

New national and regional bryophyte records, 13

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1. *Hygrohypnum styriacum* (Limpr.) Broth.

Contributors: S. Rams and G. Oliván

Spain: PROV. GRANADA, Sierra Nevada (National Park), headwaters of the Guarnón river, 37°03'N 3°22'W, 3000 m a.s.l., shady hollow on mica-schist rock, with *Amblyodon dealbatus* (Hedw.) P.Beauv., *Amphidium mougeotii* (Bruch & Schimp.) Schimp., *Myurella julacea* (Schwägr.) Schimp. and *Philonotis fontana* (Hedw.) Brid., 16 September 2000, leg. R. M. Ros, conf. L. Hedenäs (MUB 17817).

This is the first report for *H. styriacum* in Spain. The species usually grows in irrigated crevices of granite or slate rocks in the alpine regions of the mountains. It has a boreal-montane distribution and is known in Europe from the mountainous regions of Norway, Sweden, Iceland and Britain, where it is rare, and from the Alps and Tatras (Carpathian Mountains), where it is more frequent. This is the most southerly record in this continent. Outside Europe it is known only from California to British Columbia in the Rocky Mountains in North America.

This taxon may be distinguished from other species in the genus by the relatively small size of the plants, erect-spreading leaves with the apex abruptly acuminate, the costa usually forked and reaching mid-leaf, and the leaf cells becoming rectangular towards the base but not forming a recognizable alar group. It is possible that this species has been confused with slender forms of *H. luridum* (Hedw.) Jenn. with a short and forked costa, from which it may be separated by the alar cells. In *H. luridum* these are quadrate to shortly rectangular, usually incrassate, yellowish-brown, and they form a differentiated group.

2. *Leptobryum pyriforme* (Hedw.) Wilson

Contributors: R. Ochyra and O. Tyshchenko

Antarctic Peninsula: Graham Coast, Argentine Islands, Galindez Island: (1) Meek Channel, north-east of the Vernadsky (formerly Faraday) Station, 65°14.771'S 64°14.870'W, in tufts of *Chorisodontium aciphyllum*

(Hook.f. & Wilson) Broth., *Sanionia georgico-uncinata* (Müll.Hal.) Ochyra & Hedenäs, *Polytrichum strictum* Brid., *P. juniperinum* Hedw. and *Pohlia cruda* (Hedw.) Lindb. at sea level, 26 February 2004, leg. L. Manilo 3 (KRAM); (2) between Meek Channel and Wozzle Hill, lat. 65°14.906'S 64°14.802'W, ca 50 m a.s.l., in tufts of *Pohlia nutans* (Hedw.) Lindb., *Sanionia georgico-uncinata* and *Bryum pseudotriquetrum* (Hedw.) P.Gaertn., B.Mey & Scherb., 26 February 2004, leg. L. Manilo 7 (KRAM).

Leptobryum pyriforme is a bipolar species which is locally frequent in Tierra del Fuego and Patagonia and extends to subantarctic South Georgia (Ochyra, Bednarek-Ochyra & Lewis Smith, 2002) and Antarctica. It was reported several times from the Antarctic continent (Imura *et al.*, 1992; Kanda & Mochida, 1992; Kanda & Okada, 1993; Okada & Kanda, 1994) but these records correctly refer to *L. wilsonii* (Mitt.) Broth. (Arts, 2001). So far, the only correct record of *L. pyriforme* in the Antarctic is from geothermal soil on Deception Island in the South Shetland Islands archipelago (Lewis Smith, 1984a, b, 2005) and the plants are in fine fruiting condition (Lewis Smith 3644A, AAS, KRAM). The present specimens originate from unheated ground on Galindez Island in the Argentine Islands archipelago at the Graham Coast off the Antarctic Peninsula and they represent the southernmost occurrence of the species. This region has been surveyed bryologically quite often since the early days of the botanical exploration of the Antarctic (Lewis Smith & Corner, 1973) but *L. pyriforme* was overlooked. This is because the species grows in small quantity intermingled in tufts of larger mosses such as *Chorisodontium aciphyllum*, *Polytrichum strictum*, *P. juniperinum*, *Sanionia georgico-uncinata*, *Pohlia nutans*, *P. cruda*, *Bryum pseudotriquetrum*, and the shoots of *L. pyriforme* were discovered in cultured material of these species. They are principal constituents of the *Polytrichum strictum*–*Chorisodontium aciphyllum* association within the moss turf sub-formation which form characteristic peat banks on Galindez Island (Lewis Smith & Corner, 1973). *Leptobryum pyriforme* is entirely sterile but it produces

ovoid, reddish rhizoidal tubers in great profusion and these enable unmistakable identification of the material.

