



## CONTRIBUTION TO THE BRYOFLOTA OF THE ROZTOCZE NATIONAL PARK (SE POLAND)– BRYOPHYTES OF THE ŚWIERSZCZ RIVER VALLEY

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**ABSTRACT.** New distribution data for 171 bryophyte taxa in the Roztocze National Park are provided. Among them there are 43 species protected by law in Poland, including 20 strictly protected species, as well as 13 species threatened in Poland. The research revealed 36 species (5 liverworts and 31 mosses) new for the region. Noteworthy is the occurrence of 19 mountain species and 10 bryophytes thought to be relicts of old-growth forests what confirms the specificity of nature of the Roztocze region. The most valuable and interesting finds are: mosses *Campylophyllopsis sommerfeltii* (Myrin) Ochyra, *Dicranum viride* (Sull. & Lesq.) Lindb., *Buxbaumia viridis* (Moug. ex Lam. & DC.) Brid. ex Moug. & Nestl. as well as liverworts *Calypogeia suecica* (Arnell et J. Perss.) Müll. Frib. and *Cephalozia catenulata* (Huebener) Lindb. A brief characterisations of these species are presented.

**KEY WORDS:** bryophytes distribution data, mountain species, old-forests relicts, threatened bryophytes, Roztocze National Park, Świerszcz river valley

## INTRODUCTION

Situated on the south-eastern border of Poland, an upland region called “Roztocze” is best known for the occurrence of old-growth natural fir-dominated mixed forests, at their north-eastern limit of dense natural geographical range, and for breeding of Polish horses. The vegetation of Roztocze is more peculiar and reflects its geographical specificity – geomorphology, geology, hydrology and climate (BURACZYŃSKI 2002). From the floristic point of view the most interesting is rich representation of mountain species in spite of rather low elevations (290-400 m a.s.l.).

The first bryological notes from the Roztocze area were reported from the end of the 19<sup>th</sup> century (BŁOŃSKI 1890). The next bryological reports were published almost 70 years later (SZWEJKOWSKI 1957, LISOWSKI 1958b). Field research refer to the bryophytes of Roztocze were carried out quite intensively by some authors in the years 1963-1977 (KUC 1963, 1964; KARZMARZ 1964, 1965, 1967, GRABARZ 1969, BLOCH & KARZMARZ 1973, MENDELAK 1977). Their results were summarized by KARZMARZ (1994) who estimated that bryoflora of the Roztocze National Park includes 195 species (1 hornwort, 39 liverworts and 155 mosses). The most recent studies (MACIEJEWSKI & ZUBEL 2009a, b, ZUBEL 2009, ZUBEL & MACIEJEWSKI 2009, 2011) have revealed some new species and at the same time authors have confirmed the occurrence of only 60% of the earlier reported species. Thus knowledge on present distribution of bryophytes in the Roztocze region and of the Roztocze National Park required to be updated. Therefore the tree-days bryological exploration in some sites of the Roztocze National Park was organised in September 2011 by the Section of Bryology of the Polish Botanical Society. This paper presents bryological data collected in the Świerszcz river valley, especially poorly bryologically known hitherto.

## STUDY AREA, MATERIAL AND METHODS

According to the physico-geographical division of Poland, the Roztocze region is situated in two macroregions of south-eastern Poland: Wyżyna Lubelsko-Lwowska (Lublin-Lwów Upland) and Kotlina Sandomierska Dale (KONDRACKI 2002). In respect to the geobotanical division it belongs to the South-Poland Uplands district, Roztocze land (MATUSZKIEWICZ 1993).

The Roztocze National Park (Fig. 1) was established in 1974 but the first efforts to protect vegetation of the Roztocze region are much older and begun in 1936 when the nature reserve “Bukowa Góra”, protecting old-growth beech forests with silver fir, was set up (MATŁAWSKA 1994). At present, the total area of national park amounts 8483 ha and it

comprises five areas of strict protection. Regarding territorial division, 94% of its area is situated in the Zwierzyniec commune, Lublin voivodeship. The 95% of the Park area is covered with forests. Waters from the area of the Roztocze National Park fall into the Wieprz river. Świerszcz river, which is a tributary of Wieprz, gathers water from the Zwierzyniec valley, situated southwards from the Zwierzyniec village. Two retention ponds, Czarny Staw and Staw Floraniecki, are situated in its middle and lower part.

