



Early Land Plants Today: Index of Liverwort and Hornwort names published 2019–2020

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Abstract

A widely accessible authoritative list of known plant species is a fundamental requirement for local, regional, and global biodiversity conservation efforts. The longstanding index series of published names of liverworts and hornworts continues with 2019 and 2020. The list herein includes one higher taxon name, six generic names, 13 infrageneric names, 124 specific names, 27 infraspecific names, one infrageneric autonym and nine infraspecific autonyms for 2019 and 2020. The list includes 13 names of fossils as well as 13 invalid names. Four older names omitted in the earlier indices are included.

Key words: Liverworts, hornworts, index, nomenclature, fossils, new names

Introduction

Bryophytes, including mosses, liverworts and hornworts, are the second largest group of land plants after flowering plants and are pivotal in our understanding of early land plant evolution (e.g., Ligrone *et al.* 2012, Zhang *et al.* 2020). Bryophytes play a significant ecological role including CO₂ exchange (DeLucia *et al.* 2003), plant succession (Cremer & Mount 1965), production and phytomass (Frahm 1990), nutrient cycling (Coxson *et al.* 1992) and water retention (Pócs 1980, Gradstein *et al.* 2001). The publication of new liverwort and hornwort names remains vastly scattered across dozens of journals, a common problem that extends to accessibility of biodiversity data generally (Collin *et al.* 2016). Despite the ever-growing wealth of online biological literature (Wen *et al.* 2015), centralization and standardization of biodiversity data can lead to increased accessibility and lead to the development of checklists and other resources as powerful and important tools for taxonomy and conservation (Söderström *et al.* 2008). It is also critical that as such data acquisition increases, so too does the need for that data to abide by the FAIR (findable, accessible, interoperable, reusable) principles (Wilkinson *et al.* 2016).

This index follows on from decades of previous bryophyte (mosses, liverworts, hornworts) specific indices. Söderström *et al.* (2018) summarized the many ongoing nomenclatural indexing efforts as well as the many valuable historical contributions.

In the current index we list citations for effectively published names for liverworts and hornworts during the period January 1, 2019, through December 31, 2020. We use the date when it was first effectively published, whether it was a preprint online or in a hardcopy. However, in the reference list we give the bibliographic reference to the printed version wherever possible. In a few cases we note that invalid names are validated later than the endpoint of this list. Those valid names will appear in a subsequent list. Both in the list and the reference list we give the bibliographic publication year without brackets and the year of effective publication within square brackets. We also include names of fossils that may be liverworts or hornworts, but where the actual placement is uncertain, thus the inclusion of such a name does not mean that we have accepted it to be a liverwort or hornwort. Although we regularly consult bryological and other taxonomic literature, some names are inevitably overlooked. Valid, illegitimate and invalid names that were overlooked by earlier indices (2000–2018) that we have become aware of after the publication of the relevant index,

are also included here. The bibliography contains complete citations for the places of publication of the names, their basionyms and of any blocking names, in the cases where a replacement name is needed. The format generally follows that of previous indices, especially Söderström *et al.* (2018). For fossils we state the geological period. The type taxon, if any, is also provided for new higher taxa. All names are arranged alphabetically. Although names that we judge to be invalidly published under the *International Code of Nomenclature for algae, fungi, and plants* (ICN; Turland *et al.* 2018) are included in the list, nomenclaturally they are not accepted by the authors of this index, and therefore not considered to be validly published under the ICN (Turland *et al.* 2018; “Shenzhen Code”). As in previous indices, no taxonomic disposition is provided for any of the names.

Statistics

This list contains one higher taxon name, six generic, 13 infrageneric, 124 specific, 30 infraspecific names, one infrageneric autonym and none infraspecific autonoms for 2019 and 2020. Thirteen names are for fossils. Four older names omitted in the earlier indices are included. Thirteen of the names are invalid. One higher taxon, 100 species and 8 infraspecific taxa were published as new to science, the rest are new combinations or new names for existing taxa.

Format

The format follows previous versions but is outlined here in detail for ease of reference and for minor modifications. Authorities and citation abbreviations follow the on-line version of Authors of Plant Names at the Royal Botanic Gardens, Kew, Website (www.ipni.org), which is an updated version of Brummitt & Powell (1992).

The following outlines the format for the different categories of names published during the period. Common reasons for the note are superfluous combinations, blocking names, etc., and of the era for fossils.

The name of a *new taxon* published during the period takes the form:

Cheilolejeunea rodneyi Bever. et Glenny, *Teloepa* 22: 209, 2019 (see Beveridge *et al.* 2019b). TYPE: “New Zealand, Tararua Ecological Region, Tararua Ecological District, Stokes Valley, Horoeka Scenic Reserve 41°10.30’S, 174°59.27’E, 12 Dec 2017, P. Beveridge QC-2 (Holotype: WELT H014288!”). Note that the type citation is verbatim and that we do not make any attempt here to typify anything and we have not seen the types cited.

A *new combination* published during the period takes the form:

Chiloscyphus secundifolius (Hook.f. et Taylor) J.J.Engel, *Anal. Inst. Patagonia* 48 (3): 131, 2020 (see Goffinet *et al.* 2020). BASIONYM: *Jungermannia secundifolia* Hook.f. et Taylor, *London J. Bot.* 3: 471, 1844 (see Hooker & Taylor 1844).

Asterisks preceding an entry indicate that the name has been interpreted by us as contrary to the ICN (Turland *et al.*, 2018) being either invalid (two asterisks) or illegitimate (one asterisk). We give both the article that we based our interpretation on, and a short statement about what we think is wrong. For example:

*****Acrobolbus setaceus*** (Steph.) Gradst., *Frahmia* 17: 6, 2020, *nom. inval.* ICN2018 Art. 41.5; basionym not correctly cited (see Gradstein 2020). BASIONYM: *Tylimanthus setaceus* Steph., *Bull. Herb. Boissier (sér. 2)* 5 (12): 1141 (13), 1905 (see Stephani 1905). NOTE: The name was validated in 2021.

A dagger, †, preceding an entry indicates a name for a fossil. Full bibliographic references for all entries are found in the reference list.

The Index

*****Acanthonotothylas*** (Gottsche) Amélio, *Circunscrição e Filogenia de Notothylas Sull. (Notothyladaceae, Anthocerotophyta)*: 42, 2018, *nom. inval.* ICN2018 Art. 30.9; published in a thesis (see Amélio 2018). BASIONYM: *Notothylas* subg. *Acanthonotothylas* Gottsche, *Bot. Zeitung (Berlin), Beil.* 16: 21 (see Gottsche 1858).

***Acrobolbus setaceus* (Steph.) Gradst., *Frahmia* 17: 6, 2020, *nom. inval.* ICN2018 Art. 41.5; basionym not correctly cited (see Gradstein 2020). BASIONYM: *Tylimanthus setaceus* Steph., *Bull. Herb. Boissier (sér. 2)* 5 (12): 1141 (13), 1905 (see Stephani 1905). NOTE: The name was validated in 2021.

Barbilophozia hyperborea subsp. *helophila* (R.M.Schust. et Damsh.) R.H.Zander, *Phytoneuron* 2020 (17): 1, 2020 (see Zander 2020). BASIONYM: *Lophozia hyperborea* subsp. *helophila* R.M.Schust. et Damsh., *Phytologia* 63 (5): 325, 1987 (see Schuster & Damsholt 1987).

Barbilophozia hyperborea subsp. *hyperborea*, *Phytoneuron* 2020 (17): 1, 2020 (see Zander 2020).

Bazzania lacouturei (Steph.) Gyarmati, *Phytotaxa* 403 (2): 142, 2019 (see Sass-Gyarmati & Pócs 2019). BASIONYM: *Mastigobryum lacouturei* Steph., *Sp. Hepat. (Stephani)* 6: 471, 1924 (see Stephani 1924).

Bazzania pycnophylla var. *cubensis* (Gottsche ex Steph.) Pócs, *Nova Hedwigia Beih.* 150: 164, 2020 (see Pócs 2020b). BASIONYM: *Mastigobryum cubense* Gottsche ex Steph., *Hedwigia* 24 (6): 248, 1885 (see Stephani 1885).

Bazzania pycnophylla var. *pycnophylla*, *Nova Hedwigia Beih.* 150: 164, 2020 (see Pócs 2020b).

Blasiites huolinensis Rui Y.Li et B.N.Sun, *Cret. Res.* 119 (104684): 3, 2021 [2020 online] (see Li *et al.* 2021). TYPE: “Holotype. MDL-K1-209 (designated here). Repository. Northwest University Museum, Northwest University, Xi’an, China. Type locality and horizon. Mandula open-cast coal mine, Huolinhe Basin, Inner Mongolia, China; lower coal-bearing member, Huolinhe Formation, Valanginiane–Hauterivian, Lower Cretaceous”.

***Blepharolejeunea saccata* subsp. *harlingii* (S.W.Arnell) Gradst., *Frahmia* 17: 8, 2020, *nom. inval.* ICN2018 Art. 41.5; basionym not correctly cited (see Gradstein 2020). BASIONYM: *Blepharolejeunea harlingii* S.W.Arnell, *Svensk Bot. Tidskr.* 56 (2): 335, 1962 (see Arnell 1962). NOTE: The name was validated in 2021.

Blepharostoma brevirete (Bryhn et Kaal.) Vilnet et Bakalin, *Plants* 9 (11: 1423): 21, 2020 (see Bakalin *et al.* 2020e). BASIONYM: *Blepharostoma trichophyllum* var. *brevirete* Bryhn et Kaal., *Rep. Second Norweg. Arctic Exped.* 11: 46, 1906 (see Bryhn 1906).

Blepharostoma epilithicum Vilnet et Bakalin, *Plants* 9 (11: 1423): 18, 2020 ‘*epilithica*’ (see Bakalin *et al.* 2020e). TYPE: “Holotype: Japan, Shikoku Island, Kochi Prefecture, Nagaoka-gun, Otoyopcho, Ou, Shiofuri Falls (33 48’09” N 133 41’15” E), 500 m alt. Broadleaved evergreen and deciduous forest in stream valley; moist cliff in part shade. Leg. V.A. Bakalin 25 March 2015 J - 11 - 13 - 15 (VBGI, isotype in KPABG)”.

