Bryological Notes

New national and regional bryophyte records, 47

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1. Barbula convoluta Hedw.
Contributor: F. Müller

Democratic Republic of the Congo: Province Kivu, Rumangabo 40 km N of Goma, at the eastern base of Nyiragongo volcano, on open soil over volcanic stones, 1600 m a.s.l., 01°20’S, 29°22’E, 26 August 1991, leg. F. Müller Z533 (DR).

This species is widely distributed in the northern hemisphere and furthermore known from Central America, Africa, and New Zealand. O’Shea (2006) reported the species in sub-Saharan Africa from Cape Verde, Ethiopia, Kenya, South Africa, Tanzania, and Zambia.

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The specimen from Congo agrees in all details with material from central Europe. The material bears sporophytes with pale yellow setae, as is characteristic for the species.

2. *Brotherella harveyana* (Mitt.) Dixon

**Contributors:** A. K. Asthana and A. Srivastava

**India:** Eastern Himalaya: Meghalaya, West Khasi hills, Nongstoin, Mawsyngdur Forest, epiphytic, 24°58′–26°8′N, 89°47′–92°50′E, 15 September 2000, leg. A.P. Singh & M. Lal., s.n. (LWG 208606 D).

The genus *Brotherella* M.Fleisch., in the family Setaiphyllaceae, is represented in India by 12 species. Of these, 10 have been reported from the Eastern Himalayas and three from the Western Himalayas (Lal, 2005). Gangule (1980) had reported *Brotherella harveyana* from the Western Himalayas and Nepal, and it is reported here for the first time from the Eastern Himalayas.

The plants were brownish-green, with creeping, irregularly branched stems. Leaves were erecto-patent, imbricate, ovate-lanceolate, ∼1.1–1.3 × 0.2–0.3 mm, ecastate, and with a narrow apex. They were composed of linear, elongate cells, ∼45–55 × 7 μm near the leaf apex and ∼84 × 6 μm in mid leaf; distinct alar cells were reddish, quadrato-rectangular. Sporophytes were not found.

*Brotherella harveyana* shows a close resemblance with *Brotherella amblystegia* (Mitt.) Broth. but the former species differs from the latter in having irregular and fasciculate branching, in the latter species branching is regular and pinnate.

3. *Bryum pseudotriquetrum* (Hedw.) P.Gaertn., B.Mey. & Scherb.

**Contributors:** H. Bednarek-Ochyra and I. Parnikoza

**Antarctica, Argentina Islands:** (1) Skua Island, Wild Island-Rock near North Point, 65°14.965′S, 64°16.365′W, 11 m a.s.l., in nests of the kelp gull, associated with *Sanionia georgicounicinata* (Müll.Hal.) Broth. & Scherb. but the material (Parnikoza et al., 2008a). Associated bryophytes: *Riccia glauca* (F.Weber & D.Mohr) Barn., *Pohlia wahlenbergii* (F.Weber & D.Mohr), *Marchantia polymorpha* L. subsp. *ruderalis* Bischl. & Boisselier. (Erzberger & Schröder, 2006b) and *Pohlia drummondii* (Müll.Hal.) A.L.Andrews (Ellis et al., 2016), the moss flora of the Argentine Islands consists of 35 species.

4. *Bryum tenuisetum* Limpr.

**Contributors:** P. Erzberger and W. Schröder

**Hungary:** Pest County, [8679.2] (Central European Mapping Scheme), Danube island of Csepel, SW of the village of Halásztelek, on drying mud on the bank of the river Danube, exposed during prolonged low water level, ca 95 m a.s.l., 47°22′51.5″N, 18°58′44.3″E, 3 November 2015, leg. P. Erzberger, det. W. Schröder (B, Erzberger 21022). Associated bryophytes: *Riccia glauca* L., *R. bifurca* Hoffm., *R. cavernosa* Hoffm., emend. Raddi, *Aphanorrhegma patens* (Hedw.) Lindb., *Bryum klinggraeffii* Schimp., *Pohlia wahlenbergii* (F.Weber & D.Mohr) A.L.Andrews, *Marchantia polymorpha* L. subsp. *ruderalis* Bischl. & Boisselier. (Van County, [8665.2], Tömöröd, at the bottom of a ditch near a *Pinus* plantation at the small lake Kis-tó, ca 250 m a.s.l., 47°21′17″N, 16°39′14″E, 15 October 1930, leg. A. Visnyai as *Bryum murale* Wison ex Hunt, rev. W. Schröder (BP, 118104) (Erzberger & Schröder, 2013). Associated bryophytes: *Riccia glauca*, *Potti truncata* (Hedw.) Bruch & Schimp., *Bryum dichotomum* Hedw., *B. argenteum* Hedw.
*Bryum tenuisetum* is characterised by yellowish to orange, transparent spherical or slightly irregular rhizoidal tubers, 100–200 μm diam. with a more or less smooth outline (tuber cells not protruding), and leaves with a reddish tinge and that are distinctly dentillate in their upper third (similar to species of *Pohlia* Hedw., but costa distinctly excurrent in *B. tenuisetum*). It grows on wet sand or other moist soils poor in lime, but sometimes base-rich, near ditches, ponds, or wet depressions in arable fields (Erzberger & Schröder, 2013; Holyoak, 2014). The sites reported here correspond well to this ecological profile. The recent findings suggests that the species is under recorded in Hungary, since similar habitats can be found along nearly the entire length of the river Danube in nanocyperion vegetation, which develops when the water level is low for prolonged periods. However, this is a temporary condition, and is therefore not always prevalent.

In Europe, *Bryum tenuisetum* is predominantly distributed in northern and western countries (Hodgetts, 2015). However, the reported data may not reflect accurately the true distribution, since this small species is easily overlooked or confused with *B. subapiculatum* Hampe, and tuber-bearing *Bryum* species are not generally well studied throughout Europe. Among the countries surrounding Hungary, it has been found only in Austria, Slovakia, and the Ukraine (Erzberger & Schröder, 2013; Hodgetts, 2015). Outside Europe, the species occurs in Macaronesia and North America (Holyoak, 2014). *B. tenuisetum* is missing from the latest checklist of Hungarian bryophytes (Papp et al., 2010).

During revision of more than 2000 specimens of *Bryum* collected in Hungary, in the collection from 1930 cited above, a very few plants typical of *B. tenuisetum* (leaf shape, colour) were detected, in addition to some yellowish tubers in the substrate. However, since the material was extremely sparse, it was not considered a valid first record of *B. tenuisetum* in Hungary, and was therefore given the status of ‘doubtfully recorded’ (Erzberger & Schröder, 2013). With the recent detection of the species in the inundation area of the Danube, *B. tenuisetum* is definitely established as a member of the Hungarian bryoflora.

5. *Bucklandiella heterostichoides* (Cardot) Bednarek-Ochyra & Ochyra

**Contributors:** H. Bednarek-Ochyra and V. Plášek

**Chile:** XI Región Aysén del General Carlos Ibáñez del Campo, Provincia de Coihaique, Ruta 608 from Coihaique to Lago Portales, 20 km SW of Coihaique, large rock west of Los Huemules opposite the small peninsula on the northern shore of Lago Atrovesado, 360–370 m a.s.l., 45°41′386″S, 72°16′914″W, on large rock entirely covered with a carpet of bryophytes, in dry and exposed sites associated with *Bucklandiella striatipila* (Cardot) Bednarek-Ochyra & Ochyra, *B. didyma* (Mont.) Bednarek-Ochyra & Ochyra, *Racomitrium lanuginosum* (Hedw.) Brd. and *Acroschisma wilsonii* (Hook.f. & Wilson) A. Jaeger, 18 January 2015, leg. H. Bednarek-Ochyra, R. Ochyra & V. Plášek No. 724/15 (KRAM, SGO).

