

New national and regional bryophyte records, 33

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

Contributors: M. V. Dulin and D. A. Philippov

Russian Federation: Vologda Region, Vytegra district, 23 km north of the settlement of Yanishevo, Andomskaya height, 5 km to south-east of Soydozero Lake, the Soyda River bank, 61°26'72.1"N, 37°33'36.8"E, ca 205 m a.s.l., in fern and herb rich spruce forest, on rotten spruce log, with *Blepharostoma trichophyllum* (L.) Dumort., *Riccardia latifrons* (Lindb.) Lindb., *Crossocalyx hellerianus* (Nees ex Lindenb.) Meyl., *Calypogeia muelleriana* (Schiffn.) Müll.Frib., *Lophozia guttulata* (Lindb. & Arnell) A.Evans, and *Ptilidium pulcherrimum* (Weber) Vain., plants with antheridia, 17 August 2010, leg. D.A. Philippov, 10-783a (IBIW, SYKO).

This is the first report of *Anastrophyllum michauxii* from the Vologda Region. It is a montane sub-circumpolar liverwort species. The species is known in several European countries (Austria, Bulgaria,

France, the Czech Republic and Slovakia, Germany, Hungary, the former Yugoslavia, Italy, Romania, Poland, Finland, Sweden, Norway), in Asia (China, Japan) and in a few sites in North America (Damsholt, 2002; Schumacker & Váňa, 2005). In Russia, *A. michauxii* has been found in mountainous areas: Northern and Middle Urals, Caucasus, Stanovoye Nagor'e, Khamar-Daban, Kuznetskij Alatau, Sayan Mountains, Altai, Sikhote-Alin and also in mountains of Kamchatka, Sakhalin and Kuril Islands (Konstantinova *et al.*, 2009). Findings of the species in the lowland areas are rare, but include records from the Finland Gulf Islands (Potemkin *et al.*, 2008), the Russian Plain and Pechora lowlands (Dulin, 2007).

2. *Crossidium aberrans* Holz. & E.B.Bartram

Contributors: M. Kirmaci and E. Agcagil

Turkey: Province Aydın, İmamköy, deep valley, 37°52'N, 27°54'E, 150 m a.s.l., on soil covering rock, associated with *Aloina aloides* (Koch ex Schultz) Kindb., *Bryum argenteum* Hedw., *Didymodon luridus* Hornsch., *D. australasiae* (Hook. & Grev.)

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R.H.Zander, *Fissidens bryoides* Hedw., 2 March 2008, leg. & det. M. Kırmacı & E. Agcagil, conf. B. Papp (AYDN No. 2484).

The new record was collected in an area characterized by degraded maquis (dominated by *Quercus coccifera* L.), plantation of *Olea europaea* L. and a few stands of *Pinus brutia* Ten. remaining after clearance by locals for arable land. The area has a Mediterranean climate, with an average annual precipitation of 672 mm (Aydın Province Environment Situation Report, 2006). The moss was collected from very dry habitats exposed to sun, where the high irradiation results in strong desiccation during dry periods that last nearly seven months in a year.

It is well known that plants in the genus *Crossidium* Jur. are adapted to mainly arid and semiarid areas (Zander & Hedderson, 2011). *Crossidium* includes some 12 species world-wide, and according to Kürschner and Frey (2011) ten taxa (9 species and 1 variety) are known from southwest Asia. Among these, *C. squamiferum* (Viv.) Jur. var. *squamiferum*, *C. squamiferum* var. *pottioideum* (De. Not.) Mönk., *C. crassinerve* (De Not.) Jur. and *C. laxefilamentosum* Frey & Kürschner were previously recorded from Turkey.

Crossidium aberrans is easily distinguished from other species of this genus by the cells and ventral filaments of the leaves. The filaments are 1–2 cells high, subglobose and densely papillose (Bai, 2002). It shows a xerothermic Pangaean distribution pattern, related to a former Permo-Triassic continental Pangaean range (Frey & Kürschner, 1988), and has been recorded from North America, Europe, China, North Africa and southwest Asia (Syria, Israel, Saudi Arabia, and Sinai Peninsula) (Bai, 2002; Chavoutier & Hugonnot, 2006; Kürschner & Frey, 2011). This new record from Turkey is not surprising, it completes the distribution pattern for the species between southern Europe and southwest Asia, and raises the number of taxa in *Crossidium* known to occur in Turkey from four to five (four species and one variety).

3. *Dichelyma capillaceum* (Dicks.) Myrin

Contributors: V. M. Virchenko and R. Ochyra

Ukraine: Zhytomyr Province, Ovruch district, Selezivske forestry, in the valley of the Bolotnytsya river near the village of Selezivka, ca 51°32'N, ca 28°07'E; on bark of willow; 22 April 1973, leg. L. Ya. Partyka s.n. (KRAM, KW).

In 1972–1973, L. Ya. Partyka studied the moss flora of the Polissya Nature Reserve in the north-western part of Zhytomyr Province in the Ukraine which was established for the protection of the best preserved fragments of the largest European wetland, especially peat bogs and bog pinewoods. Altogether she reported 139 species of moss from the study area

(Partyka, 1974, 1986). A revision of the voucher collections revealed that one specimen she had determined as *Sanionia uncinata* (Hedw.) Loeske included, as an admixture, a plant she had provisionally named as *Drepanocladus* (Müll.Hal.)G.Roth. Actually, it represents *Dichelyma capillaceum*, a species hitherto unknown from the Ukraine. The moss was collected from the bark of willow in a flooded area of the Bolotnytsya river valley. It lacked sporophytes but the male gametangia were present. In continental Europe *D. capillaceum* is widely distributed, but scattered and localised, and so has been recorded from France, Holland, Germany, Denmark, Poland, Sicily, and Greece (Düll, 1985). However, it has not been seen for nearly a century in most of these countries. The most recent discovery of *D. capillaceum* in Central Europe was made in 1997 in Rheinland, Germany (Frahm & Stapper, 1998), where the species was refound at a locality originally discovered in 1920 and 1923 (Brasch, 1923). For six subsequent decades the species had not been rediscovered and was considered to be extinct at this site (Düll, 1980). Therefore *D. capillaceum* is included in Appendix I of the Bern Convention and in Annex 2 of the EC Habitats and Species Directive as a vulnerable species (Martiny, 1995). The information on the occurrence of the species in Romania provided by Düll (1985) and Martiny (1995) was apparently erroneous since the species has not been recorded in the latest catalogue of mosses for this country (Mohan, 1998). However, in 1978 *D. capillaceum* was recorded from the Munții Retezat in the Southern Carpathians in Romania (Blockeel *et al.*, 2003). In Europe, *D. capillaceum* has the main centre of its occurrence in Fennoscandia, where it is particularly frequent in southern Sweden (Hedenäs *et al.*, 1996; Hallingbäck, 1998; Hylander, 1998). In contrast, the species is widely scattered but localised in southern and central Finland (Toivonen, 1972) and it is considered to be endangered in this country (Sallantausta, 2009). The easternmost European station of *D. capillaceum* is in Russian Karelia in Leningrad Province, but it was found at this site only in 1914 (Czernyadjeva, 2002). However, in 1975 and 1995 the species was discovered at two stations in Estonia (Kannukene *et al.*, 1997; Ingerpuu & Vellak, 2000) and this discovery, along with that in the Ukrainian Polissya, now represents the easternmost occurrences of the species in Europe. *Dichelyma capillaceum* has maximum occurrence in eastern North America where it ranges from south-eastern Canada in the north (Ireland, 1990) to Florida in the south and Missouri and Arkansas in the west (Welch, 1960). The species was recently found in West Siberia in the middle course of the Ob river area (Czernyadjeva, 2002). This discovery changes the phytogeographical status of *D. capillaceum* a little. However, it should be

still considered as a Euro-North American boreal-temperate species weakly penetrating into westernmost boreal Asia.

4. *Ditrichum hyalinum* (Mitt.) Kuntze

Contributors: L. E. Kurbatova and R. Ochyra

South Shetland Islands, Nelson Island: (1) Stansbury Peninsula between Edgell Bay and Fildes Strait, in the central valley, 62°14'S, 59°00'W; 37 m a.s.l.; forming small patches, 2–3 cm dia., on soil in depressions and cracks in rock, together with *Andreaea gainii* Cardot, *Bartramia patens* Brid., *Hymenoloma antarcticum* (Müll.Hal.) Ochyra, *Meesia uliginosa* Hedw. and *Pohlia cruda* (Hedw.) Lindb. in a lichen and moss community, 20 February 2009, *leg.* L. E. Kurbatova L101-7 (KRAM, LE): (2) same locality, in the flat range near the glacier, on the top of a rock outcrop, 62°14'S, 59°01'W, 110 m a.s.l., in cracks in soil, associated with *Andreaea gainii*, *A. regularis* Müll.Hal., *Bartramia patens*, *Hymenoloma antarcticum*, *Meesia uliginosa*, *Pohlia cruda*, *Polytrichastrum alpinum* (Hedw.) G.L.Sm., *Schistidium antarcticum* (Cardot) L.I.Savic & Smirnova and *Syntrichia filaris* (Müll.Hal.) R.H.Zander., 20 February 2009, *leg.* L. E. Kurbatova L100-12 (KRAM, LE).

