NEW DISTRIBUTIONAL DATA ON BRYOPHYTES OF POLAND AND SLOVAKIA, 9

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Abstract. This work presents a list of localities for the following species: Barbilophozia barbata, Campylocarpus flexuosus, Conocephalum salebrosum, Didymodon spadiceus, Eucladium verticillatum, Frullania dilatata, Hamatocaulis vernicosus, Harpanthus flotovianus, Pohlia ludwigii, Riccardia latifrons, Scorpidium scorpioides, Sphagnum fuscum, and Tomentypnum nitens.

NEW LOCALITIES

1. Barbilophozia barbata (Schmidel ex Schreb.) Loeske

Author: P. Górsaki

SLOVAKIA: High Tatra Mts, MGRS 34UDV2550, NE slope of Mt Veľká kopa, above Vyšné Garajovo sedlo pass, 49.20142°N, 19.97749°E, alt. 1960 m above sea level (a.s.l.), Polytrichum-Sphagnum hummock, leg., det. P. Górski, 4.08.2015 (POZNB 2022); POLAND: ATPOL Gd-59, S Poland, Western Tatra Mts, Polana na Stolach glade, MGRS 34UDV1655, 49.24962°N, 19.85603°E, alt. 1340 m a.s.l., calcareous outcrops, leg., det. P. Górski, 20.11.2011 (POZNB 2326); ATPOL Ch-71, W Poland, NW Wielkopolska region, Gorzów Basin, Puszcza Notecka Forest, Lubuskie Province, Międzychód County, Skwierzyna commune, 52.65141°N, 15.86055°E, ca 2 km from the village of Radgoszcz, Leucobryo-Pinetum, leg., det. P. Górski, 24.06.2015 (POZNB).
The liverwort *Barbilophozia barbata* has scattered populations in northern, central, and southern Poland ([ZWEYKOWSKI 1967, 2006]). *Barbilophozia barbata* is relatively common at lower elevations in mountainous regions of Poland. In the Tatra Mountains ([GÓRSKI & VÁňA 2014]), most *B. barbata* populations (89% of those described) are found in the altitudinal belt, up to 1600 m above sea level (a.s.l.). *Barbilophozia barbata* is rarely found at higher altitudes. It has been described at only four localities above 1900 m a.s.l. ([ZWEYKOWSKI 1960, DUDA & VÁňA 1985]).

2. *Campylopus flexuosus* (Hedw.) Brid.

**Author:** B. FOJCIK

ATMOS Fc-69: S Poland, Silesian Upland (Wyżyna Śląska), Rybnik town, district Popielów, 50.04532878°N, 18.5134528°E, rotten log in herb vegetation near the edge of deciduous forest, *leg.*, B. Fojcik, 7.04.2016 (KTU).

*Campylopus flexuosus* is a Polish bryoflora species that, although rare, is considered to be spreading; it has been identified at many new sites in recent years ([STEBEL 2007, 2015, 2016]). *Campylopus flexuosus* occurs mainly in southern Poland, along the Sudeten-Carpatiche arc, and only a few populations are located in central and northern Poland ([RUSIŃSKA 1995, STEBEL 2007, 2015]). The species usually grows in forests on humic and mineral soil. In general, *Campylopus flexuosus* has a sub-oceanic distribution ([DÜLL 1984]). *Campylopus flexuosus* is partly protected in Poland and numbered among threatened mosses of undetermined threat (category I, [ZARNOWIEC et al. 2004]). It is the first locality of this species from the Silesian Upland.

3. *Conocephalum salebrosum* Szweykowski, Buczkwoska & Odrzykoski

**Authors:** H. KŁAMA, A. SALACHNA

ATMOS Gd-33: S Poland, Beskid Żywiecko-Orawski Mts, Wielka Racza group (Grupa Wielkiej Raczy), Silesian Province, Żywiec County, Sobłówka village, valley of Cichy potok stream, 49.42389°N, 19.13556°E, alt. 700 m a.s.l., on wet soil in the stream in beech forest, *leg.*, B. Fojcik, R. Zubel, G. Vončina, 12.09.2015, conf. A. Stebel (KTU, LBL, SOSN).

*Conocephalum salebrosum* was first described in 2005 ([SZWEYKOWSKI et al. 2005]). Thus, all plants collected before 2005 and identified as *C. conicum* should be reconsidered. *Conocephalum salebrosum* is a lowland mountain liverwort species and is common in Poland, found throughout the country, mainly in wet places. In the mountains, *C. salebrosus* can grow even above 1000 m a.s.l. ([SZWEYKOWSKI et al. 2005, GÓRSKI & VÁňA 2014]). This thallose plant has been identified in some regions of the Beskidy Zachodnie Mountains ([SZWEYKOWSKI et al. 2005, WĄDRA & KŁAMA 2014]). This is the second locality of *C. salebrosus* in the Beskid Żywiecko-Orawski Mountains ([STEBEL et al. 2011]).

