



Notes on Early Land Plants Today. 43. New combinations in Lophocoleaceae (Marchantiophyta)

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Söderström *et al.* (2013) outlined the current status of the family Lophocoleaceae. Following their concept several new combinations are needed, most of which are made here. While many of the taxa treated below need to be lectotypified, we are generally not doing that here.

We only transfer taxa that have been shown to belong to the new genus in recent studies (molecular and/or morphological) or taxa that have been studied by the authors (see Söderström *et al.* 2013 for further references). There still exist taxa that need to be transferred from *Chiloscyphus*, but we are not transferring them here, since it is unclear to us in which genus they belong.

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 Code of Botanical Nomenclature (ICBN; McNeill *et al.* 2006).

New combinations in *Cryptolophocolea*

Cryptolophocolea L.Söderstr., Crand.-Stotl., Stotler et Váňa, *Phytotaxa* 97: 39, 2013 (Söderström *et al.* 2013).

Type: *Cryptolophocolea ciliolata* (Nees) L.Söderstr., Crand.-Stotl., Stotler et Váňa, *Phytotaxa* 97: 39, 2013 (Söderström *et al.* 2013)

Note:—It is not fully clear which taxa to include in this genus and which to refer to *Lophocolea* or other genera. In this paper, we include only those taxa that molecular studies have confirmed to belong to *Cryptolophocolea* and taxa that recently have been classified into *Chiloscyphus* subgen. *Connati* (as well as other taxa that are morphologically close to it; cf. Söderström *et al.* 2013). The first group of taxa that follows are transferred based upon molecular evidence provided in Hentschel *et al.* (2007), Glennly *et al.* (2009), Engel *et al.* (2010), Engel & He (2010), Vanderpoorten & Long (2006) and Vanderpoorten *et al.* (2012) in addition to morphology.

Cryptolophocolea chiloscyphoidea (Lindenb. ex Lehm.) L.Söderstr. et Crand.-Stotl., *comb. nov.*

Basionym:—*Plagiochila chiloscyphoidea* Lindenb. ex Lehm., *Nov. Stirp. Pug.* 8: 4, 1844. (Lehmann 1844).

Type:—CHILE. Magellanstr., Port Famine, *Jacquinot* 59a (lectotype [Grolle 1963: 65] PC).

≡ *Chiloscyphus chiloscyphoideus* (Lindenb. ex Lehm.) Vanderp., Schäf.-Verw. et D.G.Long, *Taxon* 59: 185, 2010 (Vanderpoorten *et al.* 2010). ≡ *Leptoscyphus chiloscyphoideus* (Lindenb. ex Lehm.) Gottsche, *Bot. Zeitung (Berlin)* 16, *Beil.*: 33, 1858 (Gottsche 1858).

Cryptolophocolea ciliolata (Nees) L.Söderstr., Crand.-Stotl., Stotler et Váňa, *Phytotaxa* 97: 39, 2013 (Söderström *et al.* 2013).

Basionym:—*Jungermannia ciliolata* Nees, *Enumer. Pl. Javae*: 68, 1830 (Nees 1830).

Type:—INDONESIA. Java: in ligno putrido, rara, *Blume, ex hb. Lehmann, misit Nees 1832*, (syntype S-B25177).

≡ *Lophocolea ciliolata* (Nees) Gottsche, *Bot. Zeitung (Berlin)* 16, *Beil.*: 38, 1858 (Gottsche 1858). ≡ *Chiloscyphus ciliolatus* (Nees) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 413, 1984 [1985] (Engel & Schuster 1985).

= *Lophocolea gaudichaudii* Mont., *Ann. Sci. Nat., sér.* 2, 19: 250, 1843 (Montagne 1843), syn. fide Piippo (1985: 154). ≡ *Chiloscyphus gaudichaudii* (Mont.) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 415, 1984 [1985] (Engel & Schuster 1985).

= *Lophocolea beecheyana* Taylor, *London J. Bot.* 5: 365, 1846 (Taylor 1846), syn. fide Piippo (1985: 154). ≡ *Chiloscyphus beecheyanus* (Taylor) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 411, 1984 [1985] (Engel & Schuster 1985).

Cryptolophocolea compacta* (Mitt.) L.Söderstr., *comb. nov.

Basionym:—*Lophocolea compacta* Mitt., *Trans. Linn. Soc. London, Bot.* 3: 198, 1891 (Mitten 1891).

Type:—JAPAN, "Challenger Exp.", 1875 (NY).

= *Lophocolea japonica* Steph., *Bull. Herb. Boissier sér.* 2, 6: 941 (*Sp. Hepat.* 3: 121), 1906 (Stephani 1906c), syn. fide Inoue (1959: 222). ≡ *Chiloscyphus japonicus* (Steph.) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 417, 1984 [1985] (Engel & Schuster 1985), *nom. illeg.* (ICN Art. 53.1; *non Chiloscyphus japonicus* Steph., *Bull. Herb. Boissier sér.* 2, 7: 697 (*Sp. Hepat.* 3: 207), 1907 (Stephani 1907c). ≡ *Chiloscyphus yezoensis* T.Katag. et Furuki, *Bryol. Res.* 10: 204, 2012 (Katagiri & Furuki 2012). Note:—This name was recently proposed by Katagiri & Furuki as a *nom. nov.* for the later homonym *Chiloscyphus japonicus* (Steph.) J.J.Engel et R.M.Schust. *Chiloscyphus japonicus* Steph. was reduced to *Chiloscyphus polyanthos* by Hattori (1952: 44).

= *Lophocolea integristipula* Steph., *Bull. Herb. Boissier sér.* 2, 6: 941 (*Sp. Hepat.* 3: 121), 1906 (Stephani 1906c), syn. fide Hattori (1952:44). ≡ *Chiloscyphus integristipulus* (Steph.) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 417, 1984 [1985] (Engel & Schuster 1985).

Cryptolophocolea connata* (Sw.) L.Söderstr. et Váňa, *comb. nov.

Basionym:—*Jungermannia connata* Sw., *Prodr. (Swartz)*: 143, 1788 (Swartz 1788).

Type:—JAMAICA, Swartz (Lectotype [here designated] S-B25227!, isolectotypes G, NY-575464, S [5 specimens] UPS-B39480).

≡ *Lophocolea connata* (Sw.) Nees ex Mont., *Ann. Sci. Nat., Bot. (sér. 2)* 12: 51, 1839 (Montagne 1839). ≡ *Chiloscyphus connatus* (Sw.) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 413, 1984 [1985] (Engel & Schuster 1985).

Cryptolophocolea costata* (Nees) L.Söderstr. *comb. nov.

Basionym:—*Jungermannia costata* Nees, *Enumer. Pl. Javae*: 69, 1830 (Nees 1830).

Type:—INDONESIA. Habitat inter muscos locis montosis Javae, *Blume, ex hb. Lehmann*, (syntype S-B25269).

≡ *Lophocolea costata* (Nees) Gottsche, *Bot. Zeitung (Berlin)* 16, *Beil.*: 38, 1858 (Gottsche 1858). ≡ *Chiloscyphus costatus* (Nees) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 413, 1984 [1985] (Engel & Schuster 1985).

