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1. *Anastrophyllum michauxii* (F. Weber) H. Buch

Contributors: E. A. Borovichev and O. V. Ilina

Russian Federation: Republic of Karelia, Belomorsk District, Sosnovets Central Forestry, Varzero Lake, 64°29'24"N, 32°46'9"E, 153 m a.s.l., spruce forest near brook, on decaying wood, with *Blepharostoma trichophyllum* (L.) Dumort. and *Lophozia guttulata* (Lindb. & Arnell) A. Evans, with gemmae and perianths, 7 July 2009, leg. O. V. Ilina #OI 3-22-09 (KPABG 112925).

Anastrophyllum michauxii is a montane subcircumpolar species (Damsholt, 2002). The present record probably represents its northernmost occurrence, being a species new to the Republic of Karelia. In Russia, *A. michauxii* has been found generally in southern mountainous areas (Konstantinova *et al.*, 2009). The nearest locations in Europe are known from southern Finland (Laaka-Lindberg *et al.*, 2009), Leningrad Province (Potemkin *et al.*, 2008; Kushnevskaia & Potemkin, 2014), Vologda Province (Ellis *et al.*, 2012d) and Komi Republic (Dulin, 2007).

2. *Anthoceros lamellatus* Steph.

Contributors: B. Cykowska-Marzencka and F. Mogro

Bolivia: Dept. Cochabamba, prov. Carrasco, Parque Nacional Carrasco, near Cortas village, 17°25'51.5"S, 65°14'10.3"W, 1955 m a.s.l., on wet soil by river and trail, 23 November 2010, leg. B. Cykowska-Marzencka & F. Mogro 10685a (KRAM, LPB).

Anthoceros lamellatus was reported from North America from a few localities in North and South Carolina as *Aspiromitus appalachianus* R.M. Schuster (Schuster, 1992) and from tropical America in Costa Rica (Dauphin *et al.*, 2006), Panama (Dauphin *et al.*, 2006; Bainard & Villarreal, 2013), Venezuela (Duff *et al.*, 2007), Columbia (Bainard & Villarreal, 2013), Argentina (Hässel de Menéndez & Rubies, 2009) and Brazil (Hässel de Menéndez, 1990; Gradstein & Costa, 2003; Costa, 2013a).

In Bolivia, *A. lamellatus* was discovered growing on the ground near a medium-sized river flowing by the trail in a cloud forest area called "Yungas Montañoso". The area is protected as the National Park Carrasco, but people live there and certain types of agricultural activity occur. The gametophyte of the specimen formed dark green irregular rosettes, 1.5–2 cm in diameter, with flat oblong narrow lobes ending in, often raised, marginal filaments. Capsules were 2.0–2.5 cm long and contained black tetrahedral spores 40–45 µm diameter, with (2–)3–4(–5) forked spines on the outer face. These spines were up to 4 µm long and covered the entire outer face of the spore; the inner face of the spore was uneven. Pseudo-elateres were not observed.

With the discovery of *A. lamellatus*, and recently published records of *Anthoceros punctatus* L. (Ellis *et al.*, 2014a), *Phaeoceros carolinianus* (Michx.) Prosk. (Ellis *et al.*, 2013a) and *Phaeomegaceros fimbriatus* (Gottsche) Duff, J.C. Villarreal, Cargill & Renzaglia (Cykowska, 2014), the hornwort flora of Bolivia has expanded to eight species (Churchill *et al.*, 2009).

3. *Antitrichia curtispindula* (Hedw.) Brid.

Contributors: R. Gabriel, M. C. M. Coelho, D. S. G. Henriques, S. C. Aranda, C. Ah-Peng and E. Sjögren

Portugal: Azores, Pico Island, Pico Mountain, epiphytic on *Erica azorica* Hochst. ex Seub., 09 September 2012. (1) 38°27'57.5"N, 28°24'59.5"W, 1601 m a.s.l., leg. Márcia C. M. Coelho & Claudine Ah-Peng *s.n.*; (2) 38°27'55.7"N, 28°24'59.7"W, 1588 m a.s.l., leg. S. Débora, G. Henriques & Silvia Calvo Aranda *s.n.*; (3) 38°27'55.7"N, 28°24'59.7"W, 1588 m a.s.l., leg. Rosalina Gabriel & Fernando Pereira *s.n.* (AZU).

This suboceanic, relatively large moss is distributed from southern European countries and North Africa to the southern parts of Scandinavia; it is already known from Macaronesia, both on the Canary Islands and Madeira. Its size and characteristically recurved teeth at the leaf apex makes it quite easy to detect, even in fossils (Dickson, 1973). During the twentieth century its distribution has declined (e.g. Porley & Hodgetts, 2005) and although it was not considered in the Red Data Book of European Bryophytes (ECCB European Committee for Conservation of Bryophytes, 1995) it was recently classified as vulnerable or endangered in countries such as Germany, Holland and Poland (Hodgetts, 2015). Nevertheless, the species appears to be recolonising England (Porley & Hodgetts, 2005; Hodgetts *et al.*, 2006; Blockeel, 2012) and Belgium (De Beer, 1998), possibly responding to changing air quality and/or global warming. A new record, from the mountains of Morocco, was recently made by Draper *et al.* (2005), and it was also recorded for Algeria (a single record; Ros *et al.*, 2013).

Sjögren (2006) included *A. curtispindula* among the species unexpectedly absent in the Azorean archipelago, while on Madeira Island, it is considered restricted to high mountain habitats (Sim-Sim *et al.*, 2014). Regarding substrate preference, it has been collected both on bark and rock (e.g. Jonsgard & Birks, 1993; Atherton *et al.*, 2010), and the three Azorean collections were made on one of the most common plant species in the archipelago and one of the few woody plants above 1500 m, *Erica azorica*. Bark samples had pH values ranging from 4.58 to 4.71, matching with the acidic side of the range described by Dierssen (2001) (acidophytic-

subneutrophytic). The species appeared quite rare in the Azorean locations, and was accompanied by other species such as *Frullania tamarisci* (L.) Dumort., *F. teneriffae* (F. Weber) Nees, *Hypnum uncinatum* Jur., *Isoetecium myosuroides* Brid. and *Ulotia crispa* (Hedw.) Brid. The collected plants were sterile.

4. ***Brachythecium austrosalebrosus*** (Müll.Hal.) Kindb.

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

Antarctica: Palmer Archipelago, Litchfield Island, 64°46'17.78"S, 64°05'29.75"W, 26 m a.s.l.; in wetland, 06 Feb. 2014, *leg.* Y.-J. Yoon *KG-1645* (KOPRI)

Brachythecium austrosalebrosus is new to Litchfield Island, but was previously known in the Palmer Archipelago. *Brachythecium* is the one of the largest genera of bryophytes, consisting of approximately 175 described species (Crosby, 2000). Three species of *Brachythecium* have been reported from Antarctica and *B. austrosalebrosus* is widely distributed throughout the maritime Antarctic. This species occurs in permanently moist or wet habitats, although sometimes it also colonises rocks in dry sites. The sporophytes are, as yet, completely unknown. *B. austrosalebrosus* is also known from Bolivia and Peru (Ochyra *et al.*, 2008b).

5. ***Brachythecium extremorientale*** Ignatov

Contributors: J. D. Orgaz and Y. Sakamoto

Japan: Honshu: (1) Fukushima prefecture, Minamiizu, Hinoemata, Mount Hiuchigatake, 36°58'57"N, 139°18'06"E, 1510 m a.s.l., on decaying log, 20 August 2014, *leg.* Y. Sakamoto *645* (HIRO); (2) Nara prefecture, Yoshino, Omine mountains, Mount Hakkyo, 34°10'27"N, 135°54'24"E, 1800 m a.s.l., on tree base, 5 November 2014, *leg.* J. D. Orgaz *78* (HIRO).

Brachythecium extremorientale was described by Ignatov *et al.* (2008) based on some specimens collected in eastern Russia (Primorsky territory and Kuril Islands). Until now, its presence was recorded only in the Russian Far East, and therefore, these are the first records of this species outside Russia. Both specimens were found growing as epiphytes in wet coniferous forest dominated by *Tsuga diversifolia* (Maxim.) Mast and *Abies mariesii* Mast. According to Ignatov *et al.* (2008) Russian specimens were also epiphytic but occurred at lower altitude; at the same time they pointed out that the presence of this species in Japan was quite probable. *B. extremorientale* is quite similar to *Brachythecium buchananii* (Hook.) A. Jaeger and sometimes could be confused with this species, especially if samples are not well developed. The most important diagnostic characters that distinguish *B. extremorientale* are the autoicous sexual condition, the serrulate leaf margin, at least

in the apical part of leaf, and the usually robust aspect of the plant, while *B. buchananii* is dioicous, the leaf margin is entire or subentire and the plants are small to medium-sized.

6. ***Bruchia flexuosa*** (Schwägr.) Müll.Hal.

Contributors: A. Mesterházy and Cs. Németh

Hungary: Somogy County, 0071.1 (Central European Mapping Scheme), ca 6 km north-east of the town of Barcs, 45°59'36.0"N, 17°31'18.0"E, ca 163 m a.s.l., at the edge of a temporary pool in a sandy acidic field growing Lucerne (*Medicago sativa* L.) 04 May 2015, *leg.* A. Mesterházy; 18 May 2015, *leg.* A. Mesterházy and Cs. Németh, det. Cs. Németh, (Hb. Németh 6660, 6675).

In the course of studying the vascular flora of damp stubble fields and fallow land with temporary ponds in Somogy County, at the southern corner of the Transdanubian region, the first contributor collected bryophytes in order to investigate the plant communities of these special habitats in detail. These samples were then passed to the second contributor for determination. Besides familiar mosses, liverworts and hornworts, we spotted 26 sporophytes of a strange moss we had never seen before. The urns were pyriform and had a conspicuous elongate neck with numerous superficial stomata. Capsules of this unique shape are typical of the family Bruchiaceae Schimp. Based on its morphological characters (short seta, cleistocarpous urn, ratio of the length of neck and capsule, echinate spores) we identified the plant as *Bruchia flexuosa*. This is a Holarctic species widely distributed in North America (Zander, 2007). It has only been encountered once in Asia, (in Japan: Schwarz, 2014), and is extremely rare in Europe. In the latter region, the species has been reported from four countries, in most of which it has Red Data listing: Italy (DD – data deficient), Austria (0 – extinct), Slovenia (RE – regionally extinct) and Croatia (Ros *et al.*, 2013; Hodgetts, 2015). Three of these findings (Italy, Austria and Slovenia) date back to the 19th century (Frey *et al.*, 2006), but the Croatian occurrence was discovered by Ruprecht Düll in 1987 (Düll *et al.*, 1999).