4. *Didymodon spadiceus* (Mitt.) Limpr.

**Authors:** B. FOJCIK, R. ZUBL, G. VONČINA

ATMOS Gf-09: SE Poland, Eastern Carpathians (Karpatsy Wschodnie), Sanocko-Turczański Mountains (Góry Sanocko-Turczańskie), Suchy Obycz massive, Kamionka river valley (called Dolina Niemiecka valley), Podkarpackie Province, north of the settlement of Arłamów, 49.61872°N, 22.64158°E, alt. 427 m a.s.l., wet stones in the stream in beech forest, *leg.*, B. Fojcik, R. Zubel, G. Vončina, 12.09.2015, conf. A. Stebel (KTU, LBL, SOSN).

*Didymodon spadiceus* is a calcicolous and hygrophilous moss that usually grows on base-rich rocks and tree boles adjacent to fast-flowing streams and rivers ([DIERSSEN 2001, SMITH 2004]). In Poland, scattered populations of *D. spadiceus* are mainly found in mountain regions ([SZAFRAN 1957]). *Didymon spadiceus* is classified as a sub-montane species ([STEBEL 2006]) and has been reported to occur in the Krakowsko-Częstochowskie Upland ([SZAFRAN 1957]). It is the first locality of *D. spadiceus* in the Sanocko-Turczański Mountains.

5. *Eucladium verticillatum* (Hedw. ex Brid.) Bruch & Schimp.

**Authors:** B. FOJCIK, R. ZUBL, G. VONČINA

ATMOS Gf-09: SE Poland, Eastern Carpathians, Sanocko-Turczański Mountains, Suchy Obycz massive, Kamionka river valley (called Dolina Niemiecka valley), Podkarpackie Province, north of the settlement of Arłamów, 49.61427°N, 22.641°E, alt. 433 m a.s.l., on dripping cliff encrusting with lime deposits (well-head in beech forest), *leg.*, B. Fojcik, R. Zubel, G. Vončina, 12.09.2015, conf. A. Stebel (KTU, LBL, SOSN).

*Eucladium verticillatum* is a calcicolous hygrophilous species that usually grows as dense tufts encrusted with calcareous matter ([DIERSSEN 2001, SMITH 2004]). *Eucladium verticillatum* has a sub-mediterranean distribution ([DÜLL 1984]) and, in Poland, has only been identified at one southern site ([SZAFRAN 1957]). *Eucladium verticillatum* has been reported at the Gorce Mountains ([STEBEL & CZARNOTA 2012]), Pieniny Mountains ([STEBEL et al. 2010]) and Krakowsko-Częstochowskie Upland ([FOJCIK 2011]), among other sites. It is the first locality of this multizonal mountain species ([STEBEL 2006]) in the Sanocko-Turczański Mountains, as well as in the south-eastern part of Poland.

6. *Frullania dilatata* (L.) Dumort.

