

NEW DISTRIBUTIONAL DATA ON BRYOPHYTES OF POLAND
AND SLOVAKIA, 13

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ABSTRACT. This work presents a list of localities for the following species: *Didymodon fallax* var. *brevifolius*, *Fissidens exilis*, *Nowellia curvifolia*, *Orthocaulis atlanticus*, *Orthotrichum lyellii*, *Ptilium crista-castrensis*, and *Syntrichia virescens*.

1. *Didymodon fallax* (Hedw.) R.H. Zander var. *brevifolius* (Dicks.) Ochyra

Author: G. VONČINA

ATMOS Gf-21: S Poland, Beskid Niski Range, Podkarpacie Province, Jasło county, Nowy Żmigród commune, not exist Hałbów village near Desznica, Magurski National Park, on the sandstone in the bed of the righthand tributary of Ryj stream, in the silver fir forest, alt. 467 m above sea level (a.s.l.), 49.53736°N, 21.49364°E, leg., det. G. Vončina, 7.05.2016 (SOSN); ATMOS Fd-58: S Poland, Wyżyna Śląsko-Krakowska Upland, Małopolska Province, Kraków county, Wielka Wieś commune, Duże Skalki (Wapiennik), on the clay soil in the limestone quarry, alt. 451 m a.s.l., 50.18983°N, 19.80625°E, leg., det. G. Vončina, 1.10.2017 (SOSN).

Didymodon fallax var. *brevifolius* is a rare taxon in Poland (SZAFRAN 1957). The most recent record from the Polish lowlands was located in the Pojezierze Gnieźnieńskie Lakeland in Wapienno (RUSIŃSKA & ROSADZIŃSKI 2010). The species was also observed in the Polish uplands on the Pagóry Chełmskie Hills (LISOWSKI 1959a). In the Western Carpathians it is considered as rare or very rare (STEBEL 2006). The first Carpathian records were derived from the north-facing slopes of the Tatra Mountains (CHAŁUBIŃSKI 1886), and the Pogórze Wielickie Foothills (ŻMUDA 1912). The next records were from the Pieniny Range (OCHYRA 1984, STEBEL et al. 2010, VONČINA & STEBEL 2016) and the Pogórze Orawsko-Jordanowskie Foothills (STEBEL & VONČINA 2014). Records from the Sudety Mountains refer to the Góry Kaczawskie Mountains (LISOWSKI 1956a, WILCZYŃSKA 1974).

Didymodon fallax var. *brevifolius* is a threadlike moss with short leaves measuring up to 1 mm that grows on rocks (sandstones, limestones) and eroded wayside slopes. This taxon is most frequent in the mountains, and outside mountain areas, in quarries. The described stations are the first records from Magurski National Park in the Beskid Niski Range and the Wyżyna Śląsko-Krakowska Upland.

2. *Fissidens exilis* Hedw.

Author: G. VONČINA

ATMOS Ge-33: S Poland, Pieniny Range, Małopolska Province, Nowy Targ county, Krościenko nad Dunajcem commune, Krościenko nad Dunajcem village, between Stolarzówka and Bańków Gronik glades, Pieniński National Park, on the clay wayside in the silver fir *Abies alba* forest, alt. 650 m a.s.l., 49.42764°N, 20.41592°E, *leg.*, *det.* G. Vončina, 13.10.2011 (SOSN); ATMOS Gf-22: S Poland, Beskid Niski Range, Podkarpacie Province, Krosno county, Dukla commune, Nowa Wieś village, nearby national road No. 19, on the sandy soil on the roadside, ca alt. 350 m a.s.l., *leg.* J. Sieradzki, 2013, *det.* M. Staniaszek-Kik (LOD).

In the western part of the Polish Carpathians *Fissidens exilis* is either rare or not confirmed in recent years (SZAFRAN 1952, 1954, WACŁAWSKA 1957, STEBEL 2003, 2004, 2006, 2008, 2010, STEBEL et al. 2010). The situation is similar in the eastern part of the Carpathians (ARMATA 2005) and in south-western Poland where the species was noted only in the Góry Kaczawskie Mountains (WILCZYŃSKA 1974). The first information about the occurrence of the species in the Pieniny Range was provided by SZAFRAN (1952). Following that, *F. exilis* was not observed in the Pieniny Range until a study in the Małe Pieniny Range (OCHYRA & STEBEL 2008). The first information from the Beskid Niski Range was published by WACŁAWSKA (1957) with no further reports since then.