*Bucklandiella heterostichoides* has the main centre of its occurrence in southern South America where it predominantly occurs in Última Esperanza, Magallanes, and Antártica Chilena Provinces of the XII Región Magallanes of Chile. Its range covers the Chillean and Argentinian parts of the Tierra del Fuego archipelago, as well as southern and western Patagonia (Roivainen, 1955; Matteri, 1985; Matteri & Schiavone, 2002). In addition, the species is known from the highest elevations in the Falkland Islands (Ochyra et al., 2015) and Müller (2009) reported it from a disjunct northernmost station in Llanquihue Province in the X Región Los Lagos in Chile, at lat. 41°06′S. Herein, this species is recorded for the first time from Coyhaique Province in the XI Región Aysén at lat. 45°41′S and this locality nicely bridges the main centre of occurrence of *B. heterostichoides* in the XII Región Magallanes with isolated stations in the X Región Los Lagos.

*Bucklandiella heterostichoides* is a typical amphialantic subantarctic species having maximum occurrence on subantarctic islands and penetrating into the south-cool-temperate zone where it usually occurs at high elevations. It is especially frequent on subantarctic South Georgia (Bell, 1974) and extends to Îles Kerguelen and Heard Island in the South Indian Ocean, with some intermediate localities in Tristan da Cunha and Gough Island where it occurs at high altitudes (Ellis et al., 2012a; Ochyra et al., 2015). This distribution pattern is exhibited by a relatively small group of austral temperate and cool-adapted species, for example *Ditrichum conicum* (Mont.) Mitt. (Ochyra & Lewis Smith, 1998; Ochyra et al., 2002; Ochyra & Bednarek-Ochyra, 2013), *Bucklandiella orthotrichacea* (Müll.Hal.) Bednarek-Ochyra & Ochyra (Bednarek-Ochyra & Ochyra, 2012a), *B. pachydictyon* (Cardot) Bednarek-Ochyra & Ochyra (Ochyra et al., 2008b; Ellis et al., 2015), *B. striatipila* (Cardot) Bednarek-Ochyra & Ochyra (Bednarek-Ochyra & Ochyra, 2010, 2013; Ellis et al., 2013a), *B. membranacea* (Mitt.) Bednarek-Ochyra & Ochyra (Ellis et al., 2013c), *Bryum orbiculatifolium* Cardot & Broth. (Ochyra & Singh, 2008), *Sematophyllum lebouvieri* Ochyra (Ochyra, 2010), and *Notoligotrichum trichodon* (Hook. & Wilson) G.L.Sm. (Ellis et al., 2012d).

6. *Callicladium haldanianum* (Grev.) H.A.Crum

**Contributors:** P. Erzberger, Cs. Németh and A. Mesterházy
Callicladium haldanianum is a Holarctic species, in Europe becoming more frequent towards the east (Frey et al., 2006; Meinunger & Schröder, 2007), but has so far not been recorded from Hungary (Papp et al., 2010). The species occurs in all countries surrounding Hungary (Hodgetts, 2015), so its detection in Hungary was perhaps to be expected. Several different populations were observed at the above-mentioned site, so the species is probably long established.

Owing to a superficial similarity with species of Hypnum Hedw. often growing in the same habitat, Callicladium haldanianum can easily be overlooked. It is readily identified by its leaves with strikingly acute to acuminate leaves with short cells in the apex. In addition, in C. cuspidata the tips of stems and branches are pointed and spear-like owing to the hyaline awns of the leaves being closely rolled up, whereas the leaves of C. haldanianum are slightly secund, similar to the leaves of Hygrohypnum luridum (Hedw.) Jenn., and do not form spear-like tips.

In a recent paper, Stebel (2013) reports on the distribution of Callicladium haldanianum in Poland and states an increase in the number of records since about 1990. Similar observations were made in the surroundings of Berlin (Klawitter, 1993; Meinunger & Schröder, 2007). This might imply a moderate spread of the species in suitable continental areas, and the possibility exists that it has arrived in Hungary about that time. The surroundings of lake Baláta, famous for the occurrence of Aldrovanda vesiculosa L., have been well explored by Hungarian bryologists in the twentieth century, e.g. according to his field diaries, Ádám Boros has visited it on more than ten occasions between 1922 and 1968 (Boros, 1915–1971), and it is improbable that he would not have recognised the species. This also seems to suggest a later introduction.

7. Campylopus perpusillus Mitt.

Contributors: J. van Rooy and S. P. Bester

Angola: Cuando Cubango: 21 km NW of Longa, 14°25′S, 18°21′E (1418AD), 1327 m a.s.l., Miombo woodland, gentle slope, on sandy soil, in partial shade, 5 June 2015, leg. S. P. Bester, N. P. Barker & M. R. Janks 12631 (PRE, LG).

According to the latest checklist of African mosses (O’Shea, 2006), Campylopus perpusillus occurs throughout tropical and sub-tropical Africa as well as Madagascar. It is therefore not surprising that the species was found in Angola, where it grew as a greenish to yellowish-brown mat. The ecosystem is comprised of low Miombo woodland with deep and nutrient-poor Kalahari sands (Pröpper et al., 2015). The hyaline awns of the leaves are clearly visible through a hand lens or under a dissecting microscope. The species is also characterised by the absence of alar cells, narrow, weakly convolute leaves with obtuse apices and the costa in cross-section with dorsal stereid groups (Magill, 1981; Frahm, 1985).

8. Cephaloziella verrucosa Steph.

Contributors: J. Váňa and N. J. M. Gremmen

Prince Edward Islands: Marion Island, Juniors Kop, in between small scoriae stones on the slope of a volcanic cone; 46°52′58.4″S, 37°49′59.1″E, 252 m a.s.l., 23 April 2015, leg. N. J. M. Gremmen JK006, det. J. Váňa (PRC).

Cephaloziella verrucosa has an amphipacific south-temperate – subantarctic distribution pattern (Ochyra & Váňa, 1989; Bednarek-Ochyra et al., 2000). It was described from southernmost South America by different authors under three different names: Cephaloziella serrata Steph., C. hispidisistema R.M.Schust. and C. gemmata J.J.Engel; all three names were synonymised with C. verrucosa by Váňa et al., 2014; further C. aspericaulis S.W.Arnell in sched., and probably also C. subpapillosa Herzog (type missing) belong here. The present distribution of this species includes Chile, especially the provinces of Valparaíso (regions Petorca and San Antonio), Aisén (reg. Aisén), and Magallanes (reg. Magallanes, Ultima Esperanza, Tierra del Fuego, and Antártica Chilena); Argentina (Tierra del Fuego), Falkland Islands, South Georgia, South Orkney Islands, South Shetland Islands, and South Island of New Zealand (Bednarek-Ochyra et al., 2000; Engel & Glenny, 2008; Hässel de Menéndez & Rubies, 2009).

Until now, this species was unknown from the subantarctic and temperate islands in the eastern southern hemisphere (Grolle, 2002). The present record from one locality in Marion Island represents the first report for the subantarctic islands in the eastern southern hemisphere; in the western southern hemisphere it is known from South Georgia and two archipelagos in the maritime Antarctic zone (see above).

