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NEW DISTRIBUTIONAL DATA ON BRYOPHYTES OF POLAND AND SLOVAKIA, 8

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Abstract. This work presents a list of localities for the following species: *Anastrophyllum michauxii*, *Campylopus introflexus*, *Cephaloziella elachista*, *Cinclidotus fontinaloides*, *Cololejeunea calcarea*, *Dicranum viride*, *Didymodon spadiceus*, *Fissidens dubius* var. *mucronatus*, *Fossombronia wondraczekii*, *Fuscocephaloziopsis macrostachya*, *Hypnum cupressiforme* var. *subjulaceum*, *Lophozia ascendens*, *Mesoptychia heterocolpos*, *Nowellia curvifolia*, *Rhytidiadelphus loreus*, *Saccobasis polita*, and *Trichocolea tomentella*.

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

Author: P. Górski

Slovakia, Belianske Tatra Mountains: MGRS 34UDV4256, Západné Belianske Tatry, Tristarská dolina valley, middle part of Złoty Żleb gully, 49.26010°N, 20.20949°E, 49.26019°N, 20.20935°E, alt. 1225 m above sea level (a.s.l.), 1230 m a.s.l., decaying log, *leg*., *det*. P. Górski, 7.11.2015 (POZNB 2054, 2055); High Tatra Mts: MGRS 34UDV3852, Javorinské Tatry, Javorová dolina valley, between the Javorinka and Čierny potok streams, 49.21903°N, 20.16166°E, alt. 1335 m a.s.l., decaying log in *Plagiothecio-Piceetum* spruce forest, *leg*., *det*. P. Górski,

21.09.2015 (POZNB 2052); MGRS 34UDV2647, Skupina Kriváňa, Kôprová dolina valley, lower part of Kotlina Krywańskie Koryto, 'Niedźwiedzia Perć', 49.17425°N, 19.98595°E, 49.17363°N, 19.98477°E, alt. 1370 m a.s.l., 1380 m a.s.l., decaying log, *leg*., *det*. P. Górski, 16.09.2015 (POZNB 2050, 2053); Western Tatra Mts: MGRS 34UDV0843, 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. (new minimum of the species in the Tatra Mts.), *leg*., *det*. P. Górski, 19.09.2015 (POZNB 2051).

Characteristics of the distribution of *Anastrophyllum michauxii* in the Tatra Mts have been recently presented by Górski (2016). This study presents another six localities of this plant from the Belianske, High, and Western Tatra Mts. One of the localities is the new altitudinal minimum of the liverwort in the Tatra Mts (895 m a.s.l.). Thus far, the lowest locality of *A. michauxii* was recorded at 900 m a.s.l. (Duda & Váňa 1984). Altogether, throughout the entire Tatra Mts, this liverwort grows in 47 localities (Górski & Váňa 2014, Górski 2016).

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

Authors: M. Wilhelm, M. Rutkowska

ATMOS Ba-09: NW Poland, West Pomerania (Pomorze Zachodnie), Trzebiatowskie coast (Wybrzeże Trzebiatowskie), West Pomerania Province, Kołobrzeg County, Kołobrzeg commune, Dźwirzyno village at the Resko canal, 54.15356°N, 15.39111°E, sandy soil at the edge of white dune with *Elymo-Ammophiletum arenariae*, *leg*., *det*. M. Wilhelm, 2.04.2014 (SZUB); ATMOS Ba-27: NW Poland, West Pomerania, Gryficka Plain (Równina Gryficka), West Pomerania Province, Gryfice County, Gryfice commune, Modlimowo-Grądy peat bog near Przybiernówko (the so-called 'Wielkie Smogorze'), 53.98078°N, 15.14681°E, dried peat overgrown with birch in the cutting area of peat work, *leg*., *det*. M. Wilhelm, 23.09.2012 (SZUB); ATMOS Ba-44: NW Poland, West Pomerania, Nowogardzka Plain (Równina Nowogardzka), West Pomerania Province, Goleniów County, Przybiernów commune, 53.77806°N, 14.70278°E, forest section 669h of the Rokita Forest Inspectorate, sandy soil at the edge of a *Leucobryo-Pinetum* plant association in the Grzybnica River valley, *leg*. M. Rutkowska, 3.04.2014, *det*. M. Wilhelm (SZUB); ATMOS Ba-73: NW Poland, West Pomerania, Szczecińska Lowland (Nizina Szczecińska), West Pomerania Province, city of Szczecin, 'Wodozbiór' landscape nature protected complex, 53.48944°N, 14.55265°E, psammophilous grassland along Kredowa Street, *leg*. M. Rutkowska, 27.03.2012, *det*. M. Wilhelm (SZUB); ATMOS Ba-85: NW Poland, West Pomerania, Goleniowska Plain (Równina Goleniowska), West Pomerania Province, Stargard County, Kobylanka commune, ~4 km north of Reptowo village, 53.39769°N, 14.83663°E, a monotonous dense carpet on dried peat where peat digging ceased, *leg*. M. Rutkowska, 20.03.2016, *det*. M. Wilhelm (SZUB).