Blepharostoma neglectum Vilnet et Bakalin, *Plants* 9 (11: 1423): 27, 2020 ‘*neglecta*’ (see Bakalin *et al.* 2020e). TYPE: “Holotype: Russia, Sakhalin Province, Sakhalin Island middle part, Zhdanko Mt. (48 05’27.6” N 142 31’30.2” E), 190–350 m alt. Coniferous forest on steep rocky slope in stream valley, with dense *Taxus cuspidata* Sieb. et Zucc. ex Endl. understory; moist boulder near stream, in part shade. Leg. V.A. Bakalin 1 October 2016 S - 48 - 18 - 16 (VBGI, isotype in KPABG)”.

Blepharostoma primum Vilnet et Bakalin, *Plants* 9 (11: 1423): 19, 2020 ‘*prima*’ (see Bakalin *et al.* 2020e). TYPE: “Holotype: Russia, Sakhalin Province, Sakhalin Island, Dolinsky District, Anna River Valley in the area adjacent to its mouth (47°09’45.7” N 143°01’43.9” E), 10–50 m alt., coniferous (*Abies sachalinensis* (F. Schmidt) Mast. dominating) forests on steep slope with many rocky outcrops, on moist cliff near stream in open area. Leg. V.A. Bakalin and K.G. Klimova 29 September 2016 S - 45 - 12 - 16 (VBGI, isotype in KPABG)”.

Blepharostoma pseudominor Vilnet et Bakalin, *Plants* 9 (11: 1423): 20, 2020 (see Bakalin *et al.* 2020e). TYPE: “Holotype: Russia, Primorye Territory, Livadiysky Range, Pidan Mt. Area, Oyry Stream valley (43 05’05.1” N 132 41’40.3” E), 699 m alt., mountain lighted dark coniferous forest. Leg. V.A. Bakalin 07 October 2008 P - 56 - 15 - 08 (VBGI, isotype in KPABG)”.

Calypogeia vietnamica Bakalin et Vilnet, *Herzogia* 32 (1): 225, 2019 (see Bakalin *et al.* 2019c). TYPE: “HOLOTYPE.

Vietnam; Lao Cai Province, SaPa District, San Sa Ho Commune, Hoang Lien Son Range, Phan Xi Pang Peak area; *Rhododendron* dominated forest with bamboo thickets and many rocky outcrops (22°18'27"N 103°46'34"E), 2900 m alt., moist cliffs in part shade, leg. V.A. Bakalin & K.G. Klimova 20 April 2017, V-9-23-17 (VBGI, duplicates in KPABG and HN)".

Ceratolejeunea falcatotdentata C.J.Bastos et Vilas Bôas-Bastos, *Phytotaxa* 394 (1): 119, 2019 (see Bastos & Bôas-Bastos 2019). TYPE: "BRAZIL: Bahia, Santa Teresinha, povoado de Pedra Branca, Serra da Jiboia, Morro da Pioneira, 12°51'20"S, 39°28'32"W, 800 m.a.s.l., on tree trunk, 17 September 2015, I. Correia 08 (holotype ALCB)".

Ceratolejeunea panamensis Fossatti, C.J.Bastos et A.R.Benitez, *Phytotaxa* 459 (3): 248, 2020 (see Fossatti *et al.* 2020). TYPE: "PANAMA. CHIRIQUÍ: Parque Internacional La Amistad (PILA), Tierras Altas, 8°53'4.21"N, 82°36'59.7"W, 2665 m.a.s.l., on canopy branches of *Alnus acuminata* Kunth in montane rainforest, 17 September 2018, I. Fossatti 001 (holotype UCH)".

Cheilolejeunea* sect. *Trachylejeunea (Spruce) C.J.Bastos et Gradst., *Nova Hedwigia* 111 (3/4): 290, 2020 (see Bastos & Gradstein 2020b). BASIONYM: *Lejeunea* subg. *Trachylejeunea* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15 (1): 180, 1884 (see Spruce 1884).

Cheilolejeunea aneogyna* var. *aneogyna, *Nova Hedwigia* 111 (3/4): 299, 2020 (see Bastos & Gradstein 2020b).

Cheilolejeunea aneogyna* var. *riparia (Steph.) C.J.Bastos et Gradst., *Nova Hedwigia* 111 (3/4): 299, 2020 (see Bastos & Gradstein 2020b). BASIONYM: *Potamolejeunea riparia* Steph., *Sp. Hepat. (Stephani)* 5: 639, 1914 (see Stephani 1914).

Cheilolejeunea glauca (Steph.) Bever. et Glenny, *Telopea* 23: 173, 2020 (see Beveridge *et al.* 2020). BASIONYM: *Pycnolejeunea glauca* Steph., *Sp. Hepat. (Stephani)* 5: 635, 1914 (see Stephani 1914).

Cheilolejeunea hodgettsii Pócs, *Bryophyte Diversity Evol.* 42 (1): 49, 2020 (see Pócs 2020d). TYPE: "MADAGASCAR. Region: Aloatra-Mangoro (former Toamasina). Andasibe-Mantadia National Park, Belakato & Sanody Forests, at elevation 1250 m, 18.81763°S, 48.45243°E, 5 October 2018, N.G. Hodgetts 10830b (Holotype TAN!, isotype: EGR!)".

Cheilolejeunea lobulata (Lindenb.) Gradst. et C.J.Bastos, *Nova Hedwigia* 111 (3/4): 315, 2020 (see Bastos & Gradstein 2020b). BASIONYM: *Lejeunea lobulata* Lindenb., *Syn. Hepat.* 3: 363, 1845 (see Gottsche *et al.* 1845b).

Cheilolejeunea morganii Bever. et Glenny, *J. Bryol.* 41 (2): 159, 2019 (see Beveridge *et al.* 2019a). TYPE: "New Zealand, Taranaki Ecological Region, North Taranaki Ecological District, Forgotten World Highway (S.H. 43), Ohura Road, Tangarakau Gorge, unnamed stream adjacent to Morgan's Grave, 38°58.77'S, 174°50.05'E, 8 April 2014, elevation 150 m in a mixed broadleaf forest of *Weinmannia racemosa* L.f., *Fuscospora truncata* (Colenso) Heenan & Smissen, *Dicksonia squarrosa* (G.Forst.) Sw., and *Cyathea smithii* Hook.f., on the trunk of *Weinmannia racemosa*, growing with *Dicranoloma menziesii* (Taylor) Renauld, *Frullania aterrima* (Hook.f. & Taylor) Hook.f. & Taylor ex Gottsche, Lindenb. & Nees and *Bazzania adnexa* (Lehm. & Lindenb.) Trevis. var. *adnexa*; P. Beveridge NJ-12 and A. Kusabs. (Holotype: WELT H014086!)".

Cheilolejeunea rigidula* var. *autoica C.J.Bastos et Gradst., *Nova Hedwigia* 111 (3/4): 322, 2020 (see Bastos & Gradstein 2020b). TYPE: "Brazil, Amazonas, Rio Negro, São Gabriel, "in cortice", R. Spruce s.n. (holotype, MANCH-0004811!)".

Cheilolejeunea rigidula* var. *rigidula, *Phytotaxa* 453 (2): 322, 2020 (see Bastos & Gradstein 2020a).

Cheilolejeunea rodneyi Bever. et Glenny, *Telopea* 22: 209, 2019 (see Beveridge *et al.* 2019b). TYPE: "New Zealand, Tararua Ecological Region, Tararua Ecological District, Stokes Valley, Horoeka Scenic Reserve 41°10.30'S, 174°59.27'E, 12 Dec 2017, P. Beveridge QC-2 (Holotype: WELT H014288!)".

Cheilolejeunea savannae L.P.C.Macedo, Ilk.-Borg. et C.J.Bastos, *Nova Hedwigia* 111 (1/2): 79, 2020 (see Macedo *et al.* 2020). TYPE: “Brazil, Pará, Maracanã, Mangaba, open trail, over live trunk of *Byrsonima crassifolia* (L.) Kunth, 00°46’58.8” S, 047°33’53.1” W, 22 m, 21 March 2018, Macedo 1958 (holotype MG, isotype ALCB)”.

Cheilolejeunea shevockii Pócs, *Bryophyte Diversity Evol.* 42 (1): 51, 2020 (see Pócs 2020d). NOM. NOV. PRO *Neurolejeunea breutelii* var. *africana* Pócs, *Herzogia* 28 (1): 63, 2015 (see Pócs *et al.* 2015b).

Cheilolejeunea timboensis C.J.Bastos et Gradst., *Nova Hedwigia* 111 (3/4): 324, 2020 (see Bastos & Gradstein 2020b). TYPE: “Brazil, Bahia, Amargosa, Refúgio da Vida Silvestre de Amargosa, Serra do Timbó, 13°07’19”S, 39°39’34”W, on tree trunk, 880 m, 16 November 2011, L.C. Reis 4505 (holotype: ALCB)”.

Cheilolejeunea trifaria var. *clausa* (Nees et Mont.) C.J.Bastos et Gradst., *Nova Hedwigia* 111 (3/4): 327, 2020 (see Bastos & Gradstein 2020b). BASIONYM: *Lejeunea clausa* Nees et Mont., *Ann. Sci. Nat. Bot. (sér. 2)* 14: 337, 1840 (see Montagne 1840).

Cheilolejeunea trifaria var. *trifaria*, *Nova Hedwigia* 111 (3/4): 327, 2020 (see Bastos & Gradstein 2020b).

Chiloscyphus parapilistipulus Thouvenot, *Candollea* 75 (2): 286, 2020 (see Thouvenot & Price 2020). TYPE: “Holotypus: New Caledonia. Prov. Sud: La Foa, Dogny plateau, on wet rock in the creek Dogny, [165°52’06”E 21°37’02”S], 918 m, 26.IX.2016, Thouvenot NC2451 (PC [PC0763751]!; iso-: Herb. Thouvenot!)”.

Chiloscyphus secundifolius (Hook.f. et Taylor) J.J.Engel, *Anal. Inst. Patagonia* 48 (3):, 2020 (see Goffinet *et al.* 2020). BASIONYM: *Jungermannia secundifolia* Hook.f. et Taylor, *London J. Bot.* 3: 471, 1844 (see Hooker & Taylor 1844).

***Clasmatocolea sect. Lacerifoliae* (Steph. ex J.J.Engel) J.J.Engel et Glenny, *Monogr. Syst. Bot. Missouri Bot. Gard.* 134: 283, 2019 ‘*Lacerifolia*’, *nom. inval.* ICN2018 Art. 41.5; basionym not correctly cited (see Engel & Glenny 2019). BASIONYM: *Clasmatocolea* subg. *Lacerifoliae* Steph. ex J.J.Engel, *Fieldiana, Bot. (n.ser.)* 3: 50, 1980 (see Engel 1980).

