Journal of Bryology

ISSN: 0373-6687 (Print) 1743-2820 (Online) Journal homepage: http://www.tandfonline.com/loi/yjbr20

New national and regional bryophyte records, 51

L. T. Ellis, M. Aleffi, H. Bednarek-Ochyra, V. A. Bakalin, M. Boiko, J. A. Calleja, V. E. Fedosov, M. S. Ignatov, E. A. Ignatova, R. Garilleti, T. Hallingbäck, N. Lönnell, N. Hodgetts, T. Kiebacher, J. Larraín, M. Lebouvier, M. Lüth, V. Mazimpaka, B. Vigalondo, F. Lara, R. Natcheva, M. Nobis, A. Nowak, J. D. Orgaz, J. Guerra, J. Pantović, N. Nikolić, M. S. Sabovljević, A. D. Sabovljević, O. Yu. Pisarenko, V. Plášek, Z. Skoupá, S. Poponessi, M. Privitera, M. Puglisi, M. Skudnik & Q. H. Wang

To cite this article: L. T. Ellis, M. Aleffi, H. Bednarek-Ochyra, V. A. Bakalin, M. Boiko, J. A. Calleja, V. E. Fedosov, M. S. Ignatov, E. A. Ignatova, R. Garilleti, T. Hallingbäck, N. Lönnell, N. Hodgetts, T. Kiebacher, J. Larraín, M. Lebouvier, M. Lüth, V. Mazimpaka, B. Vigalondo, F. Lara, R. Natcheva, M. Nobis, A. Nowak, J. D. Orgaz, J. Guerra, J. Pantović, N. Nikolić, M. S. Sabovljević, A. D. Sabovljević, O. Yu. Pisarenko, V. Plášek, Z. Skoupá, S. Poponessi, M. Privitera, M. Puglisi, M. Skudnik & Q. H. Wang (2017): New national and regional bryophyte records, 51, Journal of Bryology, DOI: 10.1080/03736687.2017.1298297

To link to this article: http://dx.doi.org/10.1080/03736687.2017.1298297

Bryological Note

New national and regional bryophyte records, 51

L. T. Ellis[1], M. Aleffi[2], H. Bednarek-Ochyra[3], V. A. Bakalin[4], M. Boiko[5], J. A. Calleja[6,7], V. E. Fedosov[8], M. S. Ignatov[8], E. A. Ignatova[8], R. Garilleti[9], T. Hallingbäck[10], N. Lönnell[10], N. Hodgetts[11], T. Kiebacher[12], J. Larraín[13], M. Lebouvier[14], M. Lüth[15], V. Mazimpaka[16], B. Vigalondo[16], F. Lara[16], R. Natcheva[17], M. Nobis[18], A. Nowak[19], J. D. Orgaz[20], J. Guerra[20], J. Pantović[21], N. Nikolić[21], M. S. Sabovljević[21], A. D. Sabovljević[21], O. Yu. Pisarenko[22], V. Plášek[23], Z. Skoupá[23], S. Poponessi[24], M. Privitera[25], M. Puglisi[25], M. Skudnik[26], Q. H. Wang[27]

[1]The Natural History Museum, London, UK, [2]University of Camerino, Camerino (MC), Italy, [3]W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków, Poland, [4]Botanical Garden-Institute, Vladivostok, Russia, [5]Department of Botany, Kherson State University, Kherson, Ukraine, [6]Universidad Autónoma de Barcelona, Barcelona, Spain, [7]CREAF, Cerdanyola del Vallès, Barcelona, Spain, [8]M.V. Lomonosov Moscow State University, Russia, [9]Universidad de Valencia, Valencia, Spain, [10]Swedish University of Agricultural Sciences, Uppsala, Sweden, [11]Portree, Isle of Skye, UK, [12]Swiss Federal Research Institute WSL, Birmensdorf, Switzerland, [13]Instituto de Biología, Pontificia Universidad Católica de Valparaíso, Valparaíso, Chile, [14]CNRS UMR 6553, Université de Rennes 1, Rennes, France, [15]Freiberg im Breisgau, Germany, [16]Universidad Autónoma de Madrid, Madrid, Spain, [17]Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, Sofia, Bulgaria, [18]Jagiellonian University, Kraków, Poland, [19]University of Opole, Opole, Poland, [20]Departamento de Biología Vegetal, Universidad de Murcia, Murcia, Spain, [21]Institute of Botany and Botanical Garden, University of Belgrade, Belgrade, Serbia, [22]Central Siberian Botanical Garden, Novosibirsk, Russia, [23]University of Ostrava, Ostrava, Czech Republic, [24]University of Perugia, Perugia, Italy, [25]Università degli Studi di Catania, Catania, Italy, [26]Slovenian Forestry Institute, Ljubljana, Slovenia, [27]Chinese Academy of Science, Beijing, China

1. ***Aloina rigida*** (Hedw.) Limpr.

Contributors: O. Yu. Pisarenko, V. E. Fedosov and V. A. Bakalin

Russia: Primorsky Territory, Dalnegorsky District, vicinity of Dalnegorsk Town, NE-facing steep slope of Barachny Creek, 44°34′48″N, 135°33′8″E, *ca* 300 m a.s.l., on fine soil among dry limestone cliffs, 26 August 2016, *leg.* Pisarenko, Fedosov & Bakalin *s.n.* (NSK, MW).

In the northern hemisphere, *A. rigida* occurs mostly in xeric areas of North America, Europe, and Asia. The present find is the easternmost in Eurasia and it is the first record of the species for the Russian Far East. The nearest other localities for *A. rigida* in Russia are in southern Yakutia and in Zabaikalsky Territory (Ignatov *et al.*, 2006), while southwards it is common in Mongolia (Tsegmed, 2001) and China (Li *et al.*, 2001).

2. ***Blepharostoma trichophyllum*** (L.) Dumort. subsp. ***brevirete*** (Bryhn & Kaal.) R.M.Schust.

Contributor: N. Hodgetts

United Kingdom: Aonach Beag, Coire Cheap, Westerness (VC97), Scotland, on dry broken gritty soil among SE-facing limestone crags in high NE-facing coire, NN47177542, 1040 m a.s.l., 19 August 2014, *leg.* N. Hodgetts *9145* (E), *conf.* L. Söderström.

While no doubt collected before, this is the first time this subspecies, described as 'rather unsatisfactory' by Paton (1999), has explicitly been recorded in the UK. Essentially it is smaller and more compact than subsp. *trichophyllum*, and confined to arctic-alpine habitats. Several rather plastic characters distinguish it from subsp. *trichophyllum*, and these are described and illustrated by Damsholt (2009). In summary, subsp. *brevirete* has rigid, short leaf lobes with small, short, equally thick-walled cells 1–1.8 times as long as wide, fewer

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

DOI 10.1080/03736687.2017.1298297

(2–5) oil bodies per cell, and is not known to produce gemmae; in addition, the perianth cells are wider (19–25 μm) and the perianth mouth cells shorter (0.8–4 times as long as wide). In contrast, subsp. *trichophyllum* has ± long acuminate leaf lobes with cells (2–)3–4(–6) times as long as wide, often with somewhat thinner transverse walls, 4–8 oil bodies per cell, and produces gemmae; the perianth cells are narrower (13–18 μm), and the perianth mouth cells longer, 4–5 times as long as wide.

3. ***Brachythecium albicans*** (Hedw.) Schimp.

Contributor: H. Bednarek-Ochyra

Falkland Islands: (1) East Falkland, Cape Pembroke at the entrance to Port William, 51.696575°S, 57.780717°W, 5 m a.s.l., on soil in grassland associated with *Kindbergia praelonga* (Hedw.) Ochyra, 9 December 2015, *leg.* D. E. Crabtree *205A* (KRAM); (2) East Falkland, Sea Lion Island, 52.429733°S, 59.077115°W, 22 m a.s.l., on soil associated with *Bryum billardierei* Schwägr., 15 September 2014, *leg.* D. E. Crabtree *224A* (KRAM); (3) West Falkland Island, Grand Jason Islands, 51.066238°S, 61.099160°W, 106 m a.s.l., on slope near Albatross colony, 13 December 2014, *leg.* D. E. Crabtree *341* (KRAM).

Brachythecium albicans is a widely distributed pan-Holarctic boreal-temperate species which is very rare or even absent in some areas. It is known from eastern North America (Ignatov, 2014), occasionally penetrating to the Arctic (Afonina & Czeryadjeva, 1995) and extending to north-eastern Mexico (Nuevo León) (McFarland, 1994), Macaronesia (Azores and Madeira) (Eggers, 1982; Sjögren, 2001), and Yunnan in China (Wang & Hu, 2008). Outside the Holarctic, the species is known from New Zealand (Sainsbury, 1955), south-eastern Australia and Tasmania (Hedenäs, 2002) in the eastern hemisphere, as well as from southern South America in the western hemisphere. In the latter region, *B. albicans* is reported from Chile and Argentina in the unpublished doctoral thesis by McFarland (1988) on the basis of specimens preserved in various herbaria under the name *B. sericeovirens* (Müll.Hal.) Kindb. The species occurs mainly in the southern regions of Chile (VIII, X, XI, XII), extending northwards to Región Metropolitana de Santiago (Müller, 2009), and is also known from the Province of Santa Cruz in Argentina (Matteri, 2003). Additionally, McFarland (1988) reported *B. albicans* from New Island, a small island located near Weddell Island to the west of West Falkland. Herein, the species is recorded from three localities on the two main islands of the archipelago, namely West Falkland and East Falkland. The moss flora of the Falkland Islands is still incompletely studied and the number of species reported from this archipelago varies from 140 to 150 (Matteri, 1986, 2003), although in the last decade several additions to the moss flora were made (e.g. Allen & Magill, 2003; Bednarek-Ochyra & Ochyra, 2003; Blockeel *et al.*, 2003; Ochyra & Broughton, 2004; Ireland *et al.*, 2005; Ochyra *et al.*, 2015a).

4. ***Brachythecium campestre*** (Müll.Hal.) Schimp.

Contributors: J. D. Orgaz and J. Guerra.

Spain: Huesca, Pirineos, valle de Vallibierna, on the way to the tarns of Vallibierna, 42°36′26″N, 0°38′28″E, 2200 m a.s.l., in rock fissure with accumulated soil, in *Pinus uncinata* Raymond *ex* A.DC. forest, 19 August 2016, *leg.* J. Guerra *s.n.* (MUB 52440).

This species is known from the temperate zone of the Holarctic region, especially on soils in deciduous forests of mountain areas. Nevertheless, despite its wide distributional range, it is an uncommon species and appears in the Red Data lists of many countries (Hedenäs, 1995).

Brachythecium campestre has been cited several times as occurring in the Iberian Peninsula (Allorge & Allorge, 1946; Sérgio & Schumacker, 1992; Infante & Heras, 2007). However, a careful study of all the available samples deposited in different herbaria revealed that these specimens represented different species of *Brachythecium*, and consequently *B. campestre* was unrecorded for the Iberian Peninsula (Orgaz *et al.*, 2012). Therefore, this is the first record of this species for the area. The sample was collected in a sparse *Pinus uncinata* forest, in a high mountain area that is covered by snow during winter and early spring.

The identification of this species can be very difficult if samples do not possess sporophytes, since there are few characters to distinguish it from similar species such as *B. laetum* (Brid.) Schimp. and *B. salebrosum* (Hoffm. *ex* F.Weber & D.Mohr) Schimp. However, some characters that can be used to identify *B. campestre* are the ovate-lanceolate or ovate-triangular leaves with quadrate or subquadrate alar cells ascending along the leaf margins, the rough seta, the autoicous sexual condition, and the branch leaves with scarcely prorate laminal cells and the costa ending in a dorsal spine.

5. ***Bryoerythrophyllum inaequalifolium*** (Taylor) R.H.Zander

Contributors: O. Yu. Pisarenko, V. E. Fedosov, M. S. Ignatov, E. A. Ignatova and V. A. Bakalin

Russia: Primorsky Territory, Olginsky Distr., vicinity of Olga settlement, SW-facing slope of Avvakumovka Creek valley, 43°44′38″N, 135°12′25″E, *ca* 10 m a.s.l., on dry shaded cliffs, 28 August 2016, *leg.* Fedosov, Pisarenko & Bakalin *s.n.* (MW, NSK).

This species is known to have a widely disjunctive distribution, mostly associated with tropical and temperate zones in western North, Central and South

America, the Mediterranean, India, and East Asia (from south Siberia and Mongolia, it reaches southwards to Malesia) (Fedosov & Ignatova, 2008). The first record of the species in Russia was made in the Altai Mountains (Ignatov, 1992). The present locality is its most north-easterly in Eurasia. The closest other localities are in China, in Henan and Zhejiang provinces (Li *et al.*, 2001), and in Russia, in Zabaikalsky Territory, Agin-Buryat Autonomous District (Fedosov & Ignatova, 2008).