Ditrichum hyalinum is the most frequent and abundant of five species of the genus *Ditrichum* Hampe in the Antarctic (Ochyra & Lewis Smith, 1998; Ochyra *et al.*, 2008a). For a long time the species was better known under the name *D. austrogeorgicum* Cardot, but it proved to be synonymous with *D. hyalinum* (Ochyra, 1999). In the Antarctic biome the species is restricted in its distribution to two peri-Antarctic archipelagos, namely the South Orkney Islands and the South Shetland Islands situated in the northern part of the maritime Antarctic. There is also a single isolated station on Adelaide Island off the central Antarctic Peninsula (Ochyra *et al.*, 2008b). In the South Shetland Islands *D. hyalinum* was recorded from almost all major islands, and here its distribution is extended to Nelson Island, a heavily glaciated island situated immediately to the south-west of King George Island, the largest island of the archipelago.

5. *Ditrichum lineare* (Sw.) Lindb.

Contributors: B. Papp, E. Szurdoki and M. Sabovljević

Serbia: SE Serbia, Mt Vrtop (Plana) at Okruglica (Vlasina lake), on soil near the peak, 42°47'34.1"N, 22°22'23.6"E, 1730 m a.s.l., 21 June 2011, *leg.* B. Papp *s.n.* (BP 183642).

Ditrichum lineare is a small moss with a scattered distribution in the Northern Hemisphere. It has a subatlantic and montane distribution (Düll, 1984) and prefers acidic and disturbed soils. *D. lineare* has not been recorded very often in the Balkans. It has probably been overlooked owing to its small size, and there being relatively few appropriate habitats on acidic bedrock.

The species can also be easily misidentified due to its significant variability (Frahm *et al.*, 2008). *D. lineare* was collected on the top of a hill in the surroundings of Vlasina Lake. This region seems to be quite interesting bryologically, as around the lake can be found the biggest peat-bog in south-eastern Europe. It has quite a diverse geology, and a lot of foggy and wet days in an average year compared with other highland areas in the Balkans. Ellis *et al.* (2012a), already records a novelty for the Serbian bryophyte flora from this area.

In Southeast Europe, *D. lineare* is known only from Bulgaria, Romania and Slovenia (Sabovljević *et al.*, 2008), but could be expected elsewhere with further investigation.

6. *Gymnomitrium subintegrum* (S.W.Arnell) Váňa

Contributors: J. Váňa, R. Ochyra, H. Bednarek-Ochyra, B. Cykowska and M. Lebouvier

Île Amsterdam: Central part, Mont de la Dives, south of the summit, 37°51'9.691"S, 77°32'50.399"E, 748 m a.s.l., on rock, 22 December 2006, *leg.* M. Lebouvier RO-06-Dives (KRAM).

The Palaeotropical montane species *Gymnomitrium subintegrum* was originally described as *Marsupella subintegra* S.W.Arnell from the Ruwenzori Mountains of Uganda in Central Africa (Arnell, 1956). The species is characterised by the lack of a perianth and Váňa *et al.* (2010b) transferred it to the genus *Gymnomitrium* Corda. This taxonomic decision was supported by the results of molecular studies (Vilnet *et al.*, 2007) which showed that the development or reduction of the perianth and perigynium is an important character in the classification of the Gymnomitriaceae. The species has a bicentric distribution in the Old World. It is widely scattered in Central and East Africa, including in Rwanda (Váňa *et al.*, 1979) and Malawi (Wigginton & Porley, 2001) (but excluding Uganda) and extends to Réunion Island in the Indian Ocean (Váňa, 1985). The second centre of its occurrence is in Malesia where it was first recorded from Mt. Kinabalu as *Marsupella integra* N.Kitag. (Kitagawa, 1967). Subsequently, it was found on Mt. Wilhelm and Mt. Hagen in New Guinea and on Mt. Korinchi in Sumatra (Váňa, 1976). Additionally the species has penetrated into the temperate zone, where it was found in Nepal in the Himalaya (Hattori, 1975). Herein it is recorded from Île Amsterdam, which is situated in the south-cool-temperate zone in the South Indian Ocean. The hepatic flora of this highly isolated, oceanic volcanic island is still poorly known, and a decade ago merely 15 species of hepatics were reported (Grolle, 2002). However, recent field studies yielded six additional species for the island's liverwort flora (Blockeel *et al.*, 2009b; Váňa *et al.*, 2010a; Ellis *et al.*, 2012b), so including the present record it consists of 22 species.

7. *Metzgeria myriopoda* Lindb.

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

Uruguay: Cerro Largo, Sierra de Río, 32°11'34.1"S, 53°51'53.2"W, 309 m a.s.l., próximos al curso de agua del arroyo, 1 March 2012, *leg.* G. Suárez 1420 (LIL).

As with the mosses, the liverwort flora of Uruguay is poorly known and large areas have not been explored or studied (Ellis *et al.*, 2011b, 2012b). According to Hässel de Menéndez & Rubies (2009) only 30 species of Marchantiophyta are recorded from Uruguay, and the genus *Metzgeria* Raddi is not represented.

Metzgeria myriopoda was identified during the examination of a recent collection of bryophytes from Uruguay. This is an American species, reported in South America from Ecuador, Peru, Brazil, Bolivia, Argentina and Paraguay (Kuwahara, 1986; Nieva & Schiavone, 2002; Pinheiro da Costa, 2008).

In Uruguay, *M. myriopoda* occurred in 'Cerro Largo'; this is a temperate and warm grassland area with some forested zones where exotic, and a few native, tree species are found. It characteristically has precipitation rates of around 1100–1200 mm/year. Taking into account the climatic regime in Cerro Largo, and those prevailing in the localities of previous records, there appears to be an extensive range of environmental conditions under which *M. myriopoda* can grow. It occurs on diverse substrates (as an epiphyte, including on bark, and on rocks and soil) in environments with a wide range of temperatures and degrees of disturbance.

The examination of *M. myriopoda* revealed that its characters are highly constant, with 2–8 dorsal epidermal cells and 4–6 ventral epidermal cells in the midrib; convex wings with short, straight geminate hairs, and abundant marginal gemmae.

This note constitutes the first record for the genus *Metzgeria* in Uruguay, as well as extending the distributional range of *M. myriopoda*.

8. *Notoligotrichum trichodon* (Hook. & Wilson) G.L.Sm.

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

Île Amsterdam: 137°50'S, 77°31'E, without locality data, 13 March 1970, *leg.* Noel *s.n.* (KRAM, PC).

Since publication of the first account of mosses on Île Amsterdam (Bescherelle, 1875), information on the moss flora of this remote and highly isolated island, situated in the middle of the South Indian Ocean in the south-cool-temperate zone, has not increased markedly. The only other account of the mosses was published by Tixier (1980) and recently two additional species were added to the island's flora, namely *Ptychomnium densifolium* (Brid.) A.Jaeger and *Racomitrium lanuginosum* (Hedw.) Brid. (Blockeel *et al.*, 2009a). A revision of voucher specimens reported by Tixier (1980) for a planned survey of the moss flora of Île Amsterdam revealed that a specimen

determined as *Polytrichum formosum* Hedw. actually represented *Notoligotrichum trichodon*. The plants were in fine fruiting condition; hence the identification of the material did not pose any problems. The characteristic gibbous capsule lacking an apophysis and narrowed at the oblique mouth, making the genus immediately distinct from all polytrichalean congeners. *Notoligotrichum trichodon* is an amphiatlantic subantarctic species which has the main centre of its occurrence on South Georgia from where it extends eastwards to Îles Kerguelen and westwards to Tierra del Fuego (Ochyra *et al.*, 2008b). Additionally, it penetrates well into the Neotropics along the Andean chain, reaching to the northern Andes of Ecuador and Colombia from whence it was originally described (Ochyra, 2003).

9. *Orthotrichum affine* Bird. var. *bohemicum* Plášek & Sawicki

Contributors: V. Plášek, G. J. Wolski and J. Sawicki

Poland: Western Pomerania, Czersk district, near Brda village, base of *Salix fragilis* L., GPS coordinates (WGS 84): 53°41'54"N, 17°49'41"E, ca 140 m a.s.l., 16 July 1973, *leg.* E. Filipiak, *det.* V. Plášek & G.J. Wolski (March 2012) (LOD, #00013186).

Orthotrichum affine var. *bohemicum* is an epiphytic moss from the Czech Republic, recently described by Plášek *et al.* (2011). The taxon has been noted in five localities in the Czech Republic, but has not yet been reported elsewhere in Europe. One specimen collected by D.H. Vitt in 1976 from the U.S.A., was recorded during a revision of the herbarium collections in St Petersburg (LE) (Ellis *et al.*, 2012c). It can be expected that this variety will, before long, be found in other territories, or through the revision of other herbarium collections.