Cololejeunea ghatensis G.Asthana et A.Srivast., *J. Bryol.* 41 (2): 166, 2019 (see Asthana & Srivastava 2019). TYPE: “India: South India, Maharashtra, Mahabaleshwar (Satara), Chinaman Waterfall (ca. 1263 m a.s.l.), *Abha Srivastava*, 23034/15, 31 December 2015 (LWU)”.

Cololejeunea lobulopapillata A.K.Asthana, V.Sahu et Day.Gupta, *J. Bryol.* 41 (3): 274, 2019 (see Asthana *et al.* 2019). TYPE: “India: Western Himalaya, Uttarakhand, Uttarakashi, near Jakhol (31°06’40.69”N, 78°13’50.58”E), 12 October 2015, leg K. K. Rawat, 300543C (LWG)”.

Cololejeunea mehrana G.Asthana et A.Srivast., *J. Bryol.* 41 (2): 170, 2019 (see Asthana & Srivastava 2019). TYPE: “India: South India, Maharashtra, Mahabaleshwar (Satara), Monkey point (ca. 1316 m a.s.l.), *Abha Srivastava*, 23349/16, 2 November 2016 (LWU)”.

Cololejeunea tianmuensis Jian Wang bis, X.Tang et Z.Dai, *Phytotaxa* 402 (1): 57, 2019 (see Dai *et al.* 2019). TYPE: “CHINA. Zhejiang. Lin’an City, Tianmushan National Nature Reserve, 30°19.033’N, 119°26.900’E, 333 m, epiphyllous, 27 Apr. 2017, *Jian Wang et al.* 20170427-6E (holotype: HSNU!)”.

Cololejeunea velutina Glenny et M.A.M.Renner, *Telopea* 22: 170, 2019 (see Glenny & Renner 2019). TYPE: “New Zealand, North Island, Volcanic Plateau province, Pureora Forest, Rimu Track, 175.716993°E 38.565888°S, NZTM 1836720E, 5727895N, 460 m, *Dacrydium cupressinum* / *Beilschmiedia tawa* / *Coprosma tenuifolia* + *Dicksonia fibrosa* / *Leptopteris hymenophylloides* forest in floor of river valley, on leaves of *Beilschmiedia tawa*, with *Cololejeunea pulchella*, D. Glenny 14268 & M.A.M. Renner, 12 November 2018 (holotype: CHR 639909, isotypes: AK 372934, F, NSW)”.

Colura cataractarum Pócs, *Acta Bot. Hung.* 62 (3/4): 398, 2020 (see Pócs 2020c). TYPE: “Madagascar, Prov.

Fianarantsoa, Reg. Haute-Matsiatra, Andringitra Massif and National Park, on steadily irrigated granite rocks in the cataracts of the W tributary of Korokoro River, near Camp III, surrounded by mossy montane rainforest at 1,230 m elevation, 22°12'40"S, 47°00'00"E, *T. Pócs, A. Szabó 9473/K*, 22. Sept. 1994 (holotype: TAN; isotypes: G, GOET, EGR, MO, herb. Schäfer-Verwimp)".

Colura ochyrana Pócs, *Acta Mus. Siles. Sci. Natur.* 68: 38, 2019 (see Pócs 2019a). TYPE: "PERU, Junín, Prov. Chanchamayo, Distr. San Ramón, Bosque de Puyu Sacha, bosque montano con *Weinmannia*, *Podocarpus*, *Ceroxylum*, *Cinchona*, *Cecropia*, *Saraouya*, *Lauraceae* y *Myrtaceae*, sendero a la cascada. 11°05'40"S; 75°25'34"W. Alt. 2190-2200 m. Sobre hojas. Coll. T. Pócs & M. von Konrat No. 1601/BU, Juan Larraín No. 39741/AA, accompanied by 38 other epiphyllous liverwort species (Holotype HOXA, Isotype EGR, F)".

Colura sigmoidea Sangratt., Chantanaorr. et R.L.Zhu, *Phytotaxa* 387 (1): 43, 2019 (see Sangrattanaprasert *et al.* 2019). TYPE: "MALAYSIA. Pahang State: Cameron highland district, Gunung Batu Brinchang, 04°30'24"N, 101°23'13.9"E, 1705 m. 15 February 2015, Sangrattanaprasert 263/15C (holotype: PSU!; isotypes: BKF!, HSNU!)".

Colura stotleri J.C.Benavides, L.V.Campos et Uribe, *Cryptog. Bryol.* 41 (12): 142, 2020 (see Benavides *et al.* 2020). TYPE: "Colombia. Boyacá, Guican, Sierra Nevada del Cocuy, Sendero Laguna de los Tempanos. 6.4802N.; 72.2806W. 4700 m; 08.I.2010, *J.C. Benavides 4719* (holo-, COL[COL574955])".

Dendroceros* subg. *Cichoraceus Peñaloza-Bojacá et Maciel-Silva, *Syst. Biodivers.* 17 (7): 722, 2019 (see Peñaloza *et al.* 2019). TYPE: *Dendroceros cichoraceus* (Mont.) Gottsche.

Dendroceros* subg. *Nodulosus Peñaloza-Bojacá et Maciel-Silva, *Syst. Biodivers.* 17 (7): 720, 2019 (see Peñaloza *et al.* 2019). TYPE: *Dendroceros crispatus* (Hook.) Nees.

Diplophyllum purpurascens Bakalin et Vilnet, *Phytotaxa* 447 (2): 120, 2020 (see Bakalin *et al.* 2020b). TYPE: "Holotype:—China. Yunnan Province: Dali Prefecture, Jianchuan County, Yang-Cen Xiang, ridgeline of one of the spurs of the Lao-Jun-Shan Range (26°35'41.8"N 99°45'51.6"E), 3380 m a.s.l., broadleaved (evergreen and deciduous) forest along ridge, with some rocky outcrops. Leg. V.A. Bakalin & W.Z. Ma 11 October 2018, C-73-29-18 (VBGI, isotypes – KPABG, KUN)".

Drepanolejeunea halinae Pócs, *Acta Mus. Siles. Sci. Natur.* 68: 41, 2019 (see Pócs 2019a). TYPE: "PERU, Ucayali, Prov. Coronel Portillo, Dist. Iparia, Alturas del cerro Ariapo, Reserva Comunal el Sira, Cabecera de la cuenca (oeste) del Rio Ariapo, afluente del Rio Ucayali. 9° 28' 29" S; 74° 35' 04" W. Alt. 2000-2050 m. Bosque enano, con abundante luz solar. Crece por suelo en campo abierto. Coll. J.G. Graham No. 5407 p.p., in cushion of *Syzygiella rubricaulis* (Nees) Steph. and *Bazzania roraimensis* (Steph.) Fulford (Holotype F, Isotypes MOL and EGR, in form of microslide)".

Drepanolejeunea robinsonii Zartman et A.M.Sierra, *Bryologist* 122 (2): 293, 2019 (see Zartman *et al.* 2019). TYPE: "BRAZIL. AMAZONAS: Novo Airão, Parque Nacional Jaú, Rio Carabinani, 2°24'12.9"S, 61°33'31.9"W, epiphyllous on shrub, 25 October 2007, *C.E. Zartman 7510* (holotype, INPA; isotypes, HSNU, QFA)".

Fossombronia delgadilloana Crand.-Stotl., Stotler et J.C.Benavides, *Bryophyte Diversity Evol.* 41 (1): 11, 2019 (see Crandall-Stotler *et al.* 2019). TYPE: "MEXICO. Estado México: Sierra Nevado de Toluca National Park, 19°07'54"; 99°47'22"W, in wet seep on slope of hillside, altitude 3620 m, March 13, 1999; *R. Stotler; B. Crandall-Stotler & C. Delgadillo M. 4330* [holotype, F!, isotype MEXU]".

Fossombronia isaloensis Cargill et D.A.Callaghan, *J. Bryol.* 42 (3): 215, 2020 (see Cargill *et al.* 2020). TYPE: "Madagascar: Isalo National Park, [Toliara Province], Ihorombe Region, 22°31'57"S, 45°20'34"E, 1010 m a.s.l., damp, soft, acidic sandstone beside small stream, shaded by dry native scrub, with sterile *Cephaloziella* (Spruce) Schiffn. sp., 31 May 2016, leg. D. A. Callaghan, Coll. No. 12.45 (holotype: CANB; isotypes: E, Priv. Herb. D. A. Callaghan)".

Frullania* subg. *Caulisequae Gerh. Winter et Schäf.-Verw., *Frahmia* 19: 14, 2020 '*Caulisequa*' (see Winter & Schäfer-Verwimp 2020). TYPE: *Frullania caulisequa* (Nees) Mont.

Frullania sect. Inflatae (R.M.Schust.) J.J.Atwood, Vilnet et Mamontov, *Nova Hedwigia Beih.* 150: 218, 2020 (see Mamontov *et al.* 2020a). BASIONYM: *Frullania* subsect. *Inflatae* R.M.Schust., *Phytologia* 57 (5): 372, 1985 (see Schuster 1985b).

Frullania* subg. *Frullaniopsis J.J.Atwood, Vilnet et Mamontov, *Nova Hedwigia Beih.* 150: 226, 2020 (see Mamontov *et al.* 2020a). TYPE: *Frullania stylifera* (R.M.Schust.) R.M.Schust.

Frullania sect. Microphyllae (R.M.Schust.) Gradst., Ilk.-Borg. et E.Lima, *Phytotaxa* 456 (1): 122, 2020 (see Lima *et al.* 2020). BASIONYM: *Frullania* subsect. *Microphyllae* R.M.Schust., *Phytologia* 57 (5): 370, 1985 (see Schuster 1985b).

Frullania amazonica E.Lima, Ilk.-Borg. et Gradst., *Phytotaxa* 456 (1): 120, 2020 (see Lima *et al.* 2020). TYPE: “BRAZIL. Roraima: Amajari, Serra de Tepequem, planalto das Guianas, trilha para a Cachoeira Barata, mata de galeria, sobre tronco vivo, 3°48'14" N, 61°45'10" W, 576 m, 8 Sept 2017, D. F. Peralta *et al.* 21634 (holotype SP482832!, isotype MG!)”.

Frullania austinii J.J.Atwood, Vilnet, Mamontov et Konstant., *Nova Hedwigia Beih.* 150: 231, 2020 (see Mamontov *et al.* 2020a). TYPE: “USA, Wisconsin, Iowa County, Governor Dodge State Park, along the Pine Cliff Trail, west of Cox Hollow Lake, 43°00'43.5"N, 90°06'30.5"W, 325 m a.s.l., 3 November 2012, Brinda 4170 (holotype MO, isotype MHA)”.