9. Cheilolejeunea ovalis (Lindenb. & Gottsche) W.Ye, R.L.Zhu & Gradst. (= Omphalanthus ovalis (Lindenb. & Gottsche) Gradst.)

Contributor: S. R. Gradstein

Brazil: Estado do Ceará, Maranguape, Mata da Pedra da Rajada, 03°53′08″S, 38°43′26″W, 920 m a.s.l., on tree trunk in dense montane forest, 10 July
2014, leg. K. Santos, I. J. Diogo & G. Nobre 4433 (EAC, PC, S).

Cheilolejeunea ovalis is a neotropical species that has been recorded from the mountains of Central America (Guatemala, Costa Rica, Panama), the northern Andes (Venezuela, Colombia, Ecuador including the Galapagos Islands, and N Peru), and the coastal mountains of Venezuela and Trinidad (Malonek, 2002). The species usually grows on branches and twigs in evergreen rain forests, cloud forests, and scrub, between 1000 and 2500 m a.s.l. in the continent and at much lower elevation on the Galapagos Islands, where the species is quite common in moist evergreen woodlands between 250 and 750 m a.s.l. (Gradstein, 2009). The new record from Ceará, Brazil, constitutes a major, eastwards extension of the range of the species. Further occurrences of the species in the Atlantic coastal forests of Brazil may probably be expected.

10. Circulifolium exiguum (Bosch & Sande Lac.)

Contributor: J. Enroth

Vanuatu: Efate, Forari logging area, 17 km ENE of Port Vila, 17°38′S, 168°27′E, 300 m a.s.l., lowland rain forest on broad undulating ridge, on shaded sapling stem, 25 October 1998, leg. Heinar Streimann 63013 & P. Ala (H).

Circulifolium exiguum, previously known as Homaliodendron exiguum (Bosch & Sande Lac.) M.Fleisch., is a nearly paleotropical species, distributed from East Africa (O’Shea, 2006) throughout tropical and sub-tropical Asia to northern Australia and Fiji in the east (Ninh, 1984; Enroth, 1989). That range covers also Vanuatu, but it has not previously been reported from there. The specimen reported here was found in a herbarium folder marked “Neckeraceae indet.”

Circulifolium S.Olsson, Enroth & D.Quandt consists of two species that were formerly placed in Homaliodendron M.Fleisch. section Circulifolia M.Fleisch. They differ clearly from Homaliodendron s.s. and are in fact more closely related to Caducella Enroth and Himantocladium M.Fleisch. (Olsson et al., 2010).

11. Cryptaea rutenbergii Müll.Hal.

Contributor: H. Bednarek-Ochyra

Ethiopia: Oromia Region, Bale Mountains: above Rira, 6°43′N, 39°42′E, 3270 m a.s.l., upper montane Philippia–Hagenia forest on 10° S-facing slope with moderate grazing influence, on ground, 10 February 1990, leg. Georg & Sabine Miehe 2252 (KRAM).

Cryptaea rutenbergii was reported from the Bale Mountains as C. robusta Broth. & Thér. but without any locality data (Miehe & Miehe, 1994). In the meantime Rao (2001) showed that C. robusta is conspecific with C. rutenbergii, a widely distributed but scattered East African species, extending from Ethiopia and Uganda to Malawi, with isolated occurrences in South Africa and Madagascar. The present locality is situated in the Oromia Region (formerly Bale Province) in central Ethiopia and this species is additionally known from two sites from the Southern Nations, Nationalities, and Peoples’ Region in southwestern Ethiopia (Rao, 2001). This is apparently the northernmost locality of this African endemic species, which is situated at its highest known altitude, all other records of the species being from the lower montane belt at an altitude of 1200–2400 m a.s.l.

Ethiopia is bryologically the least known East African country and a number of interesting montane species have been discovered here in recent decades, especially in the Bale Mountains (e.g. Ochyra et al., 2000; Blockeel et al., 2001, 2004; Ellis et al., 2012c, 2014).

12. Cylindrocolea ugandica (E.W.Jones) R.M.Schust.

Contributor: F. Müller

Democratic Republic of the Congo: Kivu Province, Pinga 96 km NW of Goma, river valley 4 km NNE of the village, on decaying wood in rainforest, 1100 m a.s.l., 01°00′S, 28°43′E, 18–23 August 1991, leg. et det. F. Müller 42555 (DR), conf. J. Váňa.

This species was hitherto known only from a few sites in Uganda and Kenya (Wigginton, 2009). A collection from Sierra Leone was described by Jones & Harrington (1983) as close to Cylindrocolea ugandica, but was not attributed with certainty to this species. The material from the Democratic Republic of Congo is fertile, with frequent perianths, and agrees well with the description and illustration provided in Wigginton (2004). Important diagnostic characters are the bilobed leaves divided to 0.3–0.4 of their length, denticulate female bracts, and wide-mouthed perianths.

13. Dicranella campylophylla (Taylor) A.Jaeger

Contributors: H. Bednarek-Ochyra and M. Lebouvier

Îles Crozet, Île de la Possession: eastern coast, Pointe Léutard, rock outcrops 100 m north of Alfred Faure base by road to Cirque du Navire, 46°25.859′S, 51°51.551′E, 90 m a.s.l.; in moist crevices of rocks associated with Pedinophyllum abdita (Sull.) R.M.Schust. & Inoue, Hymenostylum recurvirostrum (Hedw.) Dixon, Philonotis tenuis (Taylor) Reichardt and on a wet rock ledge under an overhanging cliff, 22 November 2012, leg. R. Ochyra 3106A1/12, 3110/12 & 3122/12 (KRAM).

Dicranella campylophylla is a circumholarctarctic temperate species occurring in the southernmost parts of all continental land masses, including the western fringes of southern South America, South Africa, and south-eastern Australia, Tasmania, and New Zealand. Additionally, it penetrates into the
Neotropics in South America where it occurs at altimontane elevations in the central (Peru) and northern (Ecuador, Colombia, Venezuela) Andes, and also occurs in the maritime Antarctic (Ochyra & Newton, 1985; Ochyra, 1998; Ochyra et al., 2008a). The species was also known from all subantarctic islands, except for Îles Crozet, where it might be expected, since it is known from the coterminous archipelagoes of the Prince Edward Islands (Blockeel et al., 2003) and Îles Kerguelen (Ochyra & Newton, 1985). Thus, the present discovery of D. campylodynna in Île de la Possession, the largest island of this archipelago completes its geographical range in the subantarctic. This is a significant addition to the moss flora of Îles Possession, the largest island of this archipelago. This species was also known from all subantarctic islands, except for Îles Crozet, where it might be expected, since it is known from the coterminous archipelagoes of the Prince Edward Islands (Blockeel et al., 2003) and Îles Kerguelen (Ochyra & Newton, 1985). Thus, the present discovery of D. campylodynna in Île de la Possession, the largest island of this archipelago completes its geographical range in the subantarctic. This is a significant addition to the moss flora of Îles Possession, the largest island of this archipelago.

15. Encalypta longicolla Bruch

**Contributor** V. E. Fedosov

**Russia:** Krasnoyarsk Territory, Taimyr Autonomous Distr., Putorana Plateau western edge, vicinity of Imangda abandoned settlement, Kyuhta Ridge (69.15651°N, 89.63342°E), ca 220 m a.s.l., limestone outcrops, on turf-covered boulder with Ditrichium flexcaule (Schwägr.) Hampe, Stereodon bambegeri (Schimp.) Lindb., Tortella tortuosa (Hedw.) Limpr., Orthothecium strictum Lorentz, etc. 27 July 2015, leg. V. Fedosov (MW # 15-0682).