= *Lophocolea giulianettii* Steph., *Bull. Herb. Boissier sér.* 2, 6: 953 (*Sp. Hepat.* 3: 133), 1906. (Stephani 1906c), syn. fide Piippo (1985: 156). ≡ *Chiloscyphus giulianettii* (Steph.) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 415, 1984 [1985] (Engel & Schuster 1985).

Cryptolophocolea guadalupensis* (Steph.) L.Söderstr. et Váňa, *comb. nov.

Basionym:—*Lophocolea guadalupensis* Steph., *Bull. Herb. Boissier sér.* 2, 7: 65 (*Sp. Hepat.* 3: 153), 1907 (Stephani 1907a).

Type:—GUADELOUPE. s.loc., *Perrottet*, Herb Stephani no. 1369 (lectotype [Fulford 1976: 448] G-00051406).

≡ *Chiloscyphus guadalupensis* (Steph.) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 416, 1984 [1985] (Engel & Schuster 1985), "*guadeloupensis*".

Cryptolophocolea helmsiana* (Steph.) L.Söderstr., *comb. nov.

Basionym:—*Lophocolea helmsiana* Steph., *Bull. Herb. Boissier sér.* 2, 6: 794 (*Sp. Hepat.* 3: 94), 1906 (Stephani 1906a).

Type:—NEW ZEALAND, s.loc., *Helms*, Herb. Stephani no. 17631 (G-00112467).

≡ *Chiloscyphus helmsianus* (Steph.) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 416, 1984 [1985] (Engel & Schuster 1985).

Cryptolophocolea leucophylla* (Hook.f. et Taylor) L.Söderstr., *comb. nov.

Basionym:—*Jungermannia leucophylla* Hook.f. et Taylor, *London J. Bot.* 3: 384, 1844 (Hooker & Taylor 1844).

Type:—NEW ZEALAND. Auckland Islands: Auckland Creek, 1840, *Hooker* (syntypes BM, E, FH-259486).
≡ *Chiloscyphus leucophyllus* (Hook.f. et Taylor) Taylor ex Gottsche, Lindenb. et Nees, *Syn. Hepat.* 2: 181, 1845 (Gottsche *et al.* 1845).
= *Chiloscyphus verrucosus* (Steph.) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 415, 1984 [1985] (Engel & Schuster 1985), syn. fide Engel (1991a: 312).
= *Chiloscyphus fulvus* (Steph.) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 425, 1984 [1985] (Engel & Schuster 1985), syn. fide Engel (1991a: 312).

Cryptolophocolea martiana* (Nees) L.Söderstr., Crand.-Stotl. & Stotler, *comb. nov.*, **subsp. *martiana**

Basionym:—*Lophocolea martiana* Nees, *Syn. Hepat.* 2: 152, 1845 (Gottsche *et al.* 1845).

Type:—BRAZIL. *Martius* (syntype W-Lindenb. Hep. 4092!).

≡ *Chiloscyphus martianus* (Nees) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 419, 1984 [1985] (Engel & Schuster 1985).
= *Chiloscyphus jugalifolius* Taylor, *London J. Bot.* 5: 283, 1846. (Taylor 1846), syn. fide Fulford (1976: 441).
= *Lophocolea congoana* Steph., *Bull. Herb. Boissier sér. 2, 7*: 306 (*Sp. Hepat.* 3: 170), 1907. (Stephani 1907c), syn. fide Gradstein *et al.* (1983: 135). ≡ *Chiloscyphus congoanus* (Steph.) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 419, 1984 [1985] (Engel & Schuster 1985).
= *Lophocolea newtonii* Steph., *Bull. Herb. Boissier sér. 2, 7*: 306 (*Sp. Hepat.* 3: 170), 1907 (Stephani 1907b), **syn. nov.**
Type:—Africa occ. Insula Principe, *Newton II*, Herb. Stephani no 17741 (lectotype [Jones 1953: 190] G-00045369).
≡ *Lophocolea martiana* subsp. *newtonii* (Steph.) R.M.Schust., *Hepat. Anthocerotae N. Amer.* 4: 237, 1980 (Schuster 1980).

Cryptolophocolea martiana* subsp. *bidentula* (Nees) L.Söderstr., Crand.-Stotl. & Stotler, *comb. nov.

Basionym:—*Chiloscyphus bidentulus* Nees, *Syn. Hepat.* 2: 181, 1845 (Gottsche *et al.* 1845).

Type:—BRAZIL. *Hb. Hampe*.

≡ *Lophocolea bidentula* (Nees) Fulford, *Mem. New York Bot. Gard.* 11: 439, 1976 (Fulford 1976). ≡ *Lophocolea martiana* subsp. *bidentula* (Nees) Gradst., *Mem. New York Bot. Gard.* 87: 73, 2003 (Gradstein & Costa 2003).

Cryptolophocolea massalongoana* (Schiffn.) L.Söderstr., *comb. nov.

Basionym:—*Lophocolea massalongoana* Schiffn., *Akad. Wiss. Wien, Math.-Naturwiss. Kl., Denkschr.* 70: 198, 1900 (Schiffner 1900).

Type:—Needs to be lectotypified from the many syntypes in FH.

≡ *Chiloscyphus costatoides* J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 413, 1984 [1985] (Engel & Schuster 1985), non *Chiloscyphus massalongoanus* Steph., *Hedwigia* 32: 325, 1893 (Stephani 1893).

Cryptolophocolea pallidovirens* (Hook.f. et Taylor) L.Söderstr., *comb. nov.

Basionym:—*Jungermannia pallidovirens* Hook.f. et Taylor, *London J. Bot.* 3: 473, 1844 (Hooker & Taylor 1844).

Type:—CHILE. Tierra del Fuego: Cape Horn, *Hooker 12* (lectotype [Vanderpoorten *et al.* 2010: 185] BM, isolectotypes G, NY).

≡ *Chiloscyphus pallido-virens* (Hook.f. et Taylor) Taylor ex Gottsche, Lindenb. et Nees, *Syn. Hepat.* 2: 178, 1845 (Gottsche *et al.* 1845), "*pallide-virens*".

Cryptolophocolea perissodonta* (Spruce) L.Söderstr., *comb. nov.

Basionym:—*Lophocolea martiana* var. *perissodonta* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 432, 1885 (Spruce 1885).

Type:—BRAZIL "fl. Negro et Uaupés; etiam circa Pará", *Spruce* (MANCH).

≡ *Chiloscyphus perissodontus* (Spruce) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 421, 1984 [1985] (Engel & Schuster 1985).

Note:—This transfer follows the study of Hentschel *et al.* (2007) but as indicated in that work (cf. their fig. 1) it may perhaps be better treated as an infraspecific taxon of *Cryptolophocolea martiana*.

Cryptolophocolea spinifera* (Hook.f. et Taylor) L.Söderstr., *comb. nov.

Basionym:—*Jungermannia spinifera* Hook.f. et Taylor, *London J. Bot.* 3: 381, 1844 (Hooker & Taylor 1844).

Type:—NEW ZEALAND. Auckland Island: November 1840, *Hooker* (lectotype [Engel 2010: 128] FH, isolectotypes BM).