The main nature values of the Park are old-growth well-preserved forest phytocoenoses, regarded to be remnants of primeval forests represented mainly by the Carpathian beech forest *Dentario glandulosae-Fagetum* and upland fir-dominated mixed forest *Abietetum albae* (= *Abietetum polonicum*) developed in two forms: typical *A.p. typicum* and moderately wet *A.p. circaetosum* (LORENS 1998). The forest vegetation is more differentiated; altogether 21 forest communities were recognised (IZDEBSKI et al. 1992).

The results of the field studies presented in this paper were carried out between 15<sup>th</sup> and 17<sup>th</sup> of September 2011, within the valley of the Świerszcz river (ATMOS squares: Eg-91 and Fg-01). Świerszcz river valley extends from 260 m a.s.l. around its springs to 230 m a.s.l. at its mouth to the Wieprz river. The studied area was divided into 21 sites consistent with forest section division, including municipal public park in the Zwierzyniec village (site nr 1 – Table 1; Fig. 2). Within each site every liverwort and moss species were recorded from every substratum type.

Bryophyte nomenclature follows mainly OCHYRA et al. (2003) and KLAMA (2006b). Status of their legal protection in Poland is given after the “Regulation of the Minister of the Environment” from 5<sup>th</sup> January 2012, degree of threat in Poland according to KLAMA (2006a) and ŻARNOWIEC et al. (2004). Mountain species were recognized according to STEBEL (2006) and the relicts of primeval forests according to CIEŚLIŃSKI et al. (1996), STEBEL (2012) and STEBEL & ŻARNOWIEC (2014).

## RESULTS

### GENERAL CHARACTERISATION OF THE BRYOFLOTA IN THE ŚWIERSZCZ RIVER VALLEY

As result of three day field studies the localities of 171 bryophyte taxa (40 taxa of liverworts including two subspecies of *Marchantia polymorpha* and 131 taxa of mosses, with two varieties of *Hypnum cupressiforme*) were stated. They occurred with various frequency; 55 of them (32%) were recorded on 1–2 sites, while others were more widespread (Table 2). Thirteen taxa occurred exclusively in the municipal public park in Zwierzyniec village.

In the list there are 36 taxa new for the region: five liverworts and 31 mosses. Noteworthy is the occurrence of 43 protected (among them 20 strictly pro-