Orthotrichum affine var. *bohemicum* is easily distinguished from the type variety mainly by the possession of 16 endostome segments which are practically as long as the exostome teeth (not alternately longer and shorter as in *O. pallens* Brid.).

According to the herbarium label for this new record, the moss cushion was collected from the base of *Salix fragilis*, together with *Brachythecium rutabulum* (Hedw.) Schimp. and *Ceratodon purpureus* (Hedw.) Brid.

10. *Orthodontium lineare* Schwägr.

Contributors: P. Szücs and A. Bidló

Hungary: Komárom-Esztergom County, Dunaalmás, northern foothills of Gerecse Mts, 47°42'59.5"N, 18°19'22.6"E, ca 180 m a.s.l. on pine log (ca 40 cm dia.) in advanced state of decay, in planted old *Pinus* forest stand, associated with *Bryum capillare* Hedw., *B. moravicum* Podp., *Campylopus introflexus* (Hedw.) Brid., *Dicranum montanum* Hedw., *D. scoparium* Hedw., *Herzogiella seligeri* (Brid.) Z.Iwats, *Hypnum*

cupressiforme Hedw. and *Leucobryum glaucum* (Hedw.) Ångstr., 14 January 2012, *leg. & det.* P. Szücs, *conf.* B. Papp. (BP, P. Szücs private herb.).

Orthodontium lineare is a non-native species in Europe (Hill *et al.*, 2006), originating from the southern hemisphere. It was first recorded in Europe from Britain in 1910 (Burrell, 1940). Since then, it has been spreading continuously, and about 30 years ago was detected in Central Europe (Hassel & Söderström, 2005). *Orthodontium lineare* has reached the following countries in the eastern part of Central Europe: Czech Republic (Kučera & Váná, 2003), Slovakia (Hassel & Söderström, 2005), Poland (Ochyra, 1982) and Russia (Kaliningrad Province) (Ignatov *et al.*, 2006). No reports of the species have been published to date from the other countries bordering on Hungary (Austria: Grims, 1999; Slovenia, Croatia, Serbia, Romania: Sabovjević *et al.*, 2008; Ukraine: Ignatov *et al.*, 2006). This neophytic species is not included in the recent checklist of the moss flora of Hungary (Papp *et al.*, 2010), and the present report is the first for the country. The first Hungarian report of *Campylopus introflexus* was found in the same stand of forest, on exactly the same log (Blockeel *et al.*, 2007b). In Hungary, where sandy, peaty banks and siliceous cliffs are rare, decaying wood (*Pinus* and *Quercus* spp.) generally provides a suitable substrate for the species. After reaching Hungary, *Orthodontium lineare* may continue its expansion towards the south and east. The red list status of this new member of the Hungarian bryophyte flora is yet uncertain, but it might be assumed to be moderately spreading.

11. *Plagiochila asplenioides* (L. emend. Taylor) Dumort.

Contributors: M. Sim-Sim, C. A. Garcia, A. Martins and C. Sérgio

Portugal: Trás-os-Montes e Alto Douro: Bragança, entre Espinhosela e Parâmio. 29TPG7879039714, 850 m a.s.l., humid rocky slope, 31 January 2012, *leg.* C. A. Garcia, M. Sim-Sim & S. Stow *s.n.* (LISU249899); Rebordãos. 29TPG7909622082, 979 m a.s.l., slope of the river, 8 May 2012, *leg.* C. Sérgio, C. A. Garcia, A. Martins & S. Stow *s.n.* (LISU249898).

Plagiochila asplenioides was recently collected in the north-eastern part of Portugal. Portuguese collections formerly named as *P. asplenioides* had been revised, and their morphological characters found to accord with those of *P. porelloides* (Torr. ex Nees) Lindenb. (Sérgio *et al.*, 2006; Sim-Sim, 1989). The newly discovered plants of *P. asplenioides* were large and formed vigorous turfs on a humid acidic slope close to a small stream and on the slopes of river banks, in an area dominated by well conserved *Quercus pyrenaica* Willd. woodland. The populations found were developing in sheltered, and more or less humid conditions, in a microenvironment dominated

by *Barbilophozia barbata* (Schmidel ex Schreb.) Loeske, *Metzgeria furcata* (L.) Dumort., *Pellia epiphylla* (L.) Corda, *Plagiochila porelloides*, *Radula complanata* (L.) Dumort., *Atrichum undulatum* (Hedw.) P.Beauv., *Bartramia pomiformis* Hedw., *Mnium stellare* Hedw., *Plagiothecium nemorale* (Mitt.) A.Jaeger, *Platyhypnidium riparioides* (Hedw.) Dixon., *Pohlia cruda* (Hedw.) Lindb., *Pseudoscleropodium purum* (Hedw.) M.Fleisch. and *Thamnobryum alopecurum* (Hedw.) Gangulee.

Plagiochila asplenioides seems to be rare in Portugal, restricted to sheltered woodland habitats supporting a high diversity of cryptogams and vascular plants.

12. *Plagiothecium membranosulum* Müll.Hal.

Contributor: R. Ochyra, T. Pócs and H. Bednarek-Ochyra

Tanzania: (1) Kilimanjaro Mountains, Mweka Route, 3°11'21"S, 37°21'08"E, 1900–2600 m a.s.l., on rotten wood in montane rain forest dominated by *Ocotea usambarensis* Engl., 6 March 1985, *leg.* T. Pócs 6998/C (EGR, KRAM). (2) Kilimanjaro Mountains, Marangu Route, near Bismarck (=Mandara) Hut, 3°10'55"S, 37°29'37"E, 2700 m a.s.l., epiphyte on tree trunk in montane rain forest, 14 May 1948, *leg.* Olov Hedberg 1163c (PC, S).

Until recently *Plagiothecium membranosulum* was considered to be a southern African endemic species, known to occur in the Republic of South Africa and Lesotho (O'Shea, 2006). However, its geographical range was markedly extended when it was discovered on Réunion Island in the Indian Ocean (Ellis *et al.*, 2011a). Herein, the species is recorded for the first time in East Africa where it was found in the Kilimanjaro Mountains in Tanzania. Two collections of *P. membranosulum* were found to grow epiphytically in the montane rain forest at relatively low elevations 1900–2700 m a.s.l. The specimen collected by O. Hedberg was reported from this site as *P. nitens* Dixon (Potier de la Varde, 1955) and this species is presumably conspecific with *P. membranosulum*.

13. *Plagiothecium neckeroideum* Schimp.

Contributors: R. Ochyra and H. Bednarek-Ochyra
Africa, Democratic Republic of Congo: Ruwenzori Mountains, ca 0°30'N, ca 29°50'E, 3900–4700 m a.s.l., forming extensive mats on ground in alpine zone, July–August 1932, *leg.* L. Haumann 871 (BM).

Plagiothecium neckeroideum is a Eurasian species which occurs in the Alps and Eastern Carpathians in Europe (Düll, 1992), and is common in China (Li & Ireland, 2008) and Japan (Iwatsuki, 1970). In addition, it occurs at alpine outposts in the tropics in Malaysia and Papua New Guinea (Enroth, 1991). The species was once reported from Ethiopia (Miehe & Miehe, 1994) as *P. neckeroideum* var. *javense* M.Fleisch. but this material correctly represents *P.*

standleyi (Ellis *et al.*, 2012c). However, *P. neckeroideum* cannot be excluded from the moss flora of Africa and the first well documented record of the species is provided in this note. *Plagiothecium neckeroideum* was found at a high elevation of 3900–4700 m a.s.l. in the Ruwenzori Mountains of the Democratic Republic of Congo. The African plants are characterised by having julaceous stems and branches, and strongly approach *P. neckeroideum* var. *niitakayamae* (Toyama) Z.Iwats. which is known from Taiwan and China (Li & Ireland, 2008).

14. *Plagiothecium novogranatense* (Hampe) Mitt.

Contributors: R. Ochyra, T. Pócs and H. Bednarek-Ochyra

Tanzania: Kilimanjaro Mountains, Umbwe Route, 3°08'59"S, 37°17'42"E, 2250 m a.s.l., on soil in montane rain forest, 1 March 1985, *leg.* T. Pócs 6984/F (EGR, KRAM).