≡ *Chiloscyphus spinifer* (Spruce) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 423, 1984 [1985] (Engel & Schuster 1985).

The following taxa have been placed into *Chiloscyphus* subgen. *Connati* or are related to a species placed there, but have not yet been included in any molecular study. Morphology supports their transfer to *Cryptolophocolea*.

Cryptolophocolea aculeata (Mitt.) L.Söderstr., *comb. nov.*

Basionym:—*Chiloscyphus aculeatus* Mitt. in *Hooker, Bot. Antarct. Voy. II (Fl. Nov.-Zel. 2)*: 140, 1854 (Mitten 1854).

Type:—NEW ZEALAND. "(herb. Mitten)" (NY, WELT).

Cryptolophocolea connatifolia (J.J.Engel) L.Söderstr., *comb. nov.*

Basionym:—*Chiloscyphus connatifolius* J.J.Engel, *Phytologia* 83: 42, 1997 [1998] (Engel 1998).

Type:—AUSTRALIA. Tasmania: Gordon River, Gorge Creek, near Pine Landing, sea level, *Engel 14648* (holotype F-C0000109F, isotype HO).

Cryptolophocolea edentata (J.J.Engel) L.Söderstr., *comb. nov.*

Basionym:—*Chiloscyphus edentatus* J.J.Engel, *Phytologia* 83: 43, 1997 [1998] (Engel 1998).

Type:—AUSTRALIA. Tasmania: Cradle Mtn.-Lake St. Clair Natl. Park, Ballroom Forest, SW side of Lake Dove, 950-1050 m, *Engel 13993* (holotype F-C0000108F, isotype HO).

Cryptolophocolea fleischeri (Steph.) L.Söderstr., *comb. nov.*

Basionym:—*Lophocolea fleischeri* Steph., *Bull. Herb. Boissier sér. 2*, 6: 952 (*Sp. Hepat.* 3: 132), 1906 (Stephani 1906c).

Type:—SRI LANKA. Hunasgirias Peak, 9 February 1898, *M. Fleischer ex herb. Levier 2029* (lectotype [here designated] G-112452 [=G-17703]).

Note:—N. Kitagawa annotated all four syntypes in G in 1969. Three of them are annotated as synonyms of *Lophocolea ciliolata* (Nees) Steph. but the specimen cited above was annotated as "type". It is a packet containing only two stems.

≡ *Chiloscyphus ceylonensis* J.J.Engel, *Fieldiana, Bot. n.s.* 48: 133, 2010 (Engel 2010), *non Chiloscyphus fleischeri* Steph., *Sp. Hepat. (Stephani)* 6: 306, 1922 (Stephani 1922).

Cryptolophocolea levieri (Schiffn.) L.Söderstr., *comb. nov.*

Basionym:—*Lophocolea levierii* Schiffn., *Akad. Wiss. Wien, Math.-Naturwiss. Kl., Denkschr.* 70: 198, 1900 (Schiffner 1900).

Type:—INDONESIA. Java, Prov. Preanger: in silvis primaevae secus viam ad locum dictum "Tjiburrum" prope Tjibodas. 28.IV.1894 (c. per. et male), alt. 1575 m, *Schiffner 1207* (lectotype [Piippo 1985: 160] FH-258724).

≡ *Chiloscyphus parvicus* J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 420, 1984 [1985] (Engel & Schuster 1985), *non Chiloscyphus levieri* Steph., *Bull. Herb. Boissier sér. 2*, 8: 132 (*Sp. Hepat.* 3: 248), 1908 (Stephani 1908).

Cryptolophocolea lilliena (Steph.) L.Söderstr., *comb. nov.*

Basionym:—*Lophocolea lilliena* Steph., *Sp. Hepat. (Stephani)* 6: 282, 1922 (Stephani 1922).

Type:—KENYA. Near Mt. Kenia, 1910, *A. G. Allan*, Herb. Stephani no. 587 (G-00045366).

≡ *Chiloscyphus lillienus* (Steph.) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 418, 1984 [1985] (Engel & Schuster 1985).

Cryptolophocolea mitteniana (Colenso) L.Söderstr., *comb. nov.*, **var. *mitteniana***

Basionym: *Isotachis mitteniana* Colenso, *Trans. & Proc. New Zealand Inst.* 21: 69, 1888 [1889] (Colenso 1889).

Type:—NEW ZEALAND. North Is.: Waipawa Co., Ourisia slip, Redclyffe River, near Norsewood, 1885, *Colenso a. 1300* (lectotype [Engel 1991a: 312] WELT, isolectotype BM).

≡ *Chiloscyphus mittenianus* (Colenso) J.J.Engel, *Bryologist* 94: 312, 1991. (Engel 1991a).

= *Chiloscyphus vulcanicus* Colenso, *Trans. & Proc. New Zealand Inst.* 21: 59, 1888 [1889] (Colenso 1889), *syn. fide* Engel (1991a: 312).

= *Chiloscyphus hispidus* Steph., *Sp. Hepat. (Stephani)* 6: 308, 1922 (Stephani 1922), *syn. fide* Engel (2010: 175).

Cryptolophocolea mitteniana* var. *obtusata (J.J.Engel) L.Söderstr., *comb. nov.*

Basionym:—*Chiloscyphus mittenianus* var. *obtusatus* J.J.Engel, *Phytologia* 83: 44, 1997 [1998] (Engel 1998).

Type:—NEW ZEALAND. South Is.: Otago Prov.: Mt. Maungatua, W of Mosgiel, 760 m, *Engel 17768* (holotype F, isotype CHR).

Cryptolophocolea mitteniana* var. *symmetrica (J.J.Engel) L.Söderstr., *comb. nov.*

Basionym:—*Chiloscyphus mittenianus* var. *symmetricus* J.J.Engel, *Phytologia* 83: 44, 1997 [1998] (Engel 1998).

Type:—NEW ZEALAND. South Is., Westland Prov.: Westland Natl. Park, track to Alex Knob, off track to Louisa Peak, 1170 m, *Engel 18973* (holotype F-C0000115F, isotype CHR).

Cryptolophocolea pallida (Mitt.) L.Söderstr., *comb. nov.*

Basionym:—*Lophocolea pallida* Mitt. in Hooker, *Bot. Antarct. Voy. II (Fl. Nov.-Zel. 2)*: 135, 1854 (Mitten 1854).

Type:—NEW ZEALAND. "Northern Island, Auckland, Sinclair" (NY).

≡ *Chiloscyphus pallidus* (Mitt.) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 420, 1984 [1985] (Engel & Schuster 1985).

= *Jungermannia multipenna* Hook.f. et Taylor, *London J. Bot.* 4: 81, 1845, *nom. illeg.* (ICN Art. 53.1; *hom. illeg. non* Hook.f. et Taylor 1844: 381) (Hooker & Taylor 1845), *syn. fide* Mitten (1854: 135). ≡ *Chiloscyphus multipennus* J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 419, 1984 [1985] (Engel & Schuster 1985).