The present locality is the westernmost in the Asiatic part of the geographical range of this species. It somewhat narrows, but does not fill the gap between Scandinavia (Torneträsk Area) and Svalbard, its easternmost localities in Europe (Horton, 1983), and the Asiatic part of the species distribution. The closest eastward localities for the species are in the Maymecha River valley (ca 70.66°N, 101.42°E) and in the Byrranga Mountains (ca 74.64°N, 99.58°E, Fedosov & Ignatova, 2005). *Encalypta longicolla* is also known from scattered localities in northern Yakutia and in Chukotka. The species is known to be rare throughout its range, especially in Europe and Asia, but is rather frequent in some places (Horton, 1983) on very strongly calcareous substrates. Unlike *E. mutica* I.Hagen, discussed in Ellis et al. (2016), *E. longicolla* may remain undiscovered in the Urals, pending bryological exploration of the widespread areas of suitably calcareous habitats. Thus a remarkable apparent disjunction persists between the European and Asiatic parts of the Eurasian distribution of *E. longicolla*.

16. Fissidens bryoides Hedw. var. bryoides

**Contributors:** P. Saha, Md. Nehal Aziz and D. Maity

**India:** West Bengal: Darjeeling, Lloyd Botanic Garden, epiphyte growing on *Michelia* sp. bark, in association with *Hyophila involuta* (Hook.) A.Jaeger, *Hydrogonium javanicum* (Dozy & Molk.) Hilp. and *Brachythecium* sp. in the same colony, 27°04′46″N, 88°26′29″E, 2000 m a.s.l., 07 September 2011, leg. Pamela Saha 64029 (CAL); epiphyte-growing on stem with *Sematophyllum* sp. in the same colony, 08 September 2011, leg. Pamela Saha 64033 (CAL); on rocks, mixed with *Desmatodon gemmascens* P.C.Chen in the same colony, 09 September 2011, leg. Pamela Saha 64043 (CAL).

*Fissidens* Hedw. occurs in all the phytogeographical regions of India with 63 species and four varieties (Lal, 2005). Gangulee (1971) reported 15 species and two varieties from the Darjeeling district, but subsequently, the present authors have found 20 species here.
**Fissidens bryoides** is a medium-sized plant, its stem has a differentiated central strand, and the leaves are lanceolate to oblong-lingulate with strong limbidia that reach the leaf apex. The species occurs in the Himalayas, Western Ghats, and other parts of India, but herein is its first record from the Darjeeling district, West Bengal.

17. *Frullania subarctica* Vilnet, Borovich & Bakalin

**Contributors:** V. A. Bakalin, E. A. Borovievch, and T. Katagiri

**Japan:** Honshu, southern Japan Alps, Kitadake Mt., ridge line from Kitadake Katano-koya to top of Kitadake Mt., 35°40'45"N, 138°14'16"E, 3020 m a.s.l., on wet rock, in pure mats, 23 July 2009, leg. H. Masuzaki #1830 (HIRO 256900; duplicate in VBGI; as *Frullania tamarisci* (L.) Dumort.), ibidem, bifurcation of Tsuri Ridge, west side slope, 35°40'19"N, 138°14'18"E, 3090 m a.s.l., on wet rock, in mats with *Barbilophozia barbata* (Schreb.) Loeske and *Herbertus aduncus* (Dicks.) Gray, 26 July 2009, leg. H. Masuzaki #1883 (HIRO 256983; duplicate in VBGI; as *Frullania tamarisci*).

*Frullania subarctica* was recently newly described (Vilnet et al., 2014), and differs from other species of *Frullania* Raddi and in particular *F. tamarisci* s.l. in possessing: (1) red-brown to blackish-brown or almost black colouration; (2) a stylus moderate in size, 5–8 cells long and 1–2 cells wide; (3) a disc virtually absent or rarely 3–5 cells long, and (4) altogether lacking, or possessing a short line of ocelli 2–5–7 cells long and extending up to ¼ of the leaf length.

This is the first report of *Frullania subarctica* for Japan. The species has an arcto-montane, mainly Asian distribution (Vilnet et al., 2014). Currently this species is known from north Europe (Murmansk Province), Asia (Krasnoyarsk Territory, Republic of Yakutia, Magadan, and Sakhalin Provinces), and North America (Alaska) (Vilnet et al., 2014; Fedosov et al., 2015).

18. *Frullania teneriffae* (F. Weber) Nees

**Contributors:** T. Özdemir and N. Batan

**Turkey:** Ordu Province, Gökköy district, Güzelyayla, 40°35'48"N, 37°34'14"E, growing on trees (*Picea orientalis* (L.) Peterm.) and rock, 1400 m a.s.l., 10 May 2014, leg. and det. T. Özdemir & N. Batan s.n. (KTUB 1594).

Plants are 6–8 cm and dark brown. Shoots are 1.5–2 mm wide, and leaves are up to 1 mm wide and 1.5 mm long. Leaf lobules are dark brown and often darker than the lobes. Mid-leaf cells are oval-elliptic, brown, and each cell includes 3–6 oil bodies. The plant is aromatic.

The leaves of *Frullania teneriffae* are very similar to those of *F. tamarisci* (L.) Dumort. However, there are no ocelli in the leaves of *F. teneriffae*, and this is the distinguishing feature.

Hitherto, *Frullania Raddi* has been represented by four species in Turkey (*F. dilatata* (L.) Dumort., *F. fragilifolia* (Taylor) Gottsche, Lindenh. & Nees, *F. jackii* Gottsche and *F. tamarisci*) (Ozenoğuли Kiremit & Keçeli, 2009; Kürschner & Frey, 2011). A fifth species, *Frullania teneriffae*, can now be added to the Turkish moss flora. This species was previously known in Europe (Portugal, Spain, Wales, England, Scotland, and Ireland) and in the Antarctic (Smith, 1990; Paton, 1999; Ros et al., 2007; Kürschner & Frey, 2011).

19. *Funaria hygrometrica* Hedw.

**Contributors:** J. van Rooy and S. P. Bester

**Angola:** Cuando Cubango: 86 km SSE of Longa, 15°20’S, 18°47’E (1518BD), 1241 m a.s.l., on sandy loam soil, seasonally waterlogged, in full sun, 7 June 2015, leg. S. P. Bester, N. P. Barker & M. R. Janks 12634 (PRE, LG).

*Funaria hygrometrica* is cosmopolitan and found on all continents. *F. hygrometrica* var. *calvescens* (Schwär.) Kindb., as well as the type variety are known from countries throughout Africa (O’Shea, 2006), but this is the first report of the species from Angola. The ecosystem where the collection was made is comprised of low Miombo woodland with deep and nutrient-poor Kalahari sands (Pröpper et al., 2015). Müller (2015) recently reported 94 new bryophyte records from Angola, bryologically one of the least known countries in Africa.

20. *Grimmia capillata* De Not.

**Contributor:** D. De Beer

**France, Corsica:** Evisa, Forêt d’Aitone, Sentier de découverte between the car parking and the Pont de Pompeani; 1100 m a.s.l.; one specimen on old concrete bridge over a rivulet, with *Grimmia pulvinata* (Hedw.) Sm., 30 April 2014, leg. D. De Beer 5182 (D. De Beer priv. herb.).

There were no capsules present in the specimen, but juvenile perichaetial leaves carried conspicuous hair points, which were absent from the leaves of sterile plants.