Fissidens exilis occurs in the northern (Pojezierze Mazurskie and Pojezierze Pomorskie Lakelands) and southern part of Poland (Lower and Upper Silesia, Pieniny Range), but has not been found in the middle of Poland (SZAFRAN 1957). It grows on bare loam or clay soil along river banks or waysides. The described locality is the second (beside OCHYRA & STEBEL 2008) record from the Pieniński National Park in 60 years.

3. *Nowellia curvifolia* (Dicks.) Mitt.

Author: P. GÓRSKI

SLOVAKIA: MGRS 34UDV0757, Western Tatra Mts, Skupina Osobitej-Bobrovca, Suchá dolina valley, lower part of Široký žľab gully, decaying log, 49.26642°N, 19.73153°E, alt. 1135 m a.s.l., *leg.*, *det.* P. Górski, 24.09.2015 (POZNB 2064); MGRS 34UDV0843, Western Tatra Mts, Masív Baranca a Rázsochy, lower part of Trnovská dolina valley, decaying log near

stream, 49.13597°N, 19.74236°E, alt. 895 m a.s.l., *leg.*, *det.* P. Górski, 19.09.2015 (POZNB 2353); MGRS 34UDV1949, Western Tatra Mts, Tomanovsko-jamnické vrchy, Dolina Hlina valley, at the mouth of Široký žľab gully, decaying log near Hlina stream, 49.19157°N, 19.89894°E, alt. 1325 m, *leg.*, *det.* P. Górski, 24.10.2017 (POZNB 2515); MGRS 34UDV2546, High Tatra Mts, Skupina Kriváňa, at the mouth of Krivánska kotlina basin, blocks of rock in dwarf mountain pine, 49.16927°N, 19.98352°E, alt. 1498 m a.s.l., *not.* P. Górski, 10.08.2017; MGRS 34UDV2547, High Tatra Mts, Skupina Kriváňa, Kôprová dolina valley, Niedźwiedzia perć path, at the mouth of Krivánska kotlina basin, south from Nefcerský potok stream, 49.17195°N, 19.98372°E, alt. 1435 m a.s.l., *leg.*, *det.* P. Górski, 16.09.2015 (POZNB 2399); MGRS 34UDV2647, High Tatra Mts, Skupina Kriváňa, Kôprová dolina valley, Niedźwiedzia perć path, at the mouth of Krivánska kotlina basin, near Nefcerský potok stream, 49.17437°N, 19.98525°E, alt. 1350 m a.s.l., 49.17388°N, 19.98491°E, alt. 1360 m a.s.l., *leg.*, *det.* P. Górski, 16.09.2015 (POZNB 2384, 2392); MGRS 34UDV3753, High Tatra Mts, Skupina Širokej, lower part of the Svišťovská dolina valley, decaying log in spruce forest, 49.22892°N, 20.14034°E, alt. 1350 m a.s.l., *leg.*, *det.* P. Górski, 6.11.2015 (POZNB 1993); 34UDV4754, Belianske Tatra Mts, Východné Belianske Tatry, Babia dolina valley (upper part of Babilovská dolina valley), decaying log near stream, 49.24363°N, 20.27266°E, alt. 1060 m a.s.l., *leg.*, *det.* P. Górski, 29.07.2016 (POZNB 2303); MGRS 34UDV4755, Belianske Tatra Mts, Východné Belianske Tatry, Babia dolina valley (upper part of Babilovská dolina valley), decaying log, 49.24766°N, 20.27452°E, alt. 970 m a.s.l., *leg.*, *det.* P. Górski, 28.07.2016 (POZNB 2234); POLAND: MGRS 34UDV3452, ATMOS Ge-51, High Tatra Mts, Wierchy Pięciostawiańsko-Białczańskie, Dolina Rybiego Potoku valley, spruce forest near junction of the Rybi Potok stream with the Białka stream, alt. 1110 m a.s.l., *leg.*, *det.* P. Górski, 6.08.2013 (POZNB 2253).

In the entire area of the Tatra Mountains, 67 localities (55 from Slovakia, 12 from Poland) of *Nowellia curvifolia* have been recorded within an altitude range of 800–1650 m a.s.l. (GÓRSKI & VÁŇA 2014). This report presents another 11 localities for this plant in this massive.

4. *Orthocaulis atlanticus* (Kaal.) H. Buch [= *Barbilophozia atlantica* (Kaal.) Müll. Frib.]