3. *Meesia longiseta* Hedw.

Contributors: P. Hájková, M. Hájek and J. Kučera

Bulgaria: RILA MTS: Kostenetski Balkan, the Belmeken range, spring area below the Premkata saddle, 41°10'05"N 23°45'29"E (WGS 84), 2189 m a.s.l., large and strongly waterlogged spring fen (subneutral, mineral-poor spring water: pH 6.0, conductivity 39 $\mu\text{S cm}^{-1}$ at 20°C), 7 July 2003, leg. P. Hájková & M. Hájek, det. J. Kučera (BRNU, SOM).

Meesia longiseta is rare in the whole of Europe and it belongs to the mosses included in Annex II of the Habitats Directive no. 92/43/EEC of the Natura 2000 network. This glacial relic species is reported from Bulgaria for the first time and it grows here in spring fen vegetation dominated by *Carex nigra* L., *C. curta* Gooden., *Primula farinosa* L. subsp. *exigua* (Velen.) Hayek and some other fen mosses such as *Scorpidium revolvens* (Sw.) Rubers s.str., *Palustriella falcata* (Brid.) Hedenäs, *Philonotis seriata* Mitt., *Warnstorfiya exannulata* (Schimp.) Loeske and *Sphagnum contortum* Schultz.

4. *Pelekium scabrosulum* (Mitt.) Touw (*Cyrto-hypnum scabrosulum* (Mitt.) Buck & Crum).

Contributor: C. C. Townsend

Ecuador: PROV. NAPO: on an undecayed log by the trail to the tree with the observation platform, Sacha Lodge, ca 70 km eastward along the Rio Napo from Coca, 0°26'S 76°58'W, ca 200 m a.s.l., 21 November 1998, leg. C.C. Townsend 98/528 (L, Priv. Herb. Townsend), conf. A. Touw.

This species does not occur in the checklist of Ecuadorian mosses in Churchill (1994), nor have I noted it in any publication since that date. Its occurrence in lowland 'Amazonian' Ecuador is not, however, surprising, given its occurrence in the Guianas, being 'rather common' in Surinam and French Guiana (Zielman, 1996) and known from the Amazonas of Venezuela as long ago as Mitten (1869). It is not, however, listed for Colombia by Churchill & Linares (1995).

Although Churchill (1994) lists many species from 'Añangu, ca 75 km east of Coca', I do not know that any other bryologist has visited Sacha Lodge, and it may be useful to list a few other species gathered in the vicinity, other than the very common mosses and those recorded from Añangu: *Bryum apiculatum* Schwaegr.; *Callicostella merkelii* (Hornsch.) Jaeg.; *Calymperes afzelii* Sw.; *Chryso-hypnum diminutivum* (Hampe) Buck; *Fissidens elegans* Brid.; *F. flaccidus* Mitt. (both det. R. A. Pursell); *Groutiella tumidula* (Mitt.) Vitt; *Macromitrium portoricense* Williams; *Papillaria nigrescens* (Hedw.) Jaeg.; *Sematophyllum subpinnatum* (Brid.) Britt.

5. *Pseudotaxiphyllum laetevirens* (F. Koppe & Düll) Hedenäs

Contributors: Cecília Sérgio, C. Vieira and A. Séneca

Portugal: DOURO LITORAL: Santa Justa (Valongo), Fojo da Valéria, humid clayey banks, 29TNF4259, 11 March 1999, leg. A. Séneca 1251 c.fr., 1260, 1261 c.fr., 1262 (PO); 17 September 2002, leg. A. Séneca & C. Vieira 2695 c.fr. (PO); R. Ferreira valley (Valongo), dripping earthy bank in woodland, 29TNF4356, 28 June 2002, leg. A. Séneca &

C. Vieira 1520 (PO); R. Ferreira valley (Valongo), earthy bank in woodland, 29TNF4357, 27 February 2003, leg. A. Séneca & C. Vieira 4117 (PO). BEIRA LITORAL: São Jorge, Rio Uima, humid clayey banks in *Pinus* woodland, 29TNF4135, 11 March 2002, leg. Sérgio et al. 12458 (LISU 193327).

Pseudotaxiphyllum laetevirens was first reported by Persson (1939) and Luisier (1943, 1945) based on a collection studied by Dixon and Luisier from Madeira. In Luisier's report, the specimen gathered at Encumeada, Madeira, was regarded as *Isopterygium laetevirens* and it was subsequently treated as *I. elegans* var. *laetevirens* by Koppe & Düll (1986). Hedenäs (1992) considered it an endemic bryophyte to Madeira and the Azores, but from 1986 there have also been reports of this species in Spain (Koppe & Düll, 1986; Guerra et al., 2001). During recent fieldwork in the Valongo and Aveiro regions (N.W. Portugal, Iberian Peninsula), we collected specimens that we consider should be included in *P. laetevirens* since they do not fit within the variation of *P. elegans* (Brid.) Z.Iwats., which is also found in this part of the country (Sérgio & Carvalho, 2003).