6. ***Bucklandiella chlorocarpa*** (Paris) Bednarek-Ochyra & Ochyra

Contributors: H. Bednarek-Ochyra and V. Plášek

New Zealand, South Island, Nelson–Marlborough Region: (1) Mount Richmond Forest Park, off Highway 6 just downstream of Pelorus Bridge, 120 m a.s.l., 41°18′02.3″S, 173°34′09.9″E, on exposed sedimentary rock outcrops and boulders in flood plain of river, in full sun, 30 November 2010, *leg.* J. R. Shevock *36476* with William M. Malcolm (KRAM); (2) NW end of Allen Range, Little Wanganui Saddle, 1060 m a.s.l., 41°22.5′S, 172° 17.5′E, on jagged granite within cascade, NW exposure in *Olearia colensoi* Hook.f. scrub, more or less submerged, 18 February 1987, *leg.* A. J. Fife *8030* (CHR). **Canterbury Region**: (3) Arthur's Pass National Park, Bealey Glacier Track, near the road, *ca* 900 m a.s.l., 42°55.121′S, 171°33.492′E, *Nothofagus solanderi* (Hook.f.) Oerst. forest with greywacke bedrocks, on wet and partially inundated rocks, 19 February 2013, *leg.* H. Bednarek-Ochyra & R. Ochyra *1058/13*, *1059/13*, *1060/13* & *1075/13* with V. Plášek & A. J. Fife (CHR, KRAM); (4) Arthur's Pass National Park, headwater of Twin Creek, vicinity of ski huts at base of Temple Basin, 4500–4750 ft a.s.l., 42°54′S, 171°34′E, low alpine snow-tussock and herbfield with boggy areas and stream gorge cut in greywacke bedrock, west exposure, in spray zone of waterfall, 26 November 1984, *leg.* A. J. Fife *6904* (CHR). **West Coast Region**: (5) Haast Pass area, Cross Creek, just upstream of Rte 6, 520 m a.s.l., 44°06′S, 160°21′E, on massive schist boulders in deep, moist stream gorge, with *Brachythecium plumosum* (Hedw.) Schimp., 24 January 2006, *leg.* A. J. Fife *12096* with M. Higuchi (CHR); (6) Mount Cook National Park, Tasman River Valley Track to Wakefield Waterfall, 43°44′S, 170°06′E, on acidic rocks in subalpine scrub with mesic cliff faces near base of waterfall, 19 December 1981, *leg.* D. H. Vitt *29457* (KRAM). **Southland:** (7) Mount Burns in the Hunter Mts in the southern part of the Fiordland National Park, 120 km northwest of Invercargill, Borland Road below Saddle toward Monowai, a small tributary of Borland Burn, 45° 44.822′S, 167°23.190′E, 975 m a.s.l., on wet stones and blocks in river bed, temporarily flooded with water, 1 March 2013, *leg.* H. Bednarek-Ochyra & R. Ochyra *2309/13*, *2317/13*, *2322/13*, *2342/13*, *2344 & 2345/13* with V. Plášek, J. Steel & A. Pritchard (CHR, KRAM); (8) Fiordland National Park, Routeburn Track, 1700ft a.s.l., 44° 48′S, 168°08′E, on rock near waterfall in shade of forest, 26 August 1973, *leg.* J. Child *4255 & 4327* (BM); (9) Fiordland National Park, Darran Mountains, Gertrude Valley, 810 m a.s.l., 44°46′S, 168°00′E, subalpine area with mosaic *Nothofagus menziesii* (Hook.f.) Oerst. forest, boulder field developed over avalanche rubble on valley floor, abundant on rocks and probably subject to some flooding, 21 November 1990, *leg.* A. J. Fife *9667* with B. Macmillan (CHR); (10) Te Anau, Boundary Creek, 210 m a.s.l., 45°25′S, 167°43′E, on lakeside boulders in full sun, 28 November 1970, *leg.* G. M. Taylor *s.n.* (AKU).

Although species of *Bucklandiella* Roiv. play an important role in the vegetation cover in New Zealand, especially in mountainous regions, until recently the genus has been taxonomically under investigated. However, intensive taxonomic research and field work during the last decade have contributed much to our knowledge of *Bucklandiella*, and its known diversity has increased in New Zealand to 12 species. Among these, three were described as new to science (Bednarek-Ochyra & Ochyra, 2010, 2011; Bednarek-Ochyra *et al.*, 2014), three others were newly added to the New Zealand's moss flora, for example *B. pycnotricha* (Müll.Hal.) Bednarek-Ochyra & Ochyra (Ellis *et al.*, 2014a), and two were reinstated from obsolescence, namely *B. elegans* (Müll.Hal.) Bednarek-Ochyra & Ochyra (Ellis *et al.*, 2011) and *B. chlorocarpa* (Paris) Bednarek-Ochyra & Ochyra (Bednarek-Ochyra, 2014).

Bucklandiella chlorocarpa is a very distinct aquatic species which shares its overall appearance and some structural characters, which are typical adaptations to rheophytic habitats, with *B. lamprocarpa* (Müll.Hal.) Bednarek-Ochyra & Ochyra. These include the leaf laminae that are variously 1–4-stratose and bordered distally by 2–5-stratose fleshy marginal limbidia with a variable number of cell rows. The limbidia extend from the base to the apex of the leaf where they are confluent with the salient costa and merge imperceptibly with the upper laminal cells. Similar leaf structures are found in many rheophytic species of moss growing in streams with swiftly flowing water and waterfalls (e.g. Ochyra, 1985a, 1985b, 1986, 1987; Ochyra & Enroth, 1989; Sérgio *et al.*, 1995; Ochyra *et al.*, 1998; Ochyra & Vanderpoorten, 1999; Ochyra & Bednarek-Ochyra, 2011; Ochyra & Shevock, 2012). Despite the similarity in leaf anatomy, *B. chlorocarpa* is easily distinguished from *B. lamprocarpa* in having a prominent, 2–3(–4)-

seriate basal marginal border composed of hyaline, pellucid cells which are usually obscured by the distinct recurvature of the proximal leaf margins; massive peristome teeth that are 460–580 μm long and 100–125 μm wide near the base, deeply purple below and strongly papillose with large warty papillae; and larger spores, 25–30(–40) μm in diameter. Additionally, these two species have distinctly vicariant distributions in the southern hemisphere. *Bucklandiella chlorocarpa* is an Australasian species, whereas *B. lamprocarpa* has its main centre of occurrence in southern South America, where it penetrates to the northern Andes (Bednarek-Ochyra, 2015). It also occurs in South Africa (Bednarek-Ochyra & Ochyra, 2012a; Ochyra & van Rooy, 2013) and on some subantarctic islands in the Kerguelen Biogeographical Province (Bednarek-Ochyra & Ochyra, 1998).

So far, *Bucklandiella chlorocarpa* has been recorded only once on the North Island in New Zealand (Hooker, 1867). It appears to be widespread and locally common and abundant on the South Island, especially in the northern regions and in Southland, but hitherto it has not been found in the Otago Region. Besides New Zealand, the species occurs frequently in Tasmania, whereas the literature reports from Îles Kerguelen are incorrect and actually refer to other species.

7. ***Bucklandiella striatipila*** (Cardot) Bednarek-Ochyra & Ochyra

Contributors: H. Bednarek-Ochyra and V. Plášek

Chile: XI Región Aysén del General Carlos Ibáñez del Campo, Provincia de General Carrera, 32 km west of Villa Cerro Castillo on Río Cajón, in grassland by the side of the Carretera Austral – Ruta 7, 46° 07′535″S, 72°33′605″W, 414 m a.s.l., on stones in open and insolated site at the roadside, 16 January 2015, *leg.* H. Bednarek-Ochyra & R. Ochyra *569/15* with V. Plášek (KRAM, SGO).

Apart from *Bucklandiella didyma* (Mont.) Bednarek-Ochyra & Ochyra and *B. lamprocarpa* (Müll.Hal.) Bednarek-Ochyra & Ochyra, *B. striatipila* is the third most widespread species of the genus in southern South America. In particular, it is common and locally abundant in the *Nothofagus* Blume zone in Chile at the western fringes of the continent, where it extends from Provincia de Ñuble in the VIII Región de Bío Bío to Provincia de la Antártica Chilena in the XII Región de Magallanes y de la Antártica Chilena on the mainland. It also has some isolated occurrences in the Islas de Juan Fernández archipelago (Robinson, 1975), which administratively belongs to Provincia de Valparaíso in the V Región de Valparaíso (Müller, 2009). Its frequency increases southwards and in the XII Región the species is known from all provinces. In the coterminous Región XI, *B. striatipila* is known from the provinces of Aisén (Müller, 2009), Coyhaique (Ellis *et al.*, 2016b) and Capitán Prat (Larraín, 2016) and herein the species is recorded from Provincia de General Carrera. Thus, the geographical range of the species covers the whole XI Región. In contrast, the species is infrequent and scattered in Argentina, extending from the Province of Neuquén to Isla Grande de Tierra del Fuego (Larraín, 2012 as *Racomitrium subcrispipilum* (Müll.Hal.) A.Jaeger). Outside mainland South America, it occurs in the Falkland Islands (Ochyra *et al.*, 2015a), subantarctic South Georgia in the South Atlantic Ocean (Bell, 1974), and the northern maritime Antarctic (Ellis *et al.*, 2013a), where it is evidently a postglacial immigrant (Birkenmajer *et al.*, 1985).

Bucklandiella striatipila is an Afro-American temperate species. It was erroneously recorded from New Zealand, but the voucher material proved to be a separate species, *B. allanfifei* Bednarek-Ochyra & Ochyra, which is only distantly related to *B. striatipila* (Bednarek-Ochyra & Ochyra, 2010; Bednarek-Ochyra *et al.*, 2014). The transatlantic distribution pattern is exhibited by over 80 tropical lowland and montane moss species (e.g. Ochyra *et al.*, 1992, 2002a; Bednarek-Ochyra *et al.*, 1999; Ochyra & Ireland, 2004, 2016; Ellis *et al.*, 2012a, 2012b). However, it is also represented by a relatively small group of south-temperate cool-adapted mosses (e.g. Ochyra & Lewis Smith, 1998; Ochyra *et al.*, 2002b, 2008a, 2014; Ochyra & Singh, 2008; Ochyra, 2010; Bednarek-Ochyra & Ochyra, 2012b; Ellis *et al.*, 2013c, 2015; Ochyra & Bednarek-Ochyra, 2013), which occur in a second centre of distribution in the subantarctic archipelagoes in the South Indian Ocean. *Bucklandiella striatipila* occurs commonly in the archipelagoes of Îles Crozet and Îles Kerguelen, and these highly disjunct centres of occurrence are bridged within the southern South American region by stations in Tristan da Cunha and Gough Island in the middle of the South Atlantic Ocean (south-temperate zone), as well as in the Cape Floral Region in South Africa (see Bednarek-Ochyra & Ochyra, 2013 and Ochyra *et al.*, 2015a for global distribution maps).

8. ***Campylopus introflexus*** (Hedw.) Brid.

Contributors: M. Puglisi and M. Privitera

Sicily: Lipari Island (Aeolian archipelago), Mt. Chirica, 38°30′16″N, 14°56′06″E, 550 m a.s.l., on dry, acidic sandy soil with *Archidium alternifolium* (Hedw.) Mitt., *Cephaloziella stellulifera* (Taylor *ex* Spruce) Schiffn., *Ceratodon purpureus* (Hedw.) Brid., *Didymodon vinealis* (Brid.) R.H.Zander, 8 April 2006, *leg.* M. Privitera & M. Puglisi *s.n.* (CAT).

Campylopus introflexus is known to be an alien invasive moss species in northern Europe and along the west coast of North America (Söderström, 1992).

It is widely distributed in its native range in the southern hemisphere, where it is known from southern South America, southern Africa, southern Australia and several South Atlantic and Pacific Islands. It was first discovered outside its native range in 1941 in Great Britain and then it rapidly invaded mainland Europe. It became common in many western countries and reached eastwards to Lithuania and Russia (Razgulyaeva *et al*., 2001), and southwards to central-northern Spain and the central-southern Italian peninsula (Klinck, 2010; Sparrius & Kooijman, 2011). In Italy, the species is rare, being recorded only in a few regions (Puglisi *et al*., 2015). The newly discovered locality, the first for this species in Sicily, marks the southern limit of the range of the species in Europe. As in other species of *Campylopus*, *C. introflexus* has a high ecological tolerance (Spagnuolo *et al*., 2014), and due to its biological features (e.g. numerous small spores and abundant vegetative propagation), is able to easily colonise open and disturbed places. It is most often found on acid sandy soils, on decaying logs and stumps, peat and occasionally on acid rocks. In the Sicilian locality, *C. introflexus* was found in shrubby vegetation with *Erica arborea* L., *Cistus* sp. pl., *Spartium junceum* L., *Genista tyrrhena* Valsecchi, *Cytisus aeolicus* Guss., referable to *Genistetum tyrrhenae* (Brullo *et al.*, 1977) Brullo in Brullo and Furnari (1994). Herein, it formed dark green turfs that were hoary when dry, with hair points typically reflexed to 90°. Considering the high invasive ability of the species, and taking into account the further southward extension of its range to Sicily, the search for *C. introflexus* should be intensified in the whole Italian territory and its occurrence monitored over time.