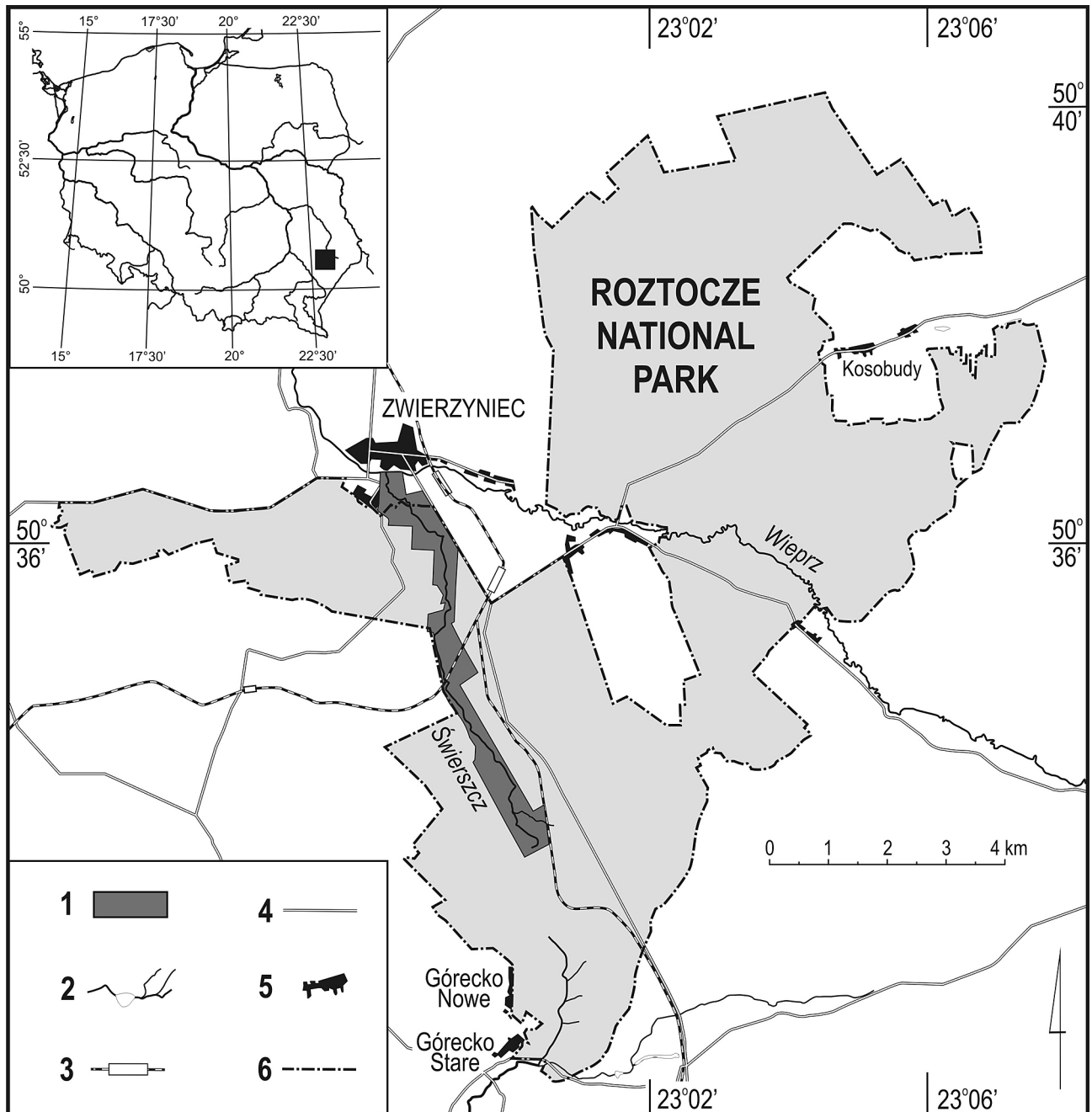


Fig. 1. Localization of the studied area (Świerszcz river valley) in the Roztocze National Park: 1 – study area (Świerszcz river valley); 2 – rivers, streams, ponds; 3 – railways; 4 – main roads; 5 – buildings; 6 – border of the Park

tected) and 13 threatened in Poland bryophyte species (Table 2). Regarding the vertical distribution of all the recorded species and their affinities to higher elevations, most of them represent lowland element whereas 19 can be classified as typical mountain bryophytes. Ten species of bryophytes are considered to be relicts of primeval forests and most of them occurred in no more than three sites (Table 2).

The bryophytes were collected from all available substrata (Table 2) and 69 species (40%) showed visible affiliation to only one substratum type, while 50 species (29%) colonized three different substrata or more (Fig. 3).

#### BRIEF CHARACTERISATION OF THE MOST INTERESTING SPECIES

To the most valuable findings of the workshops belongs a site of the moss species *Campylophyllopsis sommerfeltii* (Myrin) Ochyra which is new for Poland. It has been known earlier under some synonyms: *Campylium hispidulum* auct. eur., *Campylium sommerfeltii* (Myrin) Lange, *Campylium hispidulum* var. *sommerfeltii* (Myrin) Lindb., *Campylophyllum sommerfeltii* (Myrin) Hedenäs, *Campylidium sommerfeltii* (Myrin) Ochyra. In 1962 CRUNDWELL and NYHOLM (1962) revised herbarium specimens identified as *Campylium*