After recognising the significance of our discovery we revisited the site on 18 May 2015 in order to study it in more detail as well as to estimate the population size. In spite of searching the locality very carefully, only 6 further sporophytes were found. Plants without sporophytes may be present in larger number, but are almost impossible to detect owing to their small size. We checked similar wet habitats in the surrounding fallow fields without success.

In the Hungarian habitat *B. flexuosa*, which is an ephemeral and poorly competitive species, grows on moist, bare, acidic sandy soil among tussocks of the locally dominant vascular plant, *Juncus bufonius* L., at the margin of an ephemeral pool, embedded in a Lucerne field.

Further higher plants (partly classified as Nanocyperions) listed in the vicinity of *B. flexuosa* were the following: *Ranunculus sardous* Crantz, *Trifolium repens* L., *Juncus tenageia* Ehrh. ex L., *Juncus effusus* L., *Schoenoplectus mucronatus* (L.) Palla, *Lythrum hyssopifolia* L., *Eleocharis ovata* (Roth) Roem. & Schult., *Peplis portula* L., *Chenopodium polyspermum* L., *Sagina apetala* Ard., *Echinochloa crus-galli* (L.) P.Beauv., *Polygonum aviculare* L. Associated bryophytes were: *Funaria hygrometrica* Hedw., *Physcomitrium pyriforme* (Hedw.) Bruch & Schimp., *Bryum argenteum* Hedw., *Bryum dichotomum* Hedw., *Ceratodon purpureus* (Hedw.) Brid., *Trichodon cylindricus* (Hedw.) Schimp., *Dicranella staphylina* H.Whitehouse, *Riccia bifurca* Hoffm., *Anthoceros agrestis* Paton and *Phaeoceros carolinianus* (Michx.) Proskauer.

Bruchia flexuosa is new to Hungary. It will be interesting to monitor the site to find out if it is a permanent or a transitory member of the Hungarian bryoflora.

7. ***Bryum barnesii*** J.B.Wood ex Schimp.

Contributor: P. Erzberger

Hungary: Pest County, Visegrád Mountains [8280.1] (Central European Mapping Scheme), Tahi, on the northern slope of the hill Kenézaklatető (Ábrahám-bükk), not far from the meadow Nádas-tói-rét, at the edge of oak forest, above steep bank of forest road, associated with *Pleuridium subulatum* (Hedw.) Rabenh., ca 370 m a.s.l., 47°45'12.1"N 19°01'43.4"E, 4 April 2015, leg. P. Erzberger (B, Erzberger 19786), conf. W. Schröder, 7 May 2015.

As understood by continental authors (e.g. Ahrens in Nebel & Philippi, 2001; Meinunger & Schröder, 2007a; Erzberger & Schröder, 2013), *B. barnesii* is characterised by axillary bulbils 100–250(–450) µm long, with blunt, rounded, incurved leaf primordia, up to 10(–15) in number per leaf axil; leaves with a usually blunt tip, in particular on the upper part of the stem, and golden green to olive green colouration. *B. bicolor* Dicks. has larger and fewer bulbils, and *B. gemmiferum* R.Wilczek & Demaret up to 30 smaller bulbils per leaf axil. Holyoak (2004) considers size and number of bulbils to be variable and therefore includes *B. barnesii* in the synonymy of *B. dichotomum* Hedw. However, according to the experience of continental bryologists, the two taxa

can be separated without problems (Meinunger & Schröder, 2007a).

Earlier reports of *B. barnesii* in Hungary (Düll, 1985) proved to be unsubstantiated (Erzberger & Papp, 2004), thus the taxon is missing in the latest checklist (Papp *et al.*, 2010), nor was it reported in a survey of the genus in Hungary (Erzberger & Schröder, 2013). *B. barnesii* is new to the bryoflora of Hungary.

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

Contributor: H. Bednarek-Ochyra

Ethiopia, Bale Province: Bale Mountains: (1) east of Kara Deema, 6°50'N, 39°43'E, 4120 m a.s.l.; afro-alpine *Helichrysum* heath on boulder field safe from fire and grazing with dense stands of *Lobelia rhynchopetalum* (Hochst.) Hemsl., on ground in humid rock crevices, 2 February 1990, leg. Georg and Sabine Miehe Nos. 1639 & 1630A (KRAM); (2) same locality, 6°50'N, 39°43'E, 4120 m a.s.l.; afroalpine plant successions on mounds of the giant molerat and associated rodents (pioneer vegetation), pasture bordering swamp, on ground in humid location, 2 February 1990, leg. Georg and Sabine Miehe No. 1605A (KRAM).

Bryum pseudotriquetrum was reported from the Bale Mountains but without a citation of its locality (Miehe & Miehe, 1994), so herein this report is substantiated by citation of the relevant collections. This locality is situated in Bale Province in south-eastern Ethiopia. In addition, *B. pseudotriquetrum* is also known from Wollo Province in the north-eastern part of the country (Wigginton, 2001). The moss flora of Ethiopia is still undercollected and in recent decades a good number of interesting afro-alpine species have been discovered in this country, especially in the Bale Mountains (e.g. Ochyra *et al.*, 2000; Blockeel *et al.*, 2001, 2004; Ellis *et al.*, 2012c, 2014c, d).

9. ***Bucklandiella lamprocarpa*** (Müll.Hal.)

Bednarek-Ochyra & Ochyra

Contributors: H. Bednarek-Ochyra and V. Plášek

Chile: XI Región Aysén del General Carlos Ibáñez del Campo, Provincia de Coyhaique, Ruta 686 from Elizalde to Lago Caro, 20 km SW of Elizalde and 40 km SW of Coyhaique, Río Mogote near the junction with Río La Paloma 3 km west of Lago El Desierto at northern foot of Cerro El Mirador, 346 m a.s.l., 45°54'247"S, 72°19'213"W, on large submerged or exposed stones in river bed with swiftly flowing water, 21 January 2015, leg. H. Bednarek-Ochyra, R. Ochyra & V. Plášek 990/15 (KRAM).

Bucklandiella lamprocarpa is a rheophytic moss growing on rocks, often submerged, in streams,

brooks and cascades with swiftly flowing water. The species exhibits a peculiar leaf morphology, with multistratose laminal cells, fleshy and strongly thickened marginal borders and a salient costa. These features are typical adaptations to rheophytic habitats which protect the plants against the destructive action of water currents and they are known in many mosses occupying such sites (Ochyra, 1985a,b, 1987; [Ochyra & Vanderpoorten, 1999](#)). *Bucklandiella lamprocarpa* is widespread in Chile, ranging from Provincia de Talca in the VII Región de Maule to Provincia de la Antártica Chilena in the XII Región de Magallanes y de la Antártica Chilena (Müller, 2009). The species was also erroneously reported from Región Metropolitana de Santiago (Bednarek-Ochyra & Ochyra, 2012a). Although the species was reported from all regions from Maule to Magallanes, in some regions it is known from only a single province. In the XI Región Aysén *B. lamprocarpa* was hitherto known only from Provincia de Aysén and herein it is reported from Provincia de Coyhaique.

Bucklandiella lamprocarpa is a southern pantemperate species deeply penetrating into the tropics along the Andean chain in South America ([Blockeel et al., 2002, 2009a](#); [Bednarek-Ochyra, 2014, 2015](#)) and East African Mountains ([Ochyra et al., 1988](#)). It has optimum occurrence in southern South America, where it occurs from central Chile to Tierra del Fuego and the Falkland Islands ([Bednarek-Ochyra et al., 1996](#); [Ochyra et al., 2015](#)) and in the Cape Floral Region in South Africa ([Bednarek-Ochyra & Ochyra, 2012b](#); [Ochyra & van Rooy, 2013](#)). Additionally, it occurs on some subantarctic islands ([Bednarek-Ochyra & Ochyra, 1998](#); [Blockeel et al., 2007a](#); [Ellis et al., 2010, 2011b](#)) and on Gough Island and Tristan da Cunha in the South Atlantic Ocean ([Ochyra et al., 1988](#)).

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

Contributors: H. Bednarek-Ochyra and M. Lebouvier

Îles Kerguelen: (1) Terre Grande, Presqu'île Bouquet de la Grye, in the vicinity of the hut in Port Couvreur, ca 20 m a.s.l., 49°17'04.4"S, 69°41'35.4"E; on dry and exposed stony ground, 9 November 2006, *leg. R. Ochyra 382/06* (KRAM); (2) Port Couvreur, 1 km north-west of the hut, cliffs on the right side of the stream, ca 50 m a.s.l., 49°16'54.7"S, 69°41'24.4"E, in rock crevices on stream bank, 19 November 2006, *leg. R. Ochyra 408a/06 & 486/06* (KRAM); (3) Port Couvreur, 1 km north-east of the cemetery, plateau on the hill "104", ca 90 m a.s.l., 49°16'28.962"S, 69°41'14.341"E, forming large patches on stony ground in the fellfield, in dry and exposed sites, 20 November 2006, *leg. R. Ochyra 658/06* (KRAM);

(4) Grande Terre, Peninsula Courbet, wide valley between Mont Amery and Mont Crozier, ca 600 m a.s.l., 49°17'36.9"S, 70°00'15.8"E, in open places in fellfield on gravelly soil in dry situation, forming large monospecific patches, 28 December 2006, *leg. R. Ochyra 3859/06* (KRAM); (5) south-eastern slope of Mont Crozier overlooking Val Studer, ca 600 m a.s.l., 49°17'36.9"S, 70°00'15.8"E, on thin damp soil in deep shady rock crevices in the fellfield, 28 December 2006, *leg. R. Ochyra 3825/06 & 3845/06* (KRAM); (6) plateau north of Ravin de Mica towards Rivière du Sud and les Mamelles, 337 m a.s.l., 49°16'02.0"S, 70°02'29.1"E, forming extensive monospecific patches in open and exposed situation on dry blocks in the fellfield, 27 December 2006, *leg. R. Ochyra 3541/06* (KRAM); (7) Golfe Du Morbihan, Île Australia, north-western side of the plateau, south of Anse des Macrocystis, opposite Île Stoll over Passe de l'Aventure, 124 m a.s.l., 49°27'56.4"S, 69°52'35.5"E, on soil on stony ground in the *Acaena magellanica* (Lam.) Vahl and *Azorella selago* Hook.f. community, in fairly dry, insolated and exposed situation, forming large pure stands, 20 December 2006, *leg. R. Ochyra 2961/06* (KRAM); (8) central part of the plateau over Lac Alice in the south-eastern part of the island, opposite Île Meyes over Passe de l'Aventure, 100 m a.s.l., 49°28'20.9"S, 69°52'38.8"E; on fairly dry, insolated and exposed rocks forming extensive mats, 20 December 2006, *leg. R. Ochyra 2945/06* (KRAM).