**Author:** M. SMOCZYK

ATMOS Ca-83: W Poland, Lubuskie Lakeland (Pojezierze Lubuskie), Łagowskie Lakeland (Pojezi-
erze Łagowskie), 1.9 km north-west from church in the village of Góryca, forest section 93h of the Ośno Lubuskie Forest Inspectorate, 52.5111°N, 14.6628°E, trunk of Robinia pseudacacia in Robinia planting, leg., det. M. Smoczyk, 22.04.2015 (POZG); ATMOS Ca-93: W Poland, Lubuskie Lakeland, Łagowskie Lakeland, 1.4 km south-west from the church in the village of Sulów, numerous localities in “Mokrada Sulowskie” nature reserve, forest sections 110a, 126k, 141b, 162a of the Rzepin Forest Inspectorate, on trunk of Alnus glutinosa, Populus sp., Betula pendula, e.g. 52.3759°N, 14.7168°E, leg., det. M. Smoczyk, 24.10.2015 (POZG); ATMOS Ca-94: W Poland, Lubuskie Lakeland, Łagowskie Lakeland, 2.4 km south-west from the church in the village of Połęcko, by the forest road from Połęcko to Starościn, forest section 268c of the Rzepin Forest Inspectorate, 52.3893°N, 14.8710°E, bark of Padus avium, leg., det. M. Smoczyk, 27.04.2013, c. spor. (POZG); ATMOS Da-03: W Poland, Lubuskie Lakeland, Łagowskie Lakeland, 1.9 km south-west from the church in the village of Sulów, numerous localities in “Mokrada Sulowskie” nature reserve, forest sections 162a, 151b, 151h of the Rzepin Forest Inspectorate, on bark of Fraxinus excelsior, Alnus glutinosa and Betula pendula, e.g. 52.3699°N, 14.7175°E, leg., det. M. Smoczyk, 12.03.2016 (POZG); ATMOS Da-04: Torzyn Plain (Równina Torzymska), 1.6 km west of the Jerzmanice Lubuskie railway station, forest section 530f of the Rzepin Forest Inspectorate, 52.3065°N, 14.8438°E, on bark of Carpinus betulus, leg., det. M. Smoczyk, 29.06.2015, c. per. (POZG); shore of Jeziorno Rzeszisko Lake south-east of Rzepin, forest section 423g of the Rzepin Forest Inspectorate, 52.3190°N, 14.8831°E, on bark of Padus avium, leg., det. M. Smoczyk, 21.03.2015 (POZG); Rzepinek settlement, the Ilanka River valley, 1.7 km south of the church in Rzepin, forest section 491b of the Rzepin Forest Inspectorate, 52.3210°N, 14.8227°E, on a branch of Euonymus europaeae, leg., det. M. Smoczyk, 1.04.2014 (POZG); Półęcin settlement north of the village of Starościn, forest section 309b of the Rzepin Forest Inspectorate, 52.3695°N, 14.8598°E, on bark of Padus avium by the forest swamp, leg., det. M. Smoczyk, 27.04.2013 (POZG); east of Nowy Młyn settlement, forest section 534j of the Rzepin Forest Inspectorate, 52.3078°N, 14.8179°E, on bark of Acer pseudoplatanus in patch of an oak-hornbeam forest from Galio sylvatici-Carpinetum betuli plant association, leg., det. M. Smoczyk, 24.03.2012 (POZG); ATMOS Da-06: W Poland, Lubuskie Lakeland, Łagowskie Lakeland, Prześliski Bór Forest ca 2.7 km south-east from the village of Bobrówka, Papiernik former settlement, forest section 51h of the Torzym Forest Inspectorate, 52.3513°N, 15.0347°E, on bark of Crataegus monogyna in thickets in the ruins of a house, leg., det. M. Smoczyk, 16.04.2016 (POZG); ATMOS Da-14: W Poland, Lubuskie Lakeland, Torzynska Plain, 1.0 km south-west from the church in the village of Radzików, forest section 144l of the Cybinka Forest Inspectorate, 52.2606°N, 14.8520°E, on bark of Acer platanoides, leg., det. M. Smoczyk, 1.07.2015 (POZG); ATMOS Da-15: W Poland, Lubuskie Lakeland, Torzynska Plain, 0.6 km south-west from the church in the village of Mierczany, forest section 232a of the Torzym Forest Inspectorate, 52.2793°N, 14.9219°E, on bark of Quercus robur, leg., det. M. Smoczyk, 18.01.2015 (POZG); by the road 0.3 km south-west from the Gądękows Wielki railway station, forest section 117d of the Torzym Forest Inspectorate, 52.2436°N, 14.9619°E, trunk base of Quercus robur, leg., det. M. Smoczyk, 18.01.2015 (POZG); ATMOS Da-27: W Poland, Lubuskie Lakeland, Gryżyński Landscape Park, ca 1.3 km west of the village of Gryżyńa, forest section 285n of the Bytnica Forest Inspectorate, 52.1845°N, 15.2631°E, on bark of Populus sp., not. M. Smoczyk, 22.04.2016; ATMOS Da-37: W Poland, Lubuskie Lakeland, Gryżyński Landscape Park, 1.8 km south of the church in the village of Grabin, near Jeziorno Jatnik Lake, 52.1092°N, 15.2843°E, on bark of Padus avium, not. M. Smoczyk, 23.04.2016.