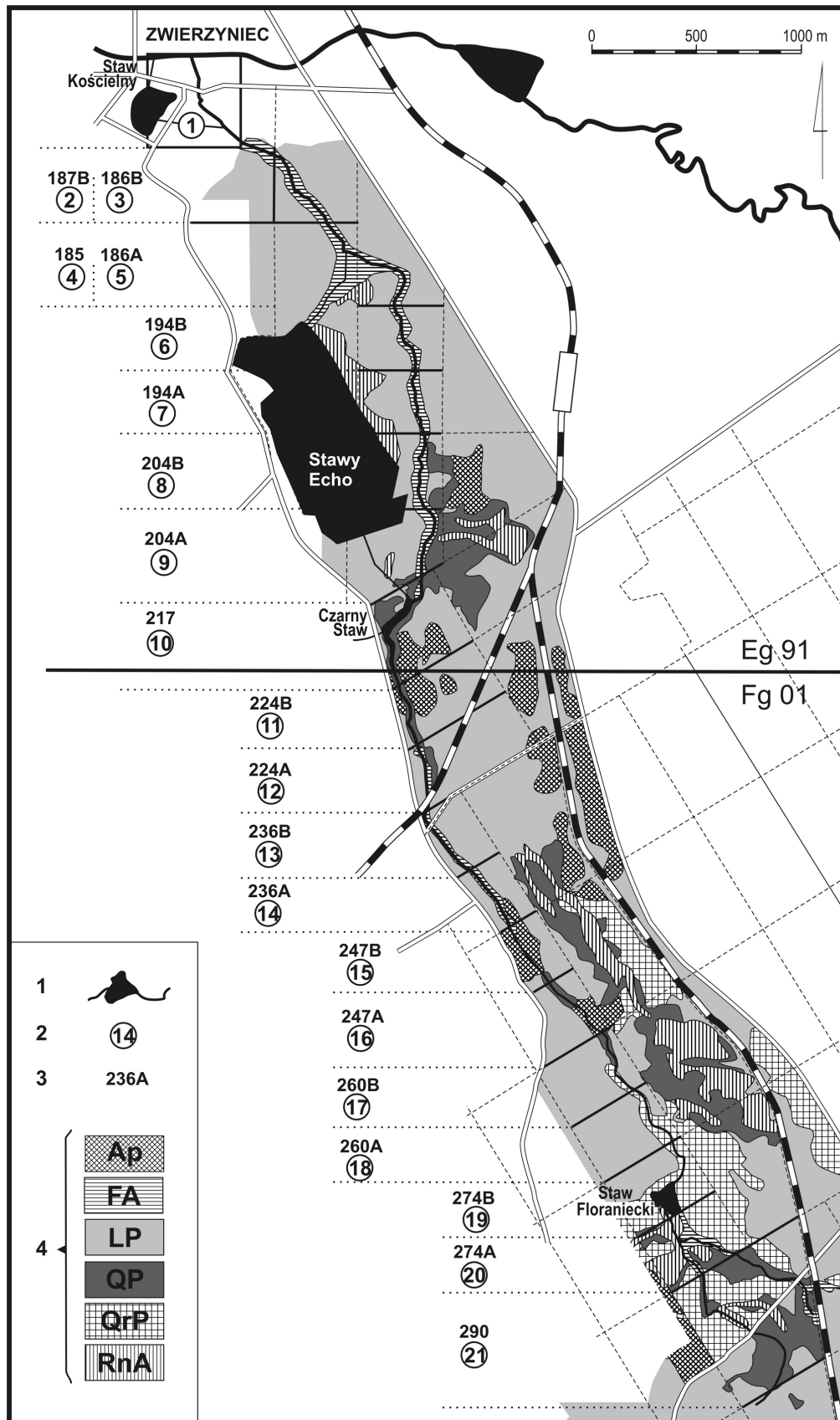


Fig. 2. Arrangement and enumeration of investigated sites on the background of forest communities diversity along the Świerszcz river valley: 1 – rivers, streams, ponds; 2 – enumeration of site; 3 – forest section number; 4 – forest communities type: Ap – *Abietetum polonicum*, FA – *Fraxino-Alnetum*, LP – *Leucobryo-Pinetum*, QP – *Quercus-Piccetum*, QrP – *Quercus roboris-Pinetum*, RnA – *Ribo nigri-Alnetum*; Eg 91, Fg 01 – number of ATMOS grid

Table 1. Enumeration and description of sites

ATMOS square	I	II	III
Eg-91	1	Zwierzyniec	MP
	2	187 B	
	3	186 B	FA, LP
	4	185	
	5	186A	FA, RnA, LP
	6	194 B	FA, LP
	7	194 A	FA, RnA, LP
	8	204 B	
	9	204 A	FA, QP, LP
	10	217	
	11	224 B	QP, Ap, LP
Fg-01	12	224 A	QP, FA, LP
	13	236 B	FA, LP
	14	236 A	FA, Ap, LP
	15	247 B	Ap, QP, LP
	16	247 A	QP, Ap, LP
	17	260 B	QP, QrP
	18	260 A	QrP, LP
	19	274 B	QrP, RnA, LP
	20	274 A	RnA, FA, QP, QrP, LP
	21	290	QP, QrP, RnA, LP

Explanations: I – site number, II – forest section number (A – South, B – North part of the section), III – Forest communities along of the river valley ordered according to the share in the vegetation cover: MP – municipal public park in the Zwierzyniec village, Ap – *Abietetum polonicum*, FA – *Fraxino-Alnetum*, LP – *Leucobryo-Pinetum*, QP – *Quercus-Picetum*, QrP – *Quercus roboris-Pinetum*, RnA – *Ribo nigri-Alnetum*.