De Notaris first observed the species, which is easily recognisable in the field, on Sardinia in 1838. As is often the case within the genus *Grimmia* Hedw. there has been some debate on the validity of this specific taxon. De Notaris regarded the species a variety of *G. crinita* Brid. Later on it was also described as *G. mesopotamica* Schiffn., but currently *G. capillata* is the accepted name. The species is distributed from Spain (including the Balearic Islands), south of France, Sicily, Sardinia, Algeria, Tunisia to the Middle East (Israel, Jordan, Iraq, Syria, Turkmenistan) (Lo Giudice & Cristaudo, 1999), and Turkey (Uyar & Ünal, 2005). More recently a record from Russia was reported (Ignatova & Muñoz, 2004). Although situated in the centre of distribution,
this is the first record for the species on Corsica (Greven, 1995; Sotiaux et al., 2007, 2008).

Grimmia capillata is generally observed in synanthropic conditions. In this sense, this stand in Corsica is distinctive since it is situated in the middle of a forest, far away from buildings, but still on concrete.

21. Haplomitrium blumei (Nees) R.M. Schust. (= H. andinum (Spruce) R.M. Schust.)

Contributors: S. R. Gradstein and J. Wang

Bolivia: Dept. La Paz, Prov. Los Andes, Valle de Hichu Kkota, 4750 m, in cushion bog (bofedal), growing partially submerged, 21 October 1984, leg. C. Ostría 274-I2 (LPB, GOET, PC).

Haplomitrium blumei is a wide-ranging, pantropical species. Its main distribution is in tropical Asia where it ranges from north-eastern India eastwards to Papua New Guinea (Bartholomew-Began, 1991). In tropical Africa the species has been recorded from three localities in eastern Zaire (now Democratic Republic of Congo) (Kahuzi-Biega) and adjacent Rwanda: (Nyungwe forest, Gishwati forest) (Groll, 1993). In the Neotropics, finally, H. blumei is known from a few localities in the northern Andes (Ecuador, northern Peru), Costa Rica, and the lesser Antilles (Martinique, Dominica, Guadeloupe) (Bartholomew-Began, 1991). The species is nowhere common, however, and in the northern Andes it is only known from only a few nineteenth century collections made by Richard Spruce and two recent gatherings made by the first contributor and his associates. Haplomitrium blumei usually grows on rotten wood or humus-covered rock in montane forests between (500–)1000 and 2300 m (below 1000 m in the lesser Antilles). In addition, there are a few records from higher elevation (New Guinea: 3550 m; Ecuador: 3900 m), all from shaded, boggy ground near the forest line. The record from the high Andes of Bolivia reported here is the first one from the Central Andes and the highest elevational record (4750 m) of the species. In fact, it is the highest locality for any member of the Haplomitriopsida (Haplomitrium, Treubia) worldwide. Its occurrence in an alpine cushion bog (“bofedal”) in Bolivia is in good agreement with the ecology of the species elsewhere in tropic-alpine environments. Although the occurrence of H. blumei in Bolivia was briefly mentioned in the Guide to the Bryophytes of Tropical America (Gradstein et al., 2001), this record has been generally overlooked and was not included in the recent bryophyte catalogues of the country (Gradstein et al., 2003; Churchill et al., 2009). Note: the name of the species has frequently been misspelled “H. blumii” (e.g., Bartholomew-Began, 1991; Schuster, 2000; Stech & Frey, 2004) but the original spelling was “blumei” [after the botanist Carl Ludwig Blume (1796–1862)] and must be retained.

22. Homalothecium aureum (Spruce) H. Rob.

Contributors: M. S. Sabovljević and A. D. Sabovljević

Montenegro: in the canyon of the Morača river by Bićac, on shaded calcareous rocky slopes with soils. 42.516744°N, 19.345712°E, 30 May 2015, leg./det. M. S. Sabovljević & A. D. Sabovljević s.n. (BEOU); Gornja Klezna, in the gorge, in rock crevices. 41.996912°N, 19.262822°E, 01 June 2015, leg./det. M. S. Sabovljević & A. D. Sabovljević s.n. (BEOU); Grabovac, on the base of Quercus pubescens Willd. tree. 42.692881°N, 18.645387°E, 03 June 2015, leg./det. M. S. Sabovljević & A. D. Sabovljević s.n. (BEOU).

Homalothecium aureum has recently been collected in various places in the Republic of Montenegro. The species is easy to overlook, but can be distinguished from other Homalothecium species by the differentiated alar cells in its leaves.

With reference to Pavletić (1955), Sabovljević et al. (2008) and Ros et al. (2013), H. aureum appears to be new to Montenegro. Frahm (2012) classed H. aureum as a typical Mediterranean species, and indeed all three localities recorded above experience a Mediterranean climate and support characteristic Mediterranean vegetation. The species occurred on rocky soil, on soil in rock crevices, and also on tree trunks. It is probably more widespread in Montenegro.

23. Leptodontium proliferum Herzog

Contributors: H. Bednarek-Ochyra and M. Lebouvier

Îles Kerguelen: Golfe du Morbihan, Île Australia, north-eastern coast of the southern part of the island, south of Anse des Macroyctis, over Passe de l’Aventure, in the saddle between the plateau ‘151’ and small eastern cliff overlooking Lac Alicia, 49°28′34.9″S, 69°63′05.5″E, alt. ca 110 m a.s.l., on detritus in grassland dominated by Festuca contracta Kirk with an admixture of Acaena magellanica (Lam.) Vahl., in a dry, insulated, and sheltered situation, associated with Ceratodon purpureus (Hedw.) Br., Bryum argenteum Hedw., and Syntrichia magellanica (Mont.) R.H.Zander, in sites affected by birds, 19 December 2006, leg. R. Ochyra 2786/06 (KRAM).

So far, Leptodontium proliferum was known to occur in the Prince Edward Islands (Zanten, 1971) and Îles Crozet (Ellis et al., 2015) in the Kerguelen Biogeographical Province of the Subantarctic in the South Indian Ocean. It is a frequent species in the coastal areas, growing in tussock grasslands of Poa cookii (Hook.f.) Hook.f. which are strongly affected by marine birds and enriched with nitrogen. Herein, the geographical range of L. proliferum is extended to Îles Kerguelen. In contrast to the two former
archipelagoes it is very rare here but it thrives in similar habitats. The discovery of this species represents an interesting addition to the moss flora of Îles Kerguelen which are the largest and oldest archipelago of all subantarctic islands. Its moss flora consists of nearly 140 species, many of which have been discovered during the recent bryological survey of this area (e.g. Bednarek-Ochyra & Ochyra, 1998; Ochyra & Poulsen, 2003; Blockeel et al., 2009; Ellis et al., 2012b; Ochyra et al., 2014). Leptodinium proliferum is an Afro-American montane species which is widely distributed in the Neotropics where it ranges as an Holarctic, mostly associated with coastal areas of Europe, Asia, and the North American west. It generally demonstrates an “asymmetric amphioceanic” pattern, with wider distribution in western North America and Europe and a more restricted distribution in NE Asia and Atlantic North America. According to Jamieson (1976, 2014), it does not occur in Atlantic North America. However, Allen (1979) reported it in Pennsylvania, and Goldberg (2003) recorded it for Greenland. It can be considered as a kind of west-western disjunction (Schofield, 1988) with additional extensions. The new locality for the species is more than 2000 km distant from the closest places where it occurs in Europe (Kola Peninsula) and in Asia (Yakutia, both according to Czernyadjeva, 2003), and so partially fills the gap in its distribution. Local climatic conditions on the high, west facing slopes of the Putorana Plateau are wet, due to rain swept in by Atlantic cyclones. These local factors over-ride the regional macroclimate.