Note:—When Hooker & Taylor (1844) first described *Jungermannia multipenna*, they inadvertently repeated the diagnosis for *Jungermannia intortifolia* Hooker & Taylor (1844: 374), which is the basionym of *Isotachis intortifolia* (Hook.f. et Taylor) Gottsche (1864: 121; see Hooker & Taylor 1845: 81 where this error was first discussed). This makes *Jungermannia multipenna* 1844 (based on Campbell I. material) a superfluous name (*nom. illeg.* ICN Art. 52.1) since it was based on the same type as *Jungermannia intortifolia*. Aware of their error, the following year Hooker and Taylor published *Jungermannia multipenna* Hooker & Taylor (1845: 81), based upon Auckland Is. material, but this is also illegitimate as a later homonym (ICN Art. 53.1) since *Jungermannia multipenna* 1844 had already been effectively published. When Gottsche *et al.* (1845) transferred *Jungermannia multipenna* to *Lophocolea* they cited the 1844 publication, technically making this name a synonym to *Isotachis intortifolia*. In Gottsche *et al.* (1847) they tried to correct it with a new combination citing the 1845 basionym, but as the earlier *Lophocolea multipenna* 1845 was effectively published, this later name also became an illegitimate homonym. In 1854 Mitten named *Lophocolea pallida* to include the *nom. illeg.* "[*Jungermannia*] *Lophocolea multipenna* Hook. fil et Tayl. *Flor. Antarct. p.155*" as a synonym, noting that the Auckland Island specimen in Hooker's herbarium is a mix of vegetative shoots of *Leioscyphus decipiens* and a fertile shoot of *Lophocolea pallida*, and that the 1845 description of *Jungermannia multipenna* was compiled from both taxa. When Engel & Schuster (1985) transferred *Jungermannia multipenna* 1845 to *Chiloscyphus*, it could have been considered a valid *nom. nov.* for all illegitimate names based on *Jungermannia multipenna* 1845 following ICN Art. 58.1 except for the fact that another epithet is available that has priority at that rank, namely *Lophocolea pallida* Mitt. When Engel (1991b) selected a lectotype for *Jungermannia multipenna* 1845 of Hooker plants from Auckland Is., he also reduced *L. pallida* to it, and in fact, all of the illustrations for *Chiloscyphus multipennus* used in his publication were from the type of *Lophocolea pallida*. Based on ICN Art. 58.1, this earlier epithet is the correct name for this taxon and is the basionym for the new combination above.

= *Chiloscyphus involucratus* Colenso, *Trans. & Proc. New Zealand Inst.* 22: 455, 1890 (Colenso 1890) "*involucrata*", *syn. fide* Engel (2010: 137).

= *Lophocolea erectifolia* Steph., *J. Linn. Soc., Bot.* 29: 269, 1893 [1892] (Stephani 1892), *syn. fide* Hodgson (1953: 345). ?= *Chiloscyphus erectifolius* Steph., *Bull. Herb. Boissier sér. 2*, 8: 147 (*Spec. Hep.* 3: 263), 1908 (Stephani 1908), *nom. inval.* (ICN Art. 38.1(a); no description and ICN Art. 41.5; no basionym cited). Note:—The name "*Chiloscyphus erectifolius* St." was never validly published by Stephani but appears only in a list of taxa that he associated with the genus *Lophocolea*.

Cryptolophocolea proteus (Herzog) L.Söderstr., *comb. nov.*

Basionym:—*Lophocolea proteus* Herzog, *Feddes Repert. Spec. Nov. Regni Veget.* 57: 164, 1955 (Herzog 1955).

Type:—COLOMBIA. Killip 15330 (holotype JE-4001801).

≡ *Chiloscyphus proteus* (Herzog) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 421, 1984 [1985] (Engel & Schuster 1985).

Cryptolophocolea pycnophylla (Spruce) L.Söderstr., *comb. nov.*

Basionym:—*Lophocolea pycnophylla* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15: 434, 1885 (Spruce 1885).

Type:—PERU. Mt. Guayrapurina, *Spruce* (syntype NY-1020409)

≡ *Chiloscyphus pycnophyllus* (Spruce) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 421, 1984 [1985] (Engel & Schuster 1985).

Cryptolophocolea regularis (Steph.) L.Söderstr., *comb. nov.*

Basionym:—*Chiloscyphus regularis* Steph., *Hedwigia* 32: 325, 1893 (Stephani 1893).

Type:—RÉUNION. St. Pala, Rivière de Roches, *Paul Lepervanche comm. clar. Bescherelle*, Herb. Stephani no. 633 (G-00045025).

= *Lophocolea onraedtii* Grolle, *J. Hattori Bot. Lab.* 55: 505, 1984 (Grolle 1984), syn. fide Engel (2010: 133).

Cryptolophocolea stephanii (Schiffn.) L.Söderstr., *comb. nov.*

Basionym:—*Lophocolea stephanii* Schiffn., *Akad. Wiss. Wien, Math.-Naturwiss. Kl., Denkschr.* 70: 197, 1900 (Schiffner 1900).

Type:—INDONESIA. Java: oberhalb Tjibodas, 1500-1800m; Pangerango oberhalb Tjiburum, 1780m, *Schiffner* (FH; many syntypes, lectotypification needed).

≡ *Chiloscyphus ciliolatooides* J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 412, 1984 [1985] (Engel & Schuster 1985), non *Chiloscyphus stephanii* N.Kitag., *J. Hattori Bot. Lab.* 37: 266, 1973 (Kitagawa 1973).

Cryptolophocolea subopposita (J.J.Engel) L.Söderstr., *comb. nov.*

Basionym:—*Chiloscyphus suboppositus* J.J.Engel, *Phytologia* 83: 45, 1997 [1998] (Engel 1998).

Type:—AUSTRALIA. Tasmania: Cradle Mt.-Lake St. Clair Natl. Park, Pine Valley, Cephissus Falls, NNW of L. St. Clair, 850 m, *Engel 14247* - c. sporo. (holotype F-C0000546F, isotype HO).

Cryptolophocolea thermanum (Schiffn.) L.Söderstr., *comb. nov.*

Basionym:—*Lophocolea thermanum* Schiffn., *Akad. Wiss. Wien, Math.-Naturwiss. Kl., Denkschr.* 70: 197, 1900 (Schiffner 1900).

Type:—INDONESIA. Java: oberhalb Tjiburum am Pangerango, 2140 m, 2 May 1894, *Schiffner, n. Q1197* (FH-258729).

≡ *Chiloscyphus thermanum* (Schiffn.) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 424, 1984 [1985] (Engel & Schuster 1985).

Cryptolophocolea trialata (Gottsche) L.Söderstr., *comb. nov.*

Basionym:—*Lophocolea trialata* Gottsche, *Linnaea* 28: 552, 1856 [1857] (Gottsche 1857).

Type:—AUSTRALIA. Alpes australes, *F. von Müller* (L).

≡ *Chiloscyphus trialatus* (Gottsche) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 410, 1984 [1985] (Engel & Schuster 1985).