*hispidulum* (Brid.) Mitt. collected from Europe and North America and found that they represented three different taxa: *Campyllum sommerfeltii* (Myrin) Lange [= *Campylophyllopsis sommerfeltii* (Myrin) Ochyra], *C. calcareum* Crundw. & Nyh. [= *Campylophyllopsis calcarea* (Crundwell & Nyholm) Ochyra] and *C. his-*

*pidulum* (Brid.) Mitt [= *Campylophyllopsis hispidula* (Brid.) Ochyra]. They also claimed that the latter has not occurred in Europe. *Campyllum hispidulum* (Brid.) Mitt. was reported from Poland by S. Lisowski from the Równina Augustowska Upland (LISOWSKI 1958a) and Bieszczady Mountains (LISOWSKI 1956). To find out the real distribution of *Campyllum sommerfeltii* in Poland there have been revised all herbarium materials gathered in following herbaria: KRAM-B, LUBL, POZG-B and WA. These studies revealed altogether five historical sites of this species in the country (Fig. 4), all noted 30–40 years ago. There is a high probability of misidentification of this species and confusion with more frequent *Campylophyllopsis calcarea* (Crundwell & Nyholm) Ochyra, which has different leaf shape and angular cells.

*Campylophyllopsis sommerfeltii* occurs in North America (HEDENÄS 1997, 2000), Greenland, northern and central Europe, North and East Asia (Syberia) as well as in Mexico (PODPĚRA 1954, NYHOLM 1965). In Europe it has been reported from Scandinavia, Baltic countries and Russia (PODPĚRA 1954); it has also been recorded in some sites in the mountains of Czech Republic (KUČERA & VAŇA 2005). *Campylophyllopsis sommerfeltii* is one of the most rarely noted in Poland representative of the *Amblystegiaceae* family. The species occurs mainly on decaying wood but sometimes colonizes also soil or rocks. In the Świerszcz river valley the species was found in three places (Table 2).

The next valuable finding is *Dicranum viride* (Sull. & Lesq.) Lindb., an epiphytic moss species regarded to be a relic of primeval forests (STEBEL 2012). The species was protected by the Bern Convention since 1978, mentioned in the Annex II of the Habitat Directive in 1992 and strictly protected by law in Poland (REGULATION... 2012). It is also classified as threatened in Europe (V category; SCHUMACKER & MARTINY 1995)