The specimens show some variation in cell length and width but most of the mid-leaf cells and apical leaf cells match the description of the species, and the stem leaves have entire or slightly denticulate margins at the apices (Hedenäs, 1992). Some specimens have flagelliform branchlets, archegonia and capsules in various stages of development, but few spores have been seen. No antheridia have been observed, indicating that this is probably a dioicous species. Compared with *P. elegans*, specimens of *P. laetevirens* are more robust and have a strong glossy appearance, a brighter golden or red colour when dry, and slightly crispate leaves.

One of the areas where the species was found was in the Natura 2000 Network Site 'Valongo', which is characterized by a great floristic originality, a result of a particular combination of environmental factors: proximity to the ocean, an intermediate position between the temperate and Mediterranean bioclimatic territories, and the presence of a complex system of deep caves. Its location in the Atlantic biogeographic region and the rainy Mediterranean climate with strong oceanic influence and a high percentage of atmospheric humidity throughout the year, create favourable conditions for the occurrence of an exceptional number of relict thermophilous pteridophytes and endemic species (Pires de Lima & Resende-Pinto, 1945; Vieira, Séneca & Sérgio, 2004). In this area *P. laetevirens* develops particularly well on clayey and humid schistose banks and soil associated with *P. elegans*, *Calypogeia fissa* (L.) Raddi and *Diplophyllum albicans* (L.) Dumort. on drier earthy banks, and with *Fissidens polyphyllus* Wilson ex Bruch & Schimp. and *Pallavicinia lyellii* (Hook.) Carruth. on the dripping walls of shaded cave entrances.

The second area where the species was found, 25 km south of the Valongo area, is a tributary of the R. Vouga

where the plants are confined to shaded non-calcareous banks of a small rivulet near a *Pinus pinaster* Aiton plantation. Here, the species also grows with oceanic and sub-oceanic bryophytes such as *Calypogeia fissa*, *Diplophyllum albicans*, and with temperate species such as *Polytrichum formosum* Hedw., *Sphagnum auriculatum* Schimp. and *Scapania nemorea* (L.) Grolle.

6. *Schistidium brunnescens* Limpr. subsp. *brunnescens*

Contributor: R. D. Porley

France: HAUTES ALPES: VALLE STRETTA, Paretea dei Militi, 1700 m a.s.l., at base of high dry dolomitic limestone crag, with *Cololejeunea calcarea* and *Grimmia anodon*, 1 August 1997, leg. R. D. Porley (Priv. Herb. Porley), det. H. H. Blom.

Schistidium brunnescens was collected during a summer field meeting of the British Bryological Society to the Italian/French Alps in 1997, and is the first report for this species from France. It formed small low dense cushions on a dry exposed limestone cliff. The identity of the plant was not elucidated until the material was shown to H. H. Blom at a BBS Workshop on *Schistidium* in 2003. *Schistidium brunnescens* is known from Europe and Turkey. It is rare or absent from westernmost Europe, showing a concentration of records in central and eastern Europe (Blom, 1996).

7. *Scorpidium cossonii* (Schimp.) Hedenäs

Contributors: P. Hájková and M. Hájek

Bulgaria: RAZLOG BASIN: northern foothills of Pirin Mountains between Predel saddle and Razlog village, 41°51'44"N 23°23'41"E (WGS 84), 1010 m a.s.l., alkaline and slightly petrifying spring fen (pH 7.8, water conductivity 380 $\mu\text{S cm}^{-1}$ at 20°C), abundant, with other calciphilous fen bryophytes such as *Campyllum stellatum* (Hedw.) J.Lange & C.E.O.Jensen, *Philonotis calcarea* (Bruch & Schimp.) Schimp., *Bryum pseudotriquetrum* (Hedw.) P.Gaertn., B.Mey & Scherb. and *Fissidens adianthoides* Hedw., 13 August 2004, leg. P. Hájková & M. Hájek, det. P. Hájková (BRNU, SOM).

RODOPI MTS: near the Batak reservoir, 7 km west of the town of Batak, 41°57'N 24°10'E, 1200 m a.s.l., small spring fen, very rare, interspersed among other fen bryophytes (*Sphagnum contortum* Schultz, *Aulacomnium palustre* (Hedw.) Schwägr., *Campyllum stellatum*), 27 June 2001, leg. P. Hájková & M. Hájek, det. P. Hájková (BRNU).