Campylopus introflexus is becoming a more and more common species in West Pomerania (Fudali et al. 2009, Górski 2014, 2015, Górski & Kapustyński 2015a, Wilhelm et al. 2015). The list of the species is still open, as evidenced by the above specifics of its new localities. The given position is an example of a wide range of habitats occupied by *C. introflexus*.

3. ***Cephaloziella elachista*** (J.B. Jack ex Gottsche et Rabenh.) Schiffn.

Author: P. Górski

ATMOS Ab-98: NW Poland, West Pomerania, Sławieńska Plain (Równina Sławieńska), Sławno County, Sławno Forest Inspectorate, 'Janiewickie Bagno' nature reserve, 54.2588°N, 16.72367°E, in open part of peat bog, *leg*., *det*. P. Górski, 28.06.2016 (POZNB).

The following liverworts have been reported so far from the 'Janiewickie Bagno' nature reserve: *Calypogeia sphagnicola* (Arnell et J. Perss.) Warnst. et Loeske, *C. neesiana* (C. Massal. et Carestia) Müll. Frib., *Kurzia pauciflora* (Dicks.) Grolle, *Lophozia silvicola* H. Buch, *Mylia anomala* (Hook.) Gray, *Odontoschisma sphagni* (Dicks.) Dumort., and *O. denudatum* (Mart.) Dumort. (Szweykowski & Koźlicka 1969). The presence of these species was confirmed in 2016. *Cephaloziella elachista* has not been reported previously from that area. Aside from the aforementioned species, the following constitute the flora of the 'Janiewickie Bagno' nature reserve: *Cephalozia bicuspidata* (L.) Dumort., *Fuscocephaloziopsis connivens* (Dicks.) Váňa et L. Söderstr. (= *Cephalozia connivens* (Dicks.) Lindb.), *F. lunulifolia* (Dumort.) Váňa et L. Söderstr. (= *Cephalozia lunulifolia* (Dumort.) Dumort.), *Lepidozia reptans* (L.) Dumort., *Lophocolea heterophylla* (Schrad.) Dumort., *Nowellia curvifolia* (Dicks.) Mitt., *Pellia epiphylla* (L.) Corda, and *Riccardia latifrons* (Lindb.) Lindb. (P. Górski, unpublished, POZNB).

Localities of *Cephaloziella elachista* are known from central and northern Poland (Szweykowski 2006). It seems to be a rare, poor fen species. However, in West Pomerania and western Poland, it is probably more frequent than the published data indicate and overlooked in the field. Since 2000, *C. elachista* has been recorded by Górski (2013), Górski & Gąbka (2015a), and Górski et al. (2015).

4. ***Cinclidotus fontinaloides*** (Hedw.) P. Beauv.

Author: G. Vončina

ATMOS Ge–23: S Poland, Beskid Sądecki Range, Małopolska Province, Nowy Sącz County, Łącko commune, Łazy Brzyńskie village, on the sandstone boulders on the bank of the Dunajec River, alt. 332