= *Lophocolea tasmanica* Mitt. in Hooker, *Bot. Antarct. Voy. II (Fl. Tasman. 2)*: 226, 1859 (Mitten 1859), syn. fide Engel (2010: 147). ≡ *Chiloscyphus archeri* J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 410, 1984 [1985] (Engel & Schuster 1985) non *Chiloscyphus tasmanicus* Steph., *Bull. Herb. Boissier sér. 2, 8*: 133 (*Sp. Hepat.* 3: 249), 1908 (Stephani 1908).

= *Lophocolea bicuspidata* Pearson, *Bull. Misc. Inform. Kew* 2: 71, 1924 (Pearson 1924), *hom. illeg.* (ICN Art. 53.1) non *Lophocolea bicuspidata* Steph., *Sp. Hepat. (Stephani)* 6: 263, 1922 (Stephani 1922), syn. fide Engel (2010: 147). ≡ *Chiloscyphus pearsonii* J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 410, 1984 [1985] (Engel & Schuster 1985), non *Chiloscyphus bicuspidatus* (Steph.) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 411, 1984 [1985] (Engel & Schuster 1985).

Cryptolophocolea tricolorata (Hässel) Crand.-Stotl. et Stotler, *comb. nov.*

Basionym:—*Chiloscyphus tricoloratus* Hässel, *Nova Hedwigia* 70: 456, 2000 (Hässel 2000a).

Type:—ARGENTINA. Tierra del Fuego: 1 km S. of Paso Garibaldi. *G. Hässel de Menéndez & I. Gamundi 1480* (holotype BA).

Note:—This species is morphologically close to *Cryptolophocolea pallidovirens* but should be kept apart from that pending further study.

Cryptolophocolea tuberculata (J.J.Engel) L.Söderstr., *comb. nov.*

Basionym:—*Chiloscyphus tuberculatus* J.J.Engel, *Phytologia* 83: 45, 1997 [1998] (Engel 1998).

Type:—NEW ZEALAND. South Is., Southland Prov.: Fiordland Natl. Park, Tutoko River, W of Milford Sound, 50 m, *Engel 18844* (holotype F-C0000107F, isotype CHR-558811).

Cryptolophocolea whittieriana (Inoue et H.A.Mill.) L.Söderstr., *comb. nov.*

Basionym:—*Lophocolea whittieriana* Inoue et H.A.Mill., *Bull. Natl. Sci. Mus.*, n.s. 8: 143, 1965 (Inoue & Miller 1965).

Type:—MICRONESIA. Caroline Islands: Kusaie, Mt. Matante, 1800 ft, *H.A. Miller & H.O. Whittier 534* (syntypes BISH, G, MU, NY, TNS, US).

≡ *Chiloscyphus whittierianus* (Inoue et H.A.Mill.) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 425, 1984 [1985] (Engel & Schuster 1985).

Transfer of taxa to *Pachyglossa*

As outlined in Söderström *et al.* (2013), *Lophocolea* subgen. *Notholophocolea* should be included in *Pachyglossa* if not treated as a separate genus close to it.

Pachyglossa Herzog et Grolle, *Rev. Bryol. Lichénol.* 27: 150, 1958 [1959] (Herzog & Grolle 1959).

Type:—*Pachyglossa tenacifolia* (Hook.f. et Taylor) Herzog et Grolle.

= *Lophocolea* subgen. *Notholophocolea* R.M.Schust., *Hepat. Anthocerotae N. Amer.* 4: 183, 1980 (Schuster 1980), **syn. nov.**

Type:—*Lophocolea boveana* C.Massal.

≡ *Chiloscyphus* subg. *Notholophocoleus* (R.M.Schust.) J.J.Engel & R.M.Schust., *Nova Hedwigia* 39: 410, 1984 [1985] (Engel & Schuster 1985), “*Notholophocolea*”.

= *Chiloscyphus* sect. *Notholophocoleus* J.J.Engel, *J. Hattori Bot. Lab.* 72: 108 (Engel 1992), “*Notholophocolea*”, nom. inval. (ICN Art. 38.1a; no description).

= *Chiloscyphus* sect. *Notholophocoleus* J.J.Engel, *Fieldiana, Bot.*, n.s. 48: 12, 2010 (Engel 2010), **syn. nov.**

Type:—*Chiloscyphus boveanus* (C.Massal.) J.J.Engel et R.M.Schust.

Note:—When Engel (1992) described his sect. *Gottscheoides*, which he placed under subg. *Notholophocoleus*, he regarded sect. *Notholophocoleus* to be established as an autonym at the same time. However, the naming of sections within a subgenus does not explicitly create an autonym (ICN Art. 22.1).

= *Chiloscyphus* sect. *Gottscheoides* J.J.Engel, *J. Hattori Bot. Lab.* 72: 107 (Engel 1992), **syn. nov.**

Type:—*Chiloscyphus gottscheoides* (Besch. et C. Massal.) J.J.Engel et R.M.Schust.

Pachyglossa austrigena (Hook.f. et Taylor) L.Söderstr., *comb. nov.*, **subsp. austrigena**

Basionym:—*Jungermannia austrigena* Hook.f. et Taylor, *London J. Bot.* 3: 466, 1844 (Hooker & Taylor 1844).

Type:—CHILE. Prov. Magellanes: I. Hermite, *Hooker s. n.* (lectotype [Hässel 1995: 404] BM!, isolectotypes NY!, S-B24899!, W).

≡ *Lophocolea austrigena* (Hook.f. et Taylor) Gottsche, Lindenb. et Nees, *Syn. Hepat.* 5: 702, 1847 (Gottsche *et al.* 1847).

≡ *Chiloscyphus austrigenus* (Hook.f. et Taylor) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 411, 1984 [1985] (Engel & Schuster 1985).

***Pachyglossa austrigena* subsp. okaritana** (Steph.) L.Söderstr., *comb. nov.*

Basionym:—*Lophocolea okaritana* Steph., *Bull. Herb. Boissier sér.* 2, 6: 785 (*Sp. Hepat.* 3: 85), 1906 (Stephani 1906a).

Type:—NEW ZEALAND. Okarito. *Kirk 592*, Herb. Stephani no. 16057 (lectotype [**here designated**] G-00064405).

≡ *Chiloscyphus okaritanus* (Steph.) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 420, 1984 [1985] (Engel & Schuster 1985). ≡ *Chiloscyphus austrigenus* subsp. *okaritanus* (Steph.) J.J.Engel, *J. Hattori Bot. Lab.* 72: 113, 1992 (Engel 1992).

= *Chiloscyphus cordifolius* (Steph.) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 413, 1984 [1985] (Engel & Schuster 1985) *nom. illeg.* (ICN Art. 53.1) *non Chiloscyphus cordifolius* Rodway, *Pap. & Proc. Roy. Soc. Tasmania* 1915: 106, 1916 (Rodway 1916), *syn. fide* Engel (2010: 16).

Pachyglossa boveana (C.Massal.) L.Söderstr., *comb. nov.*

Basionym:—*Lophocolea boveana* C.Massal., *Nuovo Giorn. Bot. Ital.* 17: 225, 1885 (Massalongo 1885).

Type:—ARGENTINA. Tierra del Fuego: Staten Island, Mt. Conegliana, 600m, *Spegazzini* (syntypes G, LPS, VER).