Bucklandiella membranacea is a typical amphiatlantic subantarctic species which is very common in the Prince Edward Islands (Ochyra & Hertel, 1990) and in Îles Crozet (Ellis et al., 2013c) in the Kerguelen Biogeographical Province in the Subantarctic. Additionally, the species occurs rarely at high elevations in Tristan da Cunha (Mitten, 1876), Tierra del Fuego, the Falkland Islands and the Archipelago Juan Fernández in the Pacific Ocean (Ellis et al., 2011b; [Ochyra et al., 2015](#)). Herein, *B. membranacea* is recorded for the first time from Îles Kerguelen where it appears to be a widely distributed and locally common constituent of the fieldmark vegetation. Îles Kerguelen is the largest and the oldest archipelago in the subantarctic and it has the richest moss flora in this biome. It consists currently of about 140 species, many of which were discovered through recent intensive fieldwork (e.g. [Ochyra & Poulsen, 2003](#); [Blockeel et al., 2009b](#); [Ochyra, 2010](#); [Ochyra et al., 2014](#)).

11. ***Bucklandiella pachydictyon*** (Cardot) Bednarek-Ochyra & Ochyra

Contributor: H. Bednarek-Ochyra

Gough Island: (1) top of South Peak, 800 m a.s.l., small cushions on rock, 16 September 2000, *leg. N. J. M. Gremmen 2000-829 & 2000-830* (KRAM);

(2) N-side of Edinburgh Peak, 850 m a.s.l., 16 September 2000, *leg.* N. J. M. Gremmen 2000-903 (KRAM); (3) N-facing slope of Tafelkoppie, 475 m a.s.l., loose cushions in mat of hepatics on shallow peat overlying mineral soil in wet sloping mire, 16 September 2000, *leg.* N. J. M. Gremmen 2000-716 (KRAM); (4) Tarn Moor, 2000 ft (=610 m) a.s.l., occasional on bare trachyte, with other bryophytes, 28 February 1956, *leg.* N. M. Wace 648 (BM); (5) without locality data, 1956, *leg.* N. M. Wace 659c (BM).

Gough Island is a small speck of land situated in the cool-temperate zone in the central part of the South Atlantic Ocean. The island belongs to the Tristan da Cunha group but it is highly isolated, lying 370 km south-west of Tristan da Cunha, 2400 km from South Africa, 3000 km from South America, and 3200 km from Antarctica. Its moss flora is still poorly known and to date only consists of a mere 68 species (Wace & Dickson, 1965; Ellis *et al.*, 2012a,b). Herein, one more species, *Bucklandiella pachydictyon*, is added to the island's bryoflora and this discovery confirms the well known fact that Gough Island harbours many austral cool-adapted species. This is an amphiatlantic south-cool-temperate species, occurring in the *Nothofagus* zone at the western fringes of southern South America (Ochyra *et al.*, 2008b) and extending to subantarctic South Georgia (Bell, 1974) and Deception Island in the maritime Antarctic, where it is evidently a postglacial immigrant (Birkenmajer *et al.*, 1985; Ochyra *et al.*, 2008a). It appears subsequently on the subantarctic islands in the Kerguelen Biogeographical Province in the South Indian Ocean (Cardot, 1916; Blockeel *et al.*, 2008a) with intermediate stations in the Tristan da Cunha group (Ellis *et al.*, 2015b), where it is apparently a postglacial coloniser, as is the case with many species of moss and liverwort on subantarctic islands (Van der Putten *et al.*, 2004, 2010). This type of distribution is exhibited by many austral species of moss, for example *Ditrichum conicum* (Mont.) Mitt. (Ochyra & Lewis Smith, 1998; Blockeel *et al.*, 2010; Ochyra & Bednarek-Ochyra, 2013), *Philonotis polymorpha* (Müll.Hal.) Broth. (Ellis *et al.*, 2013b); *Bucklandiella orthotrichacea* (Müll.Hal.) Bednarek-Ochyra & Ochyra (Bednarek-Ochyra & Ochyra, 2012a), *B. striatipila* (Cardot) Bednarek-Ochyra & Ochyra (Blockeel *et al.*, 2009c; Bednarek-Ochyra & Ochyra, 2010, 2013; Ellis *et al.*, 2013a), *Hygrodictyon falklandicum* Cardot (Blockeel *et al.*, 2007b), and *Bryum orbiculatidolum* Cardot & Broth. (Blockeel *et al.*, 2008a,b; Ochyra & Singh, 2008).

12. *Calypogeia tenax* (Spruce) Steph.

Contributor: B. Cykowska-Marzencka

Bolivia: (1) Dept. Pando, prov. Manuripi, Manuripi-Heath Amazonian Wildlife National Reserve, near Puerto Heath village, 12°29'38"S, 68°37'28"W,

170 m a.s.l., on rotten tree in lowland rain forest near banks of the Madre de Dios river, 20 May 2006, *leg.* B. Cykowska-Marzencka 5823 (LPB, KRAM). (2) Dept. Ben, prov. Ballivan, near Yucumo village, 15°09'40"S, 67°01'55"W, 254 m a.s.l., on palm root in secondary flooded pre Andean Amazon forest, 6 June 2006, *leg.* B. Cykowska-Marzencka 6458 (KRAM, LPB).

Calypogeia tenax is a tropical species confined to the Amazon basin in South America (Bischler, 1962; Fulford, 1968; Gradstein & Costa, 2003; Costa, 2013b). Until now it was known only in the northern hemisphere from Brazil, Colombia and Venezuela (Fulford, 1968; Gradstein & Hekking, 1979; Yano, 1984; Gradstein & Costa, 2003; Costa, 2013b). These Bolivian records are the first localities for the species in the southern hemisphere.

Many new bryophyte records for Bolivia have been reported recently (Blockeel *et al.*, 2009a; Blockeel *et al.*, 2010; Ellis *et al.*, 2012c, 2013a, 2014a; Cykowska, 2014), and despite a summary by Churchill *et al.* (2009), Bolivia remains poorly understood and requires additional study. *Calypogeia tenax* is the seventh species of the genus discovered in Bolivia.

13. *Campylium decipiens* (Warnst.) Walsemann

Contributors: P. Erzberger and Cs. Németh

Hungary: Veszprém County, Balaton uplands, 9071.3 (Central European Mapping Scheme), Szentbékállá, on the basaltic plateau of Kopácsi-Hill near the pond Füzés-tó, 46°54'22.5"N, 17°33'44.4"E, ca 300 m a.s.l. 1 October 2014, *leg.* P. Erzberger and Cs. Németh *s.n.* (B Erzberger 19017, Hb. Németh 6318). (Originally determined by P. Erzberger and Cs. Németh as *Amblystegium* cf. *radicale*, *rev.* L. Meinunger & W. Schröder, 13 February 2015).

Kopácsi-hill is covered with ca 20 ha of coppiced Turkey oak (*Quercus cerris* L.) woodland surrounding the temporary pond Füzés-tó. This area holds the strongest populations, presently known in Hungary, of the rare moss *Anacamptodon splachnoides* (Froel. ex Brid.) Brid. (Németh & Erzberger, 2015). Other bryophytes recorded in the vicinity include *Fissidens bryoides* Hedw., *Acaulon muticum* (Hedw.) Müll.Hal., *Dicranella schreberiana* (Hedw.) Dixon, and *Pottia truncata* (Hedw.) Bruch & Schimp. When the site was re-visited on 15 November 2014 and 11 April 2015, some parts of the forest floor near the pond were turned over, probably by boars, and the plants of *C. decipiens* could not be re-found.

Campylium decipiens was described as *Leptodictyum decipiens* by Warnstorf (1906; type locality: "Triglitz, auf einem Pappelstumpf, mit und unter *Amblystegium serpens* am 6. April 1898 von Jaap entdeckt"), but was forgotten until Walsemann

published some finds of this taxon from Northern Germany (Frahm & Walsemann, 1973), together with an amended description and more illustrations. Still, most bryologists did not take any notice of the species until Meinunger & Schröder (2007a) published occurrences in over 60 grid cells and demonstrated that it is mainly distributed in the lowlands of northern Germany, and is somewhat rarer in the south. However, they also report an occurrence in Austria (Steiermark).

A very characteristic feature of *C. decipiens* already mentioned by Warnstorf (1906) and illustrated by Walsemann (Frahm & Walsemann, 1973) are thickened axes found towards the ends of some branches, but also intercalary, with leaves erectopate, more crowded than on other parts, making a somewhat untidy impression. P.E. was able to study a specimen collected by W. Schröder in Schleswig-Holstein and revised by E. Walsemann, where this feature was nicely developed, and to compare it with the collection reported above.

Meinunger & Schröder (2007a) point out that the species is dioicous, differing in this respect from the otherwise similar autoicous or polyoicous *C. polygamum*. In habit, the plants are superficially similar to *Amblystegium radicale* (P.Beauv.) Schimp., but in that species the leaves are more distinctly decurrent.