m a.s.l., 49.52658°N, 20.51706°E, *det*. G. Vončina, 14.02.2016; S Poland, Beskid Sądecki Range, Małopolska Province, Nowy Sącz County, Łącko commune, village of Zarzecze, Kamieńczyk settlement, on the sandstone boulders in the bed of the Dunajec River, alt. 371 m a.s.l., 49.53803°N, 20.40992°E, *det*. G. Vončina, 13.02.2016; S Poland, Beskid Sądecki Range, Małopolska Province, Nowy Targ County, Ochotnica Dolna commune, village of Tylmanowa, Kamieniec settlement, on the sandstone boulders on the bank of the Dunajec River, alt. 382 m a.s.l., 49.51386°N, 20.41783°E, *det*. G. Vončina, 13.02.2016; S Poland, Gorce Mountains, Małopolska Province, Nowy Targ County, Ochotnica Dolna commune, village of Tylmanowa-Rzeka, Siwa Górka settlement, on the sandstone boulders on the bank of the Dunajec River, alt. 378 m a.s.l., 49.51697°N, 20.40311°E, *det*. G. Vončina, 14.02.2016; S Poland, Beskid Sądecki Range, Małopolska Province, Nowy Targ County, Ochotnica Dolna commune, village of Tylmanowa, Czeczugi settlement, on the sandstone boulders on the bank of the Dunajec River, alt. 387 m a.s.l., 49.51064°N, 20.39806°E, *det*. G. Vončina, 13.02.2016; S Poland, Beskid Sądecki Range, Małopolska Province, Nowy Targ County, Ochotnica Dolna commune, village of Tylmanowa, Kłodne next to Popradzki Landscape Park and Nature Reserve Kłodne nad Dunajcem, on the sandstone boulders in the bed of the Dunajec River, alt. 408 m a.s.l., 49.47542°N, 20.43517°E, *det*. G. Vončina, 17.05.2015, *conf.* A. Stebel and alt. 417 m a.s.l., 49.47514°N, 20.43642°E, *det*. G. Vončina, 17.05.2015.

Cinclidotus fontinaloides is regarded as a threatened species in Poland (category E) and taken under strict protection (Żarnowiec et al. 2004, Order… 2014). Milde (1869) published the occurrence of this species as being only from the Lower Silesia (vicinities of Jelenia Góra, Bóbr River, Giant Mountains or Bolesławiec) from the contemporary boundaries of Poland. In the Polish Carpathians, this moss was noted only from the Pieniny Range by Rehman (1865), later published by Karczmarz (2000). However, once treated as a doubtful species (Stebel et al. 2010), it was found recently (Vončina & Stebel 2016). The species was observed in the Beskid Sądecki Range at first but nowadays has been confirmed in the Polish Carpathians.

5. ***Cololejeunea calcarea*** (Lib.) Schiffn.

Author: P. Górski

Slovakia, High Tatra Mts: 34UDV3752, Skupina Širokej, upper part of the Svišťovská dolina valley, 49.22197°N, 20.14102°E, alt. 1670 m a.s.l., rock crevices, *leg*., *det*. P. Górski, 8.11.2015 (POZNB 2059); Western Tatra Mts: MGRS 34UDV0757, Skupina Osobitej-Bobrovca, Suchá dolina valley, lower part of Široký žľab gully, 49.26642°N, 19.73153°E, 49.26585°N, 19.72963°E, alt. 1135 m a.s.l., 1215 m a.s.l., calcareous outcrops, *leg*., *det*. P. Górski, 24.09.2015 (POZNB 2056, 2058).

Poland, Western Tatra Mts: ATMOS Gd-59, MGRS 34UDV2054, Masyw Czerwonych Wierchów, Kozi Grzbiet ridge (between the Mułowa and Litworowa valleys), 49.23664°N, 19.90863°E, alt. 1905 m a.s.l., calcareous outcrops, *leg*., *det*. P. Górski, 22.09.2015 (POZNB 2057).

Cololejeunea calcarea is a calciphilous liverwort that grows in the Tatra Mts on calcareous rocks, mostly in the forest belts. As much as 88% of the localities of this plant have been recorded below 1500 m a.s.l. Altogether in the Tatra Mts, *C. calcarea* grows in 67 localities, mostly in the Polish part of the Western Tatra Mts and Belianske Tatra Mts (compare Górski & Váňa 2014). Szweykowski (2006) estimated the plant's maximum in the Tatra Mts to be 1450 m a.s.l., probably based upon a locality in the Belianske Tatra Mts he discovered in 1956 (Szweykowski 1960). In the following years, *C. calcarea* has been noted in the alpine belt of the Tatra Mts at an altitude of 1700 m a.s.l. (*leg*. J. Šmarda, 1961, *leg*. P. Górski, 2011), 1760 m a.s.l. (*leg*. P. Górski, 2011), and 2000 m a.s.l. (*leg*. J. Váňa, 1966; compare Šmarda 1961b, Duda & Váňa 1975, Górski & Váňa 2014).

This work presents four new localities of *Cololejeunea calcarea* in the Tatra Mts. The first one was found in the Slovakian part of the High Tatra Mts, where only five localities have been recorded previously (Szyszyłowicz 1885, Šmarda 1961b, Górski & Váňa 2014); another two localities were found in the Slovakian Western Tatra Mts, where seven localities have been recorded previously (Duda & Váňa 1975, Górski & Váňa 2014). The fourth locality was found in the Polish Western Tatra Mts (Czerwone Wierchy ridge), at an altitude of 1905 m a.s.l., which makes it the second highest locality in the Tatra Mts. The current altitude maximum of *C. calcarea* is 2000 m a.s.l. (Mount Plačlivý Roháč, Slovakian part of the Western Tatra Mts; Duda & Váňa 1975).

