

New national and regional bryophyte records, 36

L T Ellis¹, V A Bakalin^{2,3}, E Baisheva⁴, H Bednarek-Ochyra⁵, R Ochyra⁵,
E A Borovichev⁶, S S Choi⁷, B-Y Sun⁷, P Erzberger⁸, V E Fedosov⁹,
R Garilleti¹⁰, B Albertos¹⁰, P Górski¹¹, P Hájková^{12,13}, N G Hodgetts¹⁴,
M Ignatov¹⁵, A Koczur¹⁶, L E Kurbatova¹⁷, M Lebouvier¹⁸, A Mežaka¹⁹,
J Miravet²⁰, P Pawlikowski²¹, R D Porley²², J A Rosselló^{20,23},
M S Sabovljević²⁴, J Pantović²⁴, A Sabovljević²⁴, W Schröder²⁵,
S Ștefănuț²⁶, G M Suárez²⁷, M Schiavone²⁷, Ö T Yayintaş²⁸, J Váňa²⁹

¹The Natural History Museum, London, UK, ²Botanical Garden-Institute, Vladivostok, Russia, ³Institute of Biology and Soil Science, Vladivostok, Russia, ⁴Institute of Biology of Ufa, Scientific Centre of Russian Academy of Sciences, Ufa, Russia, ⁵Institute of Botany, Poland, ⁶Polar-Alpine Botanical Garden-Institute, Kirovsk, Russia, ⁷Chonbuk National University, Jeonju, Korea, ⁸Berlin, Germany, ⁹M.V. Lomonosov Moscow State University, Russia, ¹⁰Universidad de Valencia, Burjassot, Spain, ¹¹Poznań University of Life Sciences, Poland, ¹²Masaryk University, Brno, Czech Republic, ¹³Institute of Botany, Brno, Czech Republic, ¹⁴Earlish, Isle of Skye, UK, ¹⁵Main Botanical Garden, Moscow, Russia, ¹⁶Institute of Nature Conservation, Kraków, Poland, ¹⁷Komarov Botanical Institute, Russia, ¹⁸Université de Rennes 1, France, ¹⁹University of Latvia, Riga, Latvia, ²⁰Marimurtra Botanical Garden, Catalonia, Spain, ²¹University of Warsaw, Poland, ²²Cerca dos Pomares, Portugal, ²³Universidad de Valencia, Spain, ²⁴University of Belgrade, Serbia, ²⁵Ludwigsstadt, Germany, ²⁶Institute of Biology of Romanian Academy, Bucharest, Romania, ²⁷Facultad de Ciencias Naturales e I.M.L., Tucumán, Argentina, ²⁸Çanakkale Onsekiz Mart University, Biga, Çanakkale, Turkey, ²⁹Charles University, Praha, Czech Republic

1. *Asterella lindenbergiana* (Corda ex Nees) Arnell

Contributors: E. A. Borovichev and V. A. Bakalin

Russian Federation (the Russian Far East): Magadan Province, Magadan City vicinity, Gertnera Bay, area near Staraya Vesnyolaya neighbourhood, 59°30'27.3"N, 150°56'11.1"E, 15 m a.s.l., wet, fine-grained soil in the crevices in open site, mixed with *Pressia quadrata* (Scop.) Nees, 16 June 2012, *leg.* V.A. Bakalin #Mag22-20-10 (VBGI); Amurskaya Province, Zeya District, right side of Zeya River on the opposite side to the Bolotov's zaimka (cabin), 54°07'N, 127°15'E, cliffs along the river, on fine-grained soil, mixed with *Mannia fragrans* (Balb.) Frey & Clark and *Weissia brachycarpa* (Nees & Hornsch.) Jur., 18 August 1908, *leg.* N. Prochorov & O. Kuzeneva #59 (VBGI, KPABG).

Asterella lindenbergiana is well known and one of the more characteristic species of our Marchantiales, being described in many classic manuals (Schlyakov, 1982; Damsholt 2002; Long, 2006; etc.). It is known from North America (USA, Canada), and Europe (Spain, Italy, France, Austria, Switzerland, Germany, Poland, Romania, Slovakia, Slovenia, Sweden,

Norway, Finland) (Long, 2006). In Russia, *A. lindenbergiana* is known from the Caucasus (Republic of Adygeya) (Konstantinova *et al.*, 2009), the northwest part of Russia (Murmansk Province) (Borovichev, 2011), and east Siberia (Republic of Yakutiya) (Andrejeva, 2009). The present record is its easternmost occurrence in the Eurasian continent, being a new species for eastern Asia and also for the Russian Far East.

2. *Bryum mildeanum* Jur.

Contributors: M. S. Sabovljević, J. Pantović and A. Sabovljević

Serbia: Central Serbia, Mt Jastrebac, dump soil in wet rock crevices, loc. Štit, near Mala Kamenica stream (in the gorge of Lomnička river), 43°27'42.3"N, 21°21'40.56"E, 359 m a.s.l., 12 March 2012, *leg.* A. Sabovljević & M.S. Sabovljević *s.n.* (BEOU BRYO); 10 May 2012, *leg.* J. Pantović & M.S. Sabovljević *s.n.* (BEOU BRYO).

Bryum mildeanum has frequently been confused with *Bryum alpinum* Huds. ex With., and has been regarded as a subspecies or variety of the former (*B. alpinum* var./subsp. *mildeanum* (Jur.) Podp.). Consequently, it was not included in the checklist of Balkan mosses (Sabovljević *et al.*, 2008). However, Guerra *et al.*

Correspondence to: L T Ellis, Department of Life Sciences, The Natural History Museum, London, SW7 5BD UK. Email: l.ellis@nhm.ac.uk

(2008b) showed, with molecular and morphological evidence, that *B. mildeanum* is a distinct species.