Author: P. GÓRSKI

SLOVAKIA, High Tatra Mts, 34UDV3652, Skupina Širokej, Svišťovská dolina valley, *Vaccinietum myrtili*, on humus in dwarf mountain pine, 49.22435°N, 20.13148°E, alt. 1535 m a.s.l., *leg.*, *det.* P. Górski, 9.11.2015 (POZNB 1987, KRAM); POLAND, High Tatra Mts: MGRS 34UDV3054, ATMOS Ge-50,

Masyw Waksmundzki, Koszysta ridge, SW from Mt Mała Koszysta, 49.24340°N, 20.05154°E, alt. 2020 m a.s.l., 49.24291°N, 20.05058°E, alt. 2035 m a.s.l., *leg.*, *det.* P. Górski, 30.07.2016 (POZNB 2176, 2308); MGRS 34UDV3155, ATMOS Ge-50, Masyw Waksmundzki, Koszysta ridge, NE from Mt Mała Koszysta, rocky ledge with *Polytrichum alpinum*, 49.24484°N, 20.05500°E, alt. 1950 m a.s.l., *leg.*, *det.* P. Górski, 30.07.2016 (POZNB 2177).

Orthocaulis atlanticus is a high-alpine, rare liverwort reported in Poland from the Tatra Mountains (SZWEYKOWSKI 1956, 1960, 1967, BALCERKIEWICZ 1984, CYKOWSKA 2011, GÓRSKI & VÁŇA 2014), and recently (from one locality) in the Karkonosze Mountains, Sudety Mts (GÓRSKI & PRZEWOŹNIK in GÓRSKI et al. 2014). In Slovakia, this species is known only in the Tatra Mts at two localities (DUDA 1983, DUDA & VÁŇA 1984, GÓRSKI & VÁŇA 2014) and is considered critically endangered (CR, KUBINSKÁ et al. 2001). In the entire Tatra Mountains (including new data presented here), 31 localities of *O. atlanticus* have been recorded within an altitude range of 1535–2220 m a.s.l. One of the three new sites is a new minimum (at 1535 m a.s.l.) for this species in the Tatra Mts.

5. *Orthotrichum lyellii* Hook. & Taylor

Author: G. VONČINA

ATMOS Ge-29: S Poland, Beskid Niski Range, Małopolska Province, Gorlice county, Sękowa commune, Krzywe village, Banica hamlet, lefthand tributary of Jasionka stream, on the *Salix fragilis* bark in the grove along the stream bank, alt. 560 m a.s.l., 49.52578°N, 21.31283°E, *leg.*, *det.* G. Vončina, 17.04.2016 (SOSN); ATMOS Gf-18: S Poland, Góry Sanocko-Turczańskie Range, Podkarpackie Province, Bieszczady county, Ustrzyki Dolne commune, Nowosielce Kozickie village, the grove of *Fraxinus excelsior* near the church, on the ash bark, alt. 439 m a.s.l., 49.56281°N, 22.52956°E, *leg.*, *det.* G. Vončina, 30.04.2016 (SOSN), accompanying species: *Leucodon sciuroides*; ATMOS Gf-27: S Poland, Góry Sanocko-Turczańskie Range, Podkarpackie Province, Lesko county, Olszanica commune, Rudenka village, Słonne forest, near the Dyrbek stream, on the *Acer pseudoplatanus* bark in the Carpathian beech forest *Dentario glandulosae-Fagetum*, alt. 523 m a.s.l., 49.51108°N, 22.42833°E, *leg.*, *det.* G. Vončina, 1.05.2016 (SOSN); ATMOS Gf-27: S Poland, Góry Sanocko-Turczańskie Range, Podkarpackie Province, Lesko county, Olszanica commune, Wańkowa village, Stop hill, on the *Acer pseudoplatanus* bark in the Carpathian silver fir forest *Dentario glandulosae-Fagetum abietetosum*, alt. 506 m a.s.l., 49.52328°N, 22.45011°E, *leg.*, *det.* G. Vončina, 1.05.2016 (SOSN).