In Turkey, Leucodon was represented by four taxa (L. flagellaris Broth., L. immersus Lindb., L. sciuroides (Hedw.) Schwägr. var. morensis (Schwägr.) De Not., L. sciuroides (Hedw.) Schwägr. var. sciuroides) (Uyar & Çetin, 2004; Kürschner & Erdağ, 2005; Batan et al., 2014). Leucodon pendulus can now be added to the moss flora of Turkey. It was known previously from China, Japan, Korea, Russia, and Antarctica (Noguchi & Iwatsuki, 1989; Frey et al., 2006; Kürschner & Frey, 2011; Ros et al., 2013; Batan et al., 2014):

25. Marchesinia excavata (Mitt.) Schiffn.
   **Contributor:** F. Müller

**Ivory Coast:** Man, Mt. Tonkoui 10 km NW of Man, epiphytic in tropical rainforest, ca 1200 m a.s.l., 07°27'N, 07°38'W, 25 August 1997, leg. F. Müller E269, E311 (DR).

This species is widespread in tropical Africa. It is known from West Africa, the Congo Basin, and from East Africa southwards to Zambia; furthermore the species is reported from Madagascar and Socotra (Wigginton, 2009). It is recorded from most of the West African countries, but was hitherto unknown from Ivory Coast. The new record in Ivory Coast represents a not unexpected extension to the range of this species.

26. Ochyreae mollis (Hedw.) Ignatov (= Hygrohypnum molle (Hedw.) Loeske)
   **Contributor:** V. E. Fedosov

**Russia:** Krasnoyarsk Territory, Taimyr Autonomous Distr., Putorana Plateau western edge, N-facing slope of Sunduk Mt, 69.27294°N, 89.97137°E, ca 100 m. a.s.l., 16 July 2015, brook in forest belt below extensive snow fields, on wet rocks, leg. V. Fedosov #51–0249, 15–0263 (MW).

This species has a disjunctive distribution in the Holarctic, mostly associated with coastal areas of Europe, Asia, and the North American west. It generally demonstrates an “asymmetric amphioceanic” pattern, with wider distribution in western North America and Europe and a more restricted distribution in NE Asia and Atlantic North America. According to Jamieson (1976, 2014), it does not occur in Atlantic North America. However, Allen (1979) reported it in Pennsylvania, and Goldberg (2003) recorded it for Greenland. It can be considered as a kind of west-western disjunction (Schofield, 1988) with additional extensions. The new locality for the species is more than 2000 km distant from the closest places where it occurs in Europe (Kola Peninsula) and in Asia (Yakutia, both according to Czernyadjeva, 2003), and so partially fills the gap in its distribution. Local climatic conditions on the high, west facing slopes of the Putorana Plateau are wet, due to rain swept in by Atlantic cyclones. These local factors over-ride the regional macroclimate.

27. Philonotis thwaitesii Mitt.
   **Contributors:** P. Saha, Md N. Aziz, and D. Maity

**India:** West Bengal: Darjeeling, Tista River to Sevak Bridge, on soil associated with Hyphila involuta (Hook.) A.Jaeger, 1000 m a.s.l., 07 June 1985, leg. B. D. Kar 59961, det. Pamela Saha (CAL).
In India *Philonotis* Brid. occurs in the Himalayas and Western Ghats. There are 25 species and one variety reported from India (Lal, 2005), and Gangulee (1974) recorded eight species from the Darjeeling district of West Bengal.

*Philonotis thwaitesii* is recorded in the Eastern and Western Himalayas, and in a few localities in the Western Ghats. It is reported here for the first time from the Darjeeling district, West Bengal. The plants showed the key features of the species: slender shoots with stiffly erect leaves, which possessed an excurrent costa and narrowly recurved margins.

28. *Plagiochila fastigiata* Lindenb. & Gottsche

**Contributors:** S. R. Gradstein and C. Feuillet-Hurtado

**Colombia:** Dept. Cauca, Popayán, La Rejoya farm (University of Cauca), 02°26′59.9″N, 076°36′13.5″W, 1680 m a.s.l., on tree trunk, 17 May 2014, leg. C. Feuillet-Hurtado 316 (CUCV 61547).

*Plagiochila fastigiata* is a rare neotropical species that is only known from Mexico and Costa Rica. In Mexico the species is rather widespread and has been recorded from the states of Chiapas, Guerrero, Oaxaca, and Veracruz, where it occurs on tree trunks in humid evergreen forests at elevations between about 700–2500 m (Fullford & Sharp, 1990; Gradstein, pers. obs.). In Costa Rica the species is known from one locality, in the province of San José at 700–800 m (Holz et al., 2001). The new record from Colombia is the southernmost locality of the species and the first one from the Andes. *Plagiochila fastigiata* is readily recognised by the strongly undulate ventral leaf margin and entire ventral leaf base. The species is closely related to *P. corrugata* (Nees) Mont. & Nees from Brazil and East Africa, but in the latter species the ventral leaf base is toothed (Heinrichs et al., 2004). *Plagiochila fastigiata* also approaches the common neotropical *P. raddiana* Lindemb. but in the latter species the leaves are more elongate (1.5–2.5 μm longer than wide) and the ventral leaf margin is not undulate.

29. *Polytrichastrum alpinum* (Hedw.) G.L.Sm.

**Contributors:** V. Sahu, K. K. Rawat, and A. K. Asthana

**India:** Arunachal Pradesh; Tawang, near Nagula Lake; 27°39′37.0″N, 91°51′31.6″E, 4137 m, a.s.l., on soil, 15 June 2015, leg. K. K. Rawat (LWG 300186).

In India, three species of *Polytrichastrum* (*P. papillatum* G.L.Sm., *P. emodi* G.L.Sm., *P. alpinum* (Hedw.) G.L.Sm.) are reported from the Western Himalayas while two species (*P. xanthopilum* (Wilson ex Mitt.) G.L.Sm. and *P. formosum* G.L.Sm.) are known from the Eastern Himalayas (Smith, 1974; Chopra & Kumar, 1981; Lal, 2005; Asthana et al., 2012). *Polytrichastrum alpinum*, though widespread, is reported here for the first time from the Eastern Himalayas.

The plants were erect, 3–5 cm high, with the margins of the leaves serrate above the sheathing base and lamellae covering the ventral leaf surface. Seen in cross-section, lamellae were 5–7 cells high, the apical cells pyriform with thickened papillose walls. Immature capsules were present, still enclosed in their calyptrae.

30. *Pseudephemerum nitidum* (Hedw.) Loeske

**Contributor:** D. De Beer

**France, Corsica:** Sagone, mouth of Lianomeriver, northern part of the flood plain next to the D56; 52°5′10″N, 8°43′11″E; 4 m a.s.l.; nanocyperion in maquis, with *Tortula modica* R.H.Zander, *Entosthodon obtusus* (Hedw.) Lindeb., *Ephemerum sessile* (Bruch) Müll.Hal., *Weissia longifolia* Mitt., and *Pleuridium acuminatum* Lindeb. 27 April 2014, leg. D. De Beer 5152 (D. De Beer priv. herb.).

*Pseudephemerum nitidum* has a subcosmopolitan distribution and is widespread throughout Europe (Frey et al., 2006). This is the first record of this species for Corsica (Sotiaux et al., 2007, 2008).