In Serbia, it was recorded for the first time in the region of the Jastrebac Mountains (Central Serbia). It occurred in the damp, wet crevices in phyllosilicate rock where water seeps from a stream above. The population was rather small, but well developed. The rocks were exposed and nearly vertical, surrounded by beech forest, but free of vascular plant cover. *B. mildeanum* has a scattered distribution in Europe, Central, SW, and SE Asia, N Africa and Macaronesia. It was also recently recorded in Portugal (Ellis *et al.*, 2011c). This is the second record for this species within the Balkans, the first being from a single locality in Bulgaria (Ade & Koppe, 1955).

According to de Iongh *et al.* (2003), *B. mildeanum* is a threatened species in Europe, although its status is unclear owing to a deficiency of data. In Bulgaria, it is an endangered species (Natcheva *et al.*, 2006).

Bryum mildeanum should be considered as a candidate species for inclusion in national, regional and European Red Lists.

3. *Bryum versicolor* A. Braun ex Bruch & Schimp.

Contributors: P. Erzberger and W. Schröder

Croatia: Medimurje County, on moist sand on the bank of the river Drava near Kuršanec, towards Varaždin, ca 46°19'20"N, 16°24'E, ca 160 m a.s.l., 13 August 1943, *leg.* Á. Boros *s.n.* (BP 117293).

During a revision of *Bryum* specimens in BP, a collection from Croatia was found inserted in the Hungarian section of the herbarium. At the time of its collection the specimen's locality had been part of Hungary. The original label stated: 'Dr. A. Boros: Plantae Hungariae Exsiccatae Comit. Zala. In arenosis humidis ripae fluvii Dráva ad ZRÍNYIFALVA, adv. Varasd. d. 13. aug. 1943. Alt. cca 160 m.s.m. BP 117293'. The specimen had originally been determined by J. Podpera as '*Bryum turbinatum* .. stat. juven. ? ♀', but was redetermined by W. Schröder, on 25 July 2012, as *Bryum versicolor*.

This record seems to be the first mention of *B. versicolor* for Croatia (A. Alegro, pers. comm.). Since Holyoak (2003) and Hill *et al.* (2006) include *B. versicolor* in the synonymy of *Bryum dichotomum* Hedw., the taxon is missing from the recent checklist of South-Eastern Europe (Sabovljević *et al.*, 2008) and thus no information on its distribution is available from this source. The older checklist of Düll *et al.* (1999) lists only Slovenia among the countries of former Yugoslavia as having this species. There are no confirmed records from adjacent Hungary.

Although *B. versicolor* often produces sporophytes and can then be recognized by the short and thick pendulous capsule appressed to the seta, in this specimen no sporophytes were seen. However,

abundant bulbils were found among the plants and in the substrate, typically to nearly 1 mm or more long with well-developed leaf primordia that often have a visible nerve (Demaret, 1993).

Bryum versicolor is a plant commonly found in the alluvium of unregulated rivers, and can also grow on moist sand in abandoned sand pits (Ahrens, 2001; Meinunger & Schröder, 2007). The collection site at the River Drava fits these conditions well. However, since the time of collection, conditions have likely undergone severe changes owing to the construction of a reservoir and hydrodynamic power plant in the 1980s. It is therefore unlikely that the population survived at the original collection site, although the species may have colonized available man-made habitats, such as sand pits, in the area.

4. *Bucklandiella membranacea* (Mitt.) Bednarek-Ochyra & Ochyra

Contributors: H. Bednarek-Ochyra, R. Ochyra and M. Lebouvier

Îles Crozet, Île de la Possession: (1) eastern coast, Pointe Lieutard, rock outcrops 300 m south of Alfred Faure Station, 46°26.132'S, 51°51.513'E, 100 m a.s.l., forming large extensive monospecific carpets on bare ground in the fellfield in dry and exposed situations, associated with *Racomitrium lanuginosum* (Hedw.) Brid., sterile, 16 November 2012, *leg.* R. Ochyra 2711/12 (KRAM); (2) same area, rock outcrops near meteorological station in Alfred Faure base, 46°26.013'S, 51°51.555'E, 110 m a.s.l., forming fairly large patches in the fellfield on bare ground in exposed and dry situation, in the community with *Azorella selago* Hook.f., *Agrostis magellanica* Lam. and *Racomitrium lanuginosum*, 20 November 2012, *leg.* R. Ochyra 2916/12 (KRAM); (3) same area, rock outcrops 100 m north of Alfred Faure base by road to Crique du Navire, 46°25.859'S, 51°51.551'E, 90 m a.s.l., on ground at foot of cliff in the fernbrake dominated by *Blechnum penna-marina* (Poir.) Kuhn and *Acaena magellanica* Vahl, forming large monospecific patches in somewhat shaded and dry situation, 22 November 2012, *leg.* R. Ochyra 3121/12 (KRAM).

Despite its distinctiveness, the geographical range of *Bucklandiella membranacea* is still imperfectly known. The species was described from Tristan da Cunha in the South Atlantic Ocean (Mitten, 1876) and for nearly a century it was considered endemic to this archipelago. Lawton (1973) extended its geographical range to Tasmania when she considered *B. membranacea* to be identical to *Racomitrium crispulum* var. *tasmanicum* Hampe. However, this taxonomic conclusion cannot be accepted, as this variety is inseparable from *Bucklandiella pycnotricha* (Müll.Hal.) Bednarek-Ochyra & Ochyra & Seppelt, a species endemic to Tasmania (Bednarek-Ochyra & Ochyra, 2010, 2011).