6. ***Dicranum viride*** (Sull. & Lesq.) Lindb.

Author: G. Vončina

ATMOS Ge-33: S Poland, Beskid Sądecki Range, Radziejowa ridge, Małopolska Province, Nowy Targ County, Ochotnica Dolna commune, village of Tylmanowa, Kłodne in Popradzki Landscape Park and 'Kłodne nad Dunajcem' nature reserve, 49.47514°N, 20.43642°E, alt. 417 m a.s.l., on the sandstone on the bank of the Dunajec River, *det*. G. Vončina, 17.05.2015.

Dicranum viride is a protected species under international law of the Bern Convention and the Habitat Directive; in Poland, it is a strictly protected taxon (Stebel 2012, Order… 2014). This species was treated as threatened in Europe (category V; Schumacker

& Martiny 1995); in Poland and in the Polish Carpathians, it is a rare species (category R; Żarnowiec et al. 2004). In Poland, *D. viride* was reported at a few scattered stations; the number of data has increased in recent years (Stebel et al. 2015). The species was noted in the northern part of Poland in the lowlands but most frequently in the Carpathians (Stebel et al. 2015). It grows on the bark of deciduous trees, on decaying wood and on shadowed sandstones at altitudes from 300 to 1000 m a.s.l. (Lisowski 1956, Stebel 2006, Armata 2008, Stebel et al. 2008, Żarnowiec & Stebel 2014). *Dicranum viride* was reported from the Beskid Sądecki Range from the village of Żegiestów by Rehman (1869) and then by Limpricht (1890) initially. More recently, an occurrence of *D. viride* in the village of Żegiestów, in the Jaworzyna Krynicka ridge, was confirmed by Stebel et al. (2011). The described station is the first record in the Radziejowa ridge (Beskid Sądecki Range).

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

Author: M. Smoczyk

ATMOS Fb-25: SW Poland, Central Sudety Mountains (Sudety Środkowe), Góry Stołowe Mountains, Piekielna Dolina gorge between the towns of Szczytna and Polanica-Zdrój, Bystrzyca Dusznicka riverbank, 0.1 km west of the railway bridge, 50.3972°N, 16.4915°E, alt. 400 m a.s.l., on a sandstone boulder covered by a thin layer of alluvial loam, associated species: *Chiloscyphus polyanthos*, *Codriophorus aciculari*s, *Cratoneuron filicinum*, *Fissidens pusillus*, *Hygroamblystegium fluviatile*, *Lejeunea cavifolia*, *Lunularia cruciata* (Smoczyk & Wierzcholska 2014), and *Thamnobryum alopecurum*, *leg.*, *det*. M. Smoczyk, 6.06.2014, *conf.* V. Plášek, *c. spor*. (POZG).
Didymodon spadiceus is a moss associated with base-rich rock or humus substrates near water bodies and other places with high air humidity, especially in the mountains (Kučera 2000, Jiménez et al. 2005). The species is rare in the Sudety Mts, and, thus far, *D. spadiceus* has not been reported from the Góry Stołowe Mts (Szmajda 1979).

8. ***Fissidens dubius*** P. Beauv. var. ***mucronatus*** Breidl. ex Limpr.) Karttunen, Hedenäs & Söderström

Author: G. Vončina

ATMOS Ge–33: S Poland, Beskid Sądecki Range, Małopolska Province, Nowy Targ County, Ochotnica Dolna commune, village of Tylmanowa, Kłodne in Popradzki Landscape Park and Nature Reserve Kłodne nad Dunajcem, on the sandstone in the thermophilous beech forest, 49.47406°N, 20.43719°E, alt. 418 m a.s.l., *leg.*, *det*. G. Vončina, 17.05.2015, *conf.* A. Stebel (SOSN).
Fissidens dubius var. *mucronatus* is a rare taxon that was observed only in a few localities in West Pomerania, in the uplands belt, in the Polesia region and Carpathians in Poland (Brylska 1991). This taxon was noted in the Kashubia region (Hajek 2005), Świętokrzyskie Mountains (Stebel et al. 2013), Silesian foothills (Stebel 2004a), Kotlina Żywiecka basin (Stebel et al. 2004, Stebel 2006, 2008), Orawsko-Jordanowskie foothills (Stebel & Vončina 2014), Beskid Mały Range (Stebel 2010), Beskid Makowski Range (Stebel 2006), Beskid Wysoki Range (Stebel et al. 2004, Stebel 2006), Beskid Wyspowy Range (Stebel 2006), Gorce Mts (Stebel 2004b, 2006), and Pieniny Range (Stebel et al. 2010) during the most recent decade. The moss grows on the calcareous soil in thermophilous grasslands, on wayside slopes, and in the undergrowth of deciduous forests (Brylska 1991, Stebel 2006). The lowermost locality in the Polish Carpathians is at 335 m a.s.l. and the highest at 800 m a.s.l. (Stebel 2006). The taxon was given from the Beskid Sądecki Range on Magura Hill (nearby town of Piwniczna) by Brylska (1991) after verification of Mamczarz's collection.