Campyllum decipiens is new to the bryoflora of Hungary.

14. ***Campylopus schmidii*** (Müll.Hal.) A.Jaeger

Contributor: H. Bednarek-Ochyra

Zambia: Lusaka Province, between Undaunda and Rufunsa village 125 km east of Lusaka, 1200 m a.s.l., 15°09'05"S, 29°22'57"E, on north-facing granite rocks along the Great East Road, 14 January 1972, *leg.* T. Pócs, J. Kornaś & M. Kornaś 6621/T & 6621/U (KRAM).

Campylopus schmidii is predominantly a palaeotropical species whose geographical range covers SE Asia from India and Sri Lanka to New Guinea and SE Australia (Frahm, 1994a). It extends to the Hawaiian Islands (Frahm, 1985a) and California (Frahm, 1980) in the Pacific region, and to Madagascar and the Mascarene Islands in the East Indian Ocean (Frahm, 1985b, 1994b). The species is exceedingly rare in continental Africa where so far it has only been discovered in the Democratic Republic of Congo (Frahm, 1993) and Mozambique (Ellis *et al.*, 2014a). Here, *C. schmidii* is recorded from the third sub-Saharan African country, namely Zambia.

15. ***Cryphaea heteromalla*** (Hedw.) D.Mohr

Contributors: C. Sérgio and F. Sales

Cape Verde: São Nicolau Island, NNE slope of Monte Gordo Mountain, Mata dos Ingleses,

16°37'36"N, 24°21'10"W, ca 1015 m a.s.l., very shady planted woodland mainly *Cupressus lusitanica* Mill., 10 November 2006, *leg.* Fátima Sales 203 (COI, LISU233242).

Cryphaea heteromalla is a suboceanic-mediterranean species that occurs in temperate Europe, from Ireland to the Iberian Peninsula, as well as in the Macaronesian archipelagos of the Azores, Madeira and the Canary Islands. In Africa, according to O'Shea (2006a), it is known only from Tanzania, a record derived from a worldwide revision of the genus by Rao (2001). It has also been reported from Morocco, Algeria, and Tunisia and, in fact, most of the Mediterranean from Turkey to France and Spain, including the Balearic Islands (Ros *et al.*, 2013).

In Cape Verde the species was found as an epiphyte in shady, planted woodland, growing in a small colony associated with *Radula lindenbergiana* Gottsche *ex* C.Hartm. The specimens were fruiting and were, undoubtedly, indistinguishable from those of the Iberian Peninsula, exhibiting ellipsoid capsules immersed in the costate perichaetial leaves. *C. heteromalla* is apparently rare in Cape Verde, but its presence here and in the Macaronesian archipelago, south to the Canary Islands, should not be surprising.

16. ***Dicranella heteromalla*** (Hedw.) Schimp.

Contributor: H. Bednarek-Ochyra

Falkland Islands: (1) East Falkland, south shore of Murell River, opposite Islet Point, ca 35 m a.s.l., on moist, sandy, sheltered, vertical north facing rocks, 10 January 1965, *leg.* R. E. Longton & R. I. Lewis Smith *Longton 1023* (AAS, KRAM); (2) West Falkland, Hill Cove Forest (TC 81/89), 51°31'08"N, 60°08'37"W, ca 2 m a.s.l., dry earth bank sheltered by *Pinus sylvestris* L. var. *scotica* Beissn. and *Populus alba* L., associated with *Ceratodon purpureus* (Hedw.) Brid. and *Kindbergia praelonga* (Hedw.) Ochyra, 24 November 2001, *leg.* D. Broughton 18C (KRAM).

Dicranella heteromalla is a widespread, locally common and dominant, panholarctic, boreo-temperate moss. It grows in a wide range of habitats, primarily on acidic soil in woodlands, on peaty banks on heaths and moorland, among rocks, as well as on stumps and tree trunks. As is the case with many Holarctic moss species it penetrates deeply into the tropics where it occurs in isolated outposts in the tropical mountains, at elevations up to about 2900 m a.s.l. Most of these sites are in the Neotropics, including Costa Rica (Renauld & Cardot, 1893; Bartram, 1928; Bowers, 1970, 1974) and Honduras and Panama (Allen, 1994) in Central America, as well as Colombia (Hampe, 1863 as *Aongstroemia*

crassinervis Hampe; Churchill *et al.*, 1995) and Bolivia (Herzog, 1916) in South America. Additionally, this species is known from Kenya in East Africa where it was collected at similar altitudes (Dixon, 1938; Sappa & Piovano, 1947). Herein, *D. heteromalla* is recorded for the first time from the Falkland Islands in the southern cool-temperate zone where it was found at two sites on the two main islands of the archipelago, East Falkland and West Falkland. This discovery diametrically changes the phytogeographical status of *D. heteromalla* which must now be considered as a bipolar species with intermediate stations in tropical mountains. This category of bipolar moss disjuncts surprisingly consists of far fewer species than the group of bipolar species without intermediate occurrences in the tropics. This distribution pattern is represented by only six trans-American species (Ochyra & Buck, 2003), but *D. heteromalla* represents a slightly different category as it also occurs in sub-Saharan Africa.

Dicranella heteromalla is a remarkable addition to the moss flora of the Falkland Islands. The moss flora of this archipelago consists of 146 species, two subspecies and eight varieties (Matteri, 2003), but the real number of taxa is still uncertain. It is likely that this number will be greatly reduced as a result of a critical taxonomic assessment, but the inevitable reduction in the number of species is constantly compensated for by new additions to the bryoflora of the Falkland Islands (Allen & Magill, 2003; Bednarek-Ochyra & Ochyra, 2003; Blockeel *et al.*, 2003; Ochyra & Broughton, 2004; Ellis *et al.*, 2011b; Ochyra *et al.*, 2015).

17. *Encalypta trachymitria* Ripart

Contributor: V. Fedosov

Iceland: Norðurland eystra, Jokuldalur, *ca* 64°41'N; 18°01'W, 21 July 1981, B. Johansson 34912 (MW); Norðurland vestra, Oxnadalsheidhi, *ca* 65°28'N; 18°45'W, 7 July 1973, B. Johansson 15138 (MW); Norðurland eystra, vicinity of Akureyri Town *ca* 65°41'N; 18°05'W, 19 May 1927, I. Oskarsson 4509 (MW); same place, 6 August 1971, B. Johansson 9936 (MW); Capital city region, prastarholsorgil, *ca* 64°09'N; 21°93'W, Olafur Davidsson 201 (MW).

Five specimens of *Encalypta trachymitria* were discovered as a result of the revision of specimens from Iceland previously referred to *E. rhaptoarpa* Schwägr. Hitherto, the species was regarded as the variety *E. rhaptoarpa* var. *leptodon* (Bruch) Lindb. (Hill *et al.*, 2006), but a recent study of *Encalypta* sect. *Rhapdotheca* Müll.Hal. (Fedosov, 2012) confirmed the specific status of *E. trachymitria*. From the Arctic to the temperate zone, the species is associated with limestone mountains as well as basic siliclastic rocks. Most of the localities for the species in Iceland are in the northern and central regions.

18. *Entosthodon kroonkurk* Dirkse & Brugués

Contributors: C. Sérgio, M. Sim-Sim and M. C. Duarte

Cape Verde: Fogo Island, Chã das Caldeiras, in a volcanic stone wall with *Bryum argenteum* Hedw., 14°56'38"N, 24°21'50"W, *ca* 1690 m a.s.l., 25 November 2006, *leg.* Maria Cristina Duarte 3600a (LISU257473).

This is a recently described species (Dirkse & Brugués, 2010) with a limited known distribution. It occurs in the Canary Islands and southern Spain (Ros *et al.*, 2013). *E. kroonkurk* is related to *Entosthodon pulchellus* (H. Philib.) Brugués, from which it differs by its recurved and more or less squarrose leaves when dry, and the spores with distinct crown-like or bottle top-like caps.

This new record from Cape Verde is not surprising, nevertheless it expands the known range of the species further south from the Canary Islands (Brugués & Ruiz, 2010). Here, it is known on six islands, in the southern areas of Hierro, La Palma, Tenerife, and Gran Canaria but seems rare on both Fuerteventura and Lanzarote.

In Cape Verde the species was collected on exposed slopes with xerophytic vegetation on Fogo Island. Research in the archipelago is in its early stages, but so far suggests that *E. kroonkurk* is as abundant as in the Canary Islands.

19. *Eucamptodontopsis pilifera* (Mitt.) Broth.

Contributor: D. Pinheiro da Costa

Brazil: Roraima, Uiramutã, Parque Nacional do Monte Caburaí, 8°09'31.9"N, 60°10'20"W, 1300–1400 m a.s.l., no tronco de árvores, November 2014, *D. P. Costa et al.* 6072, 6083, 6154 (RB).

The genus *Eucamptodontopsis* Broth. is reported here for the first time for Brazil. According to Price (2002), the genus comprises five species found in Central America, the Caribbean, and northern South America. *E. pilifera* occurs in Cuba, Guadeloupe, Dominica, Martinique, St. Lucia, Trinidad, Venezuela, and Suriname. Robinson (1986) considered the genus *Eucamptodontopsis* to be centered in the tepuis (Guiana Highlands), demonstrating some relationship between the tepui and Caribbean moss floras, with several species originally considered endemic to the West Indies being collected in the Guiana Highlands. Desamoré *et al.* (2010) commented that total species endemism in the tepuis is not known, but that moss endemism was lower than that of liverworts.

Eucamptodontopsis pilifera is characterised by small to medium-sized plants, growing in mats or erect tufts, leaves crowded, clasping at base, erect, ovate, concave, long-acuminate, with hyaline, piliferous hair-points, margin entire, costa single, subpercurrent, laminal cells porose, alar cells well-

differentiated, reddish-orange, subquadrate, thick-walled.

20. *Fissidens perfalcatu*s Broth.

Contributors: G. M. Suárez and J. R. Flores.

Uruguay: Rocha, Parque Nacional Fortaleza Santa Teresa, Sendero de interpretación, on rock, 33°00'7.87"S, 53°33'21.63"W, 33 m a.s.l., 10 March 2011, *leg.* G. Suárez 1180 (LIL).