B. membranacea is widespread and common in the subantarctic Prince Edward Islands (Ochyra & Hertel, 1991; Ochyra, 2008) and recently its geographical range was extended to southern South America where it is known from the Falkland Islands, Tierra del Fuego, and the Juan Fernandez Islands (Ellis *et al.*, 2011a). Thus, the species has a typical amphiatlantic south-cool-temperate distribution. Herein, *B. membranacea* is recorded for the first time from another subantarctic archipelago of Îles Crozet in the Kerguelen biogeographical province, where it is a widespread and locally common species in the fellfields and fernbrakes. In contrast to the populations on the Prince Edward Islands, only sterile plants have been observed on Île de la Possession in Îles Crozet.

5. *Campylopus purpureocaulis* Dusén

Contributors: R. Ochyra, H. Bednarek-Ochyra and M. Lebouvier

Îles Crozet, Île de la Possession: eastern coast, Ruisseau de la Pompe 1 km south of Alfred Faure Station, 51°50'57.82"E, 46°26'23.70"S, 160 m a.s.l.; on northern gentle slope of the stream with the dam, in mire dominated by *Racomitrium lanuginosum* (Hedw.) Brid. and *Bucklandiella striatipila* (Cardot) Bednarek-Ochyra & Ochyra, forming compact tufts in wet places, 17 November 2012, *leg.* R. Ochyra 2878/12 (KRAM).

Campylopus purpureocaulis is a highly disjunct circum-holantarctic, cool-temperate species. It occurs in southern South America (Tierra del Fuego and Western Patagonia), in New Zealand (North and South Islands) and in the subantarctic Kerguelen biogeographical province (Frahm, 1988). In the latter region, it has hitherto been recorded only from the Prince Edward Islands (Ochyra & Hertel, 1991; Ochyra, 2008), but here it is recorded from another archipelago in this province, namely, Île de la Possession in Îles Crozet. As elsewhere, *C. purpureocaulis* formed large, compact tufts with stems densely covered with a reddish tomentum of rhizoids. It occurred on gentle slopes above a stream, in mire dominated by *Racomitrium lanuginosum*, *Bucklandiella striatipila* and *Blechnum penna-marina* (Poir.) Kuhn.

6. *Cavicularia densa* Steph.

Contributors: S. S. Choi, V. A. Bakalin and B.-Y. Sun

Republic of Korea: Jeju Prov., Gwangryeong stream, 33°23'32.7"N, 126°28'03.3"E, 766 m a.s.l., on shaded wet rocks, 14 May 2012, *leg.* S.S. Choi 120467 (JNU).

Cavicularia includes only a single species, *Cavicularia densa*, which until now, was known only from Japan (Inoue, 1976; Yamada & Iwatsuki, 2006). This is the first record of the species for the Korean Peninsula.

7. *Dicranum crassifolium* Sérgio, Ochyra, & Séneca

Contributors: R. Garilleti, B. Albertos, J. Miravet and J.A. Rosselló

Slovenia: Bohinj lake (Triglav National Park), 46.283717° N, 13.822310°E, 537 m a.s.l., calcareous soils, 23 August 2012, *leg.* J. Miravet *s.n.*

Dicranum crassifolium is a medium sized species with an overall resemblance to *D. scoparium* Hedw. and *D. transsylvanicum* Lüth. As in these two species, the leaves possess 4–6 well developed lamellae on the back of the costa. The leaves in *D. scoparium* are distinct from those in the other two species in having a unistratose lamina. In *D. crassifolium* and *D. transsylvanicum* the lamina is partly bistratose with occasional tristratose areas. *D. transsylvanicum* is distinguishable from *D. crassifolium* as the former has a stem that is triangular in cross-section, spinosely dentate leaf margins, and high and very noticeably spinose teeth on the back of the upper lamina (Lüth, 2002). In contrast, *D. crassifolium* has a stem that is circular in cross-section, denticulate leaf margins and an almost smooth lamina (only with small protrusions).

Dicranum crassifolium was first described by Sérgio *et al.* (1995) based on material from oceanic areas of south-western Europe, mainly from northern Portugal, where it seems to occur extensively, but also from northern Spain and a single record from Italy (Tuscany, Apuan Alps). Since its publication *D. crassifolium* has scarcely been reported, and we know of only three more records from Spain (Casas *et al.*, 1999; Ederra *et al.*, 2003; Guerra *et al.*, 2008a) and, more interestingly, one from Romania (Dihoru & Răduțoiu 2004), extending its known range to Eastern Europe. The record presented here covers the gap between the Italian and Romanian records, and makes likely the possibility of a continuous distribution through southern Europe.

8. *Fissidens asplenioides* Hedw.

Contributors: G. M. Suárez and M. Schiavone

Uruguay: Cerro Largo, Sierra de Río, 32°11'34.1"S, 53°51'53.2"W, 309 m a.s.l., creciendo semi-sumergida en arroyo, 1 March 2012, *Leg.* G. Suárez 1409 (LIL).

Ten species of *Fissidens* are recorded in the moss flora of Uruguay (Matteri, 2004). Three of them (*F. macrobryoides*, *F. prionocheilos*, and *F. vitreolimbatus*) are 'species incertae' as the type material for their names could not be located (Pursell, 2007). As part of the project 'Studies on Bryophytes in the Cone Sur (Systematic and Phylogeny)' some specimens collected recently in Uruguay were determined as *Fissidens asplenioides*, a species not previously recorded in this country.

The presence of *F. asplenioides* in Uruguay completes the distribution range of the species in the Cone Sur (it is already known from Argentina, Bolivia, Brazil, Chile, and Paraguay). However,

within the Neotropical region there are few records of *F. asplenoides* in the phytogeographic Province of Pampa.

In Uruguay, where other bryophytes were recently newly recorded (Ellis *et al.*, 2011a, 2012a,b), *F. asplenoides* was collected in the river on semi-submerged rock.