≡ *Chiloscyphus boveanus* (C.Massal.) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 411, 1984 [1985] (Engel & Schuster 1985).

Pachyglossa gottscheoides (Besch. et C.Massal.) L.Söderstr., *comb. nov.*

Basionym:—*Lophocolea gottscheoides* Besch. et C.Massal., *Bull. Mens. Soc. Linn. Paris* 1: 631, 1886 (Bescherelle & Massalongo 1886).

Type:—CHILE. Magellanes: I. Hermite, *Hariot 143* (syntypes FH!, G, VER).

≡ *Chiloscyphus gottscheoides* (Besch. et C.Massal.) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 415, 1984 [1985] (Engel & Schuster 1985).

Pachyglossa otiphylla (Hook.f. et Taylor) Váňa, *comb. nov.*

Basionym:—*Jungermannia otiphylla* Hook.f. et Taylor, *London J. Bot.* 3: 466, 1844 (Hooker & Taylor 1844).

Type:—CHILE. Magellanes: Tierra del Fuego, I. Hermite, *Hooker* (syntypes NY, S, W).

≡ *Chiloscyphus otiphyllus* (Hook.f. et Taylor) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 420, 1984 [1985] (Engel & Schuster 1985).

New combinations in *Lophocolea*

The genus *Lophocolea* was traditionally considered distinct from *Chiloscyphus*, based on morphological characters, until Engel & Schuster (1985) united them. Although their concept has been accepted by some bryologists for about a quarter of a century, for reasons outlined in Söderström *et al.* (2013) a return to a narrower concept of *Chiloscyphus* is now justified. Although most of the combinations into *Chiloscyphus* made by Engel & Schuster (1985) were from *Lophocolea*, the narrower circumscription of *Chiloscyphus* requires that some new transfers from *Chiloscyphus* to *Lophocolea* be made, as detailed below.

Lophocolea (Dumort.) Dumort., *Recueil Observ. Jungerm.*: 17, 1835 (Dumortier 1835).

Basionym:—*Jungermannia* sect. *Lophocolea* Dumort., *Syll. Jungerm. Europ.*: 59, 1831 (Dumortier 1831).

= *Chiloscyphus* sect. *Semiteres* J.J.Engel, *Novon* 9: 22, 1999 (Engel 1999), **syn. nov.**

Type:—*Chiloscyphus semiteres* (Lehm.) Lehm. et Lindenb.

= *Chiloscyphus* sect. *Novarum-Zeelandiarum* J.J.Engel, *Novon* 9: 22, 1999 (Engel 1999) “*Novae-zeelandii*”, **syn. nov.**

Type:—*Chiloscyphus novae-zeelandiae* (Lehm. et Lindenb.) J.J.Engel et R.M.Schust.

= *Chiloscyphus* sect. *Hemispini* J.J.Engel, *Novon* 9: 23, 1999 (Engel 1999), **syn. nov.**

Type:—*Chiloscyphus parvispineus* J.J.Engel

= *Chiloscyphus* sect. *Aperticaulis* J.J.Engel, *Fieldiana, Bot. n.s.* 48: 119, 2010 (Engel 2010), **syn. nov.**

Type:—*Chiloscyphus aperticaulis* J.J.Engel.

= *Chiloscyphus* sect. *Spinoscaphus* J.J.Engel, *Fieldiana, Bot. n.s.* 48: 199, 2010 (Engel 2010), **syn. nov.**

Type:—*Chiloscyphus trichocoleoides* Glenny, J.J.Engel et Xiao L.He

Lophocolea anisoloba (J.J.Engel et Glenny) L.Söderstr., *comb. nov.*

Basionym:—*Chiloscyphus anisobolus* J.J.Engel et Glenny, *Bryologist* 111: 118, 2008 (Engel & Glenny 2008).

Type:—NEW ZEALAND. Canterbury Ecological Prov.: Waimakariri River, gorge of Taipoiti River, 1050 m, 6 November 2005, *Glenny 9736* (holotype F, isotype CHR-583361).

Lophocolea aperticaulis (J.J.Engel) L.Söderstr., *comb. nov.*

Basionym:—*Chiloscyphus aperticaulis* J.J.Engel, *J. Hattori Bot. Lab.* 95: 229, 2004 (Engel 2004).

Type:—NEW ZEALAND. North Is.: Gisborne Prov., Urewera Natl. Park, Waikareiti Track between track entrance and Lake Ruapani, N of eastern extremity of Lake Waikaremoana, 650-920 m, *Engel 20519* – c. per. (holotype F, isotype AK).

Lophocolea aphelophylla (Hässel) Váňa, *comb. nov.*

Basionym:—*Chiloscyphus aphelophyllus* Hässel, *J. Hattori Bot. Lab.* 98: 123, 2005 (Hässel 2005)

Type:—CHILE. Sierra Pelada, camino de Unión a Hueicolla, bosque de Mirtáceas, 7 mai 1965, *Hässel de Menéndez 2194* (holotype BA-13328).

Lophocolea apophylla (Hässel) Váňa, *comb. nov.*

Basionym:—*Chiloscyphus apophyllus* Hässel, *J. Hattori Bot. Lab.* 98: 126, 2005 (Hässel 2005).

Type:—CHILE. Osorno: Puyehue, on moist trunk in shady rainforest round Rio Chanleufú, 360 m, 25 January 1947, *Sparre* (holotype UPS).