The liverwort Frullania dilatata is widespread in Poland. According to the literature, F. dilatata has been found throughout Poland (SZWĘKOWSKI & KOŹLICKA 1977, SZWĘKOWSKI 2006). From the Pojezierze Lubuskie, F. dilatata was mentioned in old floras as “frequent” (WARNSTORF 1885, TORKA 1904). In the Pojezierze Lubuskie region, F. dilatata has recently been found at numerous localities, but the populations are usually of small size. In Pojezierze Lubuskie, F. dilatata often grows on the bark of various species of deciduous trees and shrubs with subneutral bark reactions (e.g., Padus avium and Acer platanoides), but has also been found growing on trees with more acidic bark, especially Alnus glutinosa and Betula pendula. Frullania dilatata mostly grows in epiphytic bryophyte vegetation in communities from the Orthotrichetalia Hadač in Klika et Hadač 1944 order (class Frullaniaceae) has recently been found growing on trees with more acidic bark, especially Alnus glutinosa and Betula pendula. Frullania dilatata mostly grows in epiphytic bryophyte vegetation in communities from the Orthotrichetalia Hadač in Klika et Hadač 1944 order (class Frullaniaceae). It prefers sites with weakly acid (e.g., Padus avium and Acer platanoides), but has also been found growing on trees with more acidic bark, especially Alnus glutinosa and Betula pendula. Frullania dilatata mostly grows in epiphytic bryophyte vegetation in communities from the Orthotrichetalia Hadač in Klika et Hadač 1944 order (class Frullaniaceae).

7. Hamatocaulis vernicosus (Mitt.) Hedenäs

Author: P. Pawlikowski

ATMOS Bf-12: NE Poland, Masurian Lake District (Pojezierze Mazurskie), Warmia-Masuria Province, Giżycko County, Krukłanki commune, SE from the Berecka Forest (Puszczka Berecka), SW of the village of Mozdžany, 54.07287°N, 22.00658°E, small minerotrophic fen surrounded by agricultural land, desiccated due to intensive drainage by newly renovated drainage ditch, a few small patches (covering a to-
tal area of ca. 0.5 m²) in a deteriorating sedge-moss vegetation overgrowing with trees and shrubs, along with Sphagnum teres and Calliergonella cuspidata, not. P. Pawlikowski, 10.08.2013.

Hamatocaulis vernicosus is a species occurring primarily in very wet rich fens (Dierssen 2001, Szczepański 2010), listed in Annex II of the European Union Habitat Directive (European Directive 92/43/EEC – Council... 1992). Hamatocaulis vernicosus occurs throughout Poland and, apart from the young post-glacial landscape of northern Poland, the species is threatened with extinction (Stebel 2012). In the Warmia and Masuria Province, its distribution is patchy, but was previously locally abundant (Lachańczak & Olesiński 2000, Lachańczak & Pisarek 2002, Szczepański 2010, W. Pisarek unpubl. from the years 1995-2016, M. Szczepański unpubl. 2000-2016). In the Borecka Forest (a microregion within the Elk Lakeland), H. vernicosus was recorded in three mines in the south-eastern part of the forest complex (Koppe & Koppe 1931, 1937).

8. Harpanthus flotovianus (Nees) Nees

Author: H. Klama

ATMOS Gd-69: S Poland, Western Tatras Mts, Dolina Pyszniąńska valley, Babí Potok stream, below Žleb Babie Nogi gully, alt. 1320 m a.s.l., on wet soil on the escarp of the stream, leg., det. H. Klama, 7.09.1984, ster. (herb. H. Klama).

Harpanthus flotovianus is a subalpine-alpine species that is very rarely found in Poland. Harpanthus flotovianus has been reported in the Sudetes (Karkonosze and Góry Izerskie Mts), Tatras Mountains, Beskid Żywiecko-Orawski Mountains and Gorce Mountains (Klama 1996, Mierzeńska 1994, Szweykowski 2006). Some relict populations of H. flotovianus have been reported in the northern Polish lowland (Szweykowski 2006). In the Polish part of the Tatras Mountains, four populations of H. flotovianus were recorded in the western parts (Górski & Vaňa 2014). Harpanthus flotovianus grows in wet habitats, mainly along streams.