9. *Haplomitrium mnioides* (Lindb.) R.M.Schust.

Contributors: S. S. Choi, V. A. Bakalin and B.-Y. Sun

Republic of Korea: Jeju Province, Hyodon Stream, evergreen broad-leaved forest, 33°18'21.4"N, 126°33'38.5"E, 469 m a.s.l., on shaded wet rocks, 7 August 2010, *leg.* S.S. Choi 7613 (JNU).

Haplomitrium mnioides is well distributed in southern subtropical East Asia, and has been recorded in Japan (Honshu, Shikoku, Kyushu, Ryukyu) and China (Taiwan, Fujian) (Piippo, 1990; Yamada. & Iwatsuki, 2006). This is the first record of the species for the Korean Peninsula and fills a gap between the Japanese archipelagos and continental China. The locality is one of the northernmost in the world and the northernmost in the continental part of the area.

10. *Homalothecium philippeanum* (Spruce) Schimp.

Contributors: A. Mežaka, M. Ignatov and E. Baisheva

Russia: Southern Ural Mts., Bashkortostan, Bashkiria National Park, left bank of Belaya River 52°56'50.3"N, 56°39'25.9"E, 252.3 m a.s.l., on rocky outcrop, 14 October 2011, *leg.* A. Mežaka BM-M180, *det.* M. Ignatov (RIG).

Homalothecium philippeanum is a common species in the Caucasus and in southern and central Europe, it reaches northern Germany, Poland, and Russia (reported from Kaliningrad Province), and has also been found in northern Africa, Turkey, Middle Asia eastwards to Eastern Kazakhstan and the Altai Mountains in South Siberia (near Teletskoe Lake) (Ignatov, 1998; Ignatov, *et al.*, 2006). To the north, in the Caucasus in the eastern part of European Russia, *H. philippeanum* is known from one locality in the Kalmykia Republic (46°06'N–42°02'E, collected in an *Ulmus* L. plantation, from the base of a tree trunk) (Doroshina, 2011), and in two areas in Volgograd Province, (49°41'N–42°39'E and 49°18'–30'N–43°10'–31'E). Here it was found at the base of a tree trunk, and rather abundantly on limestone on steep north-facing banks of the Don River (Suragina & Ignatov, 1999; Suragina, 2001; Ignatov & Ignatova, 2004).

The new record of *H. philippeanum*, from the left bank of the Belaya River, occurred on a rock outcrop on a steep slope, in broad-leaved forest dominated by *Ulmus glabra* Huds. and *U. laevis* Pall., and was associated with *Distichium capillaceum* Bruch & Schimp. and *Lepraria lobificans* Nyl. The population was found in a state of very high vitality, in large

quantity and forming dense cover. This is the first record of *H. philippeanum* in the Ural Mountains and its northernmost locality in the continental part of Eurasia.

Homalothecium philippeanum differs from other European *Homalothecium* species by its costa, which extends to the leaf tip. Its large size is also crucial in identification (always robust), as well as its smooth seta. However, the latter is rarely present (Ignatov & Ignatova, 2004).

11. *Hymenoloma insulare* (Mitt.) Ochyra

Contributors: R. Ochyra, H. Bednarek-Ochyra and M. Lebouvier

Îles Crozet, Île de la Possession: eastern coast, Pointe Lieutard, 200 m north-west of Alfred Faure station, 46°25.893'S, 51°51.390'E, 150 m a.s.l.; on bare ground between rock outcrops in the fellfield in dry and exposed situation, associated with *Valdonia microcarpa* (Mitt.) Ochyra, *Racomitrium lanuginosum* (Hedw.) Brid. and *Ditrichum subaustrale* Broth., 22 November 2012, *leg.* R. Ochyra 3078/12 (KRAM).

Hymenoloma insulare is an endemic of the Kerguelen biogeographical province, and is immediately distinguishable from almost all congeners in having capsules deeply immersed in enlarged perichaetial leaves. It is therefore similar in overall appearance to species in the genus *Schistidium* Bruch & Schimp., and actually, Mitten (1876) placed it in the subdivision *Schistidium* when describing it for the first time as *Grimmia insularis* Mitt. Nevertheless, it is at once distinct in its gametophytes, which are almost identical to those in other austral species of *Hymenoloma* Dusén. The only other species of this genus which shares similar sporophytes is *H. immersum* (Broth.) Ochyra from Îles Kerguelen (Brotherus, 1906; Hébrard, 1970). This species was also reported from Îles Crozet (Blockeel *et al.*, 2009) and needs a detailed taxonomic assessment. Presumably, *H. immersum* and *H. insulare* will be found to be conspecific. At present, *H. insulare* is known from Heard Island from whence it was described (Mitten, 1876) and was recently reported from the Prince Edward Islands (Ochyra, 2008).

12. *Jungermannia borealis* Damsh. & Váňa

Contributors: J. Váňa and P. Górski

Poland: Western Carpathians, High Tatra Mountains: Dolina Rybiego Potoku valley, above Czarny Staw pod Rysami pond, Szeroki Zagon, rock walls with dripping water, in rock crevices, near route to Mount Rysy, 49°11'02"N, 20°04'46"E, 1730 m a.s.l., 18 August 2004, *leg.* P. Górski s.n., *det.* J. Váňa (POZNB 1539, 1540).