9. ***Campylopus subulatus*** Schimp. *ex* Milde

Contributors: V. E. Fedosov, O. Yu. Pisarenko, M. S. Ignatov, E. A. Ignatova and V. A. Bakalin

Russia: Primorsky Territory, Chuguevka District, Oblachnaya Peak, 43°42′N, 134°12′E, *ca* 1700 m a.s.l., on soil in alpine meadow, 18 August 2007, *leg.* Ignatov & Ignatova *s.n.* (MHA); Olginsky District, vicinity of Timofeevka Settlement, Japan Sea coast, 43°53′01″N, 135°30′36″E, *ca* 30 m a.s.l., on soil in disturbed moist meadow, 28 August 2016, *leg.* Fedosov, Pisarenko & Bakalin *s.n.* (MW, NSK).

This species has a scattered distribution, mainly in temperate mountainous regions of the Holarctic. It has been recorded in Russia for the Kola Peninsula, Caucasus, Altai, Zabaikalsky Territory, Yakutia, Kamchatka and Chukotka (Ignatov *et al*., 2006). The present locality is the first in the southern part of the Russian Far East. It is more than 1500 km distant from the nearest other localities for the species in China, Mongolia, Zabaikalsky Territory and Kamchatka.

10. ***Cephaloziella elachista*** (J.B.Jack *ex* Gottsche & Rabenh.) Schiffn.

Contributor: R. Natcheva

Bulgaria: Samokov Region, Rila Mt., Central Rilski Strict Reserve: in *Sphagnum*-dominated mire above Beli Iskar dam, below Kanarski lakes, 42.100781°N, 23.52221°E, 2205 m a.s.l., 09 July 2015, collected with immature perianths, *leg.*/*det.* R. Natcheva *9486, 9487* (SOM-B).

In Bulgaria, *Cephaloziella elachista* grows among *Sphagnum capillifolium* (Ehrh.) Hedw. and *Dicranum bonjeani* De Not., or forms thin mats on bare peat, and is also associated with *Gymnocolea inflata* (Huds.) Dumort., *Scapania undulata* (L.) Dumort. and *Cephalozia bicuspidata* (L.) Dumort. At the present site, the species was relatively common in suitable microniches. Bulgarian plants are characterised by thin-walled cortical cells, (15–)17–38(–40) μm long, and a smooth cuticle. (This contrasts with the closely related *Cephaloziella spinigera* (Lindb.) Jörg., in which the cortical cells are 12–15 × 25–35 μm long and relatively thick-walled, with the cuticle striolate). Most leaves had a distinct spiniform, recurved tooth on one or both sides at the base and the female bracts had long acuminate teeth.

Cephaloziella elachista is a suboceanic species that has an amphi-atlantic distribution, being recorded in Europe and the eastern part of North America; it is also known from Siberia (Damsholt, 2002). In Europe, the species is more common to the west and north, where it is usually not threatened, although it is classified as NT in Great Britain (Hodgetts, 2011) and as VU in Estonia (Vellak *et al*., 2015). It is rarer in Central Europe: Austria—EN (Saukel & Köckinger, 1999), the Czech Republic—EN (Kučera *et al*., 2012), Germany—EN (Ludwig *et al*., 1996), and Switzerland—VU (Schnyder *et al*., 2004). In south east Europe, *C. elachista* is known only from Romania (EN, Ştefănuţ & Goia, 2012) and Slovenia (DD, Hodgetts, 2015).

11. ***Didymodon nicholsonii*** Culm.

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

Slovenia: Ljubljana, Trnovo, Murgle, on, wet and shaded concrete and rocks by the river Mali Graben, 46.031707°N, 14.494809°E, 21 November 2012, *leg.* M. S. Sabovljević & A. D. Sabovljević *s.n.*, *det.* Aneta D. Sabovljević, Mitja Skudnik and Marko S. Sabovljević (BEOU bryophyte collections *s.n.*).

Slovenia has a rich bryophyte flora (Sabovljević *et al.*, 2001, 2011), and is situated among bryologically well-known countries in the Balkans. Recent bryological investigations in Slovenia have been rather infrequent (e.g. Kutnar and Martinčič, 2008; Martinčič, 2008, 2014; Skudnik *et al*., 2013a, 2013b). Even though new bryological records have been reported

either from old collections (Sabovljević *et al.,* 2010) or from new field investigations (Martinčič, 2008, 2014; Blockeel *et al*., 2009; Ellis *et al.*, 2014b), many bryophyte reports remain based on citations in old literature (Martinčič, 2003).

Didymodon nicholsonii was stated to be quite rare in Europe (Jimenez *et al.,* 2003). However, it has lately been added to the bryophyte flora in many peri-Mediterranean countries (Jimenez *et al.,* 2003; Ellis *et al.*, 2015). Despite these new records, this suboceanic–submediterranean species still remains quite rare. Here, we report *D. nicholsonii* as new to Slovenia (not recorded for this country in Ros *et al.*, 2013). In neighbouring regions, it is known from the Apennine and Balkan Peninsulas, namely from Italy (single locality), Serbia (single locality) and Greece (three localities on the mainland and a single locality in Crete) (Jimenez *et al.*, 2003; Ellis *et al.*, 2015). All of these recent reports from Italy and Greece were based on revised historical herbarium material (2000 and older), while the Serbian material was collected during recent field investigations.

12. ***Grimmia meridionalis*** (Müll.Hal.) E.Maier

Contributors: J. Pantović, N. Nikolić and M. S. Sabovljević

Macedonia (Former Yugoslav Republic): Kula pr. Kapina (Mt. Karadžica), *sine dato*, *leg*. Teodor Soška *s.n.* (BEO bryophyte collections *s.n.*); Poreče Basain by Makedonski Brod, 16 August 1940, *leg.* Oleg Grebenščikov *s.n.* (BEO bryophyte collections *s.n.*), *det.* Jovana Pantović, Nada Nikolić and Marko S. Sabovljević

During the identification and revision of some forgotten and unprocessed bryophyte material in the Natural History Museum, Belgrade (BEO), we came across a collection by Tedor Soška (1876–1948) and one by Oleg Grebenščikov (1905–1980), who undertook collecting trips in Macedonia in the 1940s. Both specimens lacked ecological data, but represented *Grimmia meridionalis*, which with reference to Ros *et al.* (2013), is new to Macedonia.

Maier (2010) treats *G. meridionalis* as morpho-anatomically distinct, but related to *G. trichophylla* Grev., *G. lisae* De Not. and *G. dissimulata* E.Maier. This is in accordance with phylogenetic results based on the plastid DNA sequences as shown by Streiff (2006). *G. meridionalis* is known in the peri-Mediterranean areas, while in the Balkans, it was recorded from Greece, neighbouring Turkey and Cyprus.

13. ***Haplocladium discolor*** (Broth. & Paris) Broth.

Contributors: O. Yu. Pisarenko, V. E. Fedosov, M. S. Ignatov, E. A. Ignatova and V. A. Bakalin

Russia: Primorsky Territory, the boundary between Khorolsky and Khankaisky Distr., 44°34′N, 132°04′E, *ca* 70 m a.s.l., edge of macadam road A-182 near Melgunovka Creek Bridge, October 2008, *leg.* Ignatov *s.n.* (MHA); upper level of flood plain of Melgunovka Creek valley, on soil under willow canopy in meander zone of the river, 23 August 2016, *leg.* Pisarenko, Fedosov & Bakalin *s.n.* (MW, NSK).

Haplocladium discolor is an East Asian species, which occurs in China, Korea and Japan (Noguchi *et al*., 1991; Wu *et al*., 2002). The new locality is the only one known in Russia and the northernmost station worldwide.

14. ***Hydrogonium gregarium*** (Mitt.) Jan Kučera

Contributors: V. E. Fedosov, O. Yu. Pisarenko and V. A. Bakalin

Russia: Primorsky Territory, Partizansk District, Lozovyj Range (Chandolaz Mt.) S-facing slope, 43° 00′05″N, 133°00′03″E, *ca* 600 m a.s.l., oak forest with *Lespedeza bicolor* Turcz., calcareous rock outcrops along a road, in crevices, 8 September 2013, *leg.* Ignatov, Ignatova, Malashkina *et al*. *13–1901* (MHA, MW); Primorsky Territory, Dalnegorsky District, vicinity of Dalnegorsk Town, W-facing steep slope of Barachny Creek, 44°34′48″N, 135° 33′8″E, *ca* 220 m a.s.l.; abundant on exposed limestone cliffs, 26 August 2016, *leg.* Pisarenko, Fedosov & Bakalin *s.n*. (MW, NSK).

Hydrogonium gregarium is a species with its main distribution in the Himalayas and Japan with scattered occurrences in Pacific North America. Recently, it was reported for Russia from the Yakutia Republic (Ignatova *et al.*, 2013; Ivanova *et al*., 2016). The new locality is the first for the Russian Far East. The specimens from the Dalnegorsky District differ from those, collected in Yakutia (*cf*. Ignatova *et al*., 2013) in having green, rather than red-brown gemmae.

15. ***Hymenoloma antarcticum*** (Müll.Hal.) Ochyra

Contributors: H. Bednarek-Ochyra and M. Lebouvier

Îles Crozet, Île de la Possession: (1) plateau 2 km south of Port Alfred Station and 2 km south-east of Mont Branca, 185 m a.s.l., 46°44′59.6″S, 51°41′35.4″E, on bare ground covered with scoria in a dry and exposed situation in the fellfield, associated with *Bucklandiella membranacea* (Mitt.) Bednarek-Ochyra & Ochyra, *Ditrichum strictum* (Hook.f. & Wilson) Hampe, *Bartramia patens* Brid., *Guembelia kidderi* (James) Ochyra & Żarnowiec and *Racomitrium lanuginosum* (Hedw.) Brid., 11 November 2006, *leg.* R. Ochyra *181/06* (KRAM); (2) 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 situations, associated with *Valdonia microcarpa* (Mitt.) Ochyra, *Racomitrium lanuginosum*, *Hymenoloma insulare* (Mitt.) Ochyra, *H. dryptodontoides* (Müll.Hal.) Ochyra and *Ditrichum subaustrale* Broth., 22 November 2012, *leg*. R. Ochyra *3080/12* (KRAM).

Hymenoloma antarcticum is a pantemperate holantarctic species, common in temperate regions in New Zealand, Tasmania, south-eastern Australia, southern Africa and southern South America, occasionally penetrating into the tropics at high elevations in the Andes (Ochyra & Bednarek-Ochyra, 2015). Moreover, it has been recorded from most subantarctic islands, where it may be considered either as a pre-glacial survivor or post-glacial immigrant (Van der Putten *et al.*, 2004, 2009, 2010), and it extends to the maritime Antarctic to *ca* 69°S (Ochyra *et al.*, 2008b). Surprisingly, the species has not hitherto been recorded from Îles Crozet in the Subantarctic, although its occurrence in this archipelago is indicated on the map of its global distribution (Ochyra *et al.*, 2008b). *Hymenoloma antarcticum* would be expected to occur there, as there are no reasons that could prevent its occurrence in this area. In Îles Crozet, as on other islands of the Kerguelen Biogeographical Province, *H. antarcticum* seems to be an uncommon species, growing on rocks, bare ground and rock outcrops in the fellfield. Herein are cited two exemplary records that substantiate the information on the map of its world distribution. The moss flora of Îles Crozet consists currently of over 70 species, over 30 species having been discovered during exploratory activities in recent decades (e.g. Blockeel *et al.*, 2006, 2007; Cano, 2008; Ellis *et al.*, 2013b, 2013d, 2014b, 2016a, 2017; Ochyra *et al.*, 2015b).

16. ***Molendoa warburgii*** (Crundw. & M.O.Hill) R.H.Zander

Contributors: N. Hodgetts, N. Lönnell, T. Hallingbäck and M. Lüth

Sweden: Västerbotten, Lycksele Lappmark, Rödingsnäset, scattered shoots growing through biotic crusts on irrigated vertical base-rich rock faces by the Ruthjiejohke river, 65.850867°N, 14.76155°E, 520 m a.s.l., 8 August 2016, *leg.* N. Hodgetts *9145* (S); in the same habitat a few hundred metres upstream, 65.863561°N, 14.755758°E, 540 m a.s.l., 8 August 2016, *leg.* T. Hallingbäck & M. Lüth *s.n.* (S); and by a small tributary brook just above the forest line, 65.860974°N, 14.742111°E, 690 m a.s.l., 8 August 2016, *leg.* N. Lönnell *4080* (S), Hodgetts *9145* and Lönnell *4080 det.* N. Hodgetts, *conf.* G. Rothero. (Also seen higher up the hill, on irrigated phyllite rock exposures, 65.861917°N, 14.730883°E, 790 m a.s.l.)