Frullania dasyueshanensis Schäf.-Verw. et Gerh. Winter, *Frahmia* 20: 2, 2020 (see Schäfer-Verwimp & Winter 2020). TYPE: “TAIWAN, Taichung County, Hopin Township, Dasyueshan National Forest Recreation Area, 2270 m; 24°15.2' N, 121°00.4' E: surroundings of the Visitor Center, on bark of road side tree, half exposed to sunlight, leg. A. Schäfer-Verwimp DY-106, 8. Oct 2016. Herb. Schäfer-Verwimp Nr. 37395, National Taiwan Museum (TAIM). Holotype: TAIM, isotypes: FR, TAIE, JE, CAS”.

Frullania dioica (S.Hatt. et Thaithong) Mamontov et J.J.Atwood, *Nova Hedwigia Beih.* 150: 220, 2020 (see Mamontov *et al.* 2020a). BASIONYM: *Frullania inflata* var. *dioica* S.Hatt. et Thaithong, *J. Hattori Bot. Lab.* 44: 185, 1978 (see Hattori & Thaithong 1978).

†***Frullania ekaterinae*** Mamontov, Ignatov et Perkovsky, *Paleontol. Zhurn.* 53 (10): 1096, 2020 (see Mamontov *et al.* 2019b). TYPE: “Holotype. SIZK-K-10091F; liverwort in an amber sample; Klesov (Pugach quarry), Rovno amber, Late Eocene”.

*****Frullania intumescens* var. *sabanetica*** (Gottsche) Gradst., *Frahmia* 17: 16, 2020, *nom. inval.* ICN2018 Art. 41.5; basionym not correctly cited (see Gradstein 2020). BASIONYM: *Frullania sabanetica* Gottsche, *Ann. Sci. Nat. Bot. (sér. 5)* 1: 170, 1864 (see Gottsche 1864).

Frullania neomexicana J.J.Atwood, Vilnet et Mamontov, *Nova Hedwigia Beih.* 150: 235, 2020 (see Mamontov *et al.* 2020a). TYPE: “USA, New Mexico, Dona Ana County, Organ Mts., upper Rock Spring Canyon, 6800-7000 ft, mesic canyon bottom with white fir, ponderosa pine and bigtooth maple igneous substrate; permanent water, on shaded rock face, 4 May 1996, Worthington 25478, sub *F. riparia* (Holotype COLO, isotype MHA)”.

†***Frullania partita*** Ya Li bis, Y.D.Wang, H.Schneid. et P.C.Wu, *Cret. Res.* 108 (104341): 2, 2020 [2019] (see Li *et al.* 2020a). TYPE: “Holotype: PB23146. Type locality and horizon: An active amber mine near Tanai, Ledo Road, 105 km northwest of Myitkyina, Kachin State, northern Myanmar; lowermost Cenomanian (mid-Cretaceous). Repository: This amber specimen is deposited in the herbarium of Nanjing Institute of Geology and Paleontology, Chinese Academy of Sciences, Nanjing, China”.

Frullania pseudoinflata Mamontov, Vilnet et Konstant., *Nova Hedwigia Beih.* 150: 227, 2020 (see Mamontov *et al.* 2020a). TYPE: “RUSSIA, Irkutsk Region, Bodaibo District, valley of Vitim River, mouth of Balaganakh Brook, 57°35'22.7" N, 115°57'01.4" E., 361 m a.s.l., on soil covered tree trunk, near the river water, 11 August 2014, Mamontov 464-10 (holotype MHA, isotype MO)”.

***Frullania rio-janeirensis* var. *megalostipa* (Spruce) Gradst., *Frahmia* 17: 16, 2020, *nom. inval.* ICN2018 Art. 41.5; basionym not correctly cited (see Gradstein 2020). BASIONYM: *Frullania megalostipa* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15 (1): 15, 1884 (see Spruce 1884). NOTE: The name was validated in 2021.

†*Frullania schmalhauseni* Mamontov, Ignatov et Perkovsky, *Paleontol. Zhurn.* 53 (10): 1100, 2020 (see Mamontov *et al.* 2019b). TYPE: “Holotype. SIZK-L-90: liverwort in an amber sample; vicinity of the village of Voronki, Vladimirets District, Rovno amber, Late Eocene”.

†*Frullania vanae* Mamontov, J.J. Atwood, Perkovsky et Ignatov, *Bryologist* 123 (3): 434, 2020 (see Mamontov *et al.* 2020b). TYPE: “UKRAINE. ROVNO PROVINCE: Zarechnoje Distr., Kukhotskaya Volya (basin of the Veselukha River). Inclusion in Rovno amber. Eocene, Priabonian (SIZK-K-10089F, holotype)”.

Gymnomitrium kamchaticum Mamontov, Vilnet et Konstant., *Bot. Pacifica* 8 (1): 70, 2019 (see Mamontov *et al.* 2019a). TYPE: “RUSSIA. Kamchatka Territory, East Kamchatka, Ganalsky Range, Bakening volcano area, upper course of Pravaya Kamchatka River (53°56'45"N, 158°01'56"E), 900 m a.s.l., subalpine belt, on moist boulder in open place, 4 August 2015, leg. V.A. Bakalin, No. K-44-19-15 (VBGI, isotypes KPABG, MHA)”.

Heteroscyphus chishuinensis X.Y. Xiong et Wen Zhang, *Bryoph. Fl. Guizhou* 3: 174, 2018 (see Xiong & Cao 2018). TYPE: “China: Guizhou, Chishui County, Wu-ZhuFeng. 617 m a. s. 1., Zhang Wen, CS20110705101 (Holotype, GACP; isotype, GACP)”.

†*Khasurthythallus* Mamontov, *J. Syst. Evol.* 57 (4): 343, 2019 (see Mamontov & Ignatov 2019). TYPE: *Khasurthythallus monosolenioides* Mamontov.

†*Khasurthythallus monosolenioides* Mamontov, *J. Syst. Evol.* 57 (4): 343, 2019 (see Mamontov & Ignatov 2019). TYPE: “Holotype: Coll. D. Kopylov PIN 5438/101 (Fig. 1). Russia, Republic of Buryatia, Khorinsk District, left bank of Khasurty River. Repository: PIN: Borissiak Palaeontological Institute, Russian Academy of Sciences, Moscow, Russia”.

Leiomitria brevifissa (Steph.) T. Katag., *Hattoria* 10: 40, 2019 (see Katagiri 2019). BASIONYM: *Trichocolea brevifissa* Steph., *Sp. Hepat. (Stephani)* 4: 54, 1909 (see Stephani 1909).

***Leiomitria brevifissa* (Steph.) Amélio, D.F. Peralta et D.M. Carmo, *Hoehnea* 46 (2): e962018: 21, 2019 ‘*Leiomitria*’, *nom. inval.* ICN2018 Art. 41.5; basionym not correctly cited (see Amélio *et al.* 2019). BASIONYM: *Trichocolea brevifissa* Steph., *Sp. Hepat. (Stephani)* 4: 54, 1909 (see Stephani 1909).

Leiomitria sprucei (Steph.) T. Katag., *Hattoria* 10: 43, 2019 (see Katagiri 2019). BASIONYM: *Trichocolea sprucei* Steph., *Sp. Hepat. (Stephani)* 4: 59, 1909 (see Stephani 1909).

Lejeunea acanthogona var. *acanthogona*, *Phytotaxa* 453 (2): 61, 2020 (see Bastos & Gradstein 2020a).

Lejeunea acanthogona var. *crisulata* (Steph.) Gradst. et C.J. Bastos, *Phytotaxa* 453 (2): 61, 2020 (see Bastos & Gradstein 2020a). BASIONYM: *Crossotolejeunea crisulata* Steph., *Hedwigia* 35 (3): 75, 1896 (see Stephani 1896).

Lejeunea acanthogona var. *diversicuspis* (Spruce) Gradst. et C.J. Bastos, *Phytotaxa* 453 (2): 61, 2020 (see Bastos & Gradstein 2020a). BASIONYM: *Lejeunea diversicuspis* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15 (1): 176, 1884 (see Spruce 1884).

Lejeunea acanthogona var. *grossiretis* (Steph.) Gradst. et C.J. Bastos, *Phytotaxa* 453 (2): 62, 2020 (see Bastos & Gradstein 2020a). BASIONYM: *Crossotolejeunea grossiretis* Steph., *Hedwigia* 35 (3): 75, 1896 (see Stephani 1896).

Lejeunea asthanae P.K. Verma, K.K. Rawat et A. Alam, *Indian Forester* 145 (2): 198, 2019 (see Verma *et al.* 2019). TYPE: “India: Tamil Nadu - Nilgiri hills (Kotagiri - on way to Kodnad view point); N11°27'15.58" and E76°53'13.20”;

ca 1900-1950 m; P.K. Verma and A. Alam; 25.11.2001; 14308 Holotype (LWU). Tamil Nadu, Nilgiri hills (Kotagiri - Kilkotagiri); N11°27'09.76" and E76°55'31.12"; ca 1950 m; 26.11.2001; P.K. Verma and A. Alam; 14392 Paratype (LWU)".

Lejeunea atlantica C.J.Bastos et Gradst., *Phytotaxa* 453 (2): 67, 2020 (see Bastos & Gradstein 2020a). TYPE: "BRAZIL. Bahia, Wenceslau Guimarães, Nova Esperança, Estação Ecológica de Wenceslau Guimarães, Trilha Serra Grande, 13°35'43"S, 39°43'13"W, on tree trunk in montane rainforest, 583 m, 28 September 2017, C. Sena 68A p.p. (holotype, ALCB)".

Lejeunea beyrichiana (Steph.) Gradst. et C.J.Bastos, *Phytotaxa* 453 (2): 70, 2020 (see Bastos & Gradstein 2020a). BASIONYM: *Taxilejeunea beyrichiana* Steph., *Sp. Hepat. (Stephani)* 5: 460, 1914 (see Stephani 1914).

Lejeunea heinarii G.E.Lee et Pócs, *Bryologist* 123 (3): 493, 2020 (see Lee *et al.* 2020). TYPE: "PAPUA NEW GUINEA. MOROBE: Araulu logging area, 26 km SE of Wau, on upper branches of a large tree, 1900 m alt., in *Podocarpus*, *Phyllocarpus* and Fagaceae dominated ridge, 78°28'S, 146°48'E, 29 Jan. 1981, H. Streimann 13645 (holotype: JE)".