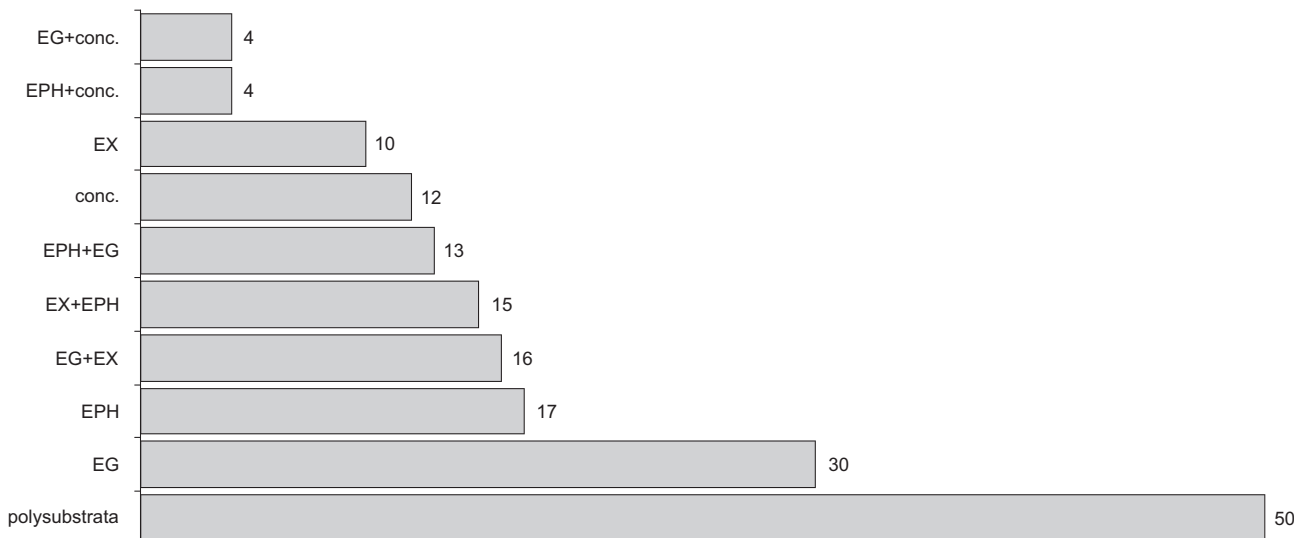


Fig. 3. Bryophyte occurrence on different substratum types (number of species): conc. – species occurring on concrete elements, EG – species occurring on ground, EPH – species occurring on tree trunks, EX – species occurring on logs, polysubstrata – species occurring on three or more substrata

Table 2. Bryophytes of the Świerszcz river valley and details of their occurrence.

Species name	Distinguishing feature	Collecting sites	Habitats and substrata	Authors
<b>LIVERWORTS (MARCHANTIOPHYTA)</b>				
<i>Aneura pinguis</i> (L.) Dumort.		1, 5, 9, 10, 14, 20	A2, A3, B1, B2	AS, BC, EF, GJW, GV, MSK, MW, RZ, SW
<i>Bazzania trilobata</i> (L.) Gray	Pp; R	2, 10–12, 15, 16, 20, 21	A2, A3, B1	AS, BC, BP, EF, GJW, MSK, PG, RZ, TP
<i>Blepharostoma trichophyllum</i> (L.) Dumort.		15, 16, 18–21	A2, B1, B2, C1	BC, BP, EF, GJW, MSK, PG, RZ, TP
<i>Calypogeia azurea</i> Stotler & Crotz	M	9, 17, 19–21	A2, B1, C1	BC, GJW, MSK, RZ
<i>Calypogeia integristipula</i> Steph.		6, 7, 9, 10, 12, 14, 19–21	A2, A3, B1, C1	AS, GJW, MSK, PG, RZ
<i>Calypogeia muelleriana</i> (Schiffn.) Müll. Frib.		1, 6, 16, 21	A3, B1	AS, BP, GJW, PG, TP
<i>Calypogeia suecica</i> (Arnell & J. Perss.) Müll. Frib.	Th; M	17	B1	PG
<i>Cephalozia bicuspidata</i> (L.) Dumort.		8, 9, 6, 15–17, 19–21	B1, C1	AS, BC, BP, EF, GJW, GV, MSK, MW, PG, RZ, SW, TP
<i>Cephalozia catenulata</i> (Huebener) Lindb.	Ps; Th; R	16, 17	B1	BC, PG
<i>Cephalozia commivens</i> (Dicks.) Lindb.		17, 21	A3, B1	BC, PG
<i>Cephalozia lumifolia</i> (Dumort.) Dumort.		16, 17, 21	B1	BC, BP, PG, TP
<i>Chiloscyphus pallescens</i> (Ehrh. ex Hoffm.) Dumort.		2, 3, 10, 14, 21	A2, A3, B1, C1	BC, MSK, PG
<i>Chiloscyphus polyanthos</i> (L.) Corda		1, 4, 20	A2, C1, C2	AS, BC, BP, EF, GJW, GV, MSK, MW, SW, TP
<i>Conocephalum conicum</i> (L.) Dumort.		3, 4, 8, 18, 19, 21	A2, A3	AS, BC, BP, GJW, RZ, TP
<i>Conocephalum salebrosum</i>		14, 19, 21	A2, B2	BC, MSK, RZ
Szweykowski, Buczkowska & Odrzykoski				
<i>Fruillania dilatata</i> (L.) Dumort.		1, 9	B1, C2	AS, BP, RZ, TP
<i>Geocalyx graveolens</i> (Schrad.) Nees	Ps; Th	9, 10–14, 16, 21	A3, B1, B2	GJW, PG, RZ
<i>Jamesoniella autumnalis</i> (DC.) Steph.		14–18, 21	A3, B1, C1	AS, BC, MSK, PG, RZ
<i>Junggermannia leiantha</i> Grolle		7, 10, 14, 15, 17, 19, 21	A3, B1, B2, C1, C2	BC, BP, MSK, PG, RZ, SW, TP
<i>Lejeunea cavifolia</i> (Ehrh.) Lindb.		14, 15–19, 21	C1, C2	BC, BP, MSK, PG, RZ, TP
<i>Lepidozia reptans</i> (L.) Dumort.		2, 3, 5, 6, 8–10, 12–21	A2, A3, B1, B2, C1, C2	AS, BC, BP, EF, GJW, GV, MSK, MW, PG, RZ, SW, TP
<i>Lophocolea bidentata</i> (L.) Dumort.		5, 6, 9, 10, 14, 18, 19–21	A2, A3, B1, C1	AS, BC, EF, GJW, GV, MSK, MW, PG, RZ, SW
<i>Lophocolea heterophylla</i> (Schrad.) Dumort.		2–6, 8–10, 12–14, 16–21	A3, B1, B2, C1, C2	AS, BC, BP, EF, GJW, GV, MSK, MW, PG, RZ, SW, TP
<i>Marchantia polymorpha</i> L. subsp. <i>polymorpha</i>		1, 3, 4, 5, 9, 10, 14, 19,	A2, B1, B2, C1	AS, BC, BP, EF, GJW, GV, MSK, MW, RZ, SW, TP
<i>Marchantia polymorpha</i> L. subsp. <i>ruderalis</i> Bischl. & Boisselier		2, 8, 15, 19	A2, B1	AS, BC, RZ
<i>Metzgeria conjugata</i> Lindb.	Th; M	15, 17, 18, 19	C1, C2	AS, BC, BP, GJW, MSK, SW, TP
<i>Metzgeria furcata</i> (L.) Dumort.		1, 15–19, 21	B1, C1, C2	AS, BC, BP, GJW, MSK, PG, RZ, TP
<i>Nowellia curvifolia</i> (Dicks.) Mitt.	Ps; Th	2, 3, 6, 8–10, 14, 16, 17, 20, 21	B1, B2	AS, BC, BP, EF, GJW, GV, MSK, MW, PG, RZ, SW, TP
<i>Odontschisma denudatum</i> (Mart.) Dumort.	Ps	11, 12	A3, B1	PG, RZ, SW
<i>Pellia endiviifolia</i> (Dicks.) Dumort.		3, 5, 10, 13, 16–19,	A2	BC, GJW, MSK, PG, RZ
<i>Pellia epiphylla</i> (L.) Corda		3, 5, 6, 8, 10, 13–19, 21	A2, A3, B2	AS, BC, BP, EF, GJW, GV, MSK, MW, PG, RZ, SW, TP