This species has been known in Britain since its discovery in the Outer Hebrides by E. F. Warburg in 1946. However, it was not described as a new species until 1977 (Crundwell & Hill, 1977), being facetiously referred to as 'the moss' during the intervening time. Originally regarded as endemic to Britain and Ireland, it was later found in the Faroe Islands (Averis & Averis, 1991), Iceland (Jóhannsson, 2003) and Norway (Birks, 1992). It is therefore not surprising that it also occurs in the mountains of Sweden, and can be expected at further localities in Scandinavia. The habitat in Sweden is absolutely typical of its habitat elsewhere. The Swedish specimens are very similar to specimens collected in Scotland, but the leaves are perhaps a little less obtuse.

17. ***Orthotrichum dentatum*** T.Kiebacher & Lüth

Contributor: T. Kiebacher

Austria: Tyrol, Innsbruck, at the Innpromenade, 47° 15′38.6″N, 11°22′46.1″E, 576 m a.s.l., parkway, on bark of deciduous tree, 15 April 2016, *leg.* T. Kiebacher (priv. herb. T. Kiebacher 1074).

Orthotrichum dentatum has recently been described from the Italian and Swiss Alps (Kiebacher & Lüth, 2017) and has now also been found in western Austria in the town of Innsbruck. This locality is approximately 60 km north of the nearest known locality in the province of South Tyrol in northern Italy (Weißenbach; Kiebacher & Lüth, 2017). In the town of Innsbruck, *O. dentatum* has been observed on a couple of trees (one locality is cited above). It seems that the species performs well in urban environments where tree barks are characterised by high nutrient levels (Stapper & Kricke, 2004; Saipunkaew *et al.*, 2007). *Orthotrichum dentatum* is most similar to *O. schimperi* Hammar and differs from the latter in that it has denticulate to dentate leaf apices, strongly keeled leaves and a hairy calyptra (Kiebacher & Lüth, 2017).

18. ***Orthotrichum denticulatum*** Lewinsky

Contributors: J. A. Calleja, R. Garilleti, V. Mazimpaka, B. Vigalondo and F. Lara

Kenya: Meru County, Mt Kenya, Sirimon Gate, 00° 00′18″N, 037°14′47″E, 2650 m a.s.l., on *Olea* sp. trunks at the edge of evergreen forest, 12 August 2014, *leg.* F. Lara *1408/03,* with R. Garilleti, B. Vigalondo & J. A. Calleja (MAUAM 4892). *Ibidem*, close to Old Moses Camp, 00°02′55″S, 037° 17′12″E, 3400 m a.s.l., ericaceous belt, on basal branches of an isolated *Erica trimera* (Engl.) Beentje, *leg.* F. Lara *1408/06*, with R. Garilleti, J. A. Calleja & B. Vigalondo, 13 August 2014 (MAUAM 4893).

Tanzania: Arusha Region, Ngorongoro Conservation Area, Nainokanoka village, garden area with autochthonous woody species, 03°01′33″S, 035°41′08″E, 2665 m a.s.l., on trunk of *Gnidia glauca* (Fresen.) Gilg, 28 August 2014, *leg.* F. Lara *1408/67,* with R. Garilleti, B. Vigalondo & J. A. Calleja (MAUAM 4894).

Orthotrichum denticulatum is a rare epiphytic moss found in the mountains and highlands of Eastern Africa, where it has been previously recorded from only four localities: Nekemte and Belleta Forest near Shebe in Ethiopia, Mt Gahinga (Volcanoes National Park) in Rwanda and Lake Kusare (Arusha National

Park) in Tanzania (Lewinsky, 1978; O'Shea, 2006). Its ecological preferences remain poorly documented, other than it has been recorded growing between 1700 and 2700 m a.s.l., and as an epiphyte on *Neoboutonia macrocalyx* Pax (Lewinsky, 1978). Our findings provide the first two records for Kenya and an additional one for Tanzania, with an increase in the available information on its ecology (altitudinal range and habitat preference) in Eastern Africa.

In Kenya, the species has been found on Mt Kenya in two very different vegetation and altitudinal belts: 1) at an altitude of 2650 m, on a trunk of *Olea* sp. at the edge of a well-preserved orotropical montane forest (Bussmann, 2006) dominated by *Juniperus procera* Hochst. *ex* Endl., *Olea* sp. and *Podocarpus latifolius* (Thunb.) R.Br. *ex* Mirb., among other evergreen woody plants; and 2) at an altitude of 3400 m, on branches of *Erica trimera* (Engl.) Beentje within a fragmented and after-fire resprouting altotropical Ericaceous shrubland (Bussmann, 2006) codominated by *Stoebe kilimandscharica* O.Hoffm and heaths (*Erica* sp. pl.) along with *Alchemilla argyrophylla* Oliv., *Helichrysum* sp. pl. and *Protea caffra* Meisn. subsp. *kilimandscharica* (Engl.) Chisumpa & Brummitt. In Tanzania, *O. denticulatum* has been gathered in the Ngorongoro region, at an altitude of 2665 m, on a trunk of *Gnidia glauca* in a small garden on the periphery of a Maasai village surrounded by habitats disturbed by traditional farmland activities.

Orthotrichum denticulatum is a small epiphytic moss, less than 1.0 cm tall, which is easily recognised by several sporophytic and gametophytic traits. It is a cryptopore species, with capsules immersed to shortly emergent, strongly ribbed and contracted when dry, and characteristically with ovate-lanceolate leaves ending in a short, frequently irregularly denticulate awn. However, the leaves of this species are quite variable. The leaf apex consists of a short, thin and fragile awn that can be yellowish or partially hyaline and irregularly dentate, more or less denticulate or almost entire at margins. At their apex, leaves taper into the awn, but sometimes suddenly narrow, forming a well-differentiated apiculus. Individuals with apiculate and dentate leaves are particularly easy to identify, even in the field, but often the leaf apices are less striking. Lewinsky (1978) stated that the leaf width could vary among populations, being more broadly ovate in Ethiopia than in Rwanda and Tanzania. This leaf variability has also been found among the new populations. The higher altitude population on Mt. Kenya has plants with broad leaves, comparable to those from Ethiopia, whereas the lower altitude population on that mountain, as well as the new Tanzanian population, has plants with ovate-lanceolate leaves as described by Lewinsky (1978) for the territories south of the equator.

19. ***Orthotrichum schofieldii*** (B.C.Tan & Y.Jia) B.H.Allen

Contributors: Z. Skoupá and Q. H. Wang

China, Gansu Province: SE of the province, Diebu County, Duoer tree farm, 2550 m a.s.l., 30 July 1998, *leg.* M. Z. Wang *54349*, *det.* Q. H. Wang, *teste* Z. Skoupá & V. Plášek, (PE#01086856).

Two species, formerly placed within the genus *Orthomitrium*, *O. schofieldii* B.C.Tan & Y.Jia and *O. tuberculatum* Lewinsky-Haapasaari & Crosby, have been reported from China (Lewinsky-Haapasaari & Crosby, 1996; Lewinsky-Haapasaari, 1999). However, this genus was subsequently placed by Allen (2002) into *Orthotrichum*, as O. *schofieldii* (B.C.Tan & Y.Jia) B.H.Allen and *O. jetteae* B.H.Allen.

The occurrence of *Orthotrichum schofieldii* in China is known only from Qinghai Province in the western part of the country, while *O. jetteae* was collected from Guizhou and Hunan Provinces in southern part of China (Jia *et al*., 2011). Neither species has been reported from Gansu Province. The specimen cited above was collected by M. Z. Wang in 1998, and was subsequently identified by Q. H. Wang. During a visit to the Chinese National Herbarium in Beijing (PE) in 2015, the identification was confirmed. This epiphytic species is a new addition to the moss flora of Gansu Province of China. GPS coordinates and detailed ecological data were not available.

Orthotrichum schofieldii differs from *O. jetteae* in having the walls of basal leaf cells only moderately thick to thin and non-nodulose (Tan & Jia, 1997). Moreover, *O. schofieldii* has a longer seta than *O. jetteae* and the vaginula hairs are often branched (Lewinsky-Haapasaari & Crosby, 1996; Lewinsky-Haapasaari, 1999). The most important differences between these two species are the features of the spores and peristome. In *O. schofieldii*, the spores are unicellular and the peristome linear, while in *O. jetteae* spores are multicellular and the peristome wide and truncate.

20. ***Orthotrichum stellatum*** Brid.

Contributors: V. Plášek, A. Nowak and M. Nobis

Georgia: Lesser Caucasus range, Adjara region, *ca* 15 km NE of Batumi town, between Khala and Chakvistskali villages, valley of the Chakvistskali River, Mitrala National Park, along a public road, on bark of *Pterocarya fraxinifolia* Spach, (WGS 84): 41°41′14.0″N, 41°49′49.0″E, *ca* 200 m a.s.l., 1 May 2015, *leg*. A. Nowak & M. Nobis *s.n.* (OSTR #B1862), *det*. V. Plášek.

A total of 17 taxa of the broadly understood genus *Orthotrichum* Hedw. have so far been reported from Georgia (Chikovani & Svanidze, 2004; Kürschner *et al*., 2013; Ellis *et al*., 2016b) and herein one more epiphytic species of this genus, *O. stellatum*, is added

to the bryoflora of the country. The species was collected in 2015 during the Polish Botanical Expedition to Georgia. It was collected near a public road towards the Mitrala National Park from the bark of a *ca* 120-year-old *Pterocarya fraxinifolia* Spach, and the plants produced sporophytes in great profusion. The mountainous area is considered the most humid in Georgia with an annual precipitation of more than 4000 mm. The main vegetation types on the valley slopes are pristine Colchic humid broad-leaved and mixed forests that are relicts of ancient Tertiary evergreen woods. *Orthotrichum stellatum* was found growing together with *O. pumilum* Sw. and *Ulota crispa* (Hedw.) Brid. agg.

Orthotrichum stellatum is a species with a disjunct transatlantic distribution. It occurs in eastern North America, Europe and locally in western Asia (*cf.* Schäfer-Verwimp, 2001; Lara & Garilleti, 2014). In Europe, its geographical range stretches from Norway, across Central Europe (Czech Republic, Hungary) to the Mediterranean and south-eastern Europe, extending to the Pontic Mountains in Turkey. The latter is the only known locality for the species in Asia.

21. ***Oxymitra incrassata*** (Brot.) Sérgio & Sim-Sim

Contributor: J. Larraín

Chile: Región de Valparaíso, Provincia de Valparaíso, Comuna de Valparaíso, Reserva Nacional Lago Peñuelas, en suelo de espinal de *Acacia caven* Molina, sendero 'las orquídeas', en sitio abierto, 350 m a.s.l., 33°10′57.7″S, 71°29′13.1″W, 13 July 2016, *leg*. J. Larraín *40318* (CONC); sector Este de la reserva, en suelo de bosque esclerófilo abierto, con *Peumus* Molina, *Maytenus* Molina & *Azara* Ruiz & Pav., 33°11′22.5″S, 71°26′35.7″W, 20 July 2016, *leg*. J. Larraín *40373* (CONC); Comuna de Quilpué, orilla de tranque junto a la Ruta F-50 entre Villa Alemana y Lo Orozco, a medio camino entre Los Quillayes y la viña Catrala, en suelo de matorral abierto de *Lithrea* Miers *ex* Hook. & Arn., *Colliguaja* Molina, *Acacia* Mill. & *Trevoa* Miers *ex* Hook., 259 m a.s.l., 33°10′01.0″S, 71°21′01.3″W, 25 July 2016, *leg*. J. Larraín *40519* (CONC); Provincia de Petorca, Comuna de la Ligua, Los Molles, parque privado Puquén, en suelo expuesto entre matorrales de *Bahia ambrosioides* Lag., *Baccharis* L., *Lithrea caustic* Hook. & Arn., *Pouteria splendens* (A.DC) Kuntze & *Fuchsia lycioides* Andrews, 20 m a.s.l., 32°14′17.9″S, 71°31′19.4″W, 31 July 2016, *leg*. J. Larraín *40632* (CONC).

Oxymitra incrassata is a characteristic species of Mediterranean habitats and dry areas with a wet season and mild winters (Schuster, 1992; Bischler & Jovet-Ast, 2004). It is one of two species in the genus *Oxymitra* Lindenb., with the other taxon endemic to South Africa (Perold, 1993). It is readily distinguishable from *Riccia* L. species by the conspicuous pyriform involucres arranged in two rows along the median sulcus, which contain the sporophytes, the hyaline ventral scales projecting far beyond the margins of the thallus, and the epidermal pores surrounded by a ring of cells with thickened radial walls.