Lejeunea madangensis G.E.Lee et Pócs, *Bryologist* 123 (3): 496, 2020 (see Lee *et al.* 2020). TYPE: "PAPUA NEW GUINEA. MADANG: 2 km NW of Teptep airstrip, on *Pandanus* trunk in mesic forest ridge, 2450–2700 m alt., in heavily cut montane rainforest, 5°56.5'S, 146°33'E, 28 July 1981, Timo Koponen 34736 (holotype: H, isotype: EGR)".

Lejeunea marginedentata G.E.Lee et Pócs, *Bryologist* 123 (3): 498, 2020 (see Lee *et al.* 2020). TYPE: "PAPUA NEW GUINEA. WEST SEPIK: Frieda River prospecting area of Frieda Copper Co., 9 km NW of Frieda Base Camp, helipad M 200 of Nena area, on bush in moist forest stream, 800 m alt., in tropical rainforest, 4°40'S, 141°43'E, 2–3 Aug. 1981, Timo Koponen 35121 (holotype: H, isotype: EGR)".

*****Lejeunea mojandae*** Gradst., *Frahmia* 17: 21, 2020, *nom. inval.* ICN2018 Art. 38.1(a); no description (see Gradstein 2020). ORIGINAL MATERIAL: "Ecuador". NOTE: The name was validated in 2021.

Lejeunea pulchra C.J.Bastos et Gradst., *Phytotaxa* 453 (2): 91, 2020 (see Bastos & Gradstein 2020a). TYPE: "BRAZIL. Bahia, Wenceslau Guimarães, Nova Esperança, Estação Ecológica de Wenceslau Guimarães, Trilha Serra Grande, on bark mixed with *Lejeunea aphanes*, *L. flava*, and *L. grossitexta*, 13°35'43"S, 39°43'13"W, 583 m C. Bastos 5975 (holotype, ALCB)".

Lejeunea rysardii Gradst. et Ilk.-Borg., *Acta Mus. Siles. Sci. Natur.* 68: 30, 2019 (see Gradstein & Ilkiu-Borges 2019). TYPE: "Colombia, Department Quindío, Municipio Filandia, Vereda Cruces, Granga Experimental "Bengala", 1900-2000 m, old secondary montane forest on steep slope, on base of tree trunk, 30 April 2018, S. R. Gradstein & C. Agudelo-H. 12726a (holotype: HUQ!; isotypes: MG!, PC!)".

*****Lejeunea yasuniensis*** Gradst. et C.J.Bastos, *Frahmia* 17: 21, 2020, *nom. inval.* ICN2018 Art. 38.1(a); no description (see Gradstein 2020). ORIGINAL MATERIAL: "Ecuador". NOTE: The name was validated in 2021.

Leptolejeunea nigra L.Shu et R.L.Zhu, *Phytotaxa* 427 (1): 35, 2019 (see Shu & Zhu 2019). TYPE: "China, Yunnan., Honghe District, Hekou Co., Huayudong Nature Reserve, 22°40'597"N, 103°56'561"E, 137 m, on twigs, 9 May 2011, J. Wang & T. Peng 20110509-13A. (holotype: HSNU!)".

Leptoscyphus revolutus Burghardt, *Phytotaxa* 452 (4): 294, 2020 (see Burghardt *et al.* 2020). TYPE: "ECUADOR. Pichincha: Cantón Pedro Moncayo, Parroquia Tabacundo, Caldera of Volcán Fuya Fuya, 250 m SE of the shoreline of Laguna Grande, elev. 3807 m, 0°07'32"N 78°15'52"W, 11 December 2014, V. Herrera VH 012 (holotype: QCNE-0246296! c. spor., male)".

*****Lophozia excisa f. cylindracea*** (Dumort.) Müll.Frib. ex Damsh., *Liverworts Greenland*: 696, 2013, *nom. inval.* ICN2018 Art. 41.5; basionym not correctly cited (see Damsholt 2013). BASIONYM: *Jungermannia cylindracea* Dumort., *Syll. Jungerm. Europ.*: 54, 1831 (see Dumortier 1831).

Lophozia fuscovirens Bakalin et Vilnet, *Nordic J. Bot.* 37 (4: e02294): 5, 2019 (see Bakalin & Vilnet 2019). TYPE: “Russia. Magadan Province, Ol’skoye Basalt Plateau, upper course of Malan River (60°39’34”N, 151°21’30”E), 1200 m a.s.l., 8.VIII.2011, V. Bakalin Mag-50-16-11 (VBGI, isotype in KPABG)”.

Lophozia obscura (Bakalin) A.V.Troitsky, Bakalin et Fedosov, *Plants* 9 (7: 850): 31, 2020 (see Bakalin *et al.* 2020c). BASIONYM: *Schistochilopsis obscura* Bakalin, *Bot. Pacifica* 5 (2): 52, 2016 (see Bakalin & Klimova 2016).

*****Lophozia spitsbergensis*** Konstant. et Vilnet, *Arctoa* 29 (2): 133, 2020, *nom. inval.* ICN2018 Art. 38.1(a); no description (apparent error for *Lophozia svalbardensis*) (see Konstantinova *et al.* 2020). ORIGINAL MATERIAL: “Norway: Svalbard, N. Konstantinova, K-135-3a-07 (KPABG)”.

Lophozia svalbardensis Konstant., Vilnet et Mamontov, *Arctoa* 29 (2): 127, 2020 (see Konstantinova *et al.* 2020). TYPE: “Norway, Svalbard, Nordaustlandet, Gustav V Land, Murchisonfjorden, south-east slope on north-west coast of Nordvika Bay, 80°3’13”N – 18°48’26”E (80.053638 N – 18.807244 E), 196 m alt. bank of lake, rock field, on covered by bryophytes nonsorted circles among crushed rocks, 17 August 2007, coll. Konstantinova N.A. & A.N.Savchenko K135-3-07 (Holotype KPABG; Isotypes MHA, MW, LE, VBGI SYKO)”.

Marchantia platycarpa D.G.Long et Crand.-Stotl., *Nova Hedwigia Beih.* 150: 110, 2020 (see Long & Crandall-Stotler 2020). TYPE: “China, Sichuan Province, Daocheng County, valley south-east of Daocheng on Julong road, east side of pass, 28°51’33.2”N, 100°22’45.7”E, steep-sided river valley with calcareous slaty rock outcrops, scattered *Picea*, *Abies*, *Salix* and shrubs, on slaty rock ledges under shrubs, 3675 m, 12 September 2010, D.G. Long 40081 (E-00955287, holotype; F, KUN, isotypes)”.

*****Marchesinia brachiata* var. *robusta*** (Mitt.) Gradst. et Uribe, *Frahmia* 17: 24, 2020, *nom. inval.* ICN2018 Art. 41.5; basionym not correctly cited (see Gradstein 2020). BASIONYM: *Lejeunea robusta* Mitt., *Hooker’s J. Bot. Kew Gard. Misc.* 3: 359, 1851 (see Mitten 1851). NOTE: The name was validated in 2021.

Marsupella* sect. *Hyalacme (Lindb.) Bakalin et Fedosov, *Cryptog. Bryol.* 40 (7): 73, 2019 (see Bakalin *et al.* 2019a). BASIONYM: *Nardia* subg. *Hyalacme* Lindb., *Helsingf. Dagbl.* 1878 (38, 9 Feb): 2, 1878 (see Lindberg 1878).

Marsupella aleutica Mamontov, Vilnet, Konstant. et Bakalin, *Bot. Pacifica* 8 (1): 71, 2019 (see Mamontov *et al.* 2019a). TYPE: “USA. Alaska, Shumagin Islands, Simeonof Island (54°55’N 159°15’W), leg. W.B. Schofield, No. 103958 (UBC, sub *Marsupella alpina*; isotype KPABG, sub *Marsupella alpina*)”.

Marsupella koreana Bakalin et Fedosov, *Cryptog. Bryol.* 40 (7): 67, 2019 (see Bakalin *et al.* 2019a). TYPE: “Republic of Korea. KyongNam Province, Chiri Mts. National Park, south-eastern part of the park, the stream descending southward of the main peak, 35°19’42”N, 127°43’07”E, 1300-1600 m alt., moist cliff in part shade in mixed coniferous (*Picea abies*)-broadleaved deciduous forest in steep slope, field no. *Kor-28-4-15*, 7.V.2015, leg. *Bakalin V. A.* (holo-, VBGI; iso-, MW)”.

Marsupella patens (N.Kitag.) Bakalin et Fedosov, *Cryptog. Bryol.* 40 (7): 72, 2019 (see Bakalin *et al.* 2019a). BASIONYM: *Marsupella emarginata* var. *patens* N.Kitag., *Mem. Coll. Sci. Kyoto Imp. Univ., Ser. B, Biol.* 27: 77, 1960 (see Kitagawa 1960).

Marsupella subemarginata Bakalin et Fedosov, *Cryptog. Bryol.* 40 (7): 63, 2019 (see Bakalin *et al.* 2019a). TYPE: “Russia. Kamchatka Territory, Ganalsky Range, Bakening Volcano area, upper course of Pravaya Kamchatka River, 53°56’45”N, 158°01’56”E, 900 m alt., moist boulder near temporary stream in alpine belt, field no. *K-44-16-15*, 04.VIII.2015, leg. *Bakalin V. A.* (holo-, VBGI; iso-, MW)”.

Marsupella vermiformis (R.M.Schust.) Bakalin et Fedosov, *Cryptog. Bryol.* 40 (7): 70, 2019 (see Bakalin *et al.* 2019a). BASIONYM: *Marsupella stoloniformis* subsp. *vermiformis* R.M.Schust., *J. Hattori Bot. Lab.* 80: 72, 1996 (see Schuster 1996).

Marsupella vietnamica Bakalin et Fedosov, *Cryptog. Bryol.* 40 (7): 66, 2019 (see Bakalin *et al.* 2019a). TYPE: “Vietnam. Lao Cai province, Sapa district, Phan Xi Pang (also spelled Fansipan) National Park, 22°20'18"N, 103°46'39"E, 1900-2100 m alt., moist cliff in part shade, field no. V-2-101-16, leg. *Bakalin V. A.*, 16.III.2016 (holo-,VBGI; iso-,MW)”.

Mesoptychia gillmanii var. *gillmanii*, *J. Bryol.* 42 (1): 5, 2020 (see Hodgetts *et al.* 2020).