9. ***Fossombronia wondraczekii*** (Corda) Lindb.

Author: M. Smoczyk

ATMOS Fb-26: SW Poland, Central Sudety Mts, Kłodzko Basin (Kotlina Kłodzka), Kłodzko commune, 2.4 km south-west of church in the village of Krosnowice, in the valley of the Duna Górna stream, 50.3815°N, 16.6180°E, alt. 310 m a.s.l., damp clayey soil in a stubble field, in extensive patches of a *Pottietum truncatae* association, growing with *Tortula truncata*, *Bryum rubens*, *Ephemerum serratum* var. *angustifolium*, *Anthoceros agrestis*, and *Riccia glauca*, *leg.*, *det*. M. Smoczyk, 20.09.2013, *c. spor*. (POZG); ATMOS Fb-36: SW Poland, Eastern Sudety Mts (Sudety Wschodnie), Śnieżnik Massif (Masyw Śnieżnika), Krowiarki, near the village of Piotrowice Górne, 0.6 km north-west of Mount Kamiennik, 50.3302°N, 16.7223°E, alt. 525 m a.s.l., clayey soil in the field margin, growing with *Bryum rubens*, *Anthoceros agrestis*, and *Riccia glauca*, *leg.*, *det*. M. Smoczyk, 1.07.2014, *c. spor*. (POZG).
Fossombronia wondraczekii is a rare plant in Poland, endangered with extinction (category E; Klama 2006). In the Sudety Mts, it occurs in arable lands and stubbles, at lower altitudes only. In Kłodzko County, the species was given previously from the Stołowe Mountains (Milde 1864, Szweykowski 1953), the Orlickie foothills (Koła & Turzańska 1993), the Bystrzyckie Mountains (Koła 1967), and the Bialskie Mountains (Koła 1972).

10. ***Fuscocephaloziopsis macrostachya*** (Kaal.) Váňa et L. Söderstr. (= *Cephalozia macrostachya* Kaal.)

Author: P. Górski

ATMOS Ab-98: NW Poland, West Pomerania, Sławieńska Plain, Sławno County, Sławno Forest Inspectorate, 'Janiewickie Bagno' nature reserve,

54.25991°N, 16.71530°E, 54.25912°N, 16.71494°E, 54.25982°N, 16.71467°E, 54.26016°N, 16.71634°E, 54.25991°N, 16.72499°E, 54.2596°N, 16.71854°E, in open part of peat bog, *leg*., *det*. P. Górski, 28.06.2016 (POZNB).

Fuscocephaloziopsis macrostachya has not been previously reported from the 'Janiewickie Bagno' nature reserve (see description of *Cephaloziella elachista* in this column). This species occurs very often in the open part of the peat bog. The distribution centre of *F. macrostachya* in Poland is situated in the northern part of the country (Szweykowski 2006). From West Pomerania, the species has been recently reported by Górski (2013), Górski & Gąbka (2015b), and Górski & Kapustyński (2015b). Szweykowski (2006) has stated that this species is actually more frequent than it would appear from the published data. It seems that it may have much more localities in West Pomerania.

11. ***Hypnum cupressiforme*** Hedw. var. ***subjulaceum*** Molendo

Author: G. Vončina

ATMOS Ge-33: S Poland, Beskid Sądecki Range, Małopolska Province, Nowy Targ County, Ochotnica Dolna commune, village of Tylmanowa, Kłodne in Popradzki Landscape Park and Nature Reserve Kłodne nad Dunajcem, on the sandstone on the bank of the Dunajec River, 49.47514°N, 20.43642°E, alt. 417 m a.s.l., *leg*., *det*. G. Vončina, 17.05.2015, *conf*. A. Stebel (SOSN); on the sandstone in the thermophilous beech forest, 49.47406°N, 20.43719°E, alt. 418 m a.s.l., *leg*., *det*. G. Vončina, 17.05.2015, *conf*. A. Stebel (SOSN).