Jungermannia borealis is a rare arctic-alpine species from the northern hemisphere. It has been recorded in northern Europe (Britain, Norway, Iceland, Sweden, Svalbard, the Faroe Islands, and European Russia), North America (British Columbia, Quebec,

Hudson Bay area, Alaska, Greenland), Siberia and West Caucasus (Damsholt & Váňa, 1977; Söderström *et al.*, 2002; Schumacker & Váňa, 2005). In continental Europe, *J. borealis* occurs in scattered stations in Austria, Switzerland, France, Italy, Romania, and Slovakia (Schumacker & Váňa, 2005). In the Western Carpathians, its occurrence is restricted to the Fagaras Mountains and the Slovakian part of the High Tatra Mountains (Duda & Váňa, 1969; Váňa, 1969, 1973; Vajda, 1975). The newly reported Polish locality for *J. borealis* is situated in an area of mylonitic rocks, in a cool glacial cirque that is open to the north, and occurred in association with *Eremonotus myriocarpus* (Carrington) Pearson. This is the second confirmed locality for *J. borealis* in the Tatra Mountains. Previously, it had been noted in the Slovakian High Tatra, in the Velká Zmarzlá dolina Valley (1900 m a.s.l., *leg. & det.* J. Váňa, 8 September 1967; *Herb.* Váňa) (Váňa, 1969). Another specimen, from the Velké Hincovo pleso pond (1965 m a.s.l., *leg.* J. Růžicka, 1957, *det.* J. Váňa; OP, *Herb.* Váňa) (Váňa, 1973) was completely sterile and belonged to *Jungermannia pumila* With. *Jungermannia borealis* belongs with the strictly Arctic species, such as *Barbilophozia binsteadii* (Kaal.) Loeske, *B. quadriloba* (Lindb.) Loeske, *Eremonotus myriocarpus*, *Scapania praetervisa* Meyl. and *Tetralophozia setiformis* (Ehrh.) Schljakov, that grow in the Tatra Mountains (Szwejkowski, 1960; Górski, 2007; Ellis *et al.*, 2012c). It is the fourth new species, together with *Cephaloziella massalongi* K.Müller, *C. varians* (Gottsche) Steph. and *Gymnomitrium adustum* Nees, which have recently been recorded in the Polish Tatra Mountains (Górski & Váňa, 2011; Ellis *et al.*, 2011a, 2013).

13. *Mannia androgyna* (L.) A.Evans

Contributors: E. A. Borovichev and V. A. Bakalin

Russian Federation (Southern Far East): Primorsky Territory, Khankajsky District, Khankajsky State Reserve, Luzanovskaya Sopka cordon, cliffs along Khanka Lake, 45°00'N, 132°09'E, ca 100 m a.s.l., open place, on humus, mixed with *Reboulia hemisphaerica* (L.) Raddi, 16 July 1997, *leg.* S.K. Gambaryan *s.n.* (VBGI, KPABG); Ussurijsky District, neighbouring Kamenushka Settlement, left side of Komarovka River Valley, broadleaved forest with herb cover, 43°36'29.0"N, 132°14'59.5"E, 126 m a.s.l., cliffs with moss cover, mixed with *Targionia hypophylla* L., 28 May 2008, *leg.* V.A. Bakalin *P-1-4-08* (VBGI, KPABG); Amurskaya Province: Bureinsky District, left side of Bureya River near Cheudga Settlement, 50°18'N, 130°28'E, sandy soil near water, in pure mats, 12 August 1973, *leg.* D.I. Martynenko *s.n.* (VBGI, KPABG).

Commonly misidentified as *Mannia fragrans* (Balb.) Frey & Clark, *M. androgyna* differs from the latter in: never being aromatic; having thalli with

apices (even in female branches) with small, deep purplish scales; possessing distinctly pale, grayish oil cells in ventral tissue and aerenchyma, and bearing antheridia dorsally on the thallus in loosely or densely aggregated clusters. In contrast, *M. fragrans* is commonly aromatic (cedar oil smell), with a brush of tufted, conspicuously projecting appendages of the ventral scales at the apices of the thalli (notably in female branches), it lacks oil cells, and on a separate thallus, has antheridia borne terminally in a well-developed receptacle disc.

M. androgyna is new for temperate East Asia. Generally, it is a Mediterranean hepatic. European localities include Portugal (including Azores, Madeira, Balears, and Canaries Islands), Italy (including Sardinia and Sicily Islands), Greece (including the island of Crete), former Yugoslavia, Romania, Bulgaria, Bosnia-Herzegovina, Albania, France (including Corsica) and Switzerland (Söderström *et al.*, 2002; Schumacker & Váňa, 2005). It also occurs in Africa (Morocco, Algeria, Chad, Cape Verde Islands, Eritrea, Ethiopia and Socotra; Wigginton, 2004), and penetrates eastward as far as the Arabian Peninsula (United Arab Emirates (Kürschner *et al.*, 2001)) and Indian subcontinent [Pakistan (Long, 2006) and the Himalayas (Singh & Singh, 2009)]. Within Russia the species is known from the Black Sea Basin in the Republic of Adygeya (Konstantinova *et al.*, 2009a).

Based on the total distribution, we can expect the occurrence of this species in the Russian Far East to be rather relict, preserved here from the time when the Tethys Ocean stretched across the modern Eurasian continent and was an area for easy exchange and migration of ancient Mediterranean taxa. Were this to be so, the records of the species in Pakistan and India should also be regarded as relict.

14. *Meesia uliginosa* Hedw.

Contributors: L. E. Kurbatova and R. Ochrya

South Shetland Islands, Nelson Island: a small valley at a cape north of Stansbury Peninsula between Drake Passage and Fildes Strait, 62°14'S, 59°03'W; 7 m a.s.l.; on ground on coastal rocks in a community dominated with lichens and mosses, sterile, 20 February 2009, *leg.* L. E. Kurbatova *L101-8* (KRAM, LE).