9. Pohlia ludwigii (Spreng. ex Schwägr.) Broth.

Authors: P. Górski, A. Rusińska

Slovakia, Western Tatras Mts: 34UDV0453, Roháčska dolina valley, glacial cirque below Mt Brestová (from the north side), alt. 1755 m a.s.l., Polyletum ludwigii oligotrichetosum hercynici, leg. P. Górski, 23.07.2006, det. A. Rusińska (KRAM, POZNB); 34UDV0550: Žabia Bielovodská dolina valley, rocks below Mt Pustá stráž, alt. 1875 m a.s.l., Polyletum sexangularis typicum, leg. P. Górski, 19.07.2006, det. A. Rusińska (KRAM, POZNB); 34UDV0751, Spálená dolina valley, rocky outcrops near route, above Rázcestie k Roháčskym Plesám, alt. 1530 m a.s.l., Moerckietum blyttii typicum, leg. P. Górski, 24.07.2006, det. A. Rusińska (POZNB); Slovakia, High Tatras Mts: 34UDV2846: Nefcerka valley, the uppermost glacial cirque, 49.16905°N, 20.22283°E, alt. 2150 m a.s.l., Polyletum drummondii typicum, leg. P. Górski, 3.08.2011, det. A. Rusińska (POZNB), Nefcerka valley, the uppermost glacial cirque, 49.16972°N, 20.02208°E, alt. 2155 m a.s.l., Polyletum ludwigii typicum, leg. P. Górski, 3.08.2011, det. A. Rusińska (KRAM, POZNB); 34UDV3046, Mlynická dolina valley, blocks of rock S from Vyšné Kozie pleso lake, 49.16687°N, 20.04647°E, alt. 2055 m a.s.l., Pohlio nutantis-Fuscocephaloziopsietosum albescentis, leg. P. Górski, 12.08.2011, det. A. Rusińska (POZNB); 34UDV3047, Hlinská dolina valley, below Vysné Kôprovské sedlo pass, alt. 1950 m a.s.l., comm. with Anthelia juratzkana, leg. P. Górski, 21.08.2006, det. A. Rusińska (POZNB); 34UDV3148, Hincova dolina valley, rocky outcrops near NE shore of Veľké Hincovo pleso lake, alt. 1940 m a.s.l., Polytrichetum sexangularis fuscocephaloziopsietosum albescentis, leg. P. Górski, 12.08.2008, det. A. Rusińska (POZNB); 34UDV3349, Žabia Bielovodská dolina valley, blocks of rock near S shore of Nižné Žabie Bielovodské pleso lake, alt. 1681 m a.s.l., comm. with Fuscocephaloziopsis albescentis, leg. P. Górski, 14.08.2009, det. A. Rusińska (KRAM, POZNB); 34UDV3445, Zlomisková dolina valley, blocks of rock near S from Vyšné Kozie pleso lake, alt. 1900 m a.s.l., comm. with Anthelia juratzkana, leg. P. Górski, 24.07.2006, det. A. Rusińska (KRAM, POZNB); 34UDV3446, Rumanova dolinka valley, near NE shore of Vyšné Rumanovo pliesko lake, 49.17205°N, 20.10078°E, alt. 2135 m a.s.l., Polyletum drummondii typicum, leg. P. Górski, 9.08.2011, det. A. Rusińska (POZNB); 34UDV3447, Tažká dolina valley, upper part of lower glacial cirque, blocks of rock below Mt Pustá stráž, alt. 1825 m a.s.l., Polyletum ludwigii oligotrichetosum hercynici, leg. P. Górski, 26.08.2009, det. A. Rusińska (KRAM, POZNB); 34UDV3448: Žabia Bielovodská dolina valley, W from Mlynárovo sedlo pass, debris slope below rocky walls, 49.18995°N, 20.09562°E, 49.18917°N, 20.09467°E, 49.18918°N, 20.09477°E, alt. 1900 m, 1920 m, 1925 m a.s.l., Polyletum ludwigii polytrichastretosum sexangularis, Polytrichetum sexangularis fuscocephaloziopsietosum albescentis, Polyletum ludwigii typicum, leg. P. Górski, 4.08.2011, det. A. Rusińska (KRAM, POZNB), Žabia Bielovodská dolina valley, debris slope below rocky walls from a ridge Mlynárovo sedlo-Mt Veľký Žabi štít, alt. 1885 m a.s.l., Polyletum ludwigii typicum, leg. P. Górski, 19.08.2009, det. A. Rusińska (KRAM, POZNB); 34UDV3449: Žabia Bielovodská dolina valley, E from S shore of Nižné Žabie Bielovodské pleso lake, be-
low rocky walls descending from Mt Prostredné Mlynár, 49.19708°N, 20.09672°E, alt. 1725 m, 1735 m a.s.l., *Pohlietum ludwigii typicum*, Andreaeetum nivalis anheliotum juratzkae, *P. Görski*, 16.08.2009, 4.08.2011, *det. A. Rusińska* (KRAM, POZNB), Žabia Bielovodská dolina valley, ebris slope below rocky walls descending from a ridge Mlynárovo sedlo-Mt Veľký Žabi ští, alt. 1885 m, 1920 m a.s.l., *Pohlietum ludwigii typicum*, *P. Görski*, 18.08.2009, *det. A. Rusińska* (KRAM, POZNB), Žabia Bielovodská dolina valley, rocky walls NW from Mlynárovo sedlo pass, alt. 1920 m a.s.l., *comm. with Marsupella sphecilata, Pohlietum ludwigii polytrichastretosum sexangularis*, *P. Görski*, 16.08.2009, *det. A. Rusińska* (POZNB); 34UDV3546: Kačacia dolina valley, above and E from Zelené pleso Kačacie lake, below sub-glacially eroded step of the upper glacial cirque, 49.17213°N, 20.11865°E, alt. 1725 m a.s.l., *Pohlietum ludwigii oligotrictetosum hercynici, leg. P. Görski*, 22.08.2007, *det. A. Rusińska* (KRAM, POZNB); 34UDV3548: Kačacia dolina valley, below rocky walls descending from Mt Ganek, alt. 1665 m a.s.l., *Pohlietum ludwigii polytrichastretosum