Hypnum cupressiforme var. *subjulaceum* is a very rare taxon that has been noted only in a few places in the Polish Carpathians (Wiśniewska 1957, Szafran 1961). It grows on the sunny or shady outcrops or boulders that are built of limestone, andesite, and sandstone at an altitude of ~300 to 1850 m a.s.l. (Wiśniewska 1957, Lisowski 1959, Jędrzejko 1970, Stebel 2006, Żarnowiec & Stebel 2014). The moss was observed in the Rożnowskie foothills (Szafran 1954), Beskid Mały Range (Stebel 2006, 2010), Beskid Wysoki Range (Stebel 2004c, Stebel et al. 2004, Żarnowiec & Szwed 2004, Stebel 2006), Beskid Sądecki Range (on the andesites of Bryjarka Hill; Jędrzejko 1970), Gorce Mts (Lisowski & Kornaś 1966, Jędrzejko 1970, Stebel 2006), Tatra Mts (Lisowski 1958, 1959, Szafran 1961, Cykowska 2008), Pieniny Range (Szafran 1952, 1954, Wiśniewska 1957, Lisowski 1958, Ochyra & Stebel 2008, Stebel et al. 2010), and Bieszczady Mountains (Lisowski 1956, Stebel & Żarnowiec 2010). The described locality is the first observation of this taxon on sandstone of Carpathian flysch in the Beskid Sądecki Range (mats of moss without sporophytes).

12. ***Lophozia ascendens*** (Warnst.) R.M. Schust.

Author: P. Górski

Slovakia Belianske Tatra Mts: MGRS 34UDV4256, Západné Belianske Tatry, Tristarská dolina valley, middle part of Złoty Żleb gully, 49.25995°N, 20.20928°E, alt. 1215 m a.s.l., decaying log, *leg*., *det*. P. Górski, 7.11.2015 (POZNB 2070); High Tatra Mts: MGRS 34UDV2647, Skupina Kriváňa, lower part of Nefcerka valley, 49.17557°N, 19.99087°E, alt. 1395 m a.s.l., decaying log in spruce forest, *leg*., *det*. P. Górski, 16.09.2015 (POZNB 2068); MGRS 34UDV3753, Skupina Širokej, lower part of the Svišťovská dolina valley, decaying log in spruce forest, 49.23156°N, 20.13879°E, alt. 1245 m a.s.l., *leg*., *det*. P. Górski, 6.11.2015 (POZNB 2069); Western Tatra Mts: MGRS 34UDV0757, Skupina Osobitej-Bobrovca, Suchá dolina valley, lower part of Široký žľab gully, 49.26585°N, 19.72963°E, 49.26642°N, 19.73153°E, alt. 1135 m a.s.l., 1215 m a.s.l., decaying log, *leg*., *det*. P. Górski, 24.09.2015 (POZNB 2062, 2063); MGRS 34UDV0757, Skupina Osobitej-Bobrovca, middle part of Suchá dolina valley, 49.26508°N, 19.73822°E, alt. 1045 m a.s.l., decaying log near stream, *leg*., *det*. P. Górski, 24.09.2015 (POZNB 2066).

Lophozia ascendens is an epixylic liverwort that is relatively frequent in the Tatra Mts. In the entire area of the Tatra Mts, 43 localities of *L. ascendens* have been recorded within an altitude range of 800 to 1800 m a.s.l. (Górski & Váňa 2014). In the Polish part of the Tatra Mts, this liverwort is considered rare (Szweykowski & Klama 2010). This is based upon the lack of data on the occurrence of the plant in the Polish High Tatra Mts and the presence of only seven localities in the Polish Western Tatra Mts. However, this is the result of an insufficient state of knowledge due to limited studies, and, in the Polish part of the massif, the species is likely more common. Aside from the Tatra Mts, *L. ascendens* is very rare in lowlands, and it may be an indicator species for well-preserved forests with a long ecological continuity (primeval forests).