Meesia uliginosa is a bipolar species which is known from Patagonia, Tierra del Fuego (Matteri & Ochrya, 1999) and the northern maritime Antarctic (Ochrya & Lewis Smith, 1999). In the latter biome the species is infrequent on Signy Island in the South Orkney Islands, and on Joinville Island and James Ross Island in the northern part of the East Antarctic Peninsula. However, the main centre of its occurrence is in the South Shetland Islands. In this archipelago, *M. uliginosa* has so far been recorded from King George Island, Robert Island and Livingston Island (Ochrya *et al.*, 2008), and here it is reported for the

first time from the small and heavily glaciated Nelson Island. As elsewhere in the Antarctic, the plants of *M. uliginosa* collected from this island were sterile.

15. *Metzgeria pulvinata* Steph.

Contributors: H. Bednarek-Ochyra and R. Ochyra

Africa, Rwanda: Northern Province, Musanze District, Mgahinga National Park, on the eastern slope of Muhavura volcano in the Virunga Massif, 1°23'S, 29°40'E, ca 3800 m a.s.l.; on perpendicular, humid and mossy walls in a deep ravine in the formation dominated by *Alchemilla johnstonii* Oliv. with scattered trees of *Senecio erici-rosenii* R.E.Fries & T.C.E.Fries, 20 February 1972, leg. J. L. De Sloover 19380, det. Y. Kuwahara (KRAM).

Metzgeria pulvinata is a Neotropical species occurring at montane elevations of 2000–4000 m along the American Cordillera from Mexico to Bolivia (Kuwahara, 1986; Costa, 2008). Herein, the species is recorded for the first time from sub-Saharan Africa, and therefore must be considered an Afro-American liverwort. Thus, this is one more addition to a fairly long list of liverworts (Gradstein *et al.*, 1983) and mosses (Ochyra *et al.*, 1992; Wilbraham & Matcham, 2010) that exhibit this distribution pattern.

16. *Microbryum davallianum* var. *commutatum* (Limpr.) R.H.Zander

Contributor: V. Fedosov

Russia: Dagestan Republic, Tabasaran District, Maraga village surroundings near the road Derbent-Huchni, 41°57'29"N; 48°09'50"E, ca 320 m a.s.l., on dry calcareous soil in disturbed place with *Entosthodon hungaricus* (Boros) Loeske, 8 June 2011, leg. V. Fedosov (MW # 11-1-4).

This is the first record of *M. davallianum* var. *commutatum* from Russia, and the first record for *M. davallianum* (Sm.) R.H.Zander from the Dagestan Republic. The var. *commutatum* has a mostly ancient-Mediterranean distribution in Europe, significantly stretching northward to England and Norway (Smith, 1978), and declining eastward. The variety is also known from a single old record from California (Zander, 2007).

17. *Neckera pennata* Hedw.

Contributor: Ö. T. Yayıntaş

Turkey: Kayseri, Yahyali, Hacer Forest, Dönbere district, on willow, poplar and cedar trees, 1300 m asl, 19 August 2001, leg. Ö. T. Yayıntaş T 1027, 1028, 1029, det. Zander (CNH, MO).

There are five species of *Neckera* reported for Turkey (Uyar & Cetin, 2004; Kürschner & Erdağ, 2005). This new addition, *N. pennata*, is mainly an epiphytic species that is distributed throughout Europe. Elsewhere the species is known from Siberia, central Asia, the Himalayas, China, Hong Kong, Japan, southern Africa, North America (from British Columbia), and in Australasia from Tasmania

and New Zealand (Smith, 2004). The nearest other localities to Turkey for *N. pennata* are in Italy (Cortini Pedrotti, 2001), Spain (Casas, 1991), Bulgaria (Natcheva & Geneva, 2005), the Caucasus region (Ignatov and Afonina, 1992), and Iran (Frey & Kürschner, 1991; Akhani & Kürschner, 2004; Kürschner, 2006).

The area with the new Turkish record is in the Aladağlar region defined by the Taurus Mountains and crossed by the River Zamanti. The Hacer forests (Yahyali-Kayseri) make up a transitional zone between the Central Anatolia Region and the Mediterranean Region. It has numerous biotopes, with relatively high bryophyte richness. The area has a typical continental or steppe climate (Akman, 1999). Common trees in this area include *Pinus nigra* subsp. *nigra* var. *caramanica* (Loud.) Reh., *Pinus brutia* Ten., *Quercus cerris* L., *Q. pubescens* Willd., *Cedrus libani* A.Rich., *Abies cilicica* (Ant. & Kotschy) Carr. subsp. *cilicica*, *Juniperus oxycedrus* L. and *J. excelsa* Bieb., *Styrax officinalis* L., and in addition, species of *Astragalus*, *Salvia*, *Populus*, *Salix*, and *Tamarix* are very common.

18. *Orthotrichum vittii* F.Lara, Garilleti & Mazimpaka

Contributor: V. Fedosov

Russia: Dagestan Republic, Rutul District, Ihreck village surroundings, 41°40'32"N; 47°14'26"E, ca 1640 m a.s.l., on the base of *Juniperus* trunk with *Leucodon sciuroides* (Hedw.) Schwägr., 21 May 2010, leg. V. Fedosov (MW # 10-2-647).

This is the first record of this species in Russia. It was described from the Iberian Peninsula (Lara *et al.*, 1999) and further recorded in the Western Alps and Atlas Mountains (Medina *et al.*, 2010). The new Russian record extends the range of *O. vittii* considerably eastward. Another species of *Orthotrichum* with hyaline leaf tips and strongly ribbed capsules, *O. dagestanicum*, was recently described from the southern part of the Dagestan Republic (Fedosov & Ignatova, 2010), but the specimen cited here demonstrates all the characters of *O. vittii*, including the possession of a long hyaline hair point (up to 350 µm, even longer than that described by Lara *et al.*, 1999), and 16 appendiculate endostome segments.