This taxon was incidentally mentioned for Chile (as *O. paleacea* Bisch., no voucher indicated) by Hässel de Menéndez & Villagrán (2007) when describing the taxa accompanying the new species *Fossombronia valparaisiana* Hässel, but was not listed for Chile in the checklist by Hässel de Menéndez and Rubies (2009). Consequently, these are the first specimens ever reported for the country. *Oxymitra incrassata* seems to be a common component of the ephemeral bryophyte flora of central Chile, where it grows on bare neutral soils on dry coastal shrublands or *Acacia* savannahs.

The general distribution of this species includes the whole Mediterranean basin in Europe and North Africa, reaching north to the Czech Republic, Hungary and Romania, and west to south-west Asia, it is also known from North America (Texas, Oklahoma, Kansas) and South America from Brazil, Paraguay and Argentina (Hässel de Menéndez, 1962; Schuster, 1992; Bischler and Jovet-Ast, 2004).

22. ***Plagiothecium latebricola*** Schimp.

Contributor: M. F. Boiko

Ukraine: Steppe Zone, Mykolaiv oblast, Ochakiv district, village Vacylivka. Nacional Park 'Biloberezzja Sviatoslava', natural boundary 'Komendats'ke', 46.52032°N, 031.66748°E, found on fallen branches of rotten wood in low areas of the sands, with *Aulacomnium palustre* (Hedw.) Schwägr., *Bryum capillare* Hedw. & *Hypnum cupressiforme* Hedw., in large grove in *Populus tremula* L., *Alnus glutinosa* (L.) Gaertn., *Quercus robur* L. forests, 20 July 2016, *leg.* M. Zakharova *s.n.*, *det.* M. F. Boiko (KHER).

This find of *Plagiothecium latebricola* is the first for the steppe zone of the Ukraine. The species grows in many regions of the world, but most often occurs in the boreal zone of Europe, Asia and North America. However, in all localities it is very rare. *P. latebricola* occurs on rotten wood and humus-rich soil in the forests of *Alnus* Mill., *Betula* L., *Populus* L. and others. Southerly penetration of the species from the boreal zone to the forested river banks in the steppe zone is very rare (Boiko, 2009). The copious production of four-celled fusiform gemmae from the tips of the leaves is typical of this species.

23. ***Struckia enervis*** (Broth.) Ignatov, T.J.Kop. & D.G.Long

Contributors: M. S. Ignatov, E. A. Ignatova, V. E. Fedosov and O. Yu. Pisarenko

Russia: Yakutia Republic, Tomponsky Distr., Sette-Daban Range, valley of right tributary of Segenyakh Creek 2.5 km upstream from road crossing Yakutsk–

Magadan, 63°03′N, 137°57′E, 520 m a.s.l., in niches among boulders, 16 July 2015, *leg.* Ignatov & Ignatova *15–450* (MHA). Khabarovsk Territory, southern spurs of Badzhalsky Range, E-facing steep slope of Yarap River valley 50°18′N, 134°43′E, *ca* 650 m a.s.l., abundant in shaded moist niches of andesite rock, 1 August 2016, *leg*. Fedosov & Pisarenko *s.n.* (MW, NSK).

The species is known to be endemic to central Asia, having been reported from a few disjunctive localities in the mountains of south Siberia, Mongolia and China (Ignatov *et al*., 2007). Among the newly reported localities, the one from Yakutia is the most northern and eastern worldwide, while the second, from Khabarovsk Territory, is the first locality of the species in the Russian Far East.

24. ***Tortula canescens*** Mont.

Contributors: S. Poponessi and M. Aleffi

Italy: Basilicata—Matera city 'Sasso Barisano', World Heritage Site (UNESCO). 46°40.051′N, 16° 36.565′E, *ca* 374 m. a.s.l, on unshaded wall in the 'Sassi', 31 August 2016, *leg.* S. Poponessi *s.n.*, *det.* S. Poponessi and M. Aleffi (PERU).

Together with *Didymodon insulanus* (De Not.) M.O.Hill, *Tortula canescens* was found on a wall of 'Calcarenite di Gravina', a type of limestone for building houses. In Europe, *D. insulanus* is assigned to the mediterranean-temperate phytogeographical element (Dierßen, 2001). The present report of *T. canescens* is the first for the Basilicata Region. Its presence in the Apennine peninsula has only recently been confirmed: Umbria, Emilia Romagna, Tuscany, Marches, Latium, Molise, Campania, Calabria, Sardinia and Sicily (Aleffi *et al*., 2008; Poponessi *et al*., 2014).

The distribution of this species is restricted to Europe and the Mediterranean area. It is listed as *Critically Endangered* in Switzerland, *Endangered* in Bulgaria, *Vulnerable* in Luxembourg, *Risk assumed* in Germany (Hodgetts, 2015). Its Mediterranean distribution, including Bulgaria, Canary Islands, Corsica, Egypt, Spain, France, Greece, Israel, Morocco, Madeira, Montenegro, Portugal, Sardinia, Sicily, Slovenia and Syria, has only recently been confirmed (Ros *et al*., 2013).

Tortula canescens differs from *T. muralis* Hedw. in having the leaf margin plane or only slightly recurved in the middle of the leaf and in the peristome teeth being united into a tube, becoming free above; in *T. muralis*, the peristome teeth are completely free (Lockhart *et al*., 2012). The discovery of this species is interesting because it is located in a habitat where it is more common to find *T. muralis*.

Acknowledgements

This work was supported by The Natural History Museum, London (BM).

The contributions by H. Bednarek-Ochyra were financially supported by the Polish National Science Centre through grant N N 303 796 940. She is also grateful to the Curators at AKU, BM and CHR for the loan of herbarium material. The field work of Marc Lebouvier on Îles Crozet was organised within the programme 136 ECOBIO of the French Polar Institute (IPEV). The contributions of V. Plášek and Z. Skoupá were financially supported by EU structural funding Operational Programme Research and Development for Innovation, project No. CZ.1.05/2.1.00/03.0100 and the Ministry of Education, Youth and Sports of the Czech Republic in the 'National Feasibility Program I', project LO1208 'TEWEP'. N. Hodgetts, N. Lönnell, T. Hallingbäck and M. Lüth are grateful to Gordon Rothero for confirming their specimens as *Molendoa warburgii.* Nick Hodgetts would like to thank Lars Söderström for confirming the identity of his specimen of *Blepharostoma trichophyllum* subsp. *brevirete* and Mrs Jean Paton for helpful correspondence. He is also grateful to Scottish Natural Heritage, especially Dr David Genney, for the contract in which the subspecies was recorded.

Juan Larraín thanks CONAF for the collecting permits given for Reserva Nacional Lago Peñuelas. His contribution was possible owing to a FONDECYT postdoctoral grant given to JL (project no. 3160556). The work of V. Fedosov, O. Pisarenko and V. Bakalin was partly supported by RFBR Grant # 15-34-20101, and that of M. Ignatov and E. Ignatova was partly supported by Grant # 14-50-00029 'Scientific basis of the national biobank—depository of the living systems' (branch 'Plants') from the Russian Science Foundation (RNF). The contribution by J. A. Calleja, R. Garilleti, V. Mazimpaka, B. Vigalondo and F. Lara was supported by the Spanish Ministries of Economy and Competitiveness (CGL2013-43246-P), and Science and Innovation (CGL2011–28857/BOS), and by the Ajuts a Grups de Recerca Consolidats–2014/SGR/00514.

Taxonomic Additions and Changes: Nil.

References

Afonina, O.M. & Czernyadjeva, I.V. 1995. Mosses of the Russian Arctic: check-list and bibliography. *Arctoa*, 5: 99–142.

Aleffi, M., Tacchi, R. & Cortini Pedrotti, C. 2008. Check-list of the hornworts, liverworts and mosses of Italy. *Bocconea*, 22: 1–255.

Allen, B.H. 2002. Moss flora of Central America, Part 2. Encalyptaceae–Orthotrichaceae. *Monographs in Systematic Botany from the Missouri Botanical Garden*, 90: 1–639.

Allen, B. & Magill, R.E. 2003. A revision of *Pilotrichella* (Lembophyllaceae, Musci). *Acta Academiae Paedagogicae Agriensis*, *Sectio Biologicae*, *Nova Series*, 24: 43–83.

Allorge, V. & Allorge, P. 1946. Notes sur la flore bryologique de la Péninsule Ibérique. X. Musciées du sud et de l'est de l'Espagne. *Revue Bryologique Lichénologique*, 15: 172–200.

Averis, A.B.G. & Averis, A.M. 1991. *Acrobolbus wilsonii* and *Anoectangium warburgii* new to the Faroe Islands. *Journal of Bryology*, 16: 641–2.