13. ***Mesoptychia heterocolpos*** (Thed. ex Hartm.) L. Söderstr. et Váňa [= *Lophozia heterocolpos* (Thed. ex Hartm.) M. Howe]

Author: P. Górski

Slovakia, High Tatra Mts: MGRS 34UDV3652, Skupina Širokej, lower part of the Široká dolina valley, 49.22435°N, 20.13149°E, 49.22435°N, 20.13149°E, alt. 1535 m a.s.l., calcareous outcrops of dwarf mountain pine, *leg*., *det*. P. Górski, 9.11.2015 (POZNB 1995, 2048); Skupina Širokej, upper part of the Široká dolina valley, 49.22059°N, 20.13159°E, alt. 1625 m a.s.l., calcareous outcrops, *leg*., *det*. P. Górski, 9.11.2015 (POZNB 2049); MGRS 34UDV3653, Skupina Širokej, lower part of the Široká dolina valley, 49.22805°N,

20.13076°E, alt. 1390 m a.s.l., calcareous boulder, *leg*., *det*. P. Górski, 9.11.2015 (POZNB 2045), Skupina Širokej, lower part of the Svišťovská dolina valley, 49.22746°N, 20.13101°E, alt. 1415 m a.s.l., *leg*., *det*. P. Górski, rock crevices, on humus, 9.11.2015 (POZNB 2046, 2047); MGRS 34UDV3752, Skupina Širokej, upper part of the Svišťovská dolina valley, 49.22237°N, 20.14153°E, 49.22257°N, 20.14188°E, 49.22554°N, 20.14003°E, alt. 1505 m a.s.l., 1620 m a.s.l., and 1630 m a.s.l., rock crevices, on humus, *leg*., *det*. P. Górski, 8.11.2015 (POZNB 1988, 1997); MGRS 34UDV3753, Skupina Širokej, lower part of the Svišťovská dolina valley, 49.22831°N, 20.13996°E, alt. 1345 m a.s.l., rock crevices, on humus, *leg*., *det*. P. Górski, 6.11.2015 (POZNB 2043).

Poland, Western Tatra Mts: MGRS 34UDV2054, ATMOS Gd–59, Masyw Czerwonych Wierchów, Dolina Mułowa valley, bottom plateau of the kettle, 49.23403°N, 19.90495°E, alt. 1820 m a.s.l., *leg*., *det*. P. Górski, 22.09.2015 (POZNB 2040).

Mesoptychia heterocolpos is an arctic–alpine species growing on the humus of calcareous rocks that is relatively rare in the Tatra Mts. In the entire area of the Tatra Mts, 28 localities of *M. heterocolpos* have been recorded within an altitude range of 1140 to 2148 m a.s.l. (Górski & Váňa 2014). Most of the localities presented above come from the Slovakian High Tatra Mts. In this part of the Tatra Mts, only five records of *M. heterocolpos* are known (Szweykowski 1960, Duda & Váňa 1989, Górski & Váňa 2014). The data presented in this work originate from valleys with northern exposure, from the vicinity of Mount Široká, where *M. heterocolpos* is a frequent species.

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

Author: M. Smoczyk

ATMOS Da-04: W Poland, Lubuskie Lakeland, Torzym Plain, 4.2 km south-east of the city of Rzepin, southern shore of Jezioro Rzepsko Lake, forest section 422f of the Rzepin Forest Inspectorate, 52.3186°N, 14.8865°E, decaying pine log on the lakeshore, growing with *Lophocolea heterophylla*, *Aulacomnium androgynum, Brachythecium rutabulum*, and *Hypnum cupressiforme*, *leg*., *det*. M. Smoczyk, 4.04.2015, *c. per.* (POZG).

Nowellia curvifolia is a lignicolous liverwort associated with coniferous wood. It occurs mainly in north-eastern Poland (Szweykowski 1969, 2006). According to Szweykowski (2006), the species is rare or absent in western Poland. However, some new records have been published recently from the north-western part of the country (Górski 2010, 2013, Górski & Gąbka 2015c, Górski & Kapustyński 2015c, Wilhelm et al. 2015), which reveal this species to be no longer rare in the West Pomerania region. Thus far, *N. curvifolia* has not been reported from the Pojezierze Lubuskie Lakeland.

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

Author: M. Wilhelm

ATMOS Ba-27: NW Poland, West Pomerania, Gryficka Plain, West Pomerania Province, Gryfice County, Gryfice commune, Modlimowo-Grądy peat bog near Przybiernówko (the so-called 'Wielkie Smogorze'), 53.97664°N, 15.14169°E, forest section 246 of the Gryfice Forest Inspectorate, on a decaying pine log in a *Vaccinio uliginosi-Pinetum* plant association, *leg*., *det*. M. Wilhelm, 23.09.2012 (SZUB).

15. ***Rhytidiadelphus loreus*** (Hedw.) Warnst.