19. *Plagiothecium nitidifolium* (Mitt.) A.Jaeger

Contributors: R. Ochyra and H. Bednarek-Ochyra

Democratic Republic of Congo: North Kivu Province: (1) Virunga Massif, NNW slope of Karisimbi volcano, below the Rukumi Plateau, 1°30'09.13"S, 29°26'54.25"E, 4250 m a.s.l.; under overhanging lava rock in a small valley with *Senecio*, 26 January 1972, leg. J. L. De Sloover 13187 (KRAM); (2) Virunga Massif, S slope of Karisimbi volcano, 1°33'11.90"S, 29°26'42.29"E, ca 3000 m a.s.l.; epiphytically on the trunk of *Hagenia abyssinica* (Bruce) J.F.Gmel., 10 October 1974, leg. J.

L. De Sloover 19368 (KRAM). South Kivu Province; (3) Kahuzi-Biega National Park, surroundings of Camp Biega 30 km west of Bukavu, 2°27'45.59"S, 28°39'36.12"E, 2500 m a.s.l.; bamboo (*Arundinaria alpina* K.Schum.) thicket at the south foot of Biega Ridge, on bamboo, 28 August 1991, *leg.* T. Pócs 7083 (KRAM).

Plagiothecium nitidifolium is an African montane species, widely ranging from Bioko in West Africa to Réunion Island in the Indian Ocean (O'Shea, 2006; Ellis *et al.*, 2011b, 2012c, 2013). Most of its localities in East Africa are concentrated in Ethiopia, Kenya, and Tanzania, and in Central Africa in Uganda and Rwanda. Herein, the species is recorded for the first time from the Democratic Republic of Congo from Mount Kahuzi and the Virunga Massif. In the latter area the species reaches its highest elevation in Africa at 4250 m a.s.l.

20. *Radula brunnea* Steph.

Contributors: S. S. Choi, V. A. Bakalin and B.-Y. Sun

Republic of Korea: Jeju Prov., Halla Mountain, Baekrokdam, 33°21'51.0"N, 126°31'42.9"E, 1814 m a.s.l., on shaded wet rocks, 6 September 2012, *leg.* S.S. Choi 120810 (JNU).

R. brunnea is oro-temperate in East Asia, sparsely distributed in Russia (Russian Far East: Sakhalin, South Kuril Islands) and Japan (Hokkaido, Honshu, Shikoku, Kyushu) (Bakalin, 2010; Konstantinova *et al.*, 2009b; Yamada, 1979). This is the first record of the species for the Korean Peninsula.

21. *Rhynchostegium confusum* K.Cezón, J.Muñoz, Hedenäs & Huttunen

Contributors: N. G. Hodgetts and R. D. Porley

Portugal: Algarve: Upper Azhena, 29S 0523827/4135944, 140 m a.s.l., shaded rock in gully by wooded stream with *Lejeunea cavifolia* (Ehrh.) Lindb., 4 March 2012, *leg.* N. G. Hodgetts & R. D. Porley (LISU, Priv. Herb. N. G. Hodgetts and Priv. Herb. R. D. Porley).

This plant was found during an excursion to a small lowland *Rhododendron* ravine in the Algarve, a habitat that supports many interesting vascular plants and bryophytes. In the field, the abundantly fertile plant was gathered as a possible candidate for *Rhynchostegium confusum*, which was recently described from Spain (Cezón *et al.*, 2010). On microscopic examination, the widely-spreading, relatively broadly ovate and regularly denticulate leaves with a strong costa and rather wide mid-leaf cells indeed suggested this species; Lars Hedenäs kindly confirmed the identification. The Portuguese plant matches the description and illustrations of the Spanish plants well, except that the seta is slightly longer, up to about 14 mm (5–12 mm in Spanish plants). Interestingly, some specimens of *Rhynchostegium confertum* (Dicks.) Schimp. collected

in the same habitat in the Algarve by RDP have a shorter seta than indicated in the published range, so it appears that there is an overlap in seta length in both *R. confusum* and *R. confertum* in the Iberian Peninsula. Other species found in the ravine included *Lejeunea holtii* Spruce and *Grimmia lisae* De Not.

Rhynchostegium confusum was hitherto known only from central and southern Spain (Cezón *et al.*, 2010), so this population represents a significant south-western extension of its known range; it is likely that further new sites remain to be discovered on the Iberian Peninsula, and perhaps elsewhere. *Rhododendron* ravines at low altitudes in the western Algarve are bryologically rich and relatively hidden, being largely concealed by extensive *Eucalyptus* plantings, and are currently under investigation by RDP.

22. *Riccia cavernosa* Hoffm.

Contributor: S. Ștefănuț

Romania: Blaj, Alba County, 14 September 1877, *leg.* J. Barth *s.n.*, *det.* J. Barth, as *Riccia crystallina* L., *rev.* S. Ștefănuț 2012 (J. Barth — Flora Transsilvanica no. 38, BP 1929/H); Blaj, Alba County, 14 September 1877, *leg.* J. Barth *s.n.*, *det.* M. Péterfi, as *Riccia crystallina* L. var. *angustior*, *rev.* S. Ștefănuț 2012 (BP 1930/H).

These samples of liverworts from Blaj, Romania were originally identified as *Riccia crystallina* L., but revision, using spore colour and morphology (red-dish-brown spores in *R. cavernosa* and yellowish-brown spores in *R. crystallina*), showed them to represent *R. cavernosa*.