Bednarek-Ochyra, H. 2014. Nomenclatural entanglements associated with *Racomitrium chlorocarpum* (Grimmiaceae). *Phytotaxa*, 188(3): 153–61.
Bednarek-Ochyra, H. 2015. *Bucklandiella lamprocarpa* (Musci, Grimmiaceae) in the Central and Northern Andes. *Cryptogamie, Bryologie*, 36(1): 81–90.
Bednarek-Ochyra, H. & Ochyra, R. 1998. *Racomitrium lamprocarpum* (Müll. Hal.) Jaeg.—an addition to the moss flora of Îles Kerguelen and the Subantarctic. *Journal of Bryology*, 20(2): 525–8.
Bednarek-Ochyra, H. & Ochyra, R. 2003. *Racomitrium patagonicum*, a new moss species from southern South America. *Journal of Bryology*, 25(3): 181–7.
Bednarek-Ochyra, H. & Ochyra, R. 2010. *Bucklandiella allanfifei* (Grimmiaceae), a new moss species from New Zealand, with a note on South American *B. striatipila*. *Journal of Bryology*, 32(4): 245–55.
Bednarek-Ochyra, H. & Ochyra, R. 2011. *Bucklandiella angustissima* sp. nov. (Grimmiaceae), a new austral amphipacific species with the smallest capsules and the shortest setae in the genus. *Cryptogamie, Bryologie*, 32(1): 13–27.
Bednarek-Ochyra, H. & Ochyra, R. 2012a. The taxonomic status of *Racomitrium capense* (Bryophyta, Grimmiaceae) from South Africa. *Cryptogamie, Bryologie*, 33(2): 97–106.
Bednarek-Ochyra, H. & Ochyra, R. 2012b. A consideration of *Bucklandiella* (Bryophyta, Grimmiaceae) in South America, with a taxonomic re-assessment of *Racomitrium looseri*. *Nova Hedwigia*, 95(1–2): 153–63.
Bednarek-Ochyra, H. & Ochyra, R. 2013. Diversity of Grimmiaceae subfam. Racomitrioideae in sub-Saharan Africa, including an addition of *Bucklandiella striatipila* to the moss flora of the continent. *Cryptogamie, Bryologie*, 34(1): 3–12.
Bednarek-Ochyra, H., Ochyra, R. & Buck, W.R. 1999. The genus *Racomitrium* (Grimmiaceae) in Brazil, with the first report of *R. subsecundum* in South America. *Brittonia*, 51: 93–105.
Bednarek-Ochyra, H., Ochyra, R., Sawicki, J. & Szczecińska, M. 2014. *Bucklandiella seppeltii*, a new species of Grimmiaceae from Australasia and its phylogenetic position based on molecular data. *Turkish Journal of Botany*, 38: 1214–28.
Bell, B.G. 1974. A synoptic flora of South Georgian mosses: V. *Willia* and *Racomitrium*. *British Antarctic Survey Bulletin*, 38: 73–101.
Birkenmajer, K., Ochyra, R., Olsson, I.U. & Stuchlik, L. 1985. Mid-Holocene radiocarbon-dated peat at Admiralty Bay, King George Island (South Shetland Islands, West Antarctica). *Bulletin of the Polish Academy of Sciences, Earth Sciences*, 33: 7–13.
Birks, H.J.B. 1992. *Anoectangium warburgii* in western Norway. *Lindbergia*, 17: 67–8.
Bischler, H. & Jovet-Ast, S. 2004. Anthocerotopsida (hornworts) and Marchantiopsida (liverworts). In: C.C. Heyn, & I. Herrnstadt, eds. *Flora Palaestina, the bryophyte flora of Israel and adjacent regions*. Jerusalem: The Israel Academy of Sciences and Humanities, pp. 521–719.
Blockeel, T.L., Abay, G., Çetin, B., Bednarek-Ochyra, H., Ochyra, R., Lewis Smithh, R.I., Matteri, C.M., Farias, R.M., Novotný, I., Rao, P., Enroth, J., van Rooy, J., Schiavone, M.M. & Váňa, J. 2003. New national and regional bryophyte records, 7. *Journal of Bryology*, 25(2): 141–4.
Blockeel, T.L., Chlebicki, A., Hájková, P., Hájek, M., Hradílek, Z., Kürschner, H., Ochyra, R., Parolly, G., Plášek, V., Quandt, D., Townsend, C.C. & Vanderpoorten, A. 2006. New national and regional bryophyte records, 12. *Journal of Bryology*, 28(1): 68–70.
Blockeel, T.L., Bednarek-Ochyra, H., Ochyra, R., Garilleti, R., Glime, J.M., Lara, F., Mazimpaka, V., Rusińska, A., Schäfer-Verwimp, A., Shabbara, H.M., Söderström, L., Stebel, A., Townsend, C.C., Váňa, J., Yayintaş, Ö.T. & Żarnowiec, J. 2007. New national and regional bryophyte records, 17. *Journal of Bryology*, 29(4): 277–83.
Blockeel, T.L., Bakalin, V.A., Bednarek-Ochyra, H., Ochyra, R., Buck, W.R., Choi, S., Cykowska, B., Erdağ, A., Erzberger, P., Kirmaci, M., Kürschner, H., Lebouvier, M., Papp, B., Sabovljević, M., Sabovljević, A., Schröder, W., Singh, S.M., Sun, B.Y., Townsend, C.C., Váňa, J. & Yayintaş, Ö.T. 2009. New national and regional bryophyte records, 20. *Journal of Bryology*, 31(1): 54–62.
Boiko, M.F. 2009. *Bryobionta of the steppe zone of Ukraine*. Kherson: Ailant (in Ukrainian).
Bussmann, R.W. 2006. Vegetation zonation and nomenclature of African mountains—an overview. *Lyonia*, 11(1): 41–66.
Cano, M.J. 2008. Taxonomic revision of *Hennediella* Paris (Pottiaceae, Bryophyta). *Bryophytorum Bibliotheca*, 64: 1–142.
Chikovani, N. & Svanidze, T. 2004. Checklist of bryophyte species of Georgia. *Braun-Blanquetia*, 34: 97–116.
Crundwell, A.C. & Hill, M.O. 1977. *Anoectangium warburgii*, a new species of moss from the British Isles. *Journal of Bryology*, 9: 435–40.
Damsholt, K. 2002. *Illustrated flora of Nordic liverworts and hornworts*. Lund: Nordic Bryological Society.
Damsholt, K. 2009. *Illustrated flora of Nordic liverworts and hornworts*. 2nd edn. Lund: Nordic Bryological Society.
Dierßen, K. 2001. Distribution, ecological amplitude and phytosociological characterization of European bryophytes. *Bryophytorum Bibliotheca*, 56: 1–289.
Eggers, J. 1982. Artenliste der Moose Makaronesiens. *Cryptogamie, Bryologie Lichénologie*, 3(4): 283–335.
Ellis, L.T., Bednarek-Ochyra, H., Ochyra, R., Calvo Aranda, S.M.T., Colotti, M.T., Schiavone, M.M., Dulin, M.V., Erzberger, P., Ezer, T., Kara, R., Gabriel, R., Hedenäs, L., Holyoak, D.T., Ódor, P., Papp, B., Sabovlević, M., Seppelt, R.D., Smith, V.R., Sotiaux, A., Szurdoki, E., Vanderpoorten, A., van Rooy, J. & Żarnowiec, J. 2011. New national and regional bryophyte records, 26. *Journal of Bryology*, 33(1): 66–73.
Ellis, L.T., Alegro, A., Bansal, P., Nath, V., Cykowska, B., Bednarek-Ochyra, H., Ochyra, R., Dulin, M.V., Erzberger, P., Garcia, C., Sérgio, C., Claro, D., Stow, S., Hedderson, T.A., Hodgetts, N.G., Hugonnot, V., Kučera, J., Lara, F., Pertierra, L., Lebouvier, M., Liepina, L., Mežaka, A., Strazdiņa, L., Madžule, L., Rēriha, I., Mazooji, A., Natcheva, R., Phephu, N., Philippov, D.A., Plášek, V., Číhal, L., Pócs, T., Porley, R.D., Sabovljević, M., Salimpour, F., Behroozmand Motlagh, M., Sharifnia, F., Akhoondi Darzikolaei, S., Schäfer-Verwimp, A., Šegota, V., Shaw, A.J., Sim-Sim, M., Sollman, P., Spitale, D., Hölzer, A., Stebel, A., Váňa, J., van Rooy, J. & Vončina, G. 2012a. New national and regional bryophyte records, 32. *Journal of Bryology*, 34(3): 231–46.
Ellis, L.T., Bednarek-Ochyra, H., Ochyra, R., Cykowska, B., Dulin, M.V., Ezer, T., Kara, R., Flores, J.R., Suárez, G.M., Garcia, C., Martins, A., Sérgio, C., Garilleti, R., Kırmacı, M., Agcagil, E., Kurbatova, L.E., Lebouvier, M., Papp, B., Szurdoki, E., Philippov, D.A., Plášek, V., Pócs, T., Sabovljević, M., Sawicki, J., Sim-Sim, M., Szűcs, P., Bidló, A., Váňa, J., Vigalondo, B., Lara, F., Draper, I., Virchenko, V.M. & Wolski, G.J. 2012b. New national and regional bryophyte records, 33. *Journal of Bryology*, 34(4): 281–91.
Ellis, L.T., Asthana, A.K., Gupta, R., Nath, V., Sahu, V., Bednarek-Ochyra, H., Ochyra, R., Cykowska, B., Calvo Aranda, S., Fischer, E., Gabriel, R., Górski, P., Gremmen, N., Hespanhol, H., Kurbatova, L.E., Lewis Smith, R.I., Long, D.G., Bell, D., Mogro, F., Sérgio, C., Garcia, C.A., Stow, S., Martins, A., Smith, V.R., Váňa, J. & Vanderpoorten, A. 2013a. New national and regional bryophyte records, 34. *Journal of Bryology*, 35(1): 62–70.
Ellis, L.T., Bednarek-Ochyra, H., Ochyra, R., Benjumea, M.J., Saïs, L.V., Caparrós, R., Lara, F., Mazimpaka, V., Dulin, M.V., Garilleti, R., Gremmen, N., Grundling, P.-L., Heras, P., Infante, M., Huttunen, S., Ignatov, M.S., Korvenpää, T., Lebouvier, M., Lewis Smith, R.I., Lin, S.-H., Yang, J.-D., Linström, A., Plášek, V., Rosselló, J.A., Sawicki, J., van Rooy, J. & Smith, V.R. 2013b. New national and regional bryophyte records, 35. *Journal of Bryology*, 35(2): 129–39.
Ellis, L.T., Bakalin, V.A., Baisheva, E., Bednarek-Ochyra, H., Ochyra, R., Borovichev, E.A., Choi, S.S., Sun, B.-Y., Erzberger, P., Fedosov, V.E., Garilleti, R., Albertos, B., Górski, P., Hájková, P., Hodgetts, N.G., Ignatov, M., Koczur, A., Kurbatova, L.E., Lebouvier, M., Mežaka, A., Miravet, J., Pawlikowski, P., Porley, R.D., Rosselló, J.A., Sabovljević, M.S., Pantović, J., Sabovljević, A., Schröder, W., Ştefănuţ, S., Suárez, G.M., Schiavone, M., Yayintaş, Ö.T. & Váňa, J. 2013c. New national and regional bryophyte records, 36. *Journal of Bryology*, 35(3): 228–38.
Ellis, L.T., Aranda, S.C., Asthana, A.K., Bansal, P., Nath, V., Sahu, V., Bayliss, J., Asthana, G., Srivastava, S., Yadav, S., Brugués, M., Cano, M.J., Dulin, M.V., Fudali, E., Fuertes, E., Gabriel, R., Pereira, F., Silva, J.A.F., Gradstein, S.R., Hájková, P., Hájek, M., Heras, P., Infante, M., Lebouvier, M., Marka, J., Newsham, K.K., Ochyra, R., Pantović, J., Sabovljević, M.S., Phephu, N., van Rooy, J., Philippov, D.A., Porley, R.D., Puche, F., Schäfer-Verwimp, A., Segarra-Moragues, J.G., Sérgio, C., Smith, V.R., Ştefănuţ, S., Váňa, J. & Wigginton,

M.J. 2013d. New national and regional bryophyte records, 37. *Journal of Bryology*, 35(4): 290–305.

Ellis, L.T., Bayliss, J., Bruggeman-Nannenga, M.A., Cykowska, B., Ochyra, R., Gremmen, N.J.M., Frahm, J.-P., Hedderson, T.A., Heras, P., Infante, M.V., Hugonnot, V., Mogro, F., Plášek, V., Číhal, L., Sawicki, J., Schäfer-Verwimp, A., Stebel, A., Ştefănuţ, S., Váňa, J., Yang, J.-D. & Lin, S.-H. 2014a. New national and regional bryophyte records, 38. *Journal of Bryology*, 36(1): 61–72.

Ellis, L.T., Aleffi, M., Tacchi, R., Alegro, A., Alonso, M., Asthana, A.K., Sahu, V., Biasuso, A.B., Callaghan, D.A., Ezer, T., Kara, R., Garilleti, R., Gil-López, M.J., Gwynne-Evans, D., Hedderson, T.A., Kiebacher, T., Larraín, J., Long, D., Lüth, M., Malcolm, B., Mamontov, Y.S., Newsham, K.K., Nobis, M., Nowak, A., Ochyra, R., Pawlikowski, P., Plášek, V., Čihal, L., Potemkin, A.D., Puche, F., Rios, D., Gallego, M.T., Guerra, J., Sawicki, J., Schäfer-Verwimp, A., Segarra-Moragues, J.G., Šegota, V., Sofronova, E.V., Ştefănuţ, S., Szűcs, P., Bidló, A., Papp, B., Szurdoki, E., Tan, B.C., Váňa, J., Vigalondo, B., Draper, I., Lara, F., Yoon, Y.-J., Sun, B.-Y. & Nishimura, N. 2014b. New national and regional bryophyte records, 41. *Journal of Bryology*, 36(4): 306–24.

Ellis, L.T., Alegro, A., Šegota, V., Bakalin, V.A., Barone, R., Borovichev, E.A., Hugonnot, V., Lebouvier, M., Nobis, M., Nowak, A., Ochyra, R., Papp, B., Szurdoki, E., Piwowarczyk, R., Plášek, V., Číhal, L., Ren, Z.-J., Sabovljević, M.S., Sérgio, C., Garcia, C.A., Melo, I., Sawicki, J., Stebel, A., Ştefănuţ, S., Ion, R., Manole, A., Tziortzis, I., Xiong, Y. & Zhao, Z.-T. 2015. New national and regional bryophyte records, 44. *Journal of Bryology*, 37(3): 228–41.

Ellis, L.T., Asthana, A.K., Srivastava, P., Omar, I., Rawat, K.K., Sahu, V., Cano, M.J., Costa, D.P., Dias, E.M., Dias dos Santos, N., Silva, J.B., Fedosov, V.E., Kozhin, M.N., Ignatova, E.A., Germano, S.R., Golovina, E.O., Gremmen, N.J.M., Ion, R., Ştefănuţ, S., von Konrat, M., Jimenez, M.S., Suárez, G.M., Kiebacher, T., Lebouvier, M., Long, D.G., Maity, D., Ochyra, R., Parnikoza, I., Plášek, V., Fialová, L., Skoupá, Z., Poponessi, S., Aleffi, M., Sabovljević, M.S., Sabovljević, A.D., Saha, P., Aziz, M.N., Sawicki, J., Suleiman, M., Sun, B.-Y., Váňa, J., Wójcik, T., Yoon, Y.-J., Żarnowiec, J. & Larraín, J. 2016a. New national and regional bryophyte records, 46. *Journal of Bryology*, 38(1): 47–63.

Ellis, L.T., Aleffi, M., Alegro, A., Segota, V., Asthana, A.K., Gupta, R., Singh, V.J., Bakalin, V.A., Bednarek-Ochyra, H., Cykowska-Marzencka, B., Benitez, A., Borovichev, E.A., Vilnet, A.A., Konstantinova, N.A., Buck, W.R., Cacciatoro, C., Sérgio, C., Csiky, J., Deme, J., Kovács, D., Damsholt, K., Enroth, J., Erzberger, P., Fedosov, V.E., Fuertes, E., Gradstein, S.R., Gremmen, N.J.M., Hallingbäck, T., Jukonienė, I., Kiebacher, T., Larraín, J., Lebouvier, M., Lüth, M., Mamontov, Yu. S., Potemkin, A.D., Nemeth, Cs., Nieuwkoop, J.A.W., Nobis, M., Osorio, F., Parnikoza, I., Peralta, D.F., Carmo, D.M., Plášek, V., Skoupá, Z., Poponessi, S., Venanzoni, R., Puche, F., Purger, D., Reeb, C., Rios, R., Rodriguez-Quiel, E., Arrocha, C., Sabovljević, M.S., Nikolić, N., Sabovljević, A.D., dos Santos, E.L., Segarra-Moragues, J.G., Ştefănuţ, S., Stončius, D., Virchenko, V.M., Węgrzyn, M. & Wietrzyk, P. 2016b. New national and regional bryophyte records, 48. *Journal of Bryology*, 38(3): 235–59.