SOUTH PIRIN MTS: spring complex in the Popovi Livadi pass, below the road from Gotse Delchev town to Petrich town, 41°32'52"N 23°38'01"E (WGS 84), 1433 m a.s.l., slightly petrifying spring fen (pH 6.9; water conductivity 417 $\mu\text{S cm}^{-1}$ at 20°C), abundant, with other calciphilous fen bryophytes such as *Philonotis calcarea*, *Bryum pseudotriquetrum* and *Cratoneuron filicinum* (Hedw.) Spruce, 9 July 2005, leg. P. Hájková & M. Hájek, det. P. Hájková (BRNU).

Scorpidium cossonii grows in mineral-rich habitats in fens and springs and it is widespread and, in some regions, common in temperate to sub-polar areas of the northern and southern hemispheres (Hedenäs, 2003). This is the first report of *S. cossonii* in Bulgaria, from where only the closely related *S. revolvens* (Sw.) Rubers is reported (Natcheva & Ganeva, 2005) and is documented by reliably determined herbarium specimen (Hedenäs, 2003).

Kooijman & Hedenäs (1991) detected ecological differences between these two species in Sweden. *Scorpidium revolvens* was found in habitats with lower water pH and conductivity than *S. cossonii*. Their results are in accordance with the distribution pattern of these two species in Bulgaria. *Scorpidium revolvens* is limited to mineral-poor and acid spring fens in the high mountains (Rila Mts), whereas *S. cossonii* prefers calcium-rich fens at lower altitudes. In central Europe, *S. cossonii* is several times more common than *S. revolvens*, which is confined to relic stands in the mountains (e.g. Kučera & Váňa, 2003).

8. *Sphagnum cuspidatum* Ehrh. ex Hoffm.

Contributor: C. C. Townsend

Réunion: Sentier de la Roche Ecrite above St Denis, in masses on banks of path, 1200 m a.s.l., 25 November 1973, leg. M.J.E. Coode 4192 (BM, Priv. Herb. Townsend).

This specimen is larger than is normally seen in Europe and was in a drier habitat. However, as stated by Eddy (1985), although subject to variation within certain limits, *S. cuspidatum* is a species rarely presenting difficulty in identification. The present gathering is quite typical except in size. The species has been recorded from Madagascar but not from Réunion (Ah-Peng & Bardat, 2005) – nor yet from Mauritius.

9. *Streptocolea atrata* (Hornsch.) Ochyra & Žarnowiec

Contributors: H. Bednarek-Ochyra and R. Ochyra

Taiwan: PINGTUNG CO.: Kwai-ku, ca 22°40'N 120°30'W, 2190 m a.s.l., on cliff on open dry slope, 18 July 1968, leg. Ching-chang Chuang 1401 (NY).

Ochyra & Bednarek-Ochyra (2004) reviewed and mapped the global range of *S. atrata* and marked its occurrence on Taiwan whence this species was recorded by Muñoz & Pando (2000) but without identifying the locality. During revision of the herbarium specimens of *Racomitrium* for an ongoing monograph of the genus *Codriophorus*, a fine specimen of *S. atrata* was discovered from Taiwan. It was initially named *Grimmia apocarpa* Hedw. and subsequently renamed *Racomitrium fasciculare* (Hedw.) Brid. and *R. carinatum* Cardot, and under the latter name this material is cited in the *Moss Flora of China* (Cao, He & Vitt, 2003). Accordingly, the record of *S. atrata* from Taiwan is now substantiated and detailed locality data for the species on the island are given.

10. *Syntrichia fragilis* (Taylor) Ochyra

Contributors: F. Müller and J. Kučera

Czech Republic: CENTRAL BOHEMIA: Křivoklátsko Biosphere Reserve, rocks on the left bank of the River Berounka between Skryje and Šlovice 1.2 km W.N.W. of the bridge in Skryje, 49°58'20"N 013°45'25"E (WGS-84), 250 m a.s.l., sterile, 24 April 2005, leg. F. Müller (DR, Priv. Herb. Kučera).

The species was found on S.S.E.-facing sunny to slightly shaded metabasaltic (spilitic) rocks along the Berounka river ca 4 m above the medium water line. It was found covering an area of ca 160 cm² in dense short turfs, accompanied by the mosses *Orthotrichum anomalum* Hedw., *Homalothecium sericeum* (Hedw.) Schimp., *Bryum capillare* Hedw., *Grimmia pulvinata* (Hedw.) Sm., *Schistidium pruinosum* (Wilson ex Schimp.) G.Roth, *Bryum argenteum* Hedw., *Grimmia ovalis* (Hedw.) Lindb., the lichens *Dermatocarpon minutum* (L.)