sexangularis, leg. P. Görski*, 22.08.2007, *det. A. Rusińska* (KRAM, POZNB), Kačacia dolina valley, in a gully descending from Mt Zlobivá, alt. 1745 m a.s.l., *Pohlietum ludwigii polytrichastretosum sexangularis, leg. P. Görski*, 22.08.2007, *det. A. Rusińska* (KRAM, POZNB); 34UDV3548, Ťažká dolina valley, upper part of the lower glacial cirque, blocks of rock below Mt Pustá stráž, alt. 1810 m, 1815 m a.s.l., *Pohlietum ludwigii typicum*, *Luzuletum alpino-pilosae pellietosum neesianae*, *P. Görski*, 24.08.2009, 26.08.2009, *det. A. Rusińska* (KRAM, POZNB); 34UDV3645, Batizovská dolina valley, Nižnia Batžovská Rówień, near Batizovská skůška, 49.16088°N, 20.12863°E, 49.1615°N, 20.12965°E, 49.15992°N, 20.12762°E, alt. 2135 m, 2175 m, 2165 m a.s.l., *Pohlietum ludwigii typicum, comm. with Marsupella sphecilata, leg. P. Görski*, 2.08.2010, *det. A. Rusińska* (KRAM, POZNB); 34UDV3647, Litvorová dolina valley, below rocky walls descending from Mt Litvorový ští, alt. 1835 m a.s.l., *Nardietum scalaris kiaerietosum starkei, leg. P. Görski*, 15.09.2009, *det. A. Rusińska* (POZNB); 34UDV3747, Svišťová (Bielovodská) dolina valley, Zmarznutý kotol basin, alt. 2065 m a.s.l., *Polytrichetum sexangularis fuscocephalozi-opsietosum albecensis, leg. P. Görski*, 1.08.2006, *det. A. Rusińska* (POZNB); 34UDV3948, Zadná Javorová dolina valley, glacial cirque below Mt Javorový ští, alt. 1720 m a.s.l., *Nardietum scalaris kiaerietosum starkei, leg. P. Görski*, 22.07.2009, *det. A. Rusińska* (POZNB), Dolina Jarząbcza valley, NW slope of Mt Kończysty Wierch, alt. 1720 m, 1735 m a.s.l., *Luzuletum alpino-pilosae pellietosum neesianae, Nardietum scalaris kiaerietosum starkei, leg. P. Görski*, 22.07.2009, *det. A. Rusińska* (POZNB), Dolina Jarząbcza valley, NW slope of Mt Kończysty Wierch (Jarząbczy Kopieniec), alt. 1720 m a.s.l., *Pohlietum ludwigii oligotrictetosum hercynici, leg. P. Görski*, 22.07.2009, *det. A. Rusińska* (KRAM, POZNB); 34UDV1150, Dolina Starorobociańska valley, E from Krzywy Żleb gully, alt. 1665 m, 1775 m a.s.l., *Luzuletum alpino-pilosae pellietosum neesianae, Pohlietum ludwigii typicum, leg. P. Görski*, 23.07.2009, *det. A. Rusińska* (KRAM, POZNB), Dolina Starorobociańska valley, NW slope of Mt Kończysty Wierch, Zadnie Koło, blocks of rock, near small lakes, Grzędy, alt. 1875 m a.s.l., *Nardietum scalaris kiaerietosum starkei, leg. P. Görski*, 30.08.2011, *det. A. Rusińska* (KRAM, POZNB), Dolina Starorobociańska valley, below rocky walls of main ridge, E from Krzywy Żleb gully, alt. 1775 m a.s.l., *Pohlietum ludwigii polytrichastretosum sexangularis, leg. P. Görski*, 23.07.2009, *det. A. Rusińska* (POZNB), Dolina Starorobociańska valley, below rocky walls descending from Mt Kończysty Wierch, below sub-glacially eroded step of the upper glacial cirque, 49.19468°N, 20.19688°E, alt. 2025 m a.s.l., *comm. with Nardia breidleri, leg. P. Görski*, 11.08.2011, *det. A. Rusińska* (POZNB), Kotlina Piątich Spišských Plies valley, above W shore of Prostredné Spišské pleso lake, alt. 2025 m a.s.l., *comm. with Nardia breidleri, leg. P. Görski*, 11.08.2011, *det. A. Rusińska* (POZNB), Kotlina Piątich Spišských Plies valley, above and NW from NW shore of Prostredné Spišské pleso lake, 49.193°N, 20.19802°E, alt. 2025 m a.s.l., *comm. with Nardia breidleri, leg. P. Görski*, 11.08.2011, *det. A. Rusińska* (POZNB), Kotlina Piątich Spišských Plies valley, above and NW from NW shore of Prostredné Spišské pleso lake, alt. 2025 m a.s.l., *Pohlietum ludwigii polytrichastretosum sexangularis, leg. P. Görski*, 27.08.2007, *det. A. Rusińska* (KRAM, POZNB).
Pohlia ludwigii is an arctic-alpine species occurring on wet and sandy soils, most often found in late snow fields. In Poland, P. ludwigii has been reported in the Tatra and Karkonosze Mountains (see references in Górska 2015). From personal studies conducted by the first author between 2002 and 2014, P. ludwigii was identified as a common species in the Tatra and Karkonosze Mountains (see references in Górska 2015). This study presents another 67 localities of this plant from the High and Western Tatra Mountains. In this massive, Pohlia ludwigii creates scanty-species phytocoenoses described as Pohlietum ludwigii (Balcerkiewicz 1984, Górska 2015, 2016). In the Tatra Mountains, Pohlia ludwigii has been found within the altitude range of 1,530–2,310 m a.s.l. In studies carried out between 2011 and 2013 by P. Górska, Pohlietum ludwigii phytocoenoses could be found during snow melts in June and the first half of July.