For a long time, *Plagiothecium novogranatense* was considered to be a neotropical endemic species occurring at high elevations in the Andes, where it extends from Colombia to Bolivia and occurs in south-eastern Brazil (Buck & Ireland, 1989). It was subsequently discovered in the Ruwenzori Mountains of Uganda in Central Africa (Ochyra *et al.*, 2002), and this discovery confirmed the existence of bryophyte disjunctions between montane areas of tropical Central and South America and tropical Central and East Africa. Only a handful of examples of this Afro-American distribution pattern have so far been found amongst mosses. Examples include *Squamidium brasiliense* (Hornsch.) Broth. (Allen & Crosby, 1986), *Tristichium mirabile* (Müll.Hal.) Herzog (Ochyra & Sharp, 1988), *Adelothecium bogotense* (Hampe) Mitt. (Ochyra *et al.*, 1992), *Rigodium toxarion* (Schwägr.) A.Jaeger (Zomlefer, 1993), *Calymperes venezuelanum* (Mitt.) Broth. ex Pittier (Orbán, 2000), and *Plagiothecium lucidum* (Hook.f. & Wilson) Paris (Ochyra *et al.*, 2000). Herein, *P. novogranatense* is recorded for the first time from tropical East Africa where it was found in the Kilimanjaro Mountains of Tanzania. It appears to be relatively rare on the south-western slope of this highest African massif, growing on ground in the afro-montane rain forest at an altitude similar to that in the Ruwenzori Mountains.

15. *Pseudocalliergon turgescens* (T.Jensen) Loeske

Contributors: T. Ezer and R. Kara

Turkey: Niğde-Aladağlar National Park-Narpuz Valley: 37°49'33.0"N, 35°8'19.0"E, ca 2606 m a.s.l., on rock flushed with melting snow water, 15 October 2011. *leg. et det.* T. Ezer & R. Kara, *Aladağ-20* (Niğde University Herbarium).

Plants in the genus *Pseudocalliergon* (Limpr.) Loeske typically grow in mineral-rich to strongly calcareous habitats and are easily recognized by the colour and gloss of the species, the structure of alar

cells, the structure and colour of the axillary hairs and their ecological preferences (Hedenäs, 1992). According to the Turkish bryological literature (Uyar & Çetin, 2004; Kürschner & Erdağ, 2005; Batan & Özdemir, 2008; Kürschner & Frey, 2011), to date only two species of the genus have been recorded in Turkey, (*Pseudocalliergon lycopodioides* (Brid.) Hedenäs, *P. trifarium* F.Weber & D.Mohr) Loeske). Herein, a third species is added to the Turkish bryoflora. This study is based on specimens held in the herbarium of Niğde University, which were collected from Niğde-Aladağlar National Park-Narpuz Valley in October 2011. *P. turgescens* was collected from rock periodically flushed with melting snow water. It was found together with many associates such as *Anoetangium handelii* Schiffn., *Cinclidotus riparius* (Host ex Brid.) Arn. and *Philonotis fontana* (Hedw.) Brid.

Pseudocalliergon turgescens is easily recognized by its sparsely branched and imbricate shoots, strongly concave and apiculate leaves, and stem leaves ovate or broadly ovate (Hedenäs, 1992). It is widely distributed in the mountains of Scandinavia and widely reported in Sweden and around the Baltic Sea. The species occurs in scattered areas throughout the Holarctic region (Crum & Anderson, 1981; Karczmarz, 1971).

16. *Sanionia uncinata* (Hedw.) Loeske

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

Île aux Cochons: 46°6'S, 50°14'E, without precise details, March 1954, *leg.* E. Aubert de la Rüe *s.n.* (KRAM, PC).

Île aux Cochons is the third largest island (67 km²) of Îles Crozet, the most extensive archipelago in the South Indian Ocean (Kerguelen) Province in the Subantarctic. It is the westernmost island of the group of three islands (Île aux Cochons, Îlot Pingouins and Îlots des Apôtres) lying about 100 km from Île de la Possession and Île de l'East, which are the two largest islands of the archipelago and situated in its easternmost part. Île aux Cochons is well known as a breeding site for sea birds and it holds the world's largest King Penguin colony and the largest colony of Wandering Albatrosses in the Indian Ocean. Hitherto, the only records of bryophytes from Îles Crozet originate from Île de la Possession and Île de l'East, whereas no bryophytes have been recorded from the western island group of the archipelago. In April 2012, when checking unstudied bryophyte collections from austral islands deposited in PC, a small packet was found with a moss collected in 1954 by E. Aubert de la Rüe on Île aux Cochons. It contained a large specimen of *Sanionia uncinata*, one of the most widespread and abundant mosses on subantarctic islands, where it grows

in a wide range of habitats, often forming extensive pure stands on flat areas and along streams (Ochyra *et al.*, 2008b). This is the first record of this species from the westernmost part of Îles Crozet and the first record of a moss from an area which is considered to be a 'blank spot' on the bryological map in the Subantarctic.

17. *Scapania crassiretis* Bryhn

Contributor: M. V. Dulin

Russian Federation: Komi Republic, Vorkuta district, southern part of the Polar Urals, Voykarsyninsky ridge, northern branch of the Hardyus mountain, the northern end of Bol'shaja Lagorta Lake, 200 m to the south-west of the source of the Levaja Lagorta River, 66°30'54.9"N, 63°31'43.9"E, ca 375 m a.s.l., at the base of the mountain slope, rocky place overgrown by *Racomitrium* sp., on stones in the runnels of a temporary watercourse, 13 August 2010, *leg.* M.V. Dulin, 905mvd (SYKO).

This is the first report of *Scapania crassiretis* from the Komi Republic. It is an arctomontane subcircumpolar species with sporadic occurrences in the Holarctic region. *S. crassiretis* is known from some European countries (Austria, Czech Republic and Slovakia, Switzerland, Italy, the former Yugoslavia, Bulgaria, Poland, Netherlands, Finland, Sweden, and Norway) and from some localities in North America (Alaska and Quebec), China and Japan. It is also recorded from Greenland (Damsholt, 2002; Schumacker & Váňa, 2005; Bakalin, 2009; Ellis *et al.*, 2011c). In Russia, it is recorded in Murmansk Province, Yamalo-Nenets Autonomous Okrug (Yamal Peninsula), Krasnoyarsk Territory (Taymyr Peninsula, Bol'shevik Island, Sayan Mountains), Yakutia Republic, Altai Territory (Altai Mountains), Chukotka Autonomous Okrug, Buryatia Republic (Khamar-Daban Chain, Stanovoye Plateau), Magadan Region (Kolymskoe Plateau), Khabarovsk Territory (Bureya River), Sakhalin Region (Sakhalin Island, Iturup Island), Primorsky Territory (Bakalin, 2009; Konstantinova *et al.*, 2009).

18. *Schistidium helveticum* (Schkuhr) Deguchi

Contributor: C. Sérgio

Portugal: Trás-os-Montes e Alto Douro: Pr de Silva, estrada para Campo das Viboras, 29TQF1398, 650 m a.s.l., on wet slope of a crystalline limestone quarry, August 2002, *leg.* Gabriel Sérgio *s.n.* (LISU249221).

This is the first report of *Schistidium helveticum* for the Portuguese bryoflora. It is a globally widespread species, mainly in the Mediterranean area (Blom, 1996) but is also known from SW Norway to Asia Minor and North Africa and relatively common in Spain and in Mallorca (Casas *et al.*, 2006).

This new occurrence in Portugal fits well with the known distribution of the species, and its habitat conforms to the typical ecological preferences of this *Schistidium*.

19. *Schistidium strictum* (Turner) Loeske ex Mårtensson

Contributors: C. Sérgio and M. Sim-Sim

Portugal, Madeira: Pico Areeiro to Pico Ruivo, on a wet slope and on volcanic rocks, 28SCB1923, 1750 m a.s.l., 5 October 1990, *leg.* C. Sérgio, M. Sim-Sim, & S. Fontinha 7057, (LISU248236).

Schistidium strictum is a hyperoceanic species (Blom, 1996). It occurs in western North America with a disjunct distribution in Europe. In the Mediterranean area and Macaronesia it is rare and is known from a single locality in Spain and one in Madeira (Blom, 1996), where it was collected by Düll in the highest part of the island. The present collection was found in an area of volcanic origin, more or less exposed between 1700 and 1800 m, associated with *Anacolia webbii* (Mont.) Schimp., *Andreaea heinemannii* Hampe & Müll.Hal., *Leucodon canariensis* (Brid.) Schwägr., *Antitrichia curtispindula* (Hedw.) Brid., and *Orthotrichum rupestre* Schleich. ex Schwägr.

In the Madeira archipelago it is certainly an uncommon species, occurring in only two localities of the upper belt on the Pico Areeiro area.

20. *Willia calobolax* (Müll.Hal.) Lightowlers

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

Îles Crozet: Île de la Possession, Port Alfred over Baie du Marin, by road to Rivière du Camp, north of the Alfred Faure base, 46°25'S, 51°50'E, 80 m a.s.l.; on rock on the scarp overgrown with *Blechnum penna-marina* (Poir.) Kuhn by road to penguin rookery, associated with *Muelleriella crassifolia* (Hook.f. & Wilson) Dusén and *Guembelia kidderi* (James) Ochyra & Żarnowiec, 9 November 2006, *leg.* R. Ochyra 11/06, 29/06 (with Marc Lebouvier) (KRAM).