Ellis, L.T., Ah-Peng, C., Aleffi, M., Baráth, K., Brugués, M., Ruiz, E., Buck, W.R., Czernyadjeva, I.V., Erzberger, P., Fantecelle, L.B., Peñaloza-Bojaca, G.F., Araújo, C.A.T., Oliveira, B.A., Maciel-Silva, A.S., Gremmen, N.J.M., Guo, S.-L., Hedderson, T.A., February, E., Wilding, N., Hugonnot, V., Kırmacı, M., Kürschner, H., Lebouvier, M., Mesterházy, A., Ochyra, R., Philippe, M., Plášek, V., Skoupá, Z., Poponessi, S., Gigante, D., Venanzoni, R., Rawat, K.K., Sahu, V., Asthana, A.K., Sabovljević, M.S., Sabovljević, A.D., Schäfer-Verwimp, A. & Wierzcholska, S. 2017. New national and regional bryophyte records, 50. *Journal of Bryology*, 39(1): 99–114.

Fedosov, V.E. & Ignatova, E.A. 2008. The genus *Bryoerythrophyllum* (Pottiaceae, Bryophyta) in Russia. *Arctoa*, 17: 19–38.

Hässel de Menéndez, G.G. 1962. Estudio de las Anthocerotales y Marchantiales de la Argentina. Opera *Lilloana*, 7: 1–207.

Hässel de Menéndez, G. & Rubies, M. 2009. Catalogue of the Marchantiophyta and Anthocerotophyta from Chile, Argentina and Uruguay [Chile, Argentina and Uruguay, including Easter Is. (Pascua I.), Malvinas Is. (Falkland Is.), South Georgia Is., and the subantarctic South Shetland Is., South Sandwich Is., and South Orkney Is]. *Nova Hedwigia, Beiheft*, 134: 1–672.

Hässel de Menéndez, G. & Villagrán, C. 2007. New species of *Fossombronia* (Hepatophyta, Fossonbroniopsida) from Chile. *Nova Hedwigia, Beiheft*, 131: 13–20.

Hedenäs, L. 1995. On the identity of *Brachythecium campestre* (C.Müll) B., S. & G. in Sweden, Norway and Finland. *Lindbergia*, 20: 94–101.

Hedenäs, L. 2002. An overview of the family Brachytheciaceae (Bryophyta) in Australia. *Journal of the Hattori Botanical Laboratory*, 92: 51–90.

Hodgetts, N.G. 2011. A revised Red List of bryophytes in Britain. *Field Bryology*, 103: 40–49.

Hodgetts, N.G. 2015. *Checklist and country status of European bryophytes—towards a new Red List for Europe*. Irish Wildlife Manuals, No. 84. Dublin: National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

Hooker, J.D. 1867. *Handbook of the New Zealand flora: a systematic description of the native plants of New Zealand and the Chatham, Kermadec's, Lord Auckland's, Campbell's and Macquarrie's Islands, Part 2*. London: Reeve & Co., pp. xli–-xlvii + 393–798.

Ignatov, M.S. 1992. On the occurence of *Barbula inaequalifolia* Tayl. (Pottiaceae, Musci) in Altai Mountains. *Ukrainian Botanical Journal*, 49(1): 95–7.

Ignatov, M.S. 2014. Brachytheciaceae Schimper. In: Flora of North America Editorial Committee, ed., *Flora of North America north of Mexico*. Volume 28, Bryophytes: Mosses, part *2*. New York and Oxford: Oxford University Press, pp. 404–68.

Ignatov, M.S., Afonina, O.M. & Ignatova, E.A. 2006. Check-list of mosses of East Europe and North Asia. *Arctoa*, 15: 1–130.

Ignatov, M.S., Milyutina, I.A., Koponen, T., Long, D.G. & Ignatova, E.A. 2007. Taxonomy of *Struckia* (Plagiotheciaceae, Bryophyta) based on molecular and morphological data. *Chenia*, 9: 117–25.

Ignatova, E.A., Kučera, J., Kuznetsova, O.I., & Ignatov, M.S. 2013. First record of *Hydrogonium gregarium* (Pottiaceae, Bryophyta) in Russia: an interesting extension of the species distribution to the heart of the permafrost zone. *Polish Botanical Journal*, 58 (2): 565–72.

Infante, M. & Heras, P. 2007. Briófitos (musgos y hepáticas) del Parque Natural de la Sierra de los Cañones de Guara. Diputació de Lleida. *Institut d'Estudis Ilerdencs. Col.lecció Pius Font i Quer*, 5: 1–238.

Ireland, R.R., Bellolio, B., Bednarek-Ochyra, H. & Ochyra, R. 2005. Fertile plants of *Racomitrium patagonicum* (Bryopsida, Grimmiaceae). *Journal of the Hattori Botanical Laboratory*, 98: 205–11.

Ivanova, E.I., Ignatova, E.A. & Ignatov, M.S. 2016. Moss flora of the Suntar-Khayata Reserve, Yakutia. *Arctoa*, 25: 131–40.

Jia, Y., He, S. & Guo, S.-L. 2011. Orthotrichaceae. In: P.-Ch. Wu, M.R. Crosby & S. He, eds. *Moss Flora of China*. English version. Volume 5. Erpodiaceae–Climaciaceae. Beijing & New York: Science Press and St. Louis, Missouri Botanical Garden Press, pp. 22–117.

Jimenez, J.A., Ros, R.M., Cano, M.J. & Guerra, J. 2003. *Didymodon nicholsonii* Culm. (Pottiaceae, Musci): new taxonomical, chorological and ecological data. *Cryptogamie, Bryologie*, 24: 277–81.

Jóhannsson, B. 2003. Íslenskir Mosar. Skrár og viðbætur. *Fjölrit Náttúrufræðistofnunar*, 44: 1–135.

Kiebacher, T. & Lüth, M. 2017. *Orthotrichum dentatum* T.Kiebacher & Lüth sp. nov. (Orthotrichaceae). *Journal of Bryology*, 39(1): 46–56.

Klinck, J. 2010. NOBANIS—Invasive Alien Species Fact Sheet—*Campylopus introflexus*. From: Online Database of the European Network on Invasive Alien Species—NOBANIS. [accessed 10 November 2016]. Available at www.nobanis.org.

Kučera, J., Váňa, J. & Hradílek, Z. 2012. Bryophyte flora of the Czech Republic: updated checklist and Red List and a brief analysis. *Preslia*, 84: 813–50.

Kutnar, L. & Martinčič, A. 2008. Bryophyte species diversity of forest ecosystems in Slovenia (intensive monitoring programme). *Zbornik Gozdarstva in Lesarstva*, 85: 11–26.

Kürschner, H., Batsatsashvili, K. & Parolly, G. 2013. Noteworthy additions to the bryophyte flora of Georgia. *Herzogia*, 26: 213–6.

Lara, F. & Garilleti, R. 2014. *Orthotrichum* Hedw. In: J. Guerra, M.J. Cano & M. Brugués, eds. *Flora briofítica Ibérica.* Vol. V.

Murcia: Universidad de Murcia, Sociedad Española de Briología, pp. 50–135.
Larraín, J. 2016. The mosses (Bryophyta) of Capitán Prat Province, Aisén Region, southern Chile. *PhytoKeys*, 68: 91–116.
Larraín, J.B. 2012. *Filogenia del género* Racomitrium *Brid. (Bryophyta, Grimmiaceae) y taxonomia de las especies Latinoamericanas*. Manuscript of the doctoral thesis. Concepción: Universidad de Concepción, Dirrección de Postgrado, Facultad de Ciencias Naturales y Oceanográficas—Programa de Doctorado en Ciencias Biológicas área Botánica.
Lewinsky, J. 1978. The genus *Orthotrichum* Hedw. (Musci) in Africa south of the Tropic of Cancer. *Botanisk Tidsskrift*, 72: 61–85.
Lewinsky-Haapasaari, J. 1999. *Orthotrichum vermiferum*, a new species from the Qinghai Province of China, together with comments on *Orthomitrium schofieldii* (Orthotrichaceae). *Lindbergia*, 24: 33–7.
Lewinsky-Haapasaari, J. & Crosby, M.R. 1996. *Orthomitrium tuberculatum* (Orthotrichaceae), a new genus and species from Guizhou, China. *Novon*, 6(1): 1–5.
Li, X.J., Crosby, M.R., He, S., & Iwatsuki, Z. 2001. Pottiaceae. In: X.-J. Li, M.R. Crosby & S. He, eds. *Moss flora of China*. English version, Vol. 2. Fissidentaceae–Ptychomitriaceae. Beijing, New York & St. Louis: Science Press & Missouri Botanical Garden, pp. 114–249.
Lockhart, N., Hodgetts, N. & Holyoak, D. 2012. *Rare and threatened bryophytes of Ireland*. Holywood: National Museums of Northern Ireland.
Ludwig, G., Düll, R., Philippi, G., Ahrens, M., Caspari, S., Koperski, M., Lütt, S., Schulz, F. & Schwab, G. 1996. Rote Liste der moose (Anthocerophyta et Bryophyta) Deutschlands. *Schriftenreihe für Vegetationskunde*, 28: 189–306.
Maier, E. 2010. The genus *Grimmia* Hedw. (Grimmiaceae, Bryophyta)—a morphological anatomical study. *Boissiera*, 63: 5–377.
Martinčič, A. 2003. Seznam listnatih mahov (Bryopsida) Slovenije. *Hacquetia*, 2: 91–166.
Martinčič, A. 2008. Mahovna flora Smrekovškega pogorja (Kamniško-Savinjske Alpe, Slovenija). *Hacquetia*, 7: 33–46.
Martinčič, A. 2014. Mahovna flora fitogeografskega podobmočja Karavanke (Slovenija). *Hacquetia*, 13: 307–53.
Matteri, C.M. 1986. Los musci (Bryophyta) de las Islas Malvinas, su habitat y distribución. *Nova Hedwigia*, 43: 159–89.
Matteri, C.M. 2003. Los musgos (Bryophyta) de Argentina. *Tropical Bryology*, 24: 33–100.
McFarland, K.D. 1988. *Revision of* Brachythecium *(Musci) for Mexico, Central America, South America, Antarctica, and circum-subantarctic islands*. Manuscript of a dissertation presented for the Doctor of Philosophy Degree, The University of Tennessee, Knoxville. Ann Arbor: UMI Dissertation Services.
McFarland, K.D. 1994. *Brachythecium* B.S.G. In: A.J. Sharp, H. Crum & P.M. Eckel, eds, *The moss flora of Mexico*. Part two, Orthotrichales to Polytrichales. *Memoirs of the New York Botanical Garden*, 69: 917–32.
Müller, F. 2009. An updated checklist of the mosses of Chile. *Archive for Bryology*, 58: 1–124.
Noguchi, A., Iwatsuki, Z. & Yamaguchi, T. 1991. *Moss flora of Japan*. Vol. 4. Nichinan: Hattori Botanical Laboratory.
Ochyra, R. 1985a. *Hypnobartlettia fontana* gen. et sp. nov. (Musci: Hypnobartlettiaceae fam. nov.), a unique moss from New Zealand. *Lindbergia*, 11: 2–8.
Ochyra, R. 1985b. *Koponenia*, a new pleurocarpous moss genus from Bolivia. *Journal of Bryology*, 13(4): 479–86.
Ochyra, R. 1986. On the taxonomic position of *Sciaromium lacustre* Herz. & Rich. in Rich. *Journal of Bryology*, 14(1): 109–15.
Ochyra, R. 1987. On the taxonomy and family placement of the moss genus *Limbella* (C. Muell.) Broth. *Journal of Bryology*, 14(3): 465–85.
Ochyra, R. 2010. Antipodal mosses: XVI. The first record of the genus *Sematophyllum* (Sematophyllaceae) in the Subantarctic, with a description of *S. lebouvieri* sp. nov. *Cryptogamie, Bryologie*, 31(3): 223–32.
Ochyra, R. & Bednarek-Ochyra, H. 2011. *Schistidium deguchianum* (Grimmiaceae), a new Andean species from Peru. *Journal of Bryology*, 33(3): 189–94.
Ochyra, R. & Bednarek-Ochyra, H. 2013. On the identity of *Ditrichum validinervium* (Bryophyta, Ditrichaceae). *Cryptogamie, Bryologie*, 34(3): 299–306.
Ochyra, R. & Bednarek-Ochyra, H. 2015. *Dicranoweisia fastigiata*, a new synonym of *Hymenoloma antarcticum* (Seligeriaceae). *Cryptogamie, Bryologie*, 36(1): 41–5.
Ochyra, R. & Broughton, D.A. 2004. New moss records from the Falkland Islands. *Journal of Bryology*, 26(3): 226–30.
Ochyra, R. & Enroth, J. 1989. *Neckeropsis touwii* (Musci, Neckeraceae), new species from Papua New Guinea, with an evaluation of sect. *Pseudoparaphysanthus* of *Neckeropsis*. *Annales Botanici Fennici*, 26: 127–32.
Ochyra, R. & Ireland, R. R. 2004. *Isoptervgium tenerum*, newly recognized for Africa. *Bryologist*, 107(3): 363–7.
Ochyra, R. & Ireland, R.R. 2016. *Isopterygium tenerifolium* (Hypnaceae, Bryophyta)—one more Afro-American disjunct. *Herzogia*, 29(1): 72–8.
Ochyra, R. & Lewis Smith, R.I. 1998. Antarctic species in the genus *Ditrichum* (Ditrichaceae, Bryopsida), with a description of *D. gemmiferum* sp. nov. *Annales Botanici Fennici*, 35(1): 33–53.
Ochyra, R. & Shevock, J.R. 2012. A fruiting plant of *Handeliobryum sikkimense* (Bryopsida, Thamnobryaceae) from Yunnan, China. *Nova Hedwigia*, 94: 307–21.
Ochyra, R. & Singh, S.M. 2008. Three remarkable moss records from Dronning Maud Land, continental Antarctica. *Nova Hedwigia*, 86: 497–506.
Ochyra, R. & van Rooy, J. 2013. Distribution of *Bucklandiella lamprocarpa* (Grimmiaceae, Musci) in South Africa. *Cryptogamie, Bryologie*, 34(3): 359–66.
Ochyra, R. & Vanderpoorten, A. 1999. *Platyhypnidium mutatum*, a mysterious new moss from Germany. *Journal of Bryology*, 21 (3): 183–9.
Ochyra, R., Bednarek-Ochyra, H., Pócs, T. & Crosby, M.R. 1992. The moss *Adelothecium bogotense* in continental Africa, with a review of its world range. *Bryologist*, 95(3): 287–95.
Ochyra, R., Schmidt, C. & Bültmann, H. 1998. *Gradsteinia torrenticola*, a new aquatic moss species from Tenerife. *Journal of Bryology*, 20(2): 403–9.
Ochyra, R., Wesche, K., Miehe, G. & Miehe, S. 2002a. New records of pleurocarpous mosses for Africa and Uganda. *Journal of Bryology*, 24(3): 256–9.
Ochyra, R., Bednarek-Ochyra, H. & Lewis Smith, R.I. 2002b. New and rare moss species from subantarctic South Georgia. *Nova Hedwigia*, 74(1–2): 121–47.
Ochyra, R., Bednarek-Ochyra, H. & Lewis Smith, R.I. 2008a. New and rare moss species from the Antarctic. *Nova Hedwigia*, 87 (3–4): 457–77.
Ochyra, R., Lewis Smith, R.I. & Bednarek-Ochyra, H. 2008b. *The illustrated moss flora of Antarctica*. Cambridge: Cambridge University Press.
Ochyra, R., Zander, R.H. & Lebouvier, M. 2014. Antipodal mosses: XVIII. *Syntrichia christophei* (Pottiaceae), a new species from subantarctic Îles Kerguelen. *Cryptogamie, Bryologie*, 35(1): 37–46.
Ochyra, R., Crabtree, D. & Tangney, R. 2015a. Studies on mosses in the Falkland Islands: I. *Bucklandiella* and *Codriophorus* (Grimmiaceae). *Cryptogamie, Bryologie*, 36(3): 289–310.
Ochyra, R., Sollman, Ph. & Lebouvier, M. 2015b. *Hymenostylium recurvirostrum* (Pottiaceae, Bryophyta), a genus and species newly discovered in the southern polar regions. *Herzogia*, 28: 599–606.
Orgaz, J.D., Cano, M.J. & Guerra, J. 2012. A Taxonomic study of genus *Brachythecium* Schimp. (Brachytheciaceae, Bryophyta) in the Mediterranean region. *Nova Hedwigia*, 95: 295–318.
O'Shea, B.J. 2006. Checklist of the mosses of sub-Saharan Africa (version 5, 12/06). *Tropical Bryology Research Reports*, 6: 1–252. Available at http://www.nhm.ac.uk/hosted_sites/bbstbg/resources_lit_africa.html
Paton, J.A. 1999. *The liverwort flora of the British Isles*. Colchester: Harley Books.
Perold, S.M. 1993. Studies in the Marchantiales (Hepaticae) from southern Africa. 2. The genus *Athalamia* and *A. spathysii*; the genus *Oxymitra* and *O. cristata*. *Bothalia*, 23: 207–14.
Poponessi, S., Aleffi, M. & Venanzoni, R. 2014. Notulae Cryptogamicae 9—Notula: 69. *Tortula canescens* Mont. +UMB. *Informatore Botanico Italiano*, 46(2): 283.
Puglisi, M., Campisi, P., Dia, M.G. & Privitera, M. 2015. New or interesting regional bryophyte records for Italian bryoflora. *Flora Mediterranea*, 25(special issue): 193–8.