The presence of *Riccia cavernosa* in Romania was reported by Schuster (1992), who stated that *R. crystallina* auct., non L. emend. Raddi, published by K. Müller (1906–1911, 1957) belonged to *R. cavernosa* Hoffm. As all reports of *Riccia crystallina* *s.l.* from Romania were referred to *R. crystallina* L., the presence of *R. cavernosa* in Romania was doubtful and assessed under the DD category (Data Deficient) of conservation status for the Red List (Ștefănuț & Goia, 2012). This is the first confirmation of *R. cavernosa* in Romania (Ștefănuț, 2008; Ștefănuț & Goia, 2012). The nearest other locality for this species is in Hungary.

In Europe, *R. cavernosa* is widespread and has been reported in the north from Great Britain, Denmark, Norway, Sweden, and Finland. Southward it is known from Portugal, Spain and Italy, and to the east from Hungary, Poland and Russia.

23. *Schistidium cupulare* (Müll.Hal.) Ochyra

Contributors: R. Ochyra, H. Bednarek-Ochyra and M. Lebouvier

Îles Crozet, Île de la Possession: (1) eastern coast, plateau west of Alfred Faure Station, midway to Mont Branca, 51°50'47.24"E, 46°26'08.72"S, 200 m

a.s.l.; rock outcrop in the fellfield with petrel burrows, forming small cushions on dry and shaded lava rock, producing sporophytes in profusion, 16 November 2012, *leg.* R. Ochyra 2793/12 (KRAM).

Schistidium cupulare is a relatively rare amphiatlantic, subantarctic species (Ochyra, 2004). It has maximum occurrence in subantarctic South Georgia and in Îles Kerguelen, and occasionally penetrates to Tierra del Fuego and the South Shetland Islands in the maritime Antarctic (Ochyra, 1998; Ochyra *et al.*, 2008). Recently, the species was found on Heard Island (Ellis *et al.*, 2010), and above it is recorded from Îles de la Possession, the largest island in the Îles Crozet archipelago. The species appears to be very rare on this island and only one small population was discovered, but the plants produced sporophytes in abundance.

24. *Sphenolobopsis pearsonii* (Spruce) R.M.Schust.

Contributor: V. A. Bakalin

Russian Federation (Southern Far East). Primorskij Territory, Partizansky District, area near the top of Olkhovaya Mountain, 43°20'50"N, 133°39'22"E, 1600 m a.s.l., crevices among stones in gravelly barrens field, 10 September 2010, *leg.* V.A. Bakalin *s.n.* (VBGI: P-44-15-10, P-44-23-10).

This species was erroneously recorded many times for Russia, but it was shown by Konstantinova (2001), that all of these records belonged to *Eremonotus myriocarpus* (Carrington) Pearson. She also established the features differentiating *Sphenolobopsis* from *Eremonotus* and other morphologically related genera. Currently, this species is known from the land adjacent to the Atlantic coast of Europe, with some disjunct occurrences in the Himalayas, North America, Taiwan, and Japan (Piippo, 1990; Paton, 1999; Yamada & Iwatsuki, 2006). So, the occurrence of this species on the southern flank of the Russian Far East might be expected. This Russian specimen of *S. pearsonii* was collected in the southern spurs of Sikhote-Alin Range, where it occurred in a relict gravelly, barren field, and overlying cushions of *Andreaea* sp.

25. *Splachnum ampullaceum* Hedw.

Contributors: P. Pawlikowski, P. Hájková and A. Koczur

Poland: Orawa-Nowy Targ Basin, northern part of Puścizna Wielka bog, 49°27'06"N 19°45'49"E, 661 m a.s.l., sterile specimens *ca* 25 cm² on a strongly decomposed dung in a bog hollow (pH 3.82, corrected conductivity 37.3 µs/cm), 5 October 2012, *leg.* M. Hájek & P. Pawlikowski *s.n.*, *conf.* A. Stebel (KRAM).

This is a re-discovery of *S. ampullaceum* in Polish, Slovakian and Czech Western Carpathians. It occurred, along with *Poa annua* L., in a bog hollow dominated by *Sphagnum cuspidatum* Ehrh. *ex* Hoffm. and *S. papillosum* Lindb., and surrounded by

hummock vegetation including *S. fuscum* (Schimp.) H.Klinggr. In the Polish Carpathians the species has been recorded only three times — twice in the 19th century, in the Podhale region (two inaccurately cited localities) and once in 1966 by the Ochlipów settlement (800 m a.s.l.), between the massifs of Polica and Babia Góra (Szmajda *et al.*, 1991). The latter occurrence has not been confirmed by A. Stebel (pers. comm. in 2012) in spite of field surveys in the area. Thus, *Splachnum ampullaceum* was regarded as extinct, or probably extinct, in the Polish Carpathians (Żarnowiec *et al.*, 2004). In the Czech and Slovak Carpathians, there are also no reliable recent records of this species. The majority of historical records came from the highest mountain regions (the High and Low Tatra Mountains; the Malá Fatra Mountains; e.g. Váňa & Soldán, 1995). *S. ampullaceum* was reported from the Suchá Hora bog (Jurko & Peciar, 1959), located close to the bog where the species was recently discovered.

26. *Tortula canescens* Mont.

Contributor: V. Fedosov

Russia: Dagestan Republic, Tabasaran Distr., Maraga village surroundings, near the road Derbent-Huchni, 41°57'29"N; 48°09'50"E, *ca* 320 m alt, on dry calcareous soil in xerophyte steppe communities on disturbed places with *Pterygoneurum ovatum* (Hedw.) Dixon and *Tortula lanceola* R.H.Zander, 8 June 2011, *leg.* V. Fedosov *s.n.* (MW # 11-1-5).

This species has a mostly ancient-Mediterranean distribution, extending significantly northward in Europe and declining eastward, reaching Turkmenistan (Mamatkulov *et al.*, 1998). The closest known locality to the present record for *T. canescens* is in Armenia (Pogosyan, 2003).

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