Willia calobolax is a subantarctic species which is most frequent on the islands in the South Indian Ocean (Kerguelen) Province, including Prince Edward Islands (Ochyra, 2008), Îles Kerguelen (Lightowlers, 1985; Ochyra, 1998) and Heard Island (Ellis *et al.*, 2011a). The present discovery completes the geographical range of the species in this biome. Like elsewhere, *W. calobolax* grows on Île de la Possession on exposed, dry maritime rocks in association with *Muelleriella crassifolia* and *Guembelia kidderi*, and only sterile plants have been detected. The moss flora of Îles Crozet is still least known of all the islands of this biome and until recently only about 50 species had been recorded from this archipelago. However, one can assume that its species richness is similar to that of the neighbouring Prince Edward Islands, where about 100 species of moss are known to occur (Ochyra, 2008). This assumption is confirmed by a number of

phytogeographically remarkable additions to the moss flora of Île de la Possession, the largest island of this group, which were made in the last decade. These included *Henediella antarctica* (Ångstr.) Ochyra & Matteri (Blockeel *et al.*, 2006), *H. marginata* (Hook.f. & Wilson) R.H.Zander (Cano, 2008), *Anomobryum julaceum* (P.Gaertn., B.Mey. & Scherb.) Schimp. (Blockeel *et al.*, 2007a), *Pohlia nutans* (Hedw.) Lindb. (Blockeel *et al.*, 2007c), *Bucklandiella pachydietyon* (Cardot) Bednarek-Ochyra & Ochyra (Blockeel *et al.*, 2008), *B. striatipila* (Cardot) Bednarek-Ochyra & Ochyra and *Hymenoloma immersa* (Broth.) Ochyra (Blockeel *et al.*, 2009c), *Blindia magellanica* Müll.Hal., *Ditrichum conicum* (Mont.) Mitt. and *Drepanocladus longifolius* (Mitt.) Paris (Blockeel *et al.*, 2010), and *Catagonium nitens* (Brid.) Cardot (Ellis *et al.*, 2010).

21. *Zygodon catarinoi* C.A.Garcia, F.Lara, Sérgio & Sim-Sim.

Contributors: B. Vigalondo, F. Lara, I. Draper and R. Garilleti

Turkey: Southern Anatolia, Adana: Anti-Taurus Mts., from Kozan to Feke, Göreken, Tersakan River, disturbed riparian forest with *Platanus orientalis* L., *Alnus glutinosa* ssp. *antitaurica* Yalt. and *A. orientalis* ssp. *pubescens* Dippel, 37°39'51"N, 35°51'32"E, 590 m a.s.l., on trunk of *Platanus orientalis*, 13 July 2006, leg. R. Garilleti *et al. s.n.* (MAUAM); Muğla, Eskiköçegiz, eastern shore of Köyceğiz lake, narrow patch of *Liquidambar orientalis* Mill. close to the lake, 36°55'20"N, 28°42'22"E, 100 m a.s.l., on trunk and base of *Liquidambar orientalis*, 20 July 2006, leg. R. Garilleti *et al. s.n.* (MAUAM); Köyceğiz, western shore of Köyceğiz lake, *Liquidambar orientalis* disturbed forest, 36°57'31"N, 28°41'38"E, 110 m a.s.l., on trunk and base of *Liquidambar orientalis*, 20 July 2006, leg. R. Garilleti *et al. s.n.* (MAUAM); Aydin: Samsun Dağı, Dilek National Park, forested maquis close to the seaside, 37°41'55"N, 27°09'59"E, at sea level, on trunk of *Platanus orientalis*, 21 July 2006, leg. R. Garilleti *et al. s.n.* (MAUAM); Samsun Dağı, Dilek National Park, Olukludere Kanyon, open maquis dominated by *Styrax officinalis* L. and *Pinus brutia* Ten., 37°41'37"N, 27°09'38"E, 50 m a.s.l., on trunk of *Platanus orientalis*, 21 July 2006, leg. R. Garilleti *et al. s.n.* (MAUAM).

Zygodon catarinoi is well known from the western Mediterranean, being a common species in the Iberian Peninsula and in Morocco (Draper *et al.*, 2006; Garcia *et al.*, 2006; Sérgio *et al.*, 2006; Medina *et al.*, 2008; Medina *et al.*, 2010). In the central Mediterranean region this species has been reported from Libya (Youssef *et al.*, 2009) and in the eastern region from Greece (Calabrese & Muñoz, 2008) and Cyprus (Frahm *et al.*, 2009; Ellis *et al.*, 2011b). The collections here reported from southern Anatolia

represent the first records of *Z. catarinoi* from Turkey and extend its distribution range in the Eastern Mediterranean to continental Asia. This species is apparently similar to *Z. rupestris* — also occurring in southern Turkey — from which it differs in the presence of fewer, but commonly longer papillae on upper leaf cells and bistratose patches in the leaf lamina.

According to the literature cited above, in the western Mediterranean *Zygodon catarinoi* occurs in different types of Mediterranean woods, frequently cleared, and commonly dominated by *Quercus ilex* ssp. *ballota* (Desf.) Samp. or *Q. suber* L., but it is also found in those of *Juniperus thurifera* L., *Q. faginea* Lam. ssp. *faginea*, or *Q. canariensis* Willd. These habitat and phorophyte preferences of *Z. catarinoi* are similar in Libya, where it has been collected growing on *Quercus* spp. and *Olea europaea* L. Information about this moss species habitat for Eastern Mediterranean is scarce: in Greece it has been found on *Abies* sp., and in Cyprus it grows on *Pinus brutia* Ten. The results of our field survey in southern Anatolia show that *Z. catarinoi* seems to prefer humid habitats, growing mainly on *Platanus orientalis* and *Liquidambar orientalis*. The localities from Aydin (the most westerly ones) correspond to a north exposed humid maquis close to the sea, favoured by the orographic rainfall induced by the Samsun Dağı Mountains. In drier areas it has been found in open riparian forests (Adana), or in groves or disturbed forest along of a lake shoreline (Muğla).