Mesoptychia gillmanii var. *laxa* (Schiffn. ex Burrell) L.Söderstr., *J. Bryol.* 42 (1): 5, 2020 (see Hodgetts *et al.* 2020). BASIONYM: *Lophozia schultzei* var. *laxa* Schiffn. ex Burrell, *J. Bot.* 49: 217, 1911 (see Burrell 1911).

†*Metzgeriites kujiensis* T.Katag., *Hattoria* 11: 14, 2020 (see Katagiri & Shinden 2020). TYPE: “JAPAN. Honshu. Iwate Pref., Kuji City, Kokuji-cho. Inclusion in amber mined from the Horinai Mine (40°09'01"N, 141°44'08"E) in July 2018. Tamagawa Formation. Late Cretaceous (Santonian; approximately 85 Ma). *Kuji Kohaku HI* (holotype: NICH-497606)”.

Mohamedia R.L.Zhu et L.Shu, *Bryologist* 122 (1): 90, 2019 (see Zhu *et al.* 2019). TYPE: *Mohamedia brunnea* (Mizut.) R.L.Zhu et L.Shu.

Mohamedia subg. *Mohamedia*, *Bryologist* 122 (1): 90, 2019 (see Zhu *et al.* 2019).

Mohamedia subg. *Piippolejeunea* R.L.Zhu et L.Shu, *Bryologist* 122 (1): 90, 2019 (see Zhu *et al.* 2019). TYPE: *Mohamedia borneensis* (Steph.) R.L.Zhu et L.Shu.

Mohamedia borneensis (Steph.) R.L.Zhu et L.Shu, *Bryologist* 122 (1): 91, 2019 (see Zhu *et al.* 2019). BASIONYM: *Hygrolejeunea borneensis* Steph., *Sp. Hepat. (Stephani)* 5: 557, 1914 (see Stephani 1914).

Mohamedia brunnea (Mizut.) R.L.Zhu et L.Shu, *Bryologist* 122 (1): 90, 2019 (see Zhu *et al.* 2019). BASIONYM: *Drepanolejeunea brunnea* Mizut., *J. Hattori Bot. Lab.* 33: 231, 1970 (see Mizutani 1970).

Monosporangiophyta S.Majumdar (superdiv.), *Phytotaxa* 451 (2): 177, 2020 (see Majumdar 2020).

***Notothylas granulata* Amélio et D.F.Peralta, *Circunscrição e Filogenia de Notothylas Sull. (Notothyladaceae, Anthocerotophyta)*: 30, 2018, *nom. inval.* ICN2018 Art. 30.9; published in a thesis (see Amélio 2018). TYPE: “Brazil. Pernambuco: Fernando de Noronha 3/8/1978, *Vital, D.M. 8341* (holotype 133199)”.

Notothylas granulata Amélio et D.F.Peralta, *Braz. J. Bot.* 43 (2): 336, 2020 (see Amélio & Peralta 2020). TYPE: “Brazil. Pernambuco: Fernando de Noronha, 3/8/1978, *Vital 8341* (holotype SP 133199)”.

***Notothylas paroicus* Schiffn. ex Amélio, *Circunscrição e Filogenia de Notothylas Sull. (Notothyladaceae, Anthocerotophyta)*: 57, 2018, *nom. inval.* ICN2018 Art. 36.1; not accepted by author, and ICN2018 Art. 30.9; published in a thesis (see Amélio 2018). NOTE: Error for *Notoscyphus paroicus* Schiffn.

***Notothylas vermiculata* Amélio et D.F.Peralta, *Circunscrição e Filogenia de Notothylas Sull. (Notothyladaceae, Anthocerotophyta)*: 32, 2018, *nom. inval.* ICN2018 Art. 30.9; published in a thesis (see Amélio 2018). TYPE: “Brazil. Ilhéus, Área do CEPEC (Centro de Pesquisas do Cacau), 15/7/1991, *Vital, D.M. s.n.* (SP404132)”

Notothylas vermiculata Amélio et D.F.Peralta, *Braz. J. Bot.* 43 (2): 336, 2020 (see Amélio & Peralta 2020). TYPE: “Brazil. Bahia: Ilhéus, Área do CEPEC (Centro de Pesquisas do Cacau), 15/7/1991, *Vital s.n.* (holotype SP 404132)”.

***Notothyloides* (A.K.Asthana et S.C.Srivast.) Amélio, *Circunscrição e Filogenia de Notothylas Sull. (Notothyladaceae, Anthocerotophyta)*: 42, 2018, *nom. inval.* ICN2018 Art. 30.9; published in a thesis (see Amélio 2018). BASIONYM: *Notothylas* subg. *Notothyloides* A.K.Asthana et S.C.Srivast. *Bryophyt. Biblioth.* 42: 106. 1991 (Asthana & Srivastava 1991).

†*Paleaethallus* Mamontov, T.Katag. et Borovich., *J. Syst. Evol.* 57 (4): 346, 2019 (see Mamontov & Ignatov 2019).

†*Paleaethallus squarrosus* Mamontov, T.Katag. et Borovich., *J. Syst. Evol.* 57 (4): 346, 2019 (see Mamontov & Ignatov 2019). TYPE: “Holotype: Coll. D.E. Shcherbakov PIN 5092/42 (Figs. 3A, 3B, 3D, 3F, 3G). Russia, Trans-Baikal Territory, Shelopugino District, left bank of Daya River upstream of Shiviya River mouth (51°50'N and 117°28'E); Upper Jurassic, Glushkovo Formation. ... Repository: PIN: Borissiak Palaeontological Institute, Russian Academy of Sciences, Moscow, Russia”.

Pallavicinia pseudolyellii R.M.Schust. et J.J.Engel, *Nova Hedwigia Beih.* 150: 265, 2020 (see Engel 2020). TYPE: “Holotype: New Zealand, North Is., Taranaki Prov., Pukeiti Bush, near New Plymouth, Hatcher 407 A (F - c. sporo.); isotype: (AK)”.

†*Pellites hamiensis* Rui Y.Li, *Geobios (Lyon)* 62: 25, 2020 (see Li *et al.* 2020b). TYPE: “Holotype: SDL-98-4-91 (Figs. 2(A, C, E, G, H), 3(A–J)). Paratype: SDL-98-4-92 (Fig. 2(D)). Repository: Institute of Paleontology and Stratigraphy of Lanzhou University, Gansu Province, China. Type locality: Sandaoling coal mine, Hami City, Xinjiang Uygur Autonomous Region, China. Horizon and Age: Xishanyao Formation, Middle Jurassic”.

Plagiochila sect. Xerophilae Bakalin et Vilnet, *Pl. Ecol. Evol.* 153 (1): 127, 2020 (see Bakalin & Vilnet 2020). TYPE: *Plagiochila xerophila* Bakalin et Vilnet.

Plagiochila xerophila Bakalin et Vilnet, *Pl. Ecol. Evol.* 153 (1): 127, 2020 (see Bakalin & Vilnet 2020). TYPE: “China, Sichuan Province, Kangding airport area (30°07'01.1"N 101°46'41.7"E), 4474 m, SW-facing gentle slope of the range, cliffs in alpine environments, open, dry crevice in the cliff, 14 Oct. 2017, V.A. Bakalin & K.G. Klimova China-46-2-17 (holotype: VGBI; isotype: KPABG) (Genbank accession numbers: MK121889; MK123265, MK123266)”.

***Pleurocladula albescens f. islandica* (Nees) R.M.Schust. ex Damsh., *Lindbergia* 37: 37, 2014, *nom. inval.* ICN2018 Art. 41.5; basionym not correctly cited (see Damsholt 2014). BASIONYM: *Jungermannia islandica* Nees, *Naturgesch. Eur. Leberm.* 2: 29, 1836 (see Nees 1836).

Protochilopsis A.V.Troitsky, Bakalin et Fedosov, *Plants* 9 (7: 850): 30, 2020 (see Bakalin *et al.* 2020c). TYPE: *Jungermannia grandiretis* Lindb. ex Kaal.

Protochilopsis grandiretis (Lindb. ex Kaal.) A.V.Troitsky, Bakalin et Fedosov, *Plants* 9 (7: 850): 31, 2020 (see Bakalin *et al.* 2020c). BASIONYM: *Jungermannia grandiretis* Lindb. ex Kaal., *Nyt Mag. Naturvidensk.* 33 (4/5): 322, 1893 (see Kaalaas 1893).

Radula bahiensis F.R.Oliveira-da-Silva, Ilk.-Borg. et Gradst., *Phytotaxa* 454 (1): 25, 2020 (see Oliveira-da-Silva *et al.* 2020). TYPE: “BRAZIL. Bahia: Uruçuca, 6.2 Km N of town of Serra Grande, ca. 40 Km N of Ilhéus along coast, wet tropical forest with small stream in ravine, 14°26' S, 39°03' W, 200 m, 17 July 1991, Vital & Buck 20271 (holotype SP-353920!, isotype MG!)”.

Radula fendleri var. fendleri, *Phytotaxa* 454 (1): 29, 2020 (see Oliveira-da-Silva *et al.* 2020).

Radula fendleri var. paroica F.R.Oliveira-da-Silva, Ilk.-Borg. et Gradst., *Phytotaxa* 454 (1): 29, 2020 (see Oliveira-da-Silva *et al.* 2020). TYPE: “BRAZIL. Rio de Janeiro: Nova Friburgo, Estrada para Teresópolis, sobre pau podre na capoeira, 6 May 1927, Vaughan Bandeira s.n. (holotype RB-99454!)”.

Radula pinnata Pócs, *Hattoria* 11: 2, 2020 (see Pócs 2020a). TYPE: “Madagascar. Analanjirifo Region, Mananara North Biosphere Reserve and National park, very wet lowland rainforest on the E slopes of Mahavoho Hill along Mahavoho River, with many tree ferns, palms and *Pandanus* ssp., 16°27'S, 49°46.9'E, 220 m elev., 17 Aug. 1998, Pócs & Szabó 9878/FL (holotype: TAN; isotypes: EGR, MO)”.

Radula renneri F.R.Oliveira-da-Silva, Ilk.-Borg. et Gradst., *Nova Hedwigia* 112 (1/2): 60, 2021 [2020 online] (see Oliveira-da-Silva *et al.* 2021). TYPE: “Brazil, Rio de Janeiro, Teresópolis, “bairro Quebra Frascos, sobre tronco vivo, na sombra, vegetação de capoeira”, 23 March 1926, Vaughan Bandeira s.n. (holotype: RB-00709793!; isotype: MG!)”.