- Lophocolea canaliculata*** (Hook.f. et Taylor ex Gottsche, Lindenb. et Nees) Steph. **var. *concava*** (J.J.Engel) L.Söderstr., *comb. nov.*
 Basionym:—*Chiloscyphus canaliculatus* var. *concavus* J.J.Engel, *Fieldiana, Bot. n.s.* 48: 107, 2010 (Engel 2010).
 Type:—NEW ZEALAND. Stewart I.; Fern Gully Track at terminus of Kaipipi Road, Mill Creek, ca. 2 km W of Oban, 20-30 m, *Engel 24081* (holotype F, isotype CHR).
- Lophocolea erosa*** (J.J.Engel) L.Söderstr., *comb. nov.*
 Basionym:—*Chiloscyphus erosus* J.J.Engel, *Phytologia* 83: 43, 1997 [1998] (Engel 1998).
 Type:—NEW ZEALAND. North I.: South Auckland Prov., Plateau E of Waiotapu Valley, ca. 1800 ft., *Allison 3569* (holotype CHR-547427).
- Lophocolea fertilis*** (J.J.Engel) L.Söderstr., *comb. nov.*
 Basionym:—*Chiloscyphus fertilis* J.J.Engel, *Phytologia* 83: 43, 1997 [1998] (Engel 1998).
 Type:—AUSTRALIA. New South Wales: Lane Cove, *Forsyth 60* as *L. bridelii* – c. sporo + ♂ (holotype NSW).
- Lophocolea gollanii*** (Steph.) Váňa, *comb. nov.*
 Basionym:—*Chiloscyphus gollanii* Steph., *Bull. Herb. Boissier sér. 2, 7*: 837 (*Sp. Hepat.* 3: 209), 1907 (Stephani 1907d).
 Type:—INDIA. Himachal Pradesh: Mussoorie, 14 September 1900, *Gollan 3828* (G)
- Lophocolea hattorii*** (J.J.Engel) L.Söderstr., *comb. nov.*
 Basionym:—*Chiloscyphus hattorii* J.J.Engel, *J. Hattori Bot. Lab.* 74: 29, 1993 (Engel 1993).
 Type:—NEW ZEALAND. South I.: Fiordland Natl. Park, Doubtful Sound, Elizabeth Is., 50-150 ft., *Schuster 52852* (holotype F, isotype CHR-558812).
- Lophocolea mediifrons*** (J.J.Engel et Braggins) L.Söderstr., *comb. nov.*
 Basionym:—*Chiloscyphus mediifrons* J.J.Engel et Braggins, *Fieldiana, Bot. n.s.* 48: 107, 2010 (Engel 2010).
 Type:—NEW ZEALAND. Stewart Is.: Paterson Inlet, Ulva Island, Flagstaff Point, NE end of island, sea level to ca. 60 m, *Engel, von Konrat and Braggins 24598A* (holotype F, isotype AK).
- Lophocolea koponenii*** (Piippo) Váňa, *comb. nov.*
 Basionym:—*Chiloscyphus koponenii* Piippo, *Ann. Bot. Fenn.* 35: 55, 1998 (Piippo 1998).
 Type:—PAPUA NEW GUINEA. West Sepik Province: Frieda River prospecting area of Frieda Copper Co. Mt. Hartley 8 km N of Frieda Base Camp, 5 August 1981, *Koponen 35338* (holotype H).
- Lophocolea novae-zeelandiae*** (Lehm. et Lindenb.) Nees **var. *meridionalis*** (Steph.) L.Söderstr., *comb. nov.*
 Basionym: *Lophocolea meridionalis* Steph., *Bull. Herb. Boissier sér. 2, 6*: 888 (*Sp. Hepat.* 3: 113), 1906 (Stephani 1906b).
 Type:—NEW ZEALAND. South I.: Waimate (Canterbury), May 1901, *Beckett*, Herb. Stephani no. 17650 (G-60987).
 Note:—This also creates the autonym *Lophocolea novae-zeelandiae* var. *novae-zeelandiae*.
- Lophocolea parvispinea*** (J.J.Engel) L.Söderstr., *comb. nov.*
 Basionym:—*Chiloscyphus parvispineus* J.J.Engel, *Phytologia* 83: 44, 1997 [1998] (Engel 1998).
 Type:—NEW ZEALAND. South Is., Otago Prov.: S side of Mt. Cargill, just below summit, N of Dunedin, ca. 2200 m, *Engel 17563* (holotype F, isotype CHR-571127).
- Lophocolea piacenzai*** (Gola) Váňa, *comb. nov.*
 Basionym:—*Lophozia piacenzai* Gola, *Atti Reale Accad. Sci. Torino* 49: 759, 1914 (Gola 1914).
 Type:—*Lophozia piacenzai* n. sp. No. 2 Kashmir, Valle Sind, prima catena a partire da Srinagar: Mummer-Gund, 2000-2100 m, 20.5.1913, *Prof. Borelli*, det. G. Gola (lectotype [**here designated**] FT ex TOM!).
 = *Lophocolea himalayensis* A.Srivast. et S.C.Srivast., *Indian Geocalycaceae*: 182, pl. 56, 2002 (Srivastava & Srivastava 2002), **syn. nov.**
 Type:—INDIA. Western Himalayas, on way to Valley of Flowers, ca. 4000 m, *Srivastava et al. 4166/80* (holotype LWU).

Lophocolea semiteres (Lehm.) Mitt. **var. *retusa*** (J.J.Engel) L.Söderstr., *comb. nov.*
Basionym:—*Chiloscyphus semiteres* var. *retusus* J.J.Engel, *Phytologia* 83: 44, 1997 [1998] (Engel 1998).
Type:—AUSTRALIA. New South Wales: Murrumbidgee River, Rules Point, 37 km NW of Adaminaby, *Streimann 7482* (holotype CBG).
Note:—This also creates the autonym *Lophocolea semiteres* var. *semiteres*.

Lophocolea subporosa Mitt. **var. *inflexifolia*** (Steph.) L.Söderstr., *comb. nov.*
Basionym:—*Lophocolea inflexifolia* Steph., *Sp. Hepat. (Stephani)* 6: 278, 1922 (Stephani 1922).
Type:—NEW ZEALAND. Pain's Limestone Hill, Wairaropa, 28 November 1910, *Gray 209*, Herb Stephani no. 17637 (lectotype [here designated] G-00060805). Note:—Engel (2010: 49) indicates the current lectotype as type but did not state "designated here" or an equivalent (cf. ICN Art. 7.10).
Note:—This also creates the autonym *Lophocolea subporosa* Mitt. var. *subporosa*.

Lophocolea trichocoleoides (Glenny, J.J.Engel et Xiao L.He) L.Söderstr., *comb. nov.*
Basionym:—*Chiloscyphus trichocoleoides* Glenny, J.J.Engel et Xiao L.He, *J. Bryol.* 31: 100, 2009 (Glenny *et al.* 2009).
Type:—NEW ZEALAND. Western Nelson Ecological Province, Marino Mountains, valley between Mt Owen and Mt Bell, 41° 32.7'S, 172° 33.1'E, NZMS 260 M28 726622, 1440 m, 19 December 2006, *Glenny 9888* (holotype CHR-505239, isotypes F, H).

Lophocolea wacei (S.W.Arnell ex J.J.Engel et Váňa) Váňa et L.Söderstr., *comb. nov.*
Basionym:—*Chiloscyphus wacei* S.W.Arnell ex J.J.Engel et Váňa, *Mem. New York Bot. Gard.* 105: 48, 2013 (Váňa & Engel 2013).
Type:—TRISTAN DA CUNHA. Gough I.: Crest of ridge to N. of Main Glen, alt. 600 ft., 1 January 1956, *Wace 559b* (holotype BM!, isotype UPS!).

Lophocolea werthii (J.J.Engel et R.M.Schust.) Váňa et L.Söderstr., *comb. nov.*
Basionym:—*Chiloscyphus werthii* J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 425, 1984 [1985] (Engel & Schuster 1985).
Type:—KERGUELEN ISLAND. 12 Sept.1902, *E. Werth* (syntype FH-286153); am Station-See, 28 June1902, *E. Werth* (syntype FH-286154).
≡ *Lophocolea variabilis* Schiffn., *Drygalski, Deutsche Südpolar-Exped. 1901-1903, 8 (Bot.):* 73, 1906 [Oct.] (Schiffner 1906), *nom. illeg.* (ICN Art 53.1), *non Lophocolea variabilis* Steph., *Bull. Herb. Boissier sér. 2, 6:* 874 (*Sp. Hepat.* 3: 99), 1906 [Sept.] (Stephani 1906b).

Transfer of *Chiloscyphus breutelii* to *Leptoscyphus*

Hentschel *et al.* (2006) showed that *Chiloscyphus breutelii* is nested within *Leptoscyphus*. A position outside *Chiloscyphus* is also confirmed by Glenny *et al.* (2009), but they did not include any *Leptoscyphus* in their study. The oldest name for the taxon is *Lophocolea trapezoïdes*, but it is not available in *Chiloscyphus*.