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References

- Allen, B.H. & Crosby, M.R. 1986. Revision of the genus *Squamidium* (Musci: Meteoriaceae). *Journal of the Hattori Botanical Laboratory*, 61: 423–76.
- Arnell, S.W. 1956. Hepaticae collected by O. Hedberg *et al.* on the East African Mountains. *Arkiv för Botanik*, Seria 2, 3: 517–62.
- Aydın Province Environment Situation Report. T. C. Çevre Bakanlığı 2006. Turkey Ministry of Environment and Urban Planning.
- Bai, Z.-L. 2002. *Crossidium aberrans* Holz. & Bartr. (Musci, Pottiaceae), a new record from Asia. *Hikobia* 13, 637–40.
- Bakalin, V.A. 2009. *Hepaticae (Marchantiophyta, Anthocerotophyta) flora and phytogeography of Kamchatka and adjacent islands*. Moscow: KMK Scientific Press. (in Russian).
- Batan, N. & Özdemir, T. 2008. Contributions to the moss flora of Artvin Region (Hatila Valley National Park-Turkey). *Pakistan Journal of Biological Sciences*, 11(13): 1676–82.
- Bescherelle, É. 1875. Note sur les mousses des Îles Saint-Paul et d'Amsterdam. *Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences*, 81: 720–5.
- Blockeel, T.L., Bednarek-Ochyra, H., Czernyadjeva, I.V., Draper, I., Fudali, E., Kučera, J., Long, D.G., Ros, R.M., Ochyra, R., Schumacker, R., Smith, V.R., Sollman, P., Sotiaux, A., Thinggaard, K. & Zmrhalová, M. 2003. New national and regional bryophyte records, 8. *Journal of Bryology*, 25(3): 217–21.
- Blockeel, T.L., Chlebicki, A., Hájková, P., Hájek, M., Hradílek, Z., Kürschner, H., Ochyra, R., Parolly, G., Plášek, V., Quandt, D., Townsend, C.C. & Vandenpoorten, A. 2006. New national and regional bryophyte records, 12. *Journal of Bryology*, 28(1): 68–70.
- Blockeel, T.L., Bednarek-Ochyra, H., Ochyra, R., Düzenli, A., Erdağ, A., Erzberger, P., Ezer, T., Hespanhol, H., Kara, R., Matteri, C.M., Müller, F., Séneca, A., Sérgio, C. & Váňa, J. 2007a. New national and regional bryophyte records, 15. *Journal of Bryology*, 29(2): 139–42.
- Blockeel, T.L., Afridi, H.-ur-R., Bakalin, V.A., Czernyadjeva, I.V., Eckstein, J., Erzberger, P., Frey, W., Fuentes, E., Gilani, S.A., Hedenäs, L., Hugonnot, V., Kürschner, H., Lüth, M., Murad, W., Prada, C., Schnyder, N., Schröder, W., Shah, J., Shinwari, Z.K., Szücs, P., Townsend, C.C. 2007b. New national and regional bryophyte records, 16. *Journal of Bryology*, 29(3): 198–204.
- Blockeel, T.L., Bednarek-Ochyra, H., Ochyra, R., Garilleti, R., Glime, J.M., Lara, F., Mazimpaka, V., Rusińska, A., Schäfer-Verwimp, A., Mostafa Shabbara, H., Söderström, L., Stebel, A., Townsend, C.C., Váňa, J., Yayintaş, Ö.T. & Żarnowiec, J. 2007c. New national and regional bryophyte records, 17. *Journal of Bryology*, 29(4): 277–83.
- Blockeel, T.L., Bednarek-Ochyra, H., Ochyra, R., Duckett, J.G., Erzberger, P., Hedenäs, L., Hugonnot, V., Maier, E., Marková, I., Matcham, H.W., Plášek, V., Pócs, T., Seppelt, R.D., Szücs, P., Thouvenot, L. & Van Zanten, B.O. 2008. New national and regional bryophyte records, 18. *Journal of Bryology*, 30(2): 161–7.
- 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. 2009a. New national and regional bryophyte records, 20. *Journal of Bryology*, 31(1): 54–62.
- Blockeel, T.L., Bednarek-Ochyra, H., Ochyra, R., Cykowska, B., Esquivel, M.G., Lebouvier, M., Luis, L., Martins, S., Müller, F., Németh, Cs, Papp, B., Plášek, V., Pócs, T., Sabovljević, M., Sérgio, C., Sim-Sim, M., Stech, M., Váňa, J. & Yayintaş, Ö.T. 2009b. New national and regional bryophyte records, 21. *Journal of Bryology* 31(2): 132–39.
- Blockeel, T.L., Bastos, C.J.P., Bednarek-Ochyra, H., Ochyra, R., Dulin, M.V., Fovet, L., Garcia, C., Hedenäs, L., Hugonnot, V., Kirmaci, M., Koponen, T., Lebouvier, M., Martins, A., Müller, F., Sabovljević, M., Lakušić, D., Schäfer-Verwimp, A., Sérgio, C., Surina, B. & Yayintaş, Ö.T. 2009c. New national and regional bryophyte records, 22. *Journal of Bryology*, 31(3): 201–10.
- Blockeel, T.L., Bednarek-Ochyra, H., Cykowska, B., Ochyra, R., Düzenli, A., Ezer, T., Holyoak, D.T., Hugonnot, V., Kara, R., Larrain, J., Lebouvier, M., Preston, C.D., Schäfer-Verwimp, A., Smith, V.R., Spitalé, D., Ştefănuţ, S. & Váňa, J. 2010. New national and regional bryophyte records, 23. *Journal of Bryology*, 32(2): 140–7.
- Blom, H.H. 1996. A revision of the *Schistidium apocarpum* complex in Norway and Sweden. *Bryophytorum Bibliotheca* 49: 1–333. Berlin, Stuttgart.
- Brasch, H. 1923. Beitrag zur Laubmoosflora. *Sitzungsbereiche des Naturhistorischen Vereins der Preußischen Rheinlande und Westfalens*, 1920–1922: 18–22.
- Buck, W.R. & Ireland, R.R. 1989. Plagiotheciaceae. *Flora Neotropica Monograph*, 50: 1–22.
- Burrell, W.H. 1940. A field study of *Orthodontium gracile* (Wilson) Schwaegrichen and its variety *heterocarpum* Watson. *Naturalist* 785: 295–302.
- Calabrese, G.M. & Muñoz, J. 2008. *Zygodon* (Orthotrichaceae) in the Iberian Peninsula. *Bryologist*, 111: 231–47.
- Cano, M.J. 2008. Taxonomic revision of *Hemediella* Paris (Pottiaceae, Bryophyta). *Bryophytorum Bibliotheca*, 64: 1–142.
- Casas, C., Brugués, M., Cros, R.M. & Sérgio, C. 2006. *Handbook of Mosses of the Iberian Peninsula and the Balearic Islands: illustrated keys to genera and species*. Institut d'Estudis Catalans, Barcelona.
- Chavoutier, J., Hugonnot, V. 2006. *Crossidium aberrans* Holz. & E.B.Bartram dans le département de la Savoie et en France — synthèse chorologique et écologique. *Journal de Botanique de la Société botanique de France* 36: 3–12.
- Crum, H. & Anderson, L.E. 1981. *Mosses of Eastern North America*, Vol. 2. Columbia University Press, New York, pp. 664–1328.
- Czernyadjeva, I.V. 2002. *Dichelyma capillaceum* (Dicks.) Myr. (Musci) in Russia. *Arctoa* 11: 87–9.
- Damsholt, K. 2002. *Illustrated flora of Nordic liverworts and hornworts*. Lund: Nordic Bryological Society.
- Draper, I., Lara, F., Albertos, B., Garilleti, R. & Mazimpaka, V. 2006. Epiphytic bryoflora of the Atlas and AntiAtlas mountains, including a synthesis of the distribution of epiphytic bryophytes in Morocco. *Journal of Bryology*, 28: 312–30.
- Dulin, M.V. 2007. *Liverworts of the Middle Taiga Subzone of the Russian European North-East*. Ekaterinburg: UrO RAN. (in Russian).
- Düll, R. 1980. Die Moose (Bryophyta) des Rheinlandes (Nordrhein-Westfalen, Bundesrepublik Deutschland) unter Berücksichtigung der seltener Arten des benachbarten Westfalen und Rheinland-Pfalz. Ein Punktkartenatlas mit ökologischer Charakteristik aller Arten sowie Angabe des