Radula yamadae F.R.Oliveira-da-Silva et Ilk.-Borg., *Nova Hedwigia* 110 (3/4): 288, 2020 (see Oliveira-da-Silva & Ilkiu-Borges 2020). TYPE: “Brazil, São Paulo, São Luiz do Piraitinga, Parque Estadual da Serra do Mar, Núcleo Santa Virginia, trilha do Corcovado, Mata Atlântica, sobre folhas, 23°24’07” S, 45°11’33” W, 981 m, 11 June 2013, *Peralta & Carmo* 14155 (holotype SP-438627!)”.

Ramudaria D.K.Singh, S.Majumdar, D.Singh et Molinari, *Indian J. Forest.* 43 (2):, 2020 (see Singh *et al.* 2020). TYPE: *Ramudaria lamellicaulis* (D.K.Singh, S.Majumdar et D.Singh) D.K.Singh, S.Majumdar, D.Singh et Molinari.

Ramudaria lamellicaulis (D.K.Singh, S.Majumdar et D.Singh) D.K.Singh, S.Majumdar, D.Singh et Molinari, *Indian J. Forest.* 43 (2): 191, 2020 (see Singh *et al.* 2020). BASIONYM: *Udaria lamellicaulis* D.K.Singh, S.Majumdar et D.Singh, *Curr. Sci.* 115 (8): 1537, 2018 (see Singh *et al.* 2018).

Rectolejeunea halinae Gradst. et Ilk.-Borg., *Acta Mus. Siles. Sci. Natur.* 68: 33, 2019 (see Gradstein & Ilkiu-Borges 2019). TYPE: “Colombia, Cordillera Occidental, Department Risaralda, Mistrato, along trail from Jeguadas to Puerto de Oro, ca. 1200 m, submontane rainforest, on branches in the forest canopy, 27 July 1992, *Gradstein* 8538 (holotype COL, isotypes GOET!, MG!, PC!)”.

Riccardia corbieri (Steph.) Reeb et Gradst., *Cryptog. Bryol.* 41 (2): 20, 2020 (see Reeb & Gradstein 2020). BASIONYM: *Aneura corbieri* Steph., *Sp. Hepat. (Stephani)* 6: 23, 1917 (see Stephani 1917).

Riccardia gasparii Reeb et Gradst., *Cryptog. Bryol.* 41 (2): 22, 2020 (see Reeb & Gradstein 2020). TYPE: “Madagascar. Alaotra-Mangoro, Vohimana Reserve, Grande Cascade, 18°55’43.6”S 49°29’56.6”E, 849 m, 30.VI.2012, *Reeb* MTV1246* (holo-, PC[PC0771050]; iso-, PC[PC0763876], TAN)”.

Riccardia gradsteinii Pócs, *Acta Bot. Hung.* 61 (3/4): 390, 2019 (see Pócs 2019b). TYPE: “[Peru] Dept. Pasco, Prov. Y Distr. Oxapampa, Parque Nacional Yanachaga-Chemillen, sector San Alberto, cordillera de Yanachaga, por sendero hacia la entrada al parque, 10.54288169° S, 75.356184840° W. Elev. 2,560 m. Bosque nublado, sobre suelo, coll.: C. Rothfels (5135/E), 27 May 2016 (holotype: HOXA; isotypes: EGR, F, G, MOL, UC)”.

Riccardia martinii Reeb et Gradst., *Cryptog. Bryol.* 41 (2): 26, 2020 (see Reeb & Gradstein 2020). TYPE: “Madagascar. Alaotra-Mangoro, Zahamena Nat. Park, 17°38’22”S, 48°38’47”E 1247 m, 26.XII.2013, *Reeb & Andriamanantena* CR13Z9* (holo-, PC[PC0763851])”.

Riccardia verticillata Gradst. et Reeb, *J. Bryol.* 41 (4): 323, 2019 (see Gradstein *et al.* 2019). TYPE: “Holotype. Ecuador: Morona-Santiago, cantón Gualaquiza, parroquia Bomboiza, Reserva Biológica El Quimi, ‘sendero entre el campamento Río Cristalino y la frontera con Perú, sector El Laberinto,’ on wet, shaded soil covered by abundant organic matter in hyper-humid conditions, 03°31’05”S, 78°23’28”W, 1900–2200 m, 23 January 2019, *N. Zapata, A.J. Pérez, W. Santillán & C. Persson* 541 (QCA; isotypes BM, G, NY, PC)”.

Riccardia vohimanensis Reeb et Gradst., *Cryptog. Bryol.* 41 (2): 31, 2020 (see Reeb & Gradstein 2020). TYPE: “Madagascar. Vohimana Reserve, 18°55’43.6”S 48°29’53.6”E 849 m, 15.IV.2010, *Reeb, Andriamantena & Bidault* CRAE96* (holo-, PC[PC0771053])”.

Riccia sahyadrica Manju et Cargill, *J. Bryol.* 41 (3): 238, 2019 (see Cargill *et al.* 2019). TYPE: “India: Kerala, Thrissur District, Aushadhikunnu, Seethal, Vallikkayam, Peechi section, Peechi-Vazhani Wild Life Sanctuary, on damp soil in scattered mass along with *Physcomitrium immersum* Sull. And *Garckea flexuosa* (Griff.) Margad. & Nork., 92 m a.s.l., 27 June 2017, *Chandini & Manjula* 11386, (holotype: CALI!; isotypes: CAL!, ZGC!)”.

Riccia sorocarpa* subsp. *arctica R.M.Schust. ex Köckinger et L.Söderstr., *J. Bryol.* 42 (1): 4, 2020 (see Hodgetts *et al.* 2020). BASED ON: *Riccia sorocarpa* subsp. *arctica* R.M.Schust., *J. Hattori Bot. Lab.* 71: 274, 1992, *nom. inval.* Art. 37.7; no herbarium indicated (see Schuster 1992).

Riccia sorocarpa* subsp. *erythrophora R.M.Schust. ex Konstant. et L.Söderstr., *J. Bryol.* 42 (1): 5, 2020 (see Hodgetts *et al.* 2020). BASED ON: *Riccia sorocarpa* subsp. *erythrophora* R.M.Schust., *J. Hattori Bot. Lab.* 71: 274, 1992, *nom.*

inval. Art. 37.7; no herbarium indicated (see Schuster 1992).

Riccia sorocarpa* subsp. *sorocarpa, *J. Bryol.* 42 (1): 4, 2020 (see Hodgetts *et al.* 2020).

†***Ricciopsis sandaolingensis*** Rui Y.Li et B.N.Sun, *Palaeontol. Electronica* 58 (1): 3, 2019 (see Li *et al.* 2019). TYPE: “Holotype. Here we designate the thallus marked by the lower case letter d on specimen LDGSW-2013-235 as the holotype (Figure 3.1, 3.3, 3.6). Type locality. Sandaoling coal mine, Hami City, Xinjiang, China. Stratigraphy. Xishanyao Formation, Middle Jurassic”.

Scapania metahimalayana Vilnet et Bakalin, *Phytotaxa* 400 (3): 135, 2019 (see Bakalin *et al.* 2019b). TYPE: “Vietnam. Lao Cai Province, SaPa District, Hoang Lien National Park (22.308°N 103.776°E), 2900 m alt., *Rhododendron* dominated forest with *Sinobambusa sat* (Balansa 1890: 28) Chao & Renvoize (1989: 366) thickets, open moist cliffs, leg. Bakalin V.A. & K.G. Klimova, 19 April 2017 (V-9-17a-17, VBGI-36336, MH930836, MH931423, duplicate in KPABG)”.

Scapania paludicola* var. *rotundiloba R.M.Schust. ex Konstant. et L.Söderstr., *J. Bryol.* 42 (1): 5, 2020 (see Hodgetts *et al.* 2020). BASED ON: *Scapania paludicola* var. *rotundiloba* R.M.Schust., *Hepat. Anthocerotae N. Amer.* 3: 519, 1974, *nom. inval.* Art. 37.2; based on more than one gathering (see Schuster 1974).

Scapania pseudojavanica Vilnet et Bakalin, *Phytotaxa* 400 (3): 132, 2019 (see Bakalin *et al.* 2019b). TYPE: “Vietnam. Lao Cai Province, SaPa District, Hoang Lien National Park (22.340°N 103.776°E), 1995 m alt., evergreen mountain south-subtropical forest in the narrow stream valley, open cliffs near stream, leg. Bakalin V.A. & K.G. Klimova, 19 April 2017 (V-7-27-17, VBGI-36336, duplicate in KPABG, MH930837, MH931424)”.

Scapania sichuanica Bakalin et Vilnet, *Phytotaxa* 400 (3): 139, 2019 (see Bakalin *et al.* 2019b). TYPE: “China. Sichuan province, Kangding Airport area, (30.107°N 101.766°E), 4187 m a.s.l., SW-facing gentle slope of the range, covered with communities like dry hummocky tundra with low *Rhododendron* and *Pentaphylloides* Duhamel du Monceau (1755: 99) shrubs, over stone submerged in sluggishly flowing stream, in open, leg. Bakalin V.A. & K.G. Klimova 14 October 2017 (China-42-3-17, VBGI-37342, MH930845, MH931432, duplicate in KPABG)”.

Schistochilopsis boliviensis (Steph.) Bakalin et Fedosov, *Plants* 9 (7: 850): 18, 2020 (see Bakalin *et al.* 2020c). BASIONYM: *Lophozia boliviensis* Steph., *Biblioth. Bot.* 21 (87): 187, 1916 (see Stephani 1916).

*****Schistochilopsis grandiretis* var. *parviretis*** (R.M.Schust.) Konstant. et A.N.Savchenko, *Nature Shelf Archipelagos European Arctic*: 179, 2008 (Konstantinova & Savchenko 2008), *nom. inval.* (ICN2018 Art. 41.5; basionym not correctly cited). BASIONYM: *Lophozia grandiretis* var. *parviretis* R.M.Schust., *Hepat. Anthocerotae N. Amer.* 2: 462, 1969 (Schuster 1969).

Siphonolejeunea bidentata (B.M.Thiers ex L.Söderstr. et A.Hagborg) M.A.M.Renner, *Austral. Syst. Bot.* 33(3): 320, 2020 (see Renner & de Lange 2020). BASIONYM: *Nephelolejeunea bidentata* B.M.Thiers ex L.Söderstr. et A.Hagborg, *Phytotaxa* 202 (1): 65, 2015 (see Pócs *et al.* 2015a).