10. Riccardia latifrons (Lindb.) Lindb.

Authors: H. Klama, A. Salachna

ATMOS Gd-33: S Poland, Beskid Żywiecko-Orawski Mts, Wielka Racza group (Grupa Wielkiej Raczy), Silesian Province, Żywiec County, Sobłówka village, valley of Cichy potok stream, 49.42389°N, 19.13556°E, alt. 700 m a.s.l., on decaying wood of tree stump, leg., H. Klama, A. Salachna, 23.09.2011, ster. (herb. H. Klama).

Riccardia latifrons is an epixylic liverwort found in lowland-mountain regions of Poland. In the mountains, R. latifrons grows on rotten wood in the forest lower belt. Riccardia latifrons is a very rare species in the Beskid Zachodnie Mountains, and has been recorded in only a few instances in the Beskid Śląskie Mountains (Rejment-Grochowska 1950), Beskid Żywiecko-Orawski Mountains (Klama 1996), Gorce Mountains (Mendełak 1977, Mierzęnska 1994) and Beskid Sądecki Mountains (Mamczarz 1977, Mendelak 1977, Szweykowski & Kozlicka 1980). The liverwort is also rarely found in the Tatra Mountains (Szweykowski & Klama 2010, Górska & Vaňa 2014).

11. Scorpidium scorpioides (Hedw.) Limpr.

Author: P. Pawlikowski

ATMOS Bf-34: NE Poland, Masurian Lake District, Elk Lakeland (Pojezierze Elckie), Warmia-Masuria Province, Elk County, Stare Juchy, mire bordering Łąsmiady lake SW of the village of Sikory Juskie, 53.90281°N, 22.26146°E, large, topogenous, temporarily inundated extremely rich fen developed in the overgrown part of the lake, dominating and forming extensive carpets covering the area of over 3 hectares, along with Campylium stellatum, Limprichtia cossonii, Carex elata and C. lasiocarpa, not. P. Pawlikowski 2006-2016, leg., P. Pawlikowski, 09.2009 (WA).

Scorpidium scorpioides is a prominent component of rich fen vegetation in the boreal zone of the Northern Hemisphere. Scorpidium scorpioides grows in temporarily or continuously inundated places within rich fens, including waterlogged carpets, small pools, and even shallow lake bottoms (Ochra et al. 1988a). In Poland, S. scorpioides is considered endangered (category E, Żarowski et al. 2004). Scorpidium scorpioides has been recorded throughout the country, but is mainly aggregated in the post-glacial landscapes of northern Poland and in some upland areas (e.g., the Polesie region in eastern Poland) (Ochra et al. 1988a). Scorpidium scorpioides is also found in north-eastern Poland, sometimes abundantly (locally in the East Suwalki Lakeland and Augustów Plain, e.g., Jutrzen-
12. **Sphagnum fuscum** (Schimp.) H. Klinggr.