Orthotrichum lyellii is a partially protected species under Polish law (ROZPORZĄDZENIE... 2014) at present and from 2004 to 2014 it was a strictly protected plant

in Poland (ROZPORZĄDZENIE... 2004). This epiphytic moss occurs throughout Poland (SZAFRAN 1961), but is a threatened species. In the current Red-list it is treated as a rare species in Poland (category R) and a vulnerable species in the Carpathians (category V) (ŻARNOWIEC et al. 2004). In the Polish Carpathians the species occurs most frequently in the Bieszczady, Beskid Śląski and Beskid Żywiecki Ranges, and in other parts of the Carpathians it is found at scattered localities (STEBEL 2011). In recent years the moss has been found in the Roztocze (FUDALI et al. 2015), Góry Sanocko-Turczańskie Mts (STEBEL et al. 2016, FOJCIK et al. 2017) and Przemyśl Foothills (STANIASZEK-KIK et al. 2017).

The described locality from the Beskid Niski Range is the second record from this region (beside STEBEL 2011). The rest of the newly recorded stations provide additional data to the one published locality from the Góry Sanocko-Turczańskie Mountains.

6. *Ptilium crista-castrensis* (Hedw.) De Not.

Author: G. VONČINA

ATMOS Gf-21: S Poland, Beskid Niski Range, Podkarpackie Province, Jasło county, Nowy Zmigród commune, not exist Hałbów village near Desznica, Magurski National Park, 49.53514°N, 21.49403°E, on the rotting log of silver fir *Abies alba*, in the bed of the righthand tributary of the Ryj stream, alt. 499 m a.s.l., *leg.*, *det.* G. Vončina, 7.05.2016 (SOSN).

Ptilium crista-castrensis is a partially protected species under Polish law (ROZPORZĄDZENIE... 2014). This species occurs throughout Poland and is considered as a relatively frequent moss (SZAFRAN 1961), although in the mountain regions it has been recorded relatively rarely. In the western part of the Polish Carpathians this species is very rare or not confirmed in recent years (OCHYRA 1984, STEBEL 2006, 2008, OCHYRA & STEBEL 2008, STEBEL et al. 2010, STEBEL & VONČINA 2014). The information from the Polish foothills and the eastern part of the Western Carpathians is also very exclusive (KARCZMARZ 1987, ARMATA 2006). The situation is similar in the Beskidy Wschodnie Range where the species was recorded only a few times in Bieszczady (LISOWSKI 1956b) and in the Góry Sanocko-Turczańskie Mts (STEBEL et al. 2016). In the Tatra Mts *Ptilium crista-castrensis* was observed at a few scattered stations (LISOWSKI 1959b). Unlike in the Carpathians, information about the frequent occurrence of moss in the Wyżyna Krakowsko-Częstochowska Upland was presented by FOJCIK (2011). The remaining reports from Poland are scarce, although in the last two decades there has been more information about new stations of this species in Poland (CIOSEK & TRZPIL-ZWIERZYK 2003, WOLSKI & FUDALI 2013, FUDALI et al. 2015, WILHELM et al. 2015).

Ptilium crista-castrensis usually grows on the ground in coniferous forests, in *Carpinion betuli* forest and on

rotting wood, generally in small scattered patches and sometimes in larger expanses. Only a few stems of moss are growing at the described locality. The described station is the first record from Magurski National Park and the second observation in the Beskid Niski Range (beside STEBEL 2011).