31. *Riccia rhenana* Lorbr., ex Müll.Frib.

**Contributors:** E. A. Borovichev, V. A. Bakalin, T. Katagiri, and T. Yamaguchi

**Japan:** Honshu, Niigata Prefecture, Tsubame-shi, Watabe, 37°39′44″N, 138°48′10″E, 30 m a.s.l., on soil, in pure mats, 21 August 2015, leg. T. Yamaguchi 35652 (HIRO 1029658; as *Riccia L. sp.*); Ibaraki Prefecture, Joshu-shi, Higashi Mati, Fukuoka, near Tosuku Bridge, 36°02′35″N, 140°01′33″E, 10 m, a.s.l., on soil, in pure mats, 13 December 2007, leg. Q.A. Latiff 5 (HIRO 247231; as *Riccia fluitans* L.).

*Riccia rhenana* is closely related to *R. fluitans* and is the diploid form of the latter (Berrie, 1964). Terrestrial forms of *R. rhenana* differ from *R. fluitans* in: (1) more robust thalli vs. more delicate in *R. fluitans*; (2) wider thallus lobes, 0.8–1.2 mm vs. 0.3–1 mm wide in *R. fluitans*; (3) cross-section 4–7 times wider than thick vs. 3–6 times wider than thick in *R. fluitans*; (4) larger air-chambers, to 750 μm long and 150–350 μm wide vs. smaller up to 300 μm long and 70–150 μm wide in *R. fluitans*.

This is the first report of *Riccia rhenana* in Japan. The species has a mainly temperate circumpolar distribution (Damsholt, 2002). Its distribution is probably poorly understood owing to its close relationship to *R. fluitans*. The nearest locations in Asia are known from Russian Siberia: Omsk Province (Mamontov, 2007), Tomsk Province (Taran et al., 2006), Khakassia Republic (Potemkin & Volobaev, 2008), and the Yakutiya Republic (Sofronova, 2007).

32. *Sematophyllum micans* (Mitt.) Braithw.

**Contributors:** N. Batan, T. Özdemir, M. Alatas, and H. Erata

**Turkey:** Ardahan, Bağuyểnen village, Yalnızçam forest, 41°01′58″N, 42°22′53″E, ca 2000–2100 m
a.s.l., on rock in the stream, 7 September 2014, *leg.* N. Batan *s.n.*, *det.* N. Batan & T. Özdemir (KTUB 1591); Ardahan, Hasköy village, Yalnızçam forest, 41°01′44″N, 42°25′15″E, *ca* 1893–1950 m a.s.l., on rock in a stream, 7 September 2014, *leg.* N. Batan *s.n.*, *det.* N. Batan & T. Özdemir (KTUB 1592); Ordu, Gürgentepe, Refahiye village, 40°51′26″N, 37°39′18″E, *ca* 969 m a.s.l., on rock in a stream, 15 November 2013, *leg.* & *det.* N. Batan & T. Özdemir *s.n.* (KTUB 1593).

*Sematophyllum* Mitt. is one of the smallest genera in the moss flora of Turkey. In south-west Asia, the genus is represented by two taxa (*S. demissum* (Wilson) Mitt. and *S. socotrense* W.R.Buck); only *S. demissum* has been reported from Turkey (*Uyar & Çetin, 2004; Kürschner & Erdağ, 2005; Kürschner & Frey, 2011; Ros et al., 2013). Herein, *S. micans* is added to the moss flora of Turkey, and to those of Mediterranean and south-west Asia. The species was already known from Belgium, France, Germany, Indonesia, Philippines, Hawaii, China, Ireland, United Kingdom, British Columbia, eastern North America, Mexico, and South America (*Smith, 2004; Jia et al., 2005*).

*Sematophyllum micans* resembles *S. demissum* and *Hypnum andoi* A.J.E.Smith, but *S. micans* grows on acidic rocks and is distinguished from *S. demissum* by having ovate leaves with margins which are denticulate distally, and a double costa that extends 1/4–1/3 up the leaf. *Hypnum andoi* lacks the glossy sheen and golden-green colour of *S. micans*.

33. *Sphaerocarpos texanus* Austin

**Contributors:** S. R. Gradstein and J. Opisco

**Peru:** Lima, Distr. Villa María del Triunfo, boundaries of the settlement “Edén del Manantial”, Lomas de Paraíso, 12°08′23″S, 76°55′26″W, *ca* 560–590 m, on open soil with *Riccia* L. sp., 17 September 2015, *leg.* Jasmin Opisco 2160, c. gyn. (USM).

Three species of *Sphaerocarpos* Boehm are known from South America: *S. texanus* Austin (Uruguay, northern Argentina, central Chile), *S. stipitatus* Lindenh. (Uruguay, central Chile), and *S. mucillaii* Vianna (southern Brazil) (*Vianna, 1981; Hässel de Menendez & Rubies, 2009; Gradstein, in press*). In addition, there is an old, doubtful report of *S. michelii* Bellardi from northern Argentina (*Hässel de Menendez & Rubies, 2009*) and a record of an unidentified species of *Sphaerocarpos* from Lima (Atocongo), Peru (*Carrillo & Chanco, 1971*). The latter report is of considerable phytogeographical interest since it is the only record of the genus, and of the order Sphaerocarpaceae as a whole, from within the boundaries of the Tropics; all other occurrences of this order are from subtropical and warm-temperate regions (*e.g.*, *Schuster, 1992*). Unfortunately, the material from Peru has been lost and the species has remained undetermined (*Bischler et al., 2005*). On 17 September 2015, during a fieldtrip with students in the coastal hills of the protected “Lomas de Paraíso” Nature Reserve in the southern part of the city of Lima (District Villa María del Triunfo), the second author discovered a large population of *Sphaerocarpos*. The material had mature spore tetrads and was identified as *S. texanus* based on the large areoles (averaging 20 μm) and tetrads margins without spines. Although the tetrads were only *ca* 100 μm in diameter and smaller than usual in this species (120–170 μm), similar populations of *S. texanus* with small tetrads have been reported (*e.g.*, Müller, 1951–1958; *Schuster, 1992*), and according to *McGregor (1955)* tetrad size is of little use separating *S. texanus* from *S. michelii*, which normally has smaller tetrads (90–130 μm). The tetrads of the latter species are readily separated from those of *S. texanus* by the much smaller areoles and the spinose margins. *Sphaerocarpos texanus* was growing on open, exposed loamy soil together with an unidentified species of *Riccia*. The new locality is very near to Atocongo, where *Sphaerocarpos* was recorded by *Carrillo & Chanco (1971)*. It may therefore be assumed that the material collected by the latter authors also belonged to *S. texanus*.

34. *Stegonia latifolia* (Schwägr.) Venturi *ex Broth*.

**Contributors:** Y.-J. Yoon and J. H. Kim

**Antarctica:** South Shetland Islands, King George Island, Barton Peninsula, glacial retreat area, 62°13′49.99″S, 58°42′38.04″W, 6 m a.s.l.; on rocks covered thin soil, 15 January 2014, *leg.* Y.-J. Yoon KG-1451 (KOPRI).

This is the first report of *Stegonia latifolia* in the Barton Peninsula, although the species was previously known from King George Island. *Stegonia latifolia* is one of the rarest and smallest species of the Antarctic moss flora. It is a bipolar species with widespread ranges in the northern hemisphere. In Antarctica, this species was known at only three localities (Signy Island, Bransfield Strait, and Marguerite Bay). In the Antarctic, *S. latifolia* usually grows on calcareous soil amongst stones or on soil-covered ledges (*Ochyra et al., 2008a*). Along the sea-coast, near an area of glacial retreat in the Barton Peninsula, it was distributed on rocks covered by thin soil. *Stegonia latifolia* is easily distinguished from other Antarctic species by its pale whitish-green, bud-like plants with spoon-shaped leaves.