- Arealtyps nebst Erläuterungen zur Gesamtverbreitung. *Decheniana Beihefte* 24: [1–5]+1–365.
- Düll, R. 1984. Distribution of the European and Macaronesian mosses (Bryophytina). Part I. *Bryologische Beiträge* 4: 1–109.
- Düll, R. 1985. Distribution of the European and Macaronesian mosses (Bryophytina). Part II. *Bryologische Beiträge*, 5: 110–232.
- Düll, R. 1992. Distribution of the European and Macaronesian mosses (Bryophytina). Annotations and progress. *Bryologische Beiträge*, 8/9: 1–223.
- Ellis, L.T., Asthana, A.K., Sahu, V., Bednarek-Ochyra, B.H., Ochyra, R., Cano, M.J., Costa, D.P., Cykowska, B., Ochyra, R., Philippov, D.A., Dulin, M.V., Erzberger, P., Lebouvier, M., Mohamed, H., Ochyra, R., Orgaz, D.J., Phephu, N., van Rooy, J., Stebel, A., Suárez, G.M., Schiavone, M.M., Townsend, C.C., Váňa, J., Vončina, G., Yayintaş, Ö.T., Yong, K.T. & Zander, R.H. 2010. New national and regional bryophyte records, 25. *Journal of Bryology*, 32(4): 311–22.
- Ellis, L.T., Bednarek-Ochyra, H., Ochyra, R., Calvo Aranda, S., 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., Sabovljević, M., Seppelt, R.D., Smith, V.R., Sotiaux, A., Szurdoki, E., Vanderpoorten, A., van Rooy, J. & Żarnowiec, J. 2011a. New national and regional bryophyte records, 26. *Journal of Bryology*, 33(1): 66–73.
- Ellis, L.T., Asthana, A.K., Sahu, V., Srivastava, A., Bednarek-Ochyra, H., Ochyra, R., Chlachula, J., Colotti, M.T., Schiavone, M.M., Hadrilek, Z., Jimenez, M.S., Klama, H., Lebouvier, M., Natcheva, R., Pócs, T., Porley, R.D., Sérgio, C., Sim-Sim, M., Smith, V.R., Söderström, L., Ștefănuț, S., Suárez, G.M. & Váňa, J. 2011b. New national and regional bryophyte records, 28. *Journal of Bryology*, 33(3): 237–47.
- Ellis, L.T., Akhoondi Darzikolaei, S., Shirzadian, S., Bakalin, V.A., Bednarek-Ochyra, H., Ochyra, R., Claro, D., Dulin, M.V., Eckel, P.M., Erzberger, P., Eziz, R., Sulayman, M., Garcia, C., Sérgio, C., Stow, S., Hedderson, T., Hedenäs, L., Kürschner, H., Li, W., Nebel, M., Nieuwkoop, J., Philippov, D.A., Plášek, V., Sawicki, J., Schäfer-Verwimp, A., Ștefănuț, S., Váňa, J. 2011c. New national and regional bryophyte records, 29. *Journal of Bryology* 33(4): 316–23.
- Ellis, L.T., Bednarek-Ochyra, H., Cykowska, B., Ochyra, R., Garcia, C., Sergio, C., Lebouvier, M., Manolaki, P., Giannouris, E., Kadis, C., Markova, I., Papp, B., Szurdoki, E., Peralta, D.F., Plášek, V., Ristow, R., Sabovljevic, M., Sim-Sim, M., Smith, V.R., Tsakiri, E., Váňa, J., Virchenko, V.M., Barsukov, O.O. 2012a. New national and regional bryophyte records, 30. *Journal of Bryology* 34(1): 45–51.
- Ellis, L.T., Alegro, A., Bednarek-Ochyra, H., Ochyra, R., Bergamini, A., Cogoni, A., Erzberger, P., Górski, P., Gremmen, N., Hespanhol, H., Vieira, C., Kurbatova, L.E., Lebouvier, M., Martinčić, A., Asthana, A.K., Gupta, R., Nath, V., Natcheva, R., Ganeva, A., Özdemir, T., Batan, N., Plášek, V., Porley, R.D., Randić, M., Sawicki, J., Schroder, W., Sérgio, C., Smith, V.R., Sollman, P., Ștefănuț, S., Stevenson, C.R., Suárez, G.M., Surina, B., Uyar, G., Modrić Surina, Z. 2012b. New national and regional bryophyte records, 31. *Journal of Bryology*, 34(2): 123–34.
- 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., Čihal, 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. 2012c. New national and regional bryophyte records, 32. *Journal of Bryology*, 34(3): 231–46.
- Enroth, J. 1991. Bryophyte flora of the Huon Peninsula, Papua New Guinea. XLVIII. Plagiotheciaceae (Musci). *Annales Botanici Fennici*, 28: 111–5.
- Frahm, J.-P., Lüth, M. & Melick, H. 2009. Die Moose Zyperns. *Archive for Bryology Special*, 46: 1–8.
- Frahm, J.-P., Sabovljević, M. & Nokhbeh-saim, M. 2008. New data on the taxonomic status of *Ditrichum plumbicola* Crundw. (Bryophyta) and its relation to *D. lineare* (Sw.) Kindb. based on the *trnL-F* region of the cpDNA. *International Journal of Botany*, 4(1): 71–4.
- Frahm, J.-P. & Stapper, N. 1998. Das Laubmoos *Dichelyma capillaceum* nach 70 Jahren an seinen einzigen Fundort in Deutschland gefunden. *Decheniana*, 151: 109–13.
- Frey, W. & Kürschner, H. 1988. Bryophytes of the Arabian Peninsula and Socotra. Floristics, phytogeography and definition of the xerothermic Pangaean element. Studies in Arabian bryophytes 12. *Nova Hedwigia* 46: 37–120.
- Garcia, C., Lara, F., Sérgio, C., Sim-Sim, M., Garilleti, R. & Mazimpaka, V. 2006. *Zygodon catarinói* (Orthotrichaceae, Bryopsida), a new epiphytic species from the Western Mediterranean Basin. *Nova Hedwigia*, 82: 247–56.
- Grims, F. 1999. Die Laubmoose Österreichs. Catalogus Florae Austriae, Teil 2, Bryophyten (Moose). Heft 1, Musci (Laubmoose). *Biosystematic and Ecology Series*, 15: 1–418.
- Grolle, R. 2002. The Hepaticae and Anthocerotae of the subantarctic and temperate islands in the eastern Southern Hemisphere (90°E to 0°): an annotated catalogue. *Journal of Bryology*, 24: 57–80.
- Hallingbäck, T., ed. 1998. *Rödlistade mossor i Sverige — Artfakta*. Uppsala: ArtDatabanken, SLU.
- Hässel de Menéndez, G.G. & Rubies, M.F. 2009. Catalogue of Marchantiophyta and Anthocerotophyta of Southern South America. *Nova Hedwigia, Beiheft*, 134: 1–672.
- Hassel, K. & Söderström, L. 2005. The expansion of the alien mosses *Orthodontium lineare* and *Campylopus introflexus* in Britain and Continental Europe. *Journal of the Hattori Botanical Laboratory*, 97: 183–93.
- Hattori, S. 1975. Anthocerotae and Hepaticae. In: H. Ohashi, ed. Flora of Eastern Himalaya. Third Report. *Bulletin of the University Museum, University of Tokyo*, 8: 206–42.
- Hedenäs, L. 1992[1990]. The genus *Pseudocalliergon* in northern Europe. *Lindbergia*, 16: 80–99.
- Hedenäs, L., Godow, S. & Hylander, K. 1996. Bryophyte profiles: 1. *Dichelyma capillaceum* (Dicks.) Myr. (Bryopsida: Fontinalaceae). *Journal of Bryology*, 19: 157–79.
- Hill, M.O., Bell, N., Bruggeman-Nannenga, M.A., Brugués, M., Cano, M.J., Enroth, J., Flatberg, K.I., Frahm, J.-P., Gallego, M.T., Garilleti, R., Guerra, J., Hedenäs, L., Holyoak, D. T., Hyvönen, J., Ignatov, M.S., Lara, F., Mazimpaka, V., Muñoz, J., & Söderström, L. 2006. An annotated checklist of the mosses of Europe and Macaronesia. *Journal of Bryology*, 28(3): 198–267.
- Hylander, K. 1998. Hårklomossa, *Dichelyma capillaceum* — ekologi och aktuell förekomst i Sverige. *Svensk Botanisk Tidskrift*, 92: 95–111.
- Ignatov, M.S., Afonina, O.M. & Ignatova, E.A. 2006. Check-list of Mosses of East Europe and North Asia. *Arctoa*, 15: 1–130.
- Ingerpuu, N. & Vellak, K. 2000. Species of the Red Data Book of European bryophytes in Estonia. *Lindbergia*, 25: 111–15.
- Ireland, R.R. 1990. Distribution of the moss genus *Dichelyma* in Canada. *Lindbergia*, 15: 65–9.
- Iwatsuki, Z. 1970. A revision of *Plagiothecium* and its related species from Japan and her adjacent areas. *Journal of the Hattori Botanical Laboratory*, 33: 331–80.
- Kannukene, L., Ingerpuu, N., Vellak, K. & Leis, M. 1997. Additions and amendments to the list of Estonian bryophytes. *Folia Cryptogamica Estonica*, 31: 1–7.
- Karczmarz, K. 1971. A monograph of the genus *Calliergon* (Sull.) Kindb. *Monographiae Botanicae* 34: 1–209, pl. 1–20.
- Kitagawa, N. 1967. Marsupellae of Mt. Kinabalu, North Borneo. *Journal of the Hattori Botanical Laboratory*, 30: 199–204.
- Konstantinova, N.A., Bakalin, V.A., Andrejeva, E.N., Bezgodov, A.G., Borovichev, E.A., Dulin, M.V. & Mamontov, Yu.S. 2009. Checklist of liverworts (Marchantiophyta) of Russia. *Arctoa*, 18: 1–64. (in Russian).
- Kučera, J. & Váňa, J. 2003. Check- and Red List of bryophytes of the Czech Republic (2003). *Preslia* 75: 193–222.
- Kürschner, H. & Erdağ, A. 2005. Bryophytes of Turkey: an annotated reference list of the species with synonyms from the recent literature and an annotated list of Turkish bryological literature. *Turkish Journal of Botany* 29: 95–154.
- Kürschner, H. & Frey, W. 2011. Liverworts, mosses and hornworts of Southwest Asia (Marchantiophyta, Bryophyta, Anthocerotophyta). *Nova Hedwigia, Beiheft*, 139: 1–225.
- Kuwahara, Y. 1986. Metzgeriaceae of the Neotropics. *Bibliotheca Bryophytorum*, 28: 1–254.
- Li, D.-K. & Ireland, R.R. 2008. Plagiotheciaceae. In: R.-L. Hu, Y.-F. Wang, M. R. Crosby & S. He, eds. *Moss flora of China*. English version. Vol. 7. *Amblystegiaceae – Plagiotheciaceae*. Beijing/New York: Science Press and St. Louis: Missouri Botanical Garden, pp. 219–42.