In recent years, some new mosses and liverworts have been recorded from Uruguay (Ellis *et al.*, 2011b, 2012b,d; Suárez & Schiavone, 2013; Suárez *et al.*, 2014). Eleven species of *Fissidens* have been documented for this country (Ellis *et al.*, 2013c).

*Fissidens perfalcatu*s was found during research on bryophytes collected in the National Park Fortaleza, in the north-east of Uruguay. According to Matteri (2004) this species was previously unrecorded in this republic, although it is known in other South American countries, such as Brazil, Colombia, Peru, Suriname and Trinidad.

*F. perfalcatu*s is distinguished by its unipapillose laminal cells and limbate leaves, with the limbidium restricted to the broad vaginant lamina that encloses the stem. The species is illustrated by Pursell (2007).

21. *Fontinalis hypnoides* Hartm.

Contributor: V. Fedosov

Iceland: Suðurland, Hveragerði town vicinity, ca 64°00'N; 21°10'W, on boulder in thermal stream near waterfall, 6 March 2015, *leg.* V. Fedosov *s.n.* (MW).

This species, new to Iceland, has a wide distribution in boreal and temperate areas of the Holarctic and several localities in the Arctic, penetrating southward to North Africa and the Arabian Peninsula (Ros *et al.*, 2013).

22. *Homalothecium mediterraneum* Hedenäs

Contributors: M. S. Sabovljević, J. Pantivić and A. D. Sabovljević

Croatia: Dalmatia, Omiš surrounding, near the mouth of the river Cetina at the Adriatic, on a calcareous hill, on north exposed rocks, 43.446486°N, 16.695500°E, 10 m a.s.l., 29. September 2013. *leg./det.* Marko S. Sabovljević, Jovana Pantivić & Aneta D. Sabovljević (BEOU BryoO6851).

Hedenäs *et al.* (2014) recently separated *Homalothecium mediterraneum* from the complex of *H. sericeum* *s.l.* A small collection of mosses made around the town of Omiš (Croatia) included among others, additional Mediterranean bryophyte species such as *Reboulia haemisphaerica* (L.) Raddi, *Targionia hypophylla* L., *Bryum radiculosum* Brid., *Dicranella howei* Renauld & Cardot, *Pleurochaete squarrosa* (Brid.) Lindb. and a moss at first sight thought to

be *Homalothecium sericeum* (Hedw.) Schimp. However, closer microscopical examination, especially of the sporophyte, showed the specimen to belong to *H. mediterraneum*. The latter is relatively easily distinguished from other *Homalothecium* species by having a smooth seta. Hedenäs *et al.* (2014) confirmed that its circum-Mediterranean distribution so far included the Canary Islands, Spain, Italy, Montenegro, Greece, Cyprus, Turkey and Tunisia. Thus, according to Pavletić (1955), Sabovljević (2006), Sabovljević *et al.* (2008) and Ros *et al.* (2013), it is new to Croatia.

Although Croatia seems to have a relatively well-documented bryophyte flora (Sabovljević *et al.*, 2001, 2011; Sabovljević, 2004), new bryophyte species for the country still continue to be recorded (e.g. Kučera, 1998; Blockeel *et al.*, 2009c; Papp & Sabovljević, 2009; Ellis *et al.*, 2012c; Papp *et al.*, 2013). With this new record the Croatian bryophyte flora includes 659 species.

23. *Hygrohypnum choprae* Vohra

Contributors: R. Gupta, V. Nath, A. K. Asthana and N. Pande

India: Central India, Madhya Pradesh, Chhindwara, Pachmarhi Biosphere Reserve, near Jambu Dweep, 22°46'N 78°43'E, on rocks, ca 792 m a.s.l., 29 November 2006, *leg.* V. Sahu & V. Awasthi *s.n.* (LWG227645),

Hygrohypnum Lindb., a prominent genus of the moss family Amblystegiaceae is represented in India by *H. choprae* Vohra, *H. dilatatum* (Wils.) Loesk., *H. luridum* (Hedw.) Jenn. and *H. nairii* Vohra (Vohra, 1983; Lal, 2005). The presently reported species *H. choprae* is endemic to India, and has previously been reported from the Eastern Himalayas (Vohra, 1980; Allen, 1987). Most species of *Hygrohypnum* occur on moist rocks in temperate regions of the world. In India, the four species were known only from the Himalayas and this is the first report of a species from any other region in the country. The present report therefore extends the range of *H. choprae* to central India, where it was found growing on rocks.

Features of the specimen: plants prostrate, dull green above, brownish-red below, loosely tufted; shoots slender, up to 12 mm long, flexuose, sometimes with sub-floral innovations. Leaves spreading, falcate, concave, delicate, bluntly pointed, $\pm 1.00 \times 0.47$ mm; costa short and double or indistinct; margin dentate at apex; lamina cells narrow, elongated, but becoming shorter at apex and longer and broader below, extreme basal cells rectangular to quadrate, alar cells indistinct.

24. *Leptobryum pyriforme* (Hedw.) Wilson

Contributors: H. Bednarek-Ochyra and V. Plášek

Chile: XI Región Aysén del General Carlos Ibáñez del Campo, Provincia de Capitán Prat, about 10 km south of Cochrane along Ruta 7 and 2 km south of Lago Esmeralda, a pasture with shrubs of various species of *Berberis* L. and a grove with relatively large trees of *Nothofagus* Blume, 275 m a.s.l., 47°19'126"S, 72°37'406"W, on clumps of clayey soil on banks of roadside ditch in shady and fairly damp site, 15 January 2015, leg. H. Bednarek-Ochyra, R. Ochyra & V. Plášek 472/15 (KRAM).

Leptobryum pyriforme has a wide but scattered distribution in Chile, ranging from IV Región de Coquimba in the north to XII Región de Magallanes y de la Antártica Chilena in the south. In northern and central parts of the country the species is relatively rare and it is usually known only from individual provinces within particular regions. The species appears to be more frequent in southern Chile, and in the Region of Magallanes, is known from several localities in the provinces of Magallanes and Última Esperanza, whereas in the Region Aysén it has been recorded from the provinces of Aysén and Coyhaique (Müller, 2009). Herein, *L. pyriforme* is recorded for the first time from the province of Capitán Prat in Region XI. Generally, *L. pyriforme* is rare and localised in Patagonia (Matteri, 2003; Ochyra *et al.*, 2008b) and is occasional in the cool and cold areas outside mainland southern South America, including the Falkland Islands (Matteri, 1986; Ellis *et al.*, 2015b) and subantarctic South Georgia (Ochyra *et al.*, 2002). Additionally, the species was twice recorded in the maritime Antarctic, on volcanic Deception Island in the South Shetland Islands archipelago (Ochyra *et al.*, 2008b) and in the Argentine Islands off the Graham Coast of the Antarctic Peninsula (Blockeel *et al.*, 2006).

25. *Nardia assamica* (Mitt.) Amakawa

Contributors: J. Váňa and †W. B. Schofield

United States of America, Alaska: Central Aleutian Islands, Adak Island, ca 0.5 miles E of Finger Bay, ca 51°49'N 176°36'W, exposed soil, top of outcrop with water seeping, 7 August 1994, leg. W. B. Schofield & M. I. Schofield 101646, det. J. Váňa (UBC ACC# B155744).

For several years *Nardia assamica* was known only from Japan and South Korea [Ulleung-do I. (= Dagelet I.) in the Sea of Japan] where it was originally determined as *Nardia sieboldii* (Sande Lac.) Steph. (*cf.* Amakawa, 1959). Subsequently, Amakawa (1963) transferred a poorly understood species, *Jungermannia assamica* Mitt., described from the Khasi Hills (India: Meghalaya, formerly Assam), to the genus *Nardia* Gray. Finally, Váňa (1972b) placed *Nardia sieboldii*

with all its synonyms to the synonymy of *Nardia assamica*. This synonymy is generally accepted by recent authors with the exception of Udar & Kumar (1981), who maintained both taxa as separate species and retained *Nardia assamica* as an endemic of India.

Nardia assamica has also been reported from China; firstly from the province of Anhui (Chen & Wu, 1965), and later from the provinces of Hunan and Jiangxi (Váňa, 1972a), Liaoning, Jiangsu, Zhejiang, Fujian, Guizhou, Sichuan and Yunnan (Gao & Bai, 2001), and Taiwan (Váňa & Inoue, 1983) with additional localities from the Korean Peninsula (*cf.* Yamada & Choe, 1997).

Collections of *Nardia assamica* from the Russian Far East were apparently first reported by Arnell (1927) from Kamchatka as *Nardia kamtschatica* Arnell & C.E.O.Jensen. The type of this species is not available and probably lost, but the possible placement of the species in synonymy with *Nardia assamica* was proposed by Váňa (1976) and accepted by Bakalin (2003). Subsequently, this species had been collected in some additional localities in Kamchatka, and also in Sakhalin (Bakalin *et al.*, 2005), Kuril Islands (Bakalin, 2007; Bakalin *et al.*, 2009) and in Khabarovsk and Primorski Provinces of Russia (Bakalin, 2012). Russian accounts of species of the *Nardia* sect. *Subclavatae* Inoue (Bakalin, 2008) were based only on the publications of Russian authors (Arnell, 1927 was not mentioned); also perplexing is that Indian and Chinese Himalayan localities, the area in which the type locality lies, were omitted in the distributional data of this species. It is also of interest that the secondary occurrence of this species had already been published by Duda (1966) from Transcaucasia, from the Himalayan sector of the Batumi Botanical Garden (Georgia: Adjara).

In Bakalin *et al.* (2005: 147), the first author stated that he had collected *Nardia assamica* in 2002 on the Commander Islands (Aleutian Islands). The cited collection must have been made on Bering Island, where Bakalin collected liverworts in 2002; collections in Mednyj Island were made by the same author until 2004 (*cf.* Bakalin, 2009: 12, 47). However, this species was not reported in his study of the liverwort flora of Bering Island (Bakalin, 2005), and also this collection was not cited in Bakalin (2008, 2010). If the first mentioned report is correct, it probably represents the first from the Aleutian Islands.