35. *Tayloria serrata* (Hedw.) Bruch & Schimp.

**Contributor:** R. Natcheva

**Bulgaria:** Sofia Region, Samokov District, Rila mts, in the lower part of the Musala cirque, valley of the Musalenska Bystritsa, along the track from Borovets to the Musala chalet, between the Velchovoto Bridge and the lower station of the Markoudjitsi ski route.
23.592149°E, 42.223701°N, 1980 m a.s.l., collected with immature sporophytes on damp humic soil on a stream bank in the belt of *Pinus mugo* Turra, 6 July 2015, leg./det. R. Natcheva 9438 (SOM-B).

The distributional range of this arcto-alpine circumalpine species includes western, central, and northern Europe, Caucasus, Middle, and South Urals, Central Asia, Chukotka, Greenland, and North America. In many European countries the species is Red-listed, Norway (EN, Hassel *et al.*, 2010), Sweden (EN, Gärdenfors, 2010), Czech Republic (EN, Kučera & Váňa, 2003), Slovakia (EN, Kubinská *et al.*, 2001), and Romania (EN, Ștefanu & Goia, 2012). It is included in the Red Data book of European Bryophytes as Regionally Threatened (ECCB, 1995), and is a candidate for the new European Red List (Hodgetts, 2015).

The locality of *Tayloria serrata* in Bulgaria is situated in Rila National Park. Nevertheless, it is severely threatened by the on-going intensive construction of ski facilities in the region. The area of the Musala cirque is relatively well known bryologically, having been studied by local and foreign bryologists (Velenovsky, 1902; Podpéra, 1911; Simon & Vajda, 1959; Meuninger, 1975; Dül, 1999; Natcheva, 2007). Therefore, it is unclear whether *T. serrata* is a recent migrant or an overlooked extremely rare member of Bulgarian flora. Considering the arcto-alpine distribution of *T. serrata* on the one hand, and the general trend of global warming on the other, the second possibility seems more likely. The current location lies at the southern border of the distribution range of the species.

36. *Tortella alpica*ola Dixon

**Contributor:** L. Hedenäs

**Sweden:** Pite Lappmark, Arjeplog, N of Måvåsjävrre, NE of lake at 640 m a.s.l., N of Vävvkáråhto, 66.937939°N, 16.355657°E, 660 m a.s.l., S-facing escarpment, leg. L. Hedenäs, G. Odelvik & M. Westberg, 10 August 2015, det. L. Hedenäs (S; reg. no. B227376).

During the annual general bryophyte and lichen collecting trip from the Department of Botany at the Swedish Museum of Natural History in 2015, we visited a remote area close to the Norwegian border in west-central Lappland. While collecting at the lower portion of an escarpment, a small *Tortella* species with numerous broken leaves was encountered, growing partly intermixed with *Anomobryum julaceum* (P.Gaertn., B.Mey. & Scherb.) Schimp. on a periodically wet rock. Subsequent study revealed that the *Tortella* specimen had all the characteristics of *T. alpica*ola, including a distinct central strand in the stem, upper leaf lamina cells 10.0–14.5 μm wide, and the few semi-intact narrow upper leaf portions that are present have a papillose dorsal costa and display constrictions at one or several places.

This is the first finding of *Tortella alpica*ola from Sweden, but in Scandinavia the species had already been found in southern Norway in 2004 (Hassel & Høitomt, 2013). According to Artskart (https://artskart.artsdatabanken.no/Default.aspx; accessed 4 November 2015) additional Norwegian findings have been made since then, including several in Junkerdal and Fauske at approximately the same latitude as the present finding. The finding from Sweden was thus not surprising, and additional findings are to be expected from the Swedish portion of the Scandinavian mountain range.

37. *Tritomaria exsecta* (Schmیدl) Loeske

**Contributor:** E. A. Borovichev

**Russian Federation:** Republic of Karelia, Kondopoga District, Kivach State Nature Reserve, western part of the Reserve, 2 km northwest from the administration centre, 62°16′58″’N, 33°58′14″′E, 95 m a.s.l., spruce forest near Suna River, on decaying wood, with *Blepharostoma trichophyllum* (L.) Dumort., with gemmae, 26 June 2015, leg. E.A. Borovichev #BE23-15 (KPABG).

In the field, *Tritomaria exsecta* may be easily confused with *T. exsectiformis* (Breidl.) Loeske. The main differences are the following: (i) leaf cells with ± thickened walls, trigones absent versus strongly distinct trigones in *T. exsectiformis* and (ii) small ellipsoidal gemmae versus larger, polygonal to pyriform in *T. exsectiformis*.

The species has a boreal circumalpine distribution (Konstantinova, 2000), and the present record is probably its northermost location in the world. *Tritomaria exsecta* is new to the Republic of Karelia, and its nearest locations in Europe are in the Komi Republic (Dulin, 2007), Archangelsk (Zickendrath, 1990), and Leningrad (Potemkin & Andrejeva, 1999) Provinces.

38. *Vittia pachyloma* (Mont.) Ochyra

**Contributors:** H. Bednarek-Ochyra and V. Plášek

**Chile:** XI Región Aysén del General Carlos Ibáñez del Campo, Provincia de Capitán Prat, near the bridge on Río El Salto, ca 25 km south of Cochrane and 5 km south of Lago Esmeralda along Ruta 7, the bridge on Río El Salto, 266 m a.s.l., 47°19′969″′S, 72°39′440″′W, submerged in swiftly flowing water in the cascade, associated with *Bucklandiella lamprocarpa* (Müll.Hal.) Bednarek-Ochyra & Ochyra, 15 January 2015, leg. H. Bednarek-Ochyra, R. Ochyra & V. Plášek 473/15 (KRAM).

*Vittia pachyloma* is a rheophytic moss growing attached to rocks and stones in montane streams, brooks, and rivers, usually in swiftly flowing water or on otherwise wet rocks. Consequently, it exhibits some adaptations to this type of habitat, of which the most important are the presence of multistratose fleshy limbidia extending from the leaf base to the
apex (Ochyra, 1987a; Ochyra & Shevock, 2012; Bednarek-Ochyra & Ochyra, 2012b), variously bistratose laminal cells (Ochyra, 1985a; Ochyra & Vanderpoorten, 1999) and strong and salient, multistratose costae (Ochyra, 1985b, 2013). V. pachyloma is an Afro-American montane species which is widespread and abundant at the western fringes of southern South America and extends to scattered localities along the Andean chain to Colombia in the northern Andes. In addition, it occurs in south-eastern Brazil and in the Falkland Islands (Ochyra, 1987b). Outside South America it is relatively frequent on subantarctic South Georgia (Ochyra & Lightowlers, 1988), in South Africa and subantarctic Îles Kerguelen (Ochyra, 1987b). In Chile, V. pachyloma is a very widespread and common species, ranging from V Región Valparaíso to XII Región Magallanes, and its frequency and abundance is increasing southwards (Ochyra, 1987b). In the IX Región Aysén it has hitherto been recorded only from the northern Provinces of Aysén and Coyhaique (Müller, 2009) and herein it is reported for the first time from Capitán Prat Province in the central part of this Región.

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