7. *Syntrichia virescens* (De Not.) Ochyra

Authors: E. FUDALI, L. ŻOŁNIERZ

ATMOS Eb-48: SW Poland, Silesian Lowland (Nizina Śląska), Wrocław Valley (Pradolina Wrocławska), area of the Wrocław town, edge of urban forest situated in NW suburbs (Las Rędziński Forest), 51.178008°N, 16.932786°E, bark of *Populus nigra* in humid riverside forest, *leg., det.* E. Fudali, L. Żołnierz, 3.10.2015 (KRAM); settlement Maślice in NW suburbs, 51.157299°N, 16.929418°E, trunks of *Tilia platyphyllos* and *Fraxinus excelsior* along the Maślicka street, *leg., det.* E. Fudali, 21.08.2014 (herb. E. Fudali); settlement Pracze Odrzańskie in NW suburbs, 51.174863°N, 16.907134°E, trunk of *Fraxinus excelsior* along the Brodzka street, *leg., det.* E. Fudali, 4.07.2014 (KRAM); built-up area of the Wrocław town: settlement Popowice, 51.126004°N, 17.006890°E, trunk of *Populus canadensis* along the side street, trunks of *Robinia pseudoacaccia* in forested square among buildings, *leg., det.* E. Fudali, 30.07.2013 (herb. E. Fudali); settlement Szczepin, 51.119013°N, 16.992281°E, trunks of *Acer negundo*, *A. platanoides* and *Populus nigra* var. *italica* on small green square among streets, *leg., det.* E. Fudali, 16.07.2013 (KRAM); ATMOS Eb-49: SW Poland, Silesian Lowland, Wrocław Valley, built-up area of the Wrocław town, Old Town in the city center, park along city moat, 51.107593°N, 17.023083°E, trunk of *Acer platanoides*, 51.114206°N, 17.039954°E, trunk of *Populus nigra*, *leg., det.* E. Fudali, 17.07.2013 (KRAM); Down Town, close to Most Grunwaldzki bridge, 51.109515°N, 17.051035°E, trunks of *Populus ×berolinensis* on small green square, *leg., det.* E. Fudali, 10.05.2015 (herb. E. Fudali); Down Town, Sienkiewicza street, 51.16337°N, 17.059889°E, trunk of old specimen of *Populus nigra* situated on inner courtyard among old tenement houses, *leg., det.* E. Fudali, 10.09.2014 (KRAM); settlement Karłowice, 51.16337°N, 17.059889°E, trunk of *Ulmus laevis* in green belt around the school, *leg., det.* E. Fudali, 21.07.2015 (herb. E. Fudali); settlement Biskupin, 51.16337°N, 17.059889°E, trunks of *Populus ×canadensis* and *Fraxinus excelsior* along the street, *leg., det.* E. Fudali, 6.10.2013 (herb. E. Fudali); settlement Sepolno, sport stadium, 51.120431°N, 17.091163°E, trunks of *Acer platanoides* and *Populus ×canadensis* along the street, *leg., det.* E. Fudali, 17.06.2014 (KRAM); settlement Psie Pole, 51.148725°N, 17.118590°E, trunks of *Robinia pseudoacaccia* and *Fraxinus excelsior* on small square next to the street, *leg., det.* E. Fudali, 12.08.2014

(herb. E. Fudali); settlement Rakowiec in E suburbs, 51.094796°N, 17.062203°E, trunk of *Populus nigra* on riverside, *leg., det.* E. Fudali, L. Żołnierz, 5.10.2015 (KRAM); ATMOS Eb-58: SW Poland, Silesian Lowland, Wrocław Valley, built-up area of the Wrocław town, settlement Grabiszyn, 51.090610°N, 16.976714°E, trunk of *Acer negundo* in green belt along the street, *leg., det.* E. Fudali, 1.08.2013 (herb. E. Fudali); settlement Oporów, 51.077856°N, 16.965805°E, trunk of *Quercus robur* next to the street, *leg., det.* E. Fudali, 14.10.2013 (KRAM); ATMOS Eb-59: SW Poland, Silesian Lowland, Wrocław Valley, built-up area of the Wrocław town, settlement Borek, 51.089771°N, 17.031008°E, trunk of *Populus ×canadensis* in green square next to the street, *leg., det.* E. Fudali, 18.08.2015 (herb. E. Fudali); settlement Huby, 51.093430°N, 17.032260°E, trunk of *Populus ×canadensis* in green square next to the street, *leg., det.* E. Fudali, 21.08.2015 (KRAM); settlement Krzyki, 51.094996°N, 17.022193°E, trunks of *Populus ×canadensis* and *Acer platanoides* in green square next to the street, *leg., det.* E. Fudali, 21.08.2015 (herb. E. Fudali); ATMOS Ec-40: SW Poland, Silesian Lowland, Wrocław Valley, NE suburbs of the Wrocław town, settlement Zakrzów, 51.153337°N, 17.125540°E, bark of *Acer platanoides* at the street, *leg., det.* E. Fudali, L. Żołnierz, 27.10.2015 (KRAM).

Syntrichia virescens is listed as a partly protected moss in Poland (ROZPORZĄDZENIE... 2014). ŻARNOWIEC et al. (2004) considered it a rare species (R category) that occurs in small populations and is not at present endangered or vulnerable but is at risk. This epiphytic moss species is distributed throughout the country but it is not frequent anywhere. In the past (19th century) *S. virescens* was reported from the around Wrocław (MILDE 1869) but it was not observed in Wrocław or in its surroundings during the 20th century (WILCZYŃSKA & KOŁA 1974–1975a, b, FUDALI 1988). The first contemporaneous report dates from 2006 (FUDALI 2007). At all reported stations *S. virescens* occurred in very small clumps (1–4 cm²) and was collected at a height of 0.8 to 1.2 m above the ground.

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