The present locality on Adak Island extends the known range of this species to North America, and it represents the first record in the U.S.A. and North America.

26. *Orthorichum obtusifolium* Brid.

Contributor: V. Fedosov

Iceland: Suðurland, Hveragerði town vicinity, ca 64°00'N; 21°10'W, on poplar trunk in town park with *O. speciosum* Nees in Sturm., 6 March 2015, leg. V. Fedosov s.n. (MW).

This species is widespread in the Holarctic, reaching the 70th parallel northward and is common in most European countries. However, until now it had not been found in Iceland. The moss flora of this country is still among the least studied in Europe, so further contributions towards our knowledge of it would be welcome.

27. *Orthotrichum scanicum* Grönvall

Contributors: M. Szczecińska, J. Sawicki, V. Plášek and J. Chmielewski

North America, United States of America: New York, Brooklyn, Prospect Park, near Fallkill Bridge, alley of deciduous trees, GPS coordinates (WGS 84): 40°39'44.11"N 73°58'18.87"W, 39 m a.s.l., 14 August 2007, leg. M. Szczecińska (OLS-M 1899).

The specimen cited above is an epiphytic moss new to the bryoflora of the U.S.A. and moreover the first known record of this species for the continent of North America.

Until recently, it was known to be widespread and locally common in central, west and northern Europe (Garilleti *et al.*, 1999; Lara *et al.*, 2001; van der Pluijm, 2004; Plášek & Mudrová, 2006; Meinunger & Schröder, 2007b; Blockeel, 2012) as well as the Mediterranean basin (including northern Africa) (Garilleti *et al.*, 1997; Draper *et al.*, 2003), the Balkans (Lara *et al.*, 2003), Turkey (Erdag *et al.*, 2004; Lara *et al.*, 2010), Georgia, Kazakhstan (*cf.* Medina *et al.*, 2009) and Kyrgyzstan (Ellis *et al.*, 2015a). *Orthotrichum scanicum* was unknown in the North America.

In the U.S.A., *O. scanicum* was first collected by Monika Szczecińska in 2007 in New York City. The species grew on the bark of a deciduous tree in Prospect Park, situated in the centre of Brooklyn. Detailed ecological data was not noted, but the population was richly fertile.

Orthotrichum scanicum is distinguished from related species by its immersed to semi-emergent capsules with eight pairs of exostome teeth that quickly split into 16, and the possession of 16 appendiculate endostome segments that are as long as the exostome teeth. Capsules of the species have eight narrow striae, and when dry, are furrowed only in their upper half. The leaf apex is often denticulate.

28. *Plagiothecium cavifolium* (Brid.) Z.Iwats.

Contributors: R. Gupta, V. Nath, A. K. Asthana and N. Pande

India: Central India, Madhya Pradesh, Chhindwara, Pachmarhi Biosphere Reserve, near Jambu

Dweep, 22°46'N 78°43'E, on soil, ca 793 m a.s.l., 29 November 2006, leg. V. Sahu & V. Awasthi s.n. (LWG 227652A); Apsara Fall, 22°46'N 78°43'E, on moist rocks, ca 734 m a.s.l., 1 December 2006, leg. V. Sahu & V. Awasthi s.n. (LWG 227699A).

This moss, in the family Plagiotheciaceae, has previously been reported from Bhutan and Nepal in the Indian subcontinent. Gangulee (1978–80) reported five species of *Plagiothecium* Schimp. as occurring in India, and later, Lal (2005) listed eleven. Nearly all of these had been reported from the Himalayas and southern India. Here, *P. cavifolium* is reported as a new record from a central Indian locality.

As expected in *P. cavifolium*, the plants in this collection were glossy-yellowish green, julaceous, irregularly branched and formed dense tufts and mats. The leaves were erecto-patent, concave, ovate-lanceolate, narrowing to a decurrent base, asymmetrical to symmetrical, $\pm 1.2 \times 0.6$ mm, with a short double costa, entire margins, and narrow laminal cells; differentiated alar cells were quadrate-rhomboid. The specimen was fertile, bearing deep red, ovate-cylindrical capsules, slightly inclined on erect, yellowish-red setae. Operculae were conical and the spores light brownish-yellow with granular ornamentation. The plants were growing on moist rocks in association with *Herpetineuron toccoe* (Sull. & Lesq.) Cardot and *Campylopus ericoides* (Griffith) A.Jaeger.

29. *Plagiothecium membranosulum* Müll.Hal.

Contributor: H. Bednarek-Ochyra

Democratic Republic of Congo: (1) North Kivu Province, Rwenzori Mountains, Lanuri Valley, 0°20'N 29°48'E, ca 2000 m a.s.l., on soil in shady place, 22 May 1914, leg. Bequaert 4419 (BR, PC) and 19 May 1914, leg. Bequaert 4419 (BM); (2) North Kivu Province, Mount Karisimbi, Camp Lukumi, 1°28'N, 29°26'E, ca 3460 m a.s.l., March 1929, leg. Derscheld s.n. (PC, S); (3) South Kivu Province, Kahuzi-Biega National Park, Kakenge, submontane secondary rainforest with many tree ferns along road from Tshivanga to Kalonge with *Parinari excelsa* Sabine, *Albizia gummefera* (J.F.Gmel.) C.A.Sm. and *Newtonia buchananii* (Baker) G.C.C. Gilbert & Boutique, 2°20'S 28°44'E, 2100 m a.s.l., on litter, 2 September 1991, leg. T. Pócs 7603 (KRAM).

Plagiothecium membranosulum is an African endemic species occurring in montane rainforests up to an elevation of 4000 m a.s.l. Its main centre of geographical distribution is in the East and Central African mountains of Tanzania, Kenya, Rwanda and Uganda (Ellis *et al.*, 2012c, 2014b, 2015b), and the present record from the Democratic Republic of Congo completes its range in this part of Africa.

In addition, *P. membranosulum* is widespread in southern Africa from where it was described, and where it is most abundant and widespread (O'Shea, 2006b). It has also been found once on Réunion Island in the Mascarenes in the Indian Ocean (Ellis *et al.*, 2011a). Interestingly, the species had not hitherto been recorded from West Africa.

30. ***Platycaulis renifolia*** R.M.Schust.

Contributors: J. E. Gil-Novoa, M. E. Morales-Puentes and S. R. Gradstein

Colombia: Boyacá, municipio de Viracachá, vereda Caros, transición de páramo y arbustal, 3170 m a.s.l., with *Plagiochila* spp. and *Syzygiella rubricaulis* (Nees) Stephani, November 2014, *leg.* J. E. Gil-Novoa, P. A. Gil-L. & E. C. Sánchez 2498 (UPTC) (*collection Convenio 14-13-014-195 CE, UPTC-IAvH 2014-2015*).

Platycaulis renifolia (Lophocoleaceae), the only known species in the genus *Platycaulis*, is a rare neotropical liverwort characterised by its dark brown colour, reniform appressed-transverse leaves, leaf cells with large trigones and a papillose cuticle, deeply bifid underleaves with 2–4 cilia on each segment, and rhizoids in bundles from the bases of the underleaves. The species was long known only from the type locality in Venezuela (páramo de Tamá) where it was collected in 1976 by the late Dr R. M. Schuster (Schuster, 1978, 1995). Recently, the species was discovered in Ecuador, in the páramo El Angel (volcán Chiles, 3600 m) at the border with Colombia (Benitez *et al.*, 2012). The collection from the Eastern Cordillera of Colombia (Boyacá) reported here is the third record of *Platycaulis renifolia* and the first one from Colombia. The species seems to be characteristic of shaded locations in wet paramo of the northern Andes, above 3000 m. The specimen was found in paramo, on soil in a humid and shaded area; protected by shrubby species of Ericaceae, Asteraceae and Brunelliaceae and grasses, growing in association with *Syzygiella rubricaulis* (Nees) Steph. and various species of *Plagiochila*. *Platycaulis renifolia* should be looked for in other humid paramos in the northern Andes, especially in Colombia where this type of habitat is common. In addition, a study should be undertaken of the phylogenetic relationships of *Platycaulis*, which remain unclear.

31. ***Polytrichastrum longisetum*** (Sw. ex Brid.) G.L.Sm.

Contributor: A. Pérez-Haase

Andorra: Pyrenees, Canillo, Siscaró, acidic fens, ED50 31TC316, 2140 m a.s.l., July 2004, *leg.* A. Pérez-Haase *s.n.* (BCN-Bryo 3956).

Polytrichastrum longisetum is a circumpolar boreo-temperate species, widespread in northern Europe (Smith, 2004). However, in the Iberian Peninsula

the species is restricted to four localities. Therefore, it was considered critically endangered and included among the threatened bryophytes of Spain (Brugués & González-Mancebo, 2012). *P. longisetum* was first reported from Andorra by Corbière (1897), but unfortunately the voucher specimen was not found during a review of *Polytrichastrum* in the Iberian Peninsula (Brugués *et al.*, 2007). Thus, this is the first modern report of the species 118 years after its first discovery in Andorra.

32. ***Pterygoneurum lamellatum*** (Brid.) Jur.

Contributors: A. Stebel, B. Fojcik and R. Zubel

Poland: Silesian Upland, west of Gliwice-Łabędy, bank of pond, ca 50°21'N 18°39'E, 260 m a.s.l., 24 March 1934, *leg.* A. Graw *s.n.* (LBL).

Pterygoneurum lamellatum is a holarctic moss with a submediterranean distribution in Europe (Düll & Meinunger, 1989). It is a small (1–2 mm), ephemeral species growing on calcareous soil, mud-capped limestone walls and in chalk pits (Smith, 2004). It is easy to distinguish from other species of *Pterygoneuron* by its operculum, which has cells in spiral rows. In many European countries the species is classified as threatened (Hodgetts, 2015), and it is included in the *Red Data Book of European Bryophytes* in the V (vulnerable) category (Schumacker & Martiny, 1995).

Although the occurrence of this species in Poland was highly possible, as it occurs in bordering countries, such as Germany (Meinunger & Schröder, 2007a), the Czech Republic (Kučera *et al.*, 2012) and the Ukraine (Ignatov *et al.*, 2006), it has not previously been reported from Poland (Ochyra *et al.*, 2003).