Author: R. Šoltés

Slovakia, Tatra Mts: The goal of this contribution is to explain why *Rhytidiadelphus loreus* on the southern slopes of the Tatra Mts in forest ecosystems is missing.

In Slovakia, *Rhytidiadelphus loreus* is abundant and is widespread in mountain areas on soil in humid habitats, on boulders, on fallen logs, or on marshy ground (Fajmonová 1979, Peciar 1979, Majzlanová 1982, Herben & Soldán 1987). Quite different is the situation in the Tatra Mts, where on the southern slopes the moss is virtually lacking. It seems that *R. loreus* is confined to the climax forest stage. Unfortunately, the forests developed on the leeward side of the Tatra Mts have been irregularly affected by the recurrent northern down-slope winds. North-facing valleys are unaffected by recurrent northern wind, because air masses from the north are due to the high air pressure forced to ridges, where the air becomes cool and heavier and falls down the southern slopes, gaining the kinetic energy. The last event happened in 2004, when 12000 ha of forest was blown down. Since 1915, this was the seventh large-scale event in this forest, affecting more or less the same forest sections. The forest thus seldom reaches its climax stage due to these natural disturbances, which is why in this area the moss *R. loreus* is lacking. On the southern slopes of the Tatras, the moss occurs rarely but above the timberline in the dwarf pine zone (i.e., in areas unaffected by windbreaks) (Šmarda 1948, 1952, 1961a). Locations in the Belianske Tatras are of course unaffected by windbreaks (Šmarda 1961a, Blackburn et al. 1997). On the unaffected north-facing slopes, the moss occurs abundantly, forming large carpets (Šmarda 1958 – Kačacia dolina valley, Bielovodská dolina valley; Peciar 1978 – Bielovodská dolina valley). Many specimens of *R. loreus* collected in the Bielovodská dolina valley or Javorová dolina valley at an altitude of 1014 to 1310 m a.s.l. are deposited in the Herbarium of the Tatra National Park (TANAP) in Tatranská Lomnica. Records of Chałubiński (1886) in the Mengusovská dolina valley and of Šmarda (1948) close to the Štrbské pleso lake are still unconfirmed. Our belief that *R. loreus* is an

indicator of natural forests is also supported by Odor & Dort (2002); *R. loreus* indicates natural forests in Slovenia.

16. ***Saccobasis polita*** (Nees) H. Buch [= *Tritomaria polita* (Nees) Jörg.]

Author: H. Klama

ATMOS Gd-59: S Poland, Western Tatra Mts, Dolina Litworowa valley, rocks at the base of the western-northern-western slope of Mount Małołączniak, alt. 1850 m a.s.l., on humus covering calcareous rocks, *leg*., *det*. H. Klama, 20.09.1989, *ster.* (*herb*. H. Klama).
In Poland, this epipetric liverwort occurs in alpine and subalpine zones in the Tatra Mts only (Szweykowski & Koźlicka 1980, Szweykowski 2006). In the Polish part of the Tatra Mts, *Saccobasis polita* grows at 15 stations (i.e., in the Western Tatra Mts at two stations and in the High Tatra Mts at 13; Górski & Váňa 2014).

17. ***Trichocolea tomentella*** (Ehrh.) Dumort.

Author: H. Klama

ATMOS Gd-34: S Poland, Beskid Żywiecko-Orawski Mountains, Wielka Racza group (Grupa Wielkiej Raczy), Silesian Province, Żywiec County, village of Soblówka, valley of the Urwisko stream, orographic left side of the valley, 49.42985°N, 19.14805°E, alt. 673 m a.s.l., on wet soil in swamp with *Caltha palustris* in spruce forest, *leg*., *det*. H. Klama, 1.07.2015, *ster.* (*herb*. H. Klama).
Trichocolea tomentella is very rare species in the Polish mountains (Szweykowski 2006). It grows in the lower forest belt in wet places, near streams, and in spring areas. In the Beskid Żywiecko-Orawski Mts, the plant is known thus far from one location (Klama 1996), and this is second station of the species in this territory. This liverwort also has been recorded at single stations in the Silesian foothills (Wilczek & Zarzycki 2013), Beskid Śląski Mountains (Rejment-Grochowska 1950, Mierzeńska & Drewniok 2000, Plášek & Stebel 2002), Beskid Mały Mountains (Stebel & Stebel 1998), Babia Góra Massif (Stebel 2002, Klama 2004), Gorce Mts (Mierzeńska 1994), and Beskid Niski Mountains (Cykowska-Marzencka 2014).

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