- Lightowlers, P.J. 1985.** Taxonomic notes on New Zealand species of *Tortula*. *Journal of Bryology*, 13: 369–75.
- Martiny, P. 1995.** *Dichelyma capillaceum* (Dicks.) Myr. In: R. Schumacker & P. Martiny, eds. *Red Data Book of European bryophytes. Part 2. Threatened bryophytes in Europe including Macaronesia*. Trondheim: The European Committee for Conservation Bryophytes, p. 90.
- Medina, N.G., Medina, R., Lara, F. & Mazimpaka, V. 2008.** Brioflora epífita de Sierra Alhamilla (Almería). *Boletín de la Sociedad Española de Briología*, 32/33: 1–7.
- Medina, R., Lara, F., Albertos, B., Draper, I., Garilleti, R. & Mazimpaka, V. 2010.** Epiphytic bryophytes in harsh environments: the *Juniperus thurifera* forests. *Journal of Bryology*, 32: 23–31.
- Miehe, S. & Miehe, G. 1994.** *Ericaceous forests and heathlands in the Bale Mountains of south Ethiopia. Ecology and man's impact*. Hamburg: Stiftung Walderhaltung & Bundesforschungsanstalt für Forst- und Holzwirtschaft.
- Mohan, G. 1998.** Catalogul briofitelor din România. *Acta Botanica Horti Bucurestensis*, 1998: 1–432.
- Nieva, M. & Schiavone, M. 2002.** El género *Metzgeria* (Metzgeriales, Hepatophyta) en los bosques montanos del Noroeste de Argentina. *Tropical Bryology*, 21: 123–33.
- Ochyra, R. 1982.** *Orthodontium lineare* Schwaegr. — a new species and genus in the moss flora of Poland. *Bryologische Beiträge*, 1: 23–36.
- Ochyra, R. 1998.** The type of *Barbula calobolax* var. *angustinervia* (Musci, Pottiaceae). *Fragmenta Floristica et Geobotanica*, 43: 285–7.
- Ochyra, R. 1999.** *Ditrichum austrogeorgicum*: a synonym of *D. hyalinum* (Musci, Ditrichaceae). *Cryptogamie, Bryologie*, 20: 247–53.
- Ochyra, R. 2003.** A nomenclatural comment on the northern Andean *Chorisodontium* (Dicranaceae) and citation of Hooker's names. *Journal of Bryology*, 25: 66–8.
- Ochyra, R. 2008.** Mosses. In: S. L. Chown & P. W. Froneman, eds. *The Prince Edward Islands: land-sea interactions in a changing ecosystem*. Stellenbosch: Sun Press, pp. 383–9.
- Ochyra, R., Bednarek-Ochyra, H. & Lewis Smith, R.I. 2008a.** New and rare moss species from the Antarctic. *Nova Hedwigia*, 87: 457–77.
- 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: 287–95.
- Ochyra, R., Kempa, R. & Buck, W.R. 2000.** *Plagiothecium lucidum* (Hook.f. & Wilson) Paris in tropical Africa. *Tropical Bryology*, 18: 147–52.
- Ochyra, R., Lewis Smith, R.I. & Bednarek-Ochyra, H. 2008b.** *The illustrated moss flora of Antarctica*. Cambridge: Cambridge University Press.
- 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: 33–53.
- Ochyra, R. & Sharp, A.J. 1988.** Results of a bryogeographical expedition to East Africa in 1968, IV. *Journal of the Hattori Botanical Laboratory*, 65: 335–77.
- Ochyra, R., Wesche, K., Miehe, G. & Miehe, S. 2002.** New records of pleurocarpous mosses for Africa and Uganda. *Journal of Bryology*, 24: 256–8.
- Orbán, S. 2000.** *Calymperes venezuelanum*, a newly discovered African–American disjunct element in the flora of Madagascar. *Bryologist*, 103: 145–6.
- O'Shea, B.J. 2006.** Checklist of the mosses of sub-Saharan Africa (version 5, 12/06). *Tropical Bryology Research Reports*, 6: 1–252.
- Papp, B., Erzberger, P., Ódor, P., Hock, Zs., Szövényi, P., Szurdoki, E. & Tóth, Z. 2010.** Updated checklist and redlist of Hungarian bryophytes. *Studia Botanica Hungarica*, 41: 31–59.
- Partyka, L.Ya. 1974.** On bryoflora of the Polissia reservation. *Ukrainskiy Botanichnyi Zhurnal*, 31: 770–3 (in Ukrainian with English summary).
- Partyka, L.Y. 1986.** Bryophytes. In: T. Andrienko *et al.*, eds., *Polissia State Nature Reserve. Vegetation*. Kiev: Naukova Dumka: pp. 153–62 (in Russian).
- Pinheiro da Costa, D. (2008)** Metzgeriaceae. *Flora Neotropica Monograph* 102: 1–170.
- Plášek V., Sawicki J., Marková, I. & Wierzcholska S. 2011.** *Orthotrichum affine* var. *bohemicum* (Orthotrichaceae), a new variety of epiphytic moss from the Czech Republic. *Acta Societatis Botanicorum Poloniae*, 80(4): 335–40.
- Potemkin, A.D., Kurbatova, L.E. & Kotkova, V.M. 2008.** Liverworts from Hogland Island (Baltic Sea, Gulf of Finland) new and less known for the Leningrad Region and Russia. *Botaničeskij Žurnal*, 93(3): 466–71. (in Russian).
- Potier de la Varde, R. 1955.** Mousses récoltées par M. le Dr. Olov Hedberg, en Afrique orientale, au cours de la mission suédoise de 1948. *Arkiv för Botanik*, 3: 125–204.
- Sabovljević, M., Natcheva, R., Dihoru, G., Tsakiri, E., Dragičević, S., Erdag, A. & Papp, B. 2008.** Check-list of the mosses of SE Europe. *Phytologia Balcanica* 14: 207–44.
- Sallantaus, T. 2009.** *Dichelyma capillaceum* — erittäin uhanalainen. In: S. Laaka-Lindberg, S. Anttila & K. Syrjänen, eds. *Suomen uhanalaiset sammalet*. Helsinki: Suomen Ympäristökeskus, pp. 83–5.
- Schumacker, R. & Váňa, J. 2005.** *Identification keys to the liverworts and hornworts of Europe and Macaronesia (distribution and status)*. 2nd ed. Poznan: Sorus.
- Sérgio, C., Brugués, M., Cros, R.M., Garcia, C. & Louro, T. 2006.** A new important mediterranean area for bryophytes in Portugal: Barrancos (Baixo Alentejo). *Boletín de la Sociedad Española de Briología*, 29: 25–33.
- Sérgio, C. & Carvalho, S. 2006.** Annotated catalogue of Portuguese bryophytes. *Portugaliae Acta Biológica*, 21 (1–4): 5–230.
- Sim-Sim, M. 1989.** As Hepaticae e Anthocerotae da flora de Portugal. *Portugaliae Acta Biológica*, B, 15: 347–408.
- Szafran, B. 1948.** Relicts of past epochs in the moss flora of Poland and adjacent eastern regions. *Ochrona Przyrody*, 18: 41–65 (in Polish with English summary).
- Tixier, P. 1980.** Bryophyta exotica. VI. Données muscologiques nouvelles sur l'île d'Amsterdam (Océan Indien du Sud). *Nova Hedwigia*, 32: 483–91.
- Toivonen, H. 1972.** Distribution of *Dichelyma capillaceum* (With.) Myr. emend. Br. & Schimp. (Bryophyta), especially in north-western Europe. *Annales Botanici Fennici*, 9: 102–6.
- Uyar, G. & Çetin, B. 2004.** A new check-list of the mosses of Turkey. *Journal of Bryology*, 26(3): 203–20.
- Váňa, J. 1976.** Lebermoose aus Neuguinea. 13. Gymnomitriaceae. *Journal of the Hattori Botanical Laboratory*, 40: 185–9.
- Váňa, J. 1985.** Notes on some African Hepatic Genera 6–9. *Folia Geobotanica et Phytotaxonomica*, 20: 81–99.
- Váňa, J., Pócs, T. & de Sloover, J.L. 1979.** Hépatiques d'Afrique tropicale. *Lejeunia*, 98: 1–15.
- Váňa, J., Lebouvier, M., Ochyra, R., Bednarek-Ochyra, H. & Cykowska, B. 2010a.** Two noteworthy records of hepatics from Île Amsterdam in the South Indian Ocean. *Nova Hedwigia, Beiheft*, 138: 231–41.
- Váňa, J., Söderström L., Hagborg, A. & von Konrat, M. 2010b.** Nomenclatural novelties and lectotypifications in Gymnomitriaceae. *Novon*, 20: 225–7.
- Vilnet, A.A., Konstantinova, N.A. & Troitsky, A.V. 2007.** On molecular phylogeny of Gymnomitriaceae H. Klingr. (Hepaticae). In: Computational Phylogenetics and Molecular Systematics 'CPMS' 2007'. Conference proceedings. Moscow: KMK Scientific Press Ltd, pp. 24–6.
- Welch, W. 1960.** *A monograph of the Fontinalaceae*. The Hague: Martinus Nijhoff.
- Wigginton, M.J. & Porley, R.D. 2001.** British Bryological Society Expedition to Mulanje Mountain, Malawi. 14. Allisoniaceae, Arnelliaceae, Aytoniaceae, Geocalycaceae, Gymnomitriaceae, Pallaviciniaceae (Hepaticae). *Journal of Bryology*, 23: 133–8.
- Youssef, S.G.M., Khaled, SA.-E.-R. & Hamad, R.B. 2009.** *Zygodon* Hook. ex Taylor a new record to Libya. *Pakistan Journal of Biological Sciences*, 12: 1571–5.
- Zander R. H., Hedderson T.A. 2011.** A new species of *Crossidium* (Pottiaceae, Bryophyta) from South Africa. *Journal of Bryology*, 33: 304–7.
- Zomlefer, W. 1993.** 1993. A revision of *Rigodium* (Musci, Rigodiaceae). *Bryologist*, 96: 1–72.