During a revision of bryophyte collections gathered by A. Graw in the first half of 20th century in Silesia (S Poland), a bag with specimens of *P. lamellatum*, comprising several dozen individuals (some of them with mature sporophytes), was found. *P. lamellatum* was correctly determined by A. Graw, but this interesting information had never been published.

33. ***Riccia huebeneriana*** Lindenb.

Contributors: A. Mežaka and A. Potemkin.

Russia, Republic of Mordovia: Mordovia State Nature Reserve, 54°45'57.0"N 43°24'21.6"E, 17 July 2014 on wet soil of forest road, forest kvartal 396, *leg.* A. Mežaka *s.n.*, *det.* A. Potemkin (LE).

This species was found for the first time in the Republic of Mordovia in the Mordovia State Nature Reserve, on open soil of a forest road on the way to Cordon Pavlovskii. Its closest record in Russia is in the Okskiy Reserve of Ryazan Region (Volosnova *et al.*, 2000). *Riccia huebeneriana* is a southern temperate species, found in Europe, Asia, North America and Africa. Occurring on open mud at the edge of ponds and on banks of quiet meandering streams, it is restricted to sites with a constant

moisture content in the substrate (Damsholt, 2009). *Riccia huebeneriana* is rather rare in Russia, found on various soil types (moderately and slightly acidic) in the European part of Russia, including the Ural Mountains (north-west, centre and south-east of European Russia, southern Urals) and Asian part of Russia (west Siberia, northern and southern part of Russian Far East,) (Potemkin & Sofronova, 2009).

Contributor: L. Thouvenot.

Spain: Girona, Alt Empurdà, Capmany, 122 m a.s.l., UTM 31T: 04952 E, 46920 N, on wet soil at the edge of periodically flooded grassland, *leg.* L. Thouvenot 3994 (BCB58401).

This species is usually found on very damp sandy clay, more or less acidic, at low altitude, in shady stations (Bischler, 2004), at the edge of ponds (Infante & Heras, 2004), on river banks (Vieira *et al.*, 2004, 2005) and in temporary pools or wet soils in gardens (Jovet-Ast, 1986).

In the Mediterranean region, strictly speaking, Bischler (2004) recorded only one collection (south-eastern France), and records from Algeria and Morocco are doubtful according to Ros *et al.* (2007). In the Iberian Peninsula, *R. huebeneriana* was hitherto seen only in the Atlantic region of Portugal (i.e. Beira Litoral, Beira Alta, Douro Litoral, Minho, Trás-o-Montes Provinces, Sérgio, 2002; Vieira *et al.*, 2004, 2005; Sérgio & Silva, 2007; Sérgio *et al.*, 2014) and Spain (Navarra and Basque country, Infante & Heras, 2004). Globally, this meso-thermophytic species is boreo-subtropical with a circumpolar, African and North American distribution (the latter as *subsp. sullivanii* (Austin) R.M.Schust.).

This species, regionally decreasing (Dierssen, 2001), is classified as vulnerable (VU) in Portugal (Sérgio *et al.*, 2013) and Spain (Garilleti & Albertos, 2012). It is locally rare and threatened especially on river banks with a risk of strongly rising water levels (Vieira *et al.*, 2005).

With only two recent records (including the present locality) *R. huebeneriana* seems particularly rare in Mediterranean habitats. Nevertheless, it could be widely overlooked in this region and the new record is very isolated, far from the nearest locality in France. Therefore its status in the Mediterranean region is insufficiently known.

34. *Scapania uliginosa* (Sw. ex Lindenb.) Dumort.

Contributor: S. Ștefănuț

Bulgaria: Rila Planina Mountains: Mussala, 42°13'20"N 23°35'28"E, 2000 m a.s.l., on rocks, 31 July 1908, *leg.* J. Podpěra *s.n.*, det. V. Schiffner, *conf.* S. Ștefănuț (W 2014-04846 – *Flora bulgarica* 75).

With in the framework of the research project AT-TAF-3288 supported by EC-SYNTHESYS, I had

the opportunity to make some studies on bryophytes in the Vienna herbarium (W), Austria. Among V. Schiffner's collections I found two packets with unregistered liverwort samples from Bulgaria. In one packet were liverwort samples collected in 1905 by S. Petroff and in the other were liverwort samples collected in 1908 by J. Podpěra from Vitosha Planina and Rila Planina. Both packets contained samples from *Flora Exsiccata Bulgaria* and were sent by J. Podpěra and S. Petroff to V. Schiffner for confirmation. Among the liverworts collected by J. Podpěra from Mussala Mountain, Rila Planina Mountains, 2000-2200 m a.s.l., on 31 July – 2 August 1908, I found a few samples of *Scapania uliginosa*.

Scapania uliginosa was collected from the subalpine zone of Rila Planina along with other liverworts, such as *Barbilophozia hatcheri* (A.Evans) Loeske, *B. floerkei* (F.Weber & D.Mohr) Loeske, *B. lycopodioides* (Wallr.) Loeske, *Diplophyllum taxifolium* (Wahlenb.) Dumort., *Marsupella sphacelata* (Gieseke ex Lindenb.) Dumort., *Nardia geoscyphus* (De Not.) Lindb., *Plagiochila asplenoides* (L. emend. Taylor) Dumort., *Porella cordaeana* (Huebener) Moore, *Scapania undulata* (L.) Dumort. and *Tritomaria scitula* (Taylor) Jörg.

This is the first report of *Scapania uliginosa* for Bulgaria and the Balkans (Ros *et al.*, 2007; Hodgetts, 2015). The nearest other locality for this species is in Romania (Ștefănuț, 2008; Ștefănuț & Goia, 2012).

In Europe, *S. uliginosa* has been reported from Svalbard, Iceland, Faroe Islands, Norway, Sweden, Finland, Ireland, Britain, France, Germany, Switzerland, Austria, Poland, Czech Republic, Slovakia, ?Spain, Italy, Romania, Ukraine, north, central and east Russia (Söderström *et al.*, 2002, 2007; Ros *et al.*, 2007; Hodgetts, 2015) and now, Bulgaria.

35. *Sciuro-hypnum curtum* (Lindb.) Ignatov

Contributor: D. Spitale

Italy: South Tyrol, Laces municipality, 1820 m a.s.l., 46°35'03"N 10°51'37"E, 18 June 2013, *leg.* & *det.* Daniel Spitale *s.n.*, *conf.* Lars Hedenäs (Priv. Herb. Spitale; Museo di Scienze Naturali dell'Alto Adige).

The species was found on the ground of a spruce forest together with *Dicranum scoparium* Hedw., *Hylocomium splendens* (Hedw.) Schimp., *Pleurozium schreberi* (Brid.) Mitt., *Blepharostoma trichophyllum* (L.) Dumort., *Sciuro-hypnum starkei* (Brid.) Ignatov & Huttunen, *Lophocolea heterophylla* (Schrad.) Dumort., *Brachytheciastrum velutinum* (Hedw.) Ignatov & Huttunen, *Calypogeia neesiana* (C.Massal. & Carestia) Müll.Frib., *Dicranum montanum* Hedw., *Mnium spinosum* (Voit.) Schwägr., *Plagiothecium denticulatum* (Hedw.) Schimp., *Plagiothecium laetum* Schimp.,

Pohlia nutans (Hedw.) Lindb., *Polytrichastrum alpinum* (Hedw.) G.L.Sm., *Rhytidiadelphus triquetrus* (Hedw.) Warnst. and *Sanionia uncinata* (Hedw.) Loeske. The special list was recorded inside a circular plot with a radius of 13 m. Bryophyte cover on the ground was 34% of the area, aspect was 340° (NW–N), slope 30°, canopy closure 71%, and the average age of spruce plants was 183 years.

Sciuro-hypnum curtum had been placed in synonymy with *S. oedipodium* by Piippo (1983), but Ignatov & Milyutina (2007) showed that they are two distinct species. As currently understood *S. curtum* is a widespread species in boreal forests of Eurasia and occurs also in the east of North America. In contrast, *Sciuro-hypnum oedipodium* is mainly an American species, with a few localities in Eurasia (Caucasus and in Chukotka). According to Orgaz *et al.* (2011), in the Mediterranean region *S. curtum* is present in Bulgaria, France, Italy, Romania, Slovenia, Spain, and possibly in Greece, Montenegro and Turkey. The presence of *S. curtum* in Italy is based on a few old records (pre 1950, *cf.* Aleffi *et al.*, 2008) and on the species concept of *S. oedipodium*. Therefore, this is the first confirmed record of *Sciuro-hypnum curtum* in Italy.

36. ***Solenostoma amplexifolium*** (Hampe *ex* Lehm.) Váňa & Schäf.-Verw.

Contributors: A. Schäfer-Verwimp and J. Váňa

Panama: Prov. Chiriqui, Cordillera Talamanca, Straße von El Volcan nach Rio Sereno, Passhöhe Tierras Altas, an Erdabstich am Rande eines Regenwald-Restes, 1580 m a.s.l., 3 April 2013, *leg.* Schäfer-Verwimp & Verwimp 34672, *det.* Váňa (JE, PRC).

Solenostoma amplexifolium, earlier known as *Jungermannia linguifolia* Gottsche, is a widespread neotropical species known from Mexico to Bolivia, Venezuela and the West Indies (Blockeel *et al.*, 2010, with detailed distribution). The new record closes the gap in its distribution between Central and northern South America. The collection site was well within the known altitudinal range of this species, from 1080–3600 m a.s.l. (Blockeel *et al.*, 2010). *S. amplexifolium* is the second species of this genus recorded from Panama, apart from a single record of *Solenostoma callithrix* (Lindenb. & Gottsche) Steph. made by Stotler *et al.* (1998, as *Jungermannia*).

37. ***Sphagnum majus*** (Russow) C.E.O.Jensen

Contributor: A. Koczur

Poland: Western Carpathians, Kotlina Orawsko-Nowotarska: Ludźmierz, southern part of Młaka Brzeże raised bog, 601 m a.s.l., 49°27'28"N 19°57'44"E, in a bog hollow, 5 September 2014, *leg.* A. Koczur, *conf.* R. Ochyra (KRAM).