W. Mann, *Lecanora muralis* (Schreb.) Rabenh., and the vascular plant *Sedum album* L. *Gymnostomum calcareum* Nees & Hornsch., *Bryum alpinum* Huds. ex With. (both in wet fissures) and *Syntrichia latifolia* (Bruch ex Hartm.) Huebener (on rocks covered with mud near the river) were found in the wider surroundings on the same rock.

Křivoklátsko is a UNESCO Biosphere Reserve and a Protected Landscape Area in the Czech Republic, characterized by a wide variety of broadleaved and mixed coniferous forests, grasslands, valley meadows and agricultural land. The central valley of Berounka is in many parts canyon-shaped through the hard proterozoic erupitives. The climate is generally rather mild and dry (mean annual temperature 7–8.5°C, mean annual precipitation 530 mm; cf. Mašek, 1997), with a significant inversion effect of the valley. The most valuable vegetation is concentrated along the Berounka valley, with thermophilous oak forests and rock steppes.

The global range of *S. fragilis* is nearly cosmopolitan, known from the Americas (more or less widespread from southern South America to central and southern U.S.A.), Oceania (Hawaii), throughout Africa, Macaronesia, southern Europe and Asia (Arabian Peninsula, Socotra, Iran, India, China), from many regions reported as *Tortula schmidii* (Müll.Hal.) Broth., synonymized only recently with *Syntrichia fragilis* by Townsend (1984). In Europe, it has been characterized by Düll (1984) as sub-Mediterranean-dealpine, hitherto known from Italy, Slovenia, Austria, Switzerland, France and Spain, mostly growing on open to somewhat shaded rocks of different chemistry in warm situations. Most occurrences are from southern Switzerland and the neighbouring part of Italy, with a rapid decline towards the north-east. The closest Austrian localities lie on the southern slopes of the Alps some 340 km S.S.W. of the new Czech site, which thus marks a remarkable area expansion to the north.

The Czech plants are relatively small, to 5(–8) mm high, leaves ca 2.2–2.8 × 0.65–0.95 mm, compared with the well-developed samples from the tropical regions (commonly to 30 mm, leaves up to 4.0 × 1.2 mm). On the other hand, the upper cell size was found to be within the upper limits of the known variability (14–17 µm) and the areolation clearly discernible, whereas the typical dimensions are between 12 and 15 µm with a hardly discernible, opaque areolation, according to 25 measured samples from the Americas and Africa. The basal juxtacostal hyaline cells are rather well differentiated against the marginal border of shorter and narrower, often green cells forming a border, whereas in most of the samples studied the border differentiation is weak to absent. Despite the reduced stature of the Czech plants, the characteristic hydroid band and central strand of the stem are normally developed.

11. *Warnstorfia sarmentosa* (Wahlenb.) Hedenäs (*Calliergon sarmentosum* (Wahlenb.) Kindb.)

Contributors: H. Kürschner and G. Parolly

Turkey: RIZE: İkizdere, between Çagirankaya Yayla and Büyük Yayla, 40°49'10.6"N, 40°41'43.7"E, 2300 m a.s.l.,

submerged in flushes, 16 September 2004, leg. H. Kürschner & G. Parolly 04–1012 (B, Priv. Herb. H. Kürschner).

A circumpolar, boreo-arctic, montane taxon of alpine distribution (Europe, N. and C. Asia, C. Africa, N. America) with disjunctions in Antarctica, S. America, New Guinea, New Zealand. In S.W. Asia presently known only from a single locality in Iran (Elburz Mts; Kürschner, 1996). The new locality in the western Dogu Karadeniz Daglari therefore fills a distribution gap. *Warnstorfia sarmentosa* grows submerged in water courses of the numerous flushes and bogs dissecting the extended *Nardus stricta* L. swards that characterize the subalpine belt (Swertio ibericae-Nardion strictae Vural 1996). The Turkish plants are easily recognized by their deep purplish red colour, oblong-lanceolate leaf shape and ovate to rounded or apiculate, often subcucullate leaf apex. Associated species include *Bryum schleicheri* Lam. & DC, *Chiloscyphus pallescens* (Ehrh. ex Hoffm.) Dumort., *Scapania compacta* (Roth) Dumort., *S. undulata* (L.) Dumort., *Sphagnum capillifolium* (Ehrh.) Hedw., *S. subsecundum* Nees and *S. teres* (Schimp.) Ångstr.

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