Leptoscyphus Mitt., *Hooker's J. Bot. Kew Gard. Misc.* 3: 358, 1851 (Mitten 1851).
Type:—*Leptoscyphus liebmannianus* (Lindenb. et Gottsche) Mitt. [= *Leptoscyphus porphyrius* (Nees) Grolle].
= *Chiloscyphus* subgen. *Eurychiloscyphus* Hässel, *Lindbergia* 26: 38, 2001 [2000] (Hässel 2000b), **syn. nov.**
Type:—*Chiloscyphus horizontalis* Hook.

Leptoscyphus trapezoïdes (Mont.) L.Söderstr., *comb. nov.*
Basionym:—*Lophocolea trapezoïdes* Mont., *Ann. Sci. Nat. Bot. (sér. 2)* 19: 251, 1843 (Montagne 1843).
Type:—ANTILLES. *Perrottet* (PC-fusion274592).
= *Lophocolea breutelii* Gottsche, *Syn. Hepat.* 2: 154, 1845 (Gottsche *et al.* 1845), *syn. fide* Fulford (1976: 435). ≡ *Chiloscyphus breutelii* (Gottsche) J.J.Engel et R.M.Schust., *Nova Hedwigia* 39: 412, 1984 [1985] (Engel & Schuster 1985).

Transfer of *Chiloscyphus gremmenii* to *Stolonivector*

Chiloscyphus gremmenii was described using a very broad concept of the genus *Chiloscyphus* (*sensu* Engel & Schuster 1985). Molecular analyses of a relatively large number of taxa (e.g., Hentschel *et al.* 2006, 2007) show that within the broadly defined genus were included a number of separate clades, some of which corresponded to described genera (see Söderström *et al.* 2013). Unfortunately, no specimens of the small, morphologically specialized genus *Stolonivector* Engel (1991c: 80) have been included in any molecular study to date. However, we conclude that, with acceptance of a narrower circumscription of *Chiloscyphus* and the additional, better developed material of *Chiloscyphus gremmenii* now available, *Chiloscyphus gremmenii* should be transferred to *Stolonivector* as it agrees with this genus in all characteristics presented by Engel (1991c) except that stolons are not common and gynoecia are on leading shoots. This species is similar to *Stolonivector fiordlandiae* (Hodgson 1953: 340) Engel (1991c: 82) and *Stolonivector obtusilobus* Engel (2009: 337). The differences can be summarized as follows: stolons relatively rare, leaves heteromorphic, of very variable form, sometimes deeply bi-(tri-)lobed, basal part of the leaves bistratose, gemmae present, gynoecia on leading shoots, and perianth mouth entire. Moreover, *Stolonivector gremmenii* has larger cells (25–30 × 20–27 µm) than *Stolonivector fiordlandiae*. Thick-walled cells without trigones and acute leaf lobes separate *Stolonivector gremmenii* from *Stolonivector obtusilobus*.

Stolonivector gremmenii (Váňa) Váňa, *comb. nov.*

Basionym:—*Chiloscyphus gremmenii* Váňa, *Cryptog. Bryol.* 26: 81, 2005 (Váňa & Gremmen 2005).

Type:—HEARD I. In crater west of Corinth Head, 53°00'33.1"S, 73°24'30.0"E, alt. 60 m, 9 February 2001, *Gremmen 1524* (holotype ADT!, isotype PRC!).

New synonym in *Chiloscyphus* Corda

In Söderström *et al.* (2013) *Chiloscyphus* is circumscribed to include only taxa that can be assigned to *Chiloscyphus* subg. *Chiloscyphus* as defined morphologically by Schuster & Engel (1985: 409). Relevant characters of the genus include the following: leaves unlobed; underleaves bifid, never connate with the leaves; perianth inflated to slightly prismatic, not sharply keeled; shoot calyptra well-developed, equal in length to the perianth or extending beyond it at maturity; androecia on leading stems, with the male bracts scarcely differentiated from the leaves. As currently defined, we think only four species belong to the genus.

Chiloscyphus kashyapii A.Srivast. et S.Srivast., *Indian Geocalycaceae*: 34, 2002 (Srivastava & Srivastava 2002).

Type:—INDIA. West Bengal: Darjeeling, on way to Teesta Valley, alt. ca. 2000 m, 3 January 1970, *Udar & Srivastava 1757/70* (holotype LWU).

Chiloscyphus koepensis (Gottsche) Steph., *Bull. Herb. Boissier sér.* 2, 8: 139 (*Sp. Hepat.* 3: 255), 1908 Stephani 1908).

Basionym:—*Jungermannia koepensis* Gottsche in Neumayer, *Int. Polarforsch., Deutsch. Exped.* 2: 452, 1890 (Gottsche 1890).

Type:—SOUTH GEORGIA. Köppenberg, 10 February 1883, *Will IIa* (lectotype [Grolle 1972: 86] M, isolectotype HBG).

Chiloscyphus pallescens (Ehrh. ex Hoffm.) Dumort., *Syll. Jungerm. Europ.*: 67, 1831 (Dumortier 1831).

Basionym:—*Jungermannia pallescens* Ehrh. ex Hoffm., *Deutschl. Fl., Theil 2 (Hoffm.)*: 87, 1795 [1796] (Hoffman 1796).

Type:—GERMANY. Harz, *Ehrhart* (lectotype [Grolle 1970: 646] MW [Hb. Hoffm. 8461] isolectotype [Ehrh. Plant. Crypt. Exs. no. 302. Hannover. 1793] LINN).

Note:—A var. *fragilis* (Roth) Müll.Frib. is occasionally recognized, sometimes even at the species level.

=*Chiloscyphus himalayensis* Steph., *Bull. Herb. Boissier sér. 2, 7: 837 (Spec. Hep. 3: 209)*, 1907 (Stephani 1907), **syn. nov.** Type:—INDIA. N. W. Himalaya, Dehra-Dun, prope Mussoorie, 6-7000', 2 January 1892, *J. F. Duthie*, Herb. Stephani no. 562 (lectotype [**here designated**] G-00069475, isolectotype JE-4005449!). Note:—The isolectotype of *Chiloscyphus himalayensis* in JE was annotated by R. Grolle as a synonym of *Chiloscyphus pallescens* but he never published it. The isolectotype consists of only two shoots originating from the richer specimen in G.

Chiloscyphus polyanthos (L.) Corda, *Naturalientausch* 12: 651, 1829 (Corda 1829).

Basionym:—*Jungermannia polyanthos* L., *Sp. Pl. ed. 1: 1131, 1753*. (Linnaeus 1753).

Type:—GREAT BRITAIN. (lectotype [Grolle 1970: 646] OXF [specimen illustrated by Dillenius. 1741] isolectotype H-SOL [Isoviita, *Acta Bot. Fenn.* 89: 17. 1970].

Note:—A var. *rivularis* (Schrad.) Lindb. et Arnell is occasionally recognized, sometimes even at the species level.

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