Siphonolejeunea carcharias (M.A.M.Renner) M.A.M.Renner, *Austral. Syst. Bot.* 33(3): 320, 2020 (see Renner & de Lange 2020). BASIONYM: *Nephelolejeunea carcharias* M.A.M.Renner, *Syst. Bot.* 34 (4): 621, 2009 (see Renner *et al.* 2009).

Siphonolejeunea conchophylla (Grolle) M.A.M.Renner, *Austral. Syst. Bot.* 33(3): 320, 2020 (see Renner & de Lange 2020). BASIONYM: *Nephelolejeunea conchophylla* Grolle, *J. Hattori Bot. Lab.* 48: 164, 1980 (see Grolle 1980).

Siphonolejeunea fragilis (R.M.Schust.) M.A.M.Renner, *Austral. Syst. Bot.* 33(3): 320, 2020 (see Renner & de Lange 2020). BASIONYM: *Cololejeunea fragilis* R.M.Schust., *Phytologia* 56 (7): 458, 1985 (see Schuster 1985a).

Siphonolejeunea hamata (Grolle) M.A.M.Renner, *Austral. Syst. Bot.* 33(3): 320, 2020 (see Renner & de Lange 2020). BASIONYM: *Nephelolejeunea hamata* Grolle, *J. Hattori Bot. Lab.* 48: 167, 1980 (see Grolle 1980).

Siphonolejeunea hispida (R.M.Schust. ex L.Söderstr. et A.Hagborg) M.A.M.Renner, *Austral. Syst. Bot.* 33(3): 320, 2020 (see Renner & de Lange 2020). BASIONYM: *Nephelolejeunea hispida* R.M.Schust. ex L.Söderstr. et A.Hagborg, *Phytotaxa* 202 (1): 66, 2015 (see Pócs *et al.* 2015a).

Siphonolejeunea jarmaniana (Grolle ex L.Söderstr. et A.Hagborg) M.A.M.Renner, *Austral. Syst. Bot.* 33(3): 320, 2020 (see Renner & de Lange 2020). BASIONYM: *Nephelolejeunea jarmaniana* Grolle ex L.Söderstr. et A.Hagborg, *Phytotaxa* 202 (1): 66, 2015 (see Pócs *et al.* 2015a).

Siphonolejeunea occidentalis (Pócs ex L.Söderstr. et A.Hagborg) M.A.M.Renner, *Austral. Syst. Bot.* 33(3): 321, 2020 (see Renner & de Lange 2020). BASIONYM: *Nephelolejeunea occidentalis* Pócs ex L.Söderstr. et A.Hagborg, *Phytotaxa* 202 (1): 66, 2015 (see Pócs *et al.* 2015a).

Siphonolejeunea papillosa (Glenny) M.A.M.Renner, *Austral. Syst. Bot.* 33(3): 321, 2020 (see Renner & de Lange 2020). BASIONYM: *Nephelolejeunea papillosa* Glenny, *New Zealand J. Bot.* 34 (2): 195, 1996 (see Glenny 1996).

Siphonolejeunea radulifolia (C.Massal.) M.A.M.Renner, *Austral. Syst. Bot.* 33(3): 321, 2020 (see Renner & de Lange 2020). BASIONYM: *Lejeunea radulifolia* C.Massal., *Nuovo Giorn. Bot. Ital.* 17 (3): 248, 1885 “*radulaefolia*” (see Massalongo 1885).

Siphonolejeunea raharahanehemiae de Lange et M.A.M.Renner, *Austral. Syst. Bot.* 33(3): 322, 2020 (see Renner & de Lange 2020). TYPE: “New Zealand, North Island, Te Pahi Ecological Region and District, Te Pahi, Radar Bush, upper Waitiki Stream, 19 Sep. 2011, *P.J. de Lange 9999 & M.A.M.Renner* (holo: AK 327802)”.

Siphonolejeunea secunda (M.A.M.Renner ex L.Söderstr. et A.Hagborg) M.A.M.Renner, *Austral. Syst. Bot.* 33(3): 322, 2020 (see Renner & de Lange 2020). BASIONYM: *Nephelolejeunea secunda* M.A.M.Renner ex L.Söderstr. et A.Hagborg, *Phytotaxa* 202 (1): 66, 2015 (see Pócs *et al.* 2015a).

Siphonolejeunea talinayi (S.W.Arnell) M.A.M.Renner, *Austral. Syst. Bot.* 33(3): 322, 2020 (see Renner & de Lange 2020). BASIONYM: *Harpalejeunea talinayi* S.W.Arnell, *Svensk Bot. Tidskr.* 50 (2): 309, 1956 (see Arnell 1956).

Solenostoma jirisanense Bakalin et S.S.Choi, *Korean J. Pl. Taxon.* 50 (2): 135, 2020 (see Bakalin *et al.* 2020d). TYPE: “Korea. Gyeongsangnam-do: Jirisan Mt., elev. 1,620 m, Choi 3747-3 (Holotype: JNU)”.

Sphaerocarpos subg. *Criscarpos* R.L.Zhu et You L.Xiang, *Bryologist* 122 (4): 591, 2019 (see Xiang & Zhu 2019). TYPE: *Sphaerocarpos cristatus* M.Howe.

Sphaerocarpos siguniangensis R.L.Zhu et You L.Xiang, *Bryologist* 122 (4): 591, 2019 (see Xiang & Zhu 2019). TYPE: “CHINA. SICHUAN: Xiaojin Co., Siguniang Mountains Nature Reserve, Haizigou, Huahaizi, 31802054800N, 102855078300E, 3828 m, on soil, 16 Aug. 2016, *R.-L. Zhu 20160816-14A* (holotype: HSNU!)”.

Stolonivector echioides Frogley et Glenny, *New Zealand J. Bot.* 59 (1): [2], 2020 (see Frogley & Glenny 2020). TYPE: “R. Hindmarsh-Walls, Department of Conservation sample number NV181900146, 25 November 2018, New Zealand, Copland Range, west of Chlorite Creek, a tributary of Architect Creek, *Metrosideros umbellata* Cav.–*Libocedrus bidwillii* Hook.f. forest in a shallow, boulder filled gully, 169.895585°E, 43.589873°S, NZTM 1349392E, 5168994N, 760 m, growing on rock in a small creek bed. Nearby species were *Achrophyllum dentatum* (Hook.f. & Wilson) Vitt & Crosby, *Distichophyllum microcarpum* (Hedw.) Mitt., *Echinodium hispidum* (Hook.f. & Wilson) Reichardt, *Megaceros pellucidus* (Colenso) E.A. Hodgs., *Plagiochila ramosissima* (Hook.) Lindenb., *P. rutlandii* Steph., *Pseudocypbellaria dissimilis* (Nyl.) D.J. Galloway & P. James, *Schistochila muricata* E.A. Hodgs. & Allison, and *Trichocolea rigida* R.M. Schust. Holotype: CHR 656062; isotype: F”.

Symphyogyna caduciloba Burghardt et Uribe, *Phytotaxa* 470 (1): 107, 2020 (see Burghardt & Uribe 2020). TYPE: “ECUADOR. Pichincha: Canton San Miguel de los Bancos, Parrish Mindo, area of Cascada Nambilla, ca. 3.3 km SE of the central park of Mindo, elev. 1462 m, 0°04'43.28”S 78°45'33.81”W, 05 January 2019, *M.Burghardt & V.Cadena*

MB 10777 (holotype: QCNE, female)”.

†*Thallites yangcaogouensis* Jun You Wang *et al.*, *Global Geol.* 38 (1): 3, 2019 (see Wang *et al.* 2019). TYPE: “正模(holotype): IMMNH—PB00018—2; 图 3a2; c右图。 吾0模(paratype): IMMNH—PB00018—1, 图3b; IMMNH—PB00018—7, 图39。地(locality): 辽宁省北票市常河营子乡羊草沟自然村北山。层位(horizon): 上三叠统羊草沟组(L.)中段下部褐黄色泥质粉砂岩。词源(etymology): 种名源于新种产地羊草沟(yangcaogou)地名。标本保存单位(repository): 内蒙古自然博物万方”.

†*Thysananthus weiweianus* N.N.Yu et Gradst., *Chenia* 14: 59, 2020 (see Yu *et al.* 2020). TYPE: “Holotype: Dominican amber, *W.-W. Zhang* 001770 (PE)”.

Trilophozia quinquedentata f. gracilis (R.M.Schust.) Konstant., *Nova Hedwigia Beih.* 150: 191, 2020 (see Konstantinova & Savchenko 2020). BASIONYM: *Tritomaria quinquedentata f. gracilis* R.M.Schust., *Hepat. Anthocerotae N. Amer.* 2: 691, 1969 (see Schuster 1969).

Vietnamiella Bakalin et Vilnet, *Bryologist* 123 (1): 51, 2020 (see Bakalin *et al.* 2020a). TYPE: *Vietnamiella epiphytica* Bakalin et Vilnet.

Vietnamiella epiphytica Bakalin et Vilnet, *Bryologist* 123 (1): 53, 2020 (see Bakalin *et al.* 2020a). TYPE: “VIETNAM. LAO CAI PROVINCE: SaPa District, Hoang Lien Range, *Rhododendron* dominated forest with bamboo thickets, mesic branch of shrub in part shade; 22.3088°N, 103.7768°E, 2900 m alt.; 20 April 2017, *Bakalin & Klimova V-9-8- 17* (VBGI: holotype; HN, KPABG and UBC: isotypes)”.

***Xylolejeunea pellucidissima* (Spruce) Gradst., *Frahmia* 17: 36, 2020, *nom. inval.* ICN2018 Art. 41.5; basionym not correctly cited (see Gradstein 2020). BASIONYM: *Lejeunea pellucidissima* Spruce, *Trans. & Proc. Bot. Soc. Edinburgh* 15 (1): 184, 1884 (see Spruce 1884). NOTE: The name was validated in 2021.

Zoopsidella grahamii Pócs, *Acta Bot. Hung.* 61 (3/4): 388, 2019 (see Pócs 2019b). TYPE: “[Peru] Dept. Pasco, Prov. Oxapampa, Distr. Huancabamba, Parque Nacional Yanachaga Chemillen, Abra Yanachaga, 10°23’15”S, 75°28’10”W, alt. 2,400–2,500 m, “bosque nublado, filo de tierra firme entre 2 quebradas, sobre tronco caído”, coll.: J. G. Graham, V. Coshanti, C. Mateo (AY-6/E1), 30 May 2016 (holotype: MOL)”.

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<https://doi.org/10.1007/s40415-020-00602-x>
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