Author: P. Pawlikowski

ATMOS Cd-97: Central Poland, Toruń-Eberswalde Ustrontral (Pradolina Toruńsko-Eberswaldzka), Plock Basin (Kotlina Plocka), Mazovia Province, Plock County, Plock commune, Gostynin-Włocławek Landscape Park, ‘Jastrzębie’ nature reserve, 52.50385°N, 19.60738°E, minerotrophic mire bordering SE part of the small, vanishing Jeziorko lake, single hummock in the *Sphagnum*-dominated fen with *Betula pubescens* tree stand, along with *Sphagnum palustre, S. teres, Phragmites australis, Thelypteris palustris, Oxycoccus palustris* and *Carex acutiformis*, leg., det. P. Pawlikowski, 6.08.2016 (WA).

*Sphagnum fuscum* is a mountain-arctic-oceanic-subcontinental species and an important component of the moss layer of raised bogs, occurring also in some fens (Dierssen 2001) and indicating habitat changes toward ombrotrophic conditions (Ćwiklińska 2007). The rapid vanishing of *S. fuscum* from acidic mires in the region of Pomerania, where it used to be common, has been documented (Jasnowski et al. 1968) and, generally, the species is decreasing in its southern lowland European range (Dierssen 2001). *Sphagnum fuscum* is considered vulnerable in Poland (category V, Żarnowiec et al. 2004). *Sphagnum fuscum* has been recorded in the northern and western lowland areas of Poland, as well as in the mountains (Szafran 1957), and remains only locally frequent in selected lakeland regions of the post-glacial landscapes of northern Poland (e.g., Karczmarz & Sokolowski 1985, Herbichowa et al. 2007, Pawlikowski 2010b, P. Pawlikowski unpubl. 2003–2016) and submountain raised bogs of the Orawa-Nowy Targ Basin (Koczur 2007). In the predominating lowland landscapes of central Poland, where the newly discovered locality is situated, *S. fuscum* has rarely been recorded, with only two records to date in the Mazovia Province: one in the Torfowsisko Serafin nature reserve (Was 1960, P. Pawlikowski unpubl. 2013-2016) and one in the Zwoleńka river valley near the village of Stara Siekierka (Jarzombkowski & Kozub 2011).

13. **Tomentypnum nitens** (Hedw.) Loeske

Author: P. Pawlikowski

ATMOS Bf-12: NE Poland, Masurian Lake District, Warmia-Masuria Province, Giżycko County, Kruklanki commune, SE of the Borecka Forest, SW of the Możdżany village, 54.07287°N, 22.00658°E, small minerotrophic fen surrounded by agricultural land, desiccated due to intensive drainage by newly renovated drainage ditch, small hummock in a deteriorating sedge-moss vegetation overgrowing with trees and shrubs, along with *Sphagnum teres* and *Calliergonella cuspidata*, not. P. Pawlikowski, 10.08.2013.

*Tomentypnum nitens* is considered vulnerable in Poland (category V, Żarnowiec et al. 2004) but remains relatively common in minerotrophic fens in some regions, including some lakeland areas of northern and north-western Poland, the Biebrza area, uplands of southern Poland, and the Carpathians (Ochryba et al. 1988b). In the Warmia and Masuria Province, the *T. nitens* distribution is patchy and recent published records are rather limited (Lachacz & Oleśniski 2000, Lachacz & Pisarek 2002, 2007, Bloch-Orlowska & Pisarek 2005, Pawlikowski & Jarzombkowski 2010), although the species seems more numerous in the eastern part of the region (Bloch et al. 1979). It should be noted that many existing localities remain unpublished (M. Szczepański unpubl., W. Pisarek unpubl. from the years 1995–2016). In the Borecka Forest (a microregion within the Elk Lakeland), the species was recorded only by Koppe & Koppe (1937, see Ochryba et al. 1988b) from two sites: (presently degraded) peatland between the village of Jablonowo and Ciche lake, and peatland situated west of the northernmost part of Szwalk Wielki lake.

**REVISIONS**

1. **Hymenostylium recurvirostrum** (Hedw.) Dixon published in Fojcik (1999), page 95 [ATMOS Ed-61: S Poland, Wieluńska Upland (Węzywa Wieluńska), Śląskie Province, Rębiele Królewskie, 50.98855°N, 18.84386°E, shaded crevice of limestone on a hill, leg., det. B. Fojcik, 8.05.1995] – est *Eucladium verticillatum* (Hedw. ex Brid.) Bruch & Schimp., rev. B. Fojcik, 2016 (KTU).

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