Razgulyaeva, L.V., Napreenko, M.G., Wolfram, CH. & Ignatov, M.S. 2001. *Campylopus introflexus* (Dicranaceae, Musci)—an addition to the moss flora of Russia. *Arctoa*, 10: 185–9.

Robinson, H. 1975. The mosses of Juan Fernandez. *Smithsonian Contributions to Botany*, 27: i–iv + 1–88.

Ros, R.M., Mazimpaka, V., Abou-Salama, U., Aleffi, M., Blockeel, T.L., Brugués, M., Cros, R.M., Dia, M.G., Dirkse, G.M., Draper, I., El Saadawi, W., Erdağ, A., Ganeva, A., Gabriel, R., González-Mancebo, J.M., Granger, C., Herrnstadt, I., Hugonnot, V., Khalil, K., Kürschner, H., Losada-Lima, A., Luís, L., Mifsud, S., Privitera, M., Puglisi, M., Sabovljevíc, M., Sérgio, C., Shabbara, H.M., Sim-Sim, M., Sotiaux, A., Tacchi, R., Vanderpoorten, A. & Werner, O. 2013. Mosses of the Mediterranean, an annotated checklist. *Cryptogamie, Bryologie*, 34(2): 99–283.

Sabovljević, M., Ganeva, A., Tsakiri, E. & Ştefănuţ, S. 2001. Bryology and bryophyte protection in south-eastern Europe. *Biological Conservation*, 101: 73–84.

Sabovljević, M., Papp, B. & Szurdoki, E. 2010. New bryophyte records to some countries of the south-eastern Europe. *Cryptogamie, Bryologie*, 31: 289–92.

Sabovljević, M., Alegro, A., Sabovljević, A., Marka, J. & Vujicic, M. 2011. An insight into diversity of the Balkan Peninsula bryophyte flora in the European background. *Revue d'Ecologie (Terre et Vie)*, 66: 399–413.

Sainsbury, G.O.K. 1955. A handbook of New Zealand mosses. *Royal Society of New Zealand Bulletin*, 5: 1–490.

Saipunkaew, W., Wolseley, P.A., Chimonides, P.J. & Boonpragob, K. 2007. Epiphytic macrolichens as indicators of environmental alteration in northern Thailand. *Environmental Pollution*, 146: 366–74.

Saukel, J. & Köckinger, H. 1999. Rote Liste gefährdeter Lebermoose (Hepaticae) und Hornmoose (Anthocerotae) Österreichs. 2. Fassung. In: H. Niklfeld & F. Grims, *Rote Listen gefährdeter Pflanzen Österreichs*. Wien: Grüne Reihe des Bundesministeriums für Umwelt, Jugend und Familie, pp. 172–9.

Schäfer-Verwimp, A. 2001. *Orthotrichum* Hedw. In: M. Nebel & G. Philippi, eds. *Die Moose Baden-Württembergs*. Band 2: Spezieller Teil (Bryophytina II, Schistostegales bis Hypnobryales). Stuttgart: Eugen Ulmer, pp. 170–97.

Schnyder, N., Bergamini, A., Hofman, H., Müller, N., Schubiger-Bossard, C. & Urmi, E. 2004. *Rote Liste der gefährdeten Moose der Schweiz*. Bern: Hrsg. BUWAL, FUB & NISM. BUWAL-reihe: Vollzug umwelt.

Schuster, R.M. 1992. *The Hepaticae and Anthocerotae of North America east of the hundredth meridian*. Vol. 6. Chicago: Field Museum of Natural History, pp. 399–408.

Sérgio, C. & Schumacker, R. 1992. Contribuiçao para o estudo da flora briológica do parque nacional da Peneda-Gerês. *Portugaliae Acta Briologica (B)*, 16: 107–37.

Sérgio, C., Muñoz, J. & Ochyra, R. 1995. *Racomitrium hespericum*, a new species from the Iberian Peninsula. *Bryologist*, 98(1): 112–7.

Sjögren, E. 2001. Distribution of Azorean bryophytes up to 1999, their island distribution and information on their presence elsewhere, including Madeira and the Canary Islands. *Boletim do Museu Municipal do Funchal (Historia Natural) Supplemento*, 7: 1–89.

Skudnik, M., Sabovljević, A., Batič, F. & Sabovljević, M. 2013a. Notes on some rare and interesting bryophytes of Slovenia. *Botanica Serbica*, 37: 141–6.

Skudnik, M., Sabovljević, A., Batič, F. & Sabovljević, M. 2013b. The bryophyte diversity of Ljubljana (Slovenia). *Polish Botanical Journal*, 58: 319–24.

Söderström, L. 1992. Invasion and range expansion and contractions of bryophytes. In: J.W. Bates & A.M. Farmer, eds. *Bryophytes and lichens in a changing environment*. Oxford: Oxford University Press, pp. 131–58.

Spagnuolo, V., Terracciano, S., Puglisi, M. & Privitera, M. 2014. The taxonomic status of *Campylopus pilifer* subsp *vaporarius* and its relationships within *Campylopus* Brid. (Dicranaceae, Bryophyta). *Nova Hedwigia*, 99(3–4): 501–10.

Sparrius, L.B. & Kooijman, A.M. 2011. Invasiveness of *Campylopus introflexus* in drift sands depends on nitrogen deposition and soil organic matter. *Applied Vegetation Science*, 14: 221–9.

Stapper, N.J. & Kricke, R. 2004. Epiphytische Moose und Flechten als Bioindikatoren von städtischer Überwärmung, Standorteutrophierung und verkehrsbedingten Immissionen. *Limprichtia*, 24: 187–208.

Streiff, A. 2006. Phylogenetic study of *Grimmia* (Grimmiaceae) based on plastid DNA sequences (*trn*L-*trn*F and *rps*4) and on morphological characters. *Bryologist*, 109: 224–35.

Ştefănuţ, S. & Goia, I. 2012. Checklist and Red List of Bryophytes of Romania. *Nova Hedwigia*, 95(1–2): 59–104.

Tan, B.C. & Jia, Y. 1997. Mosses of Qinghai-Tibetan Plateau, China. *Journal of the Hattori Botanical Laboratory*, 82: 305–20.

Tsegmed, T. 2001. Checklist and distribution of mosses in Mongolia. *Arctoa*, 10: 1–18.

Van der Putten, N., Stieperaere, H., Verbruggen, C. & Ochyra, R. 2004. Holocene palaeoecology and climate history of South Georgia (sub-Antarctica) based on a macrofossil record of bryophytes and seeds. *Holocene*, 14: 382–92.

Van der Putten, N., Verbruggen, C., Ochyra, R., Spassov, S., de Beaulieu, J.-L., De Dapper, M., Hus, J. & Thouveny, N. 2009. Peat bank growth, Holocene palaeoecology and climate history of South Georgia (sub-Antarctica), based on a botanical macrofossil record. *Quaternary Science Reviews*, 28: 65–79.

Van der Putten, N., Verbruggen, C., Ochyra, R., Verleyen, E. & Frenot, Y. 2010. Subantarctic flowering plants: pre-glacial survivors or post-glacial immigrants? *Journal of Biogeography*, 37: 582–92.

Vellak, K., Ingerpuu, N., Leis, M. & Ehrlich, L. 2015. Annotated checklist of Estonian bryophytes. *Folia Cryptogamica Estonica*, 52: 109–127.

Wang, Y.-F. & Hu, R.-L. 2008. Brachytheciaceae. In: R.-L. Hu, Y.-F. Wang, M.R. Crosby & S. He, eds. *Moss Flora of China*. English version. Vol. 7. Amblystegiaceae–Plagiothecіaceae. Beijing & New York: Science Press and St. Louis: Missouri Botanical Garden Press, pp. 71–167.

Wu, P.-C., Wang, M.-Z. & Zhong, B.-G. 2002. Thuidiaceae. In: P.-C. Wu, M.R. Crosby, & S. He, eds. *Moss Flora of China*. English Version. Vol. 6. Hookeriaceae–Thuidiaceae. Beijing & New York: Science Press and St. Louis: Missouri Botanical Garden Press, pp. 150–207.