Hitherto, *Sphagnum majus* has been recorded only at three stations in the Slovak part of the Western

Carpathians, namely in Štrbské pleso and Furkotská valley in the Tatra Mountains (Pilous, 1971) and Sucha Hora in the Orava Basin (Peciar, 1958; Jurko & Peciar, 1959). However, it has not been seen at these stations since then (Kubinská *et al.*, 1996). Until now, no reliable records of this species were known from the Czech and Polish parts of the Western Carpathians. In 2014, *S. majus* was found for the first time in the Polish Western Carpathians in the Kotlina Orawsko-Nowotarska basin at the northern foot of the Tatra Mountains. The species grew together with *S. cuspidatum* Hoffm. in the most hydrated places in a system of wide bog hollows, whilst in drier and slightly elevated parts of the hollows, *S. papillosum* Lindb. and *S. affine* Renaud & Cardot occurred. The bog hollows were surrounded by hummocks formed mainly by *S. magellanicum* Brid., *S. rubellum* Wilson, *S. fallax* (H.Klinggr.) H.Klinggr. and *Polytrichum strictum* Brid. which were densely covered by shrubby forms of *Pinus × rhaetica* Brügger. This record represents a rediscovery of *S. majus* in the Western Carpathians after about a half century.

38. ***Tortula revolvens*** (Schimp.) G.Roth

Contributors: C. Sérgio and J. Paiva

Cape Verde: Fogo Island, Chã das Caldeiras, exposed volcanic soil with *Mannia androgyna* (L.) A.Evans, 1800 m a.s.l., 14°54'56"N 24°20'45"W, 13 October 1987, *leg.* Jorge Paiva *s.n.* (LISU257550).

The distribution of this member of the Pottiaceae extends to West Africa, having been found some years ago on the volcanic Fogo Island in Cape Verde. The species is reported from other Macaronesian islands, such as the Azores, Madeira and the Canary Islands, but was not listed from Cape Verde by O'Shea (2006a). The present finding fills the gap in its distribution in sub-Saharan Africa.

The known distribution of *Tortula revolvens* (including *T. fiorii* G.Roth) extends from Spain and the Balearics, Italy, Sicily, Crete, Greece, Turkey, Syria, Israel, to Jordan, and from Libya, Tunisia, Algeria to Morocco (Ros *et al.*, 2013). Therefore, the present note constitutes the first record for the species outside of the Mediterranean region.

The species was found in a semi-arid environment, the soil being volcanic and not gypsum-rich as in some European habitats (Cano, 2006). The colony formed a very small turf, in an arid volcanic area near the Fogo volcano, and the plants were referable to var. *revolvens* as their leaves had a nerve-like acute apex, a small mucro (Casas *et al.*, 2006) and all the leaf cells were papillose.

It is interesting to note that this species is considered an element closely related to the xerotherm-Pangaeian flora, but nowadays is also represented in

the bryoflora of south-west Asia (Kürschner, 2008), having an identical distribution to other species of *Tortula* present in Cape Verde e.g. *T. cuneifolia* (Dicks.) Turner and *T. solmsii* (Schimp.) Limpr.

39. ***Touwia elliptica*** (Bosch & Sande Lac.) S.Olsson, Enroth & D.Quandt

Contributor: J. Enroth

Fiji: “Ngau: Hills east of Herald Bay, inland from Sawaieke, 300–450 m a.s.l.; dense forest”, 1953, *leg.* A. C. Smith 7862 (B, Bryo 82606).

Touwia (Neckeraceae) is a moss genus of three species distributed from Queensland in Australia to Indonesia and the Philippines. The genus and its type species *T. laticostata* Ochyra were described from Queensland by Ochyra (1986). Olsson *et al.* (2010) transferred into *Touwia* two species previously placed in *Thamnobryum*. All three species are rheophytes i.e. growing in flowing water and mostly attached to rocks.

Touwia elliptica was previously known from Sumatra, Java, Borneo, Amboina, Philippines and Papua New Guinea (Noguchi & Iwatsuki, 1972). The specimen reported here was collected in the north-western part of the small island of Gau some 60 km east of Fiji Island.

A morphologically fairly similar species in Fiji is *Thamnobryum sublatifolium* (Dixon) Schultze-Motel, which also grows in similar habitats. However, it differs from *T. elliptica* in the more robust and more densely branched fronds, spreading rather than erect stipe leaves, in the leaf shape, which is clearly more elongate and ligulate, and in the more strongly serrulate leaf apices. [Specimen examined: Fiji. Koro: Eastern slope of main ridge, 300–500 m, on moist stones in stream, dense forest, 29 Jan.–5 Feb., 1934 A. C. Smith 987 (B, Bryo 82620)].

40. ***Vanaea plagiochiloides*** (Inoue & Gradst.) Inoue & Gradst.

Contributor: D. Pinheiro da Costa

Brazil: Roraima, Uiramutã, Parque Nacional do Monte Caburaí, 5–8°9–10'31.9–21.5"N 60°10–12'20–57.1"W, 1300–1400 m a.s.l., na base do tronco de arbustos, November 2014, *leg.* D.P. Costa *et al.* 6011 p.p., 6018, 6068, 6084 p.p., 6142 p.p. (RB).

The genus *Vanaea* (Inoue & Gradst.) Gradst. & J.Florsch. is reported here for the first time for Brazil. Collections of *Vanaea plagiochiloides* were made in fields of tepui vegetation at Mount Caburaí, Roraima State, Brazil, in the Guyana Highland area (remnants of the ancient Guiana Shield that just reaches the northern border of Brazil).

The Guyana Highland region is famous for the richness of its endemic taxa, and is considered the second most important centre of endemism in the Neotropics for liverworts (Gradstein & Costa, 2003; Desamóré *et al.*, 2010), with endemic and

monotypic genera such as *Vanaea* that, according to Gradstein & Florschütz-de Waard (1989), have not been recorded in Brazil, but only in Guyana (Mount Roraima, 1400–2300 m, the type locality). This taxon was considered by Desamóré *et al.* (2010) to be a unique tepui endemic species, although it seems to be common on the summit of Mount Caburaí (*ca* 1400 m), an area that has remained poorly explored as it is almost inaccessible without the aid of a helicopter. Access to the summit of Mount Caburaí was made by helicopter (from the municipality of Uiramutã in Roraima State) and collections were made during the 2014 expedition of the project “Flora of the mountains of the Brazilian Amazon” at 1300–1400 m. Our expedition yielded approximately 120 bryophyte collections.

Vanaea plagiochiloides is characterised by having leaves widely spreading, with oblique insertion lines, often flat, narrowly oblong, with apex rounded to sub-truncate, with two teeth, cells with large trigones, underleaves absent. The species is quite common as an epiphyte on tree trunks in scattered locations, and is associated with *Cheilolejeunea lineata* (Lehm.) Steph., *Ceratolejeunea malligera* (Spruce) Steph., *Metzgeria leptoneura* Spruce, *Plagiochila adiantoides* (Sw.) Lindb., and *Sematophyllum subpinnatum* (Brid.) E.Britton.

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Orthotrichum rogeri Brid. in England, new to Britain

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During the spring meeting of the British Bryological Society, or more precisely whilst waiting for the rest of the group to arrive for an excursion during the spring meeting, the epiphyte flora of *Quercus* L. and *Salix* L. near the Poundgate carpark in Ashdown Forest, East Sussex was examined. Among other common species of *Orthotrichum* Hedw. and *Ulotia* D.Mohr was a single tuft of *U. calvescens* Wilson, and a single tuft of an *Orthotrichum* with an exerted capsule and long, pale calyptra. This was collected, examined microscopically, and provisionally identified as *Orthotrichum* cf. *consimile* although it did not quite fit descriptions of that species (e.g. Porley, 2000). A month later, at the BBS *Orthotrichum* workshop in May 2014, the specimen was examined by Dr Francisco Lara, who immediately recognised it as *O. rogeri* Brid. on account of *inter alia* its separate male branches and elongated capsule neck. This is the first record of *O. rogeri* from England and Britain, although its occurrence here was predicted recently (Bosanquet, 2012).

Orthotrichum rogeri is very nearly a European endemic, known from most countries between Spain and France in the west, Finland and Poland in the north-east, and Romania and Greece in the south-east; however, an outlying, non-European population was recently found in north-east Anatolia (Lara *et al.*, 2010). Its distribution was reviewed by Hugonnot (2008), who showed that reports from Kashmir were based on misidentification, and suggested that other Asian records are also dubious. It is rare, threatened or extinct in many countries, often appearing on

national Red Lists, and is included on Annex II of the EU Habitats Directive. However, there are signs of an increase in the Netherlands, from where there are 21 recent records (BLWG, 2015), whilst Stebel (2010) reported that recent records from Poland, Germany and the Czech Republic suggested the species is starting to spread near the eastern edge of its range. Many of the recent records are from *Salix* species, including *S. alba* L. in Poland and the Netherlands and *S. acuminata* Mill., *S. caprea* L. and *S. pentandra* L. in France, with others coming from *Acer platanoides* L., *A. pseudoplatanus* L., *A. campestre* L., *Fraxinus excelsior* L., *Sambucus nigra* L., *S. racemosa* L., *Populus tremula* L., *Corylus avellana* L. and *Quercus robur* L. Although some populations are found in old-growth forest in mountainous regions, others are in anthropogenic scrub, and trunks and major branches are favoured over twigs (Hugonnot, 2008). Hugonnot (*loc. cit.*) gives ca 1000 m as its favoured altitude, but cites records from up to 1820 m in the Pyrenees, and down to sea level in the Netherlands. Lüth (2010) described the ecology of *O. rogeri* in the southern Black Forest, noting a preference of *O. rogeri* for open habitats influenced by human activity and suggesting that cool night temperatures are an important factor determining the distribution of the species.

Full descriptions of *Orthotrichum rogeri* are published elsewhere (Garilleti *et al.*, 2002; Lara & Garilleti, 2014). The following description of the British specimen includes selected features that allow identification of *O. rogeri*, but not every character of the specimen; key diagnostic characters are underlined.

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