Species name	Distinguishing feature	Collecting sites	Habitats and substrata	Authors
<i>Plagiochila asplenoides</i> (L. emend. Taylor) Dumort.	Pp	6, 8–10, 13–21	A2, A3, B1, C1	AS, BC, BP, EF, GJW, GV, MSK, MW, PG, RZ, SW, TP
<i>Plagiochila porelloides</i> (Torrey ex Nees) Lindenb.		3, 4, 5, 10, 13–16, 18–21	A2, A3, B1, C1, C2	AS, BC, BP, GJW, MSK, PG, RZ, TP
<i>Porella platyphylla</i> (L.) Pfeiff.	Th	1	C2	AS, RZ
<i>Ptilidium pulcherrimum</i> (Weber) Vain.		3–6, 8–10, 13–21	B1, C1, C2	AS, BC, BP, EF, GJW, GV, MSK, MW, PG, RZ, SW, TP
<i>Radula complanata</i> (L.) Dumort.		1, 17–19, 21	C1, C2	AS, BC, BP, GJW, MSK, PG, RZ, TP
<i>Riccardia latifrons</i> (Lindb.) Lindb.		5, 8, 10, 13, 14, 17–21	A3, B1, B2	AS, BC, EF, GJW, GV, MSK, MW, PG, RZ, SW
<i>Riccardia palmata</i> (Hedw.) Carruth.		1–3, 6, 8, 9, 13, 18, 19, 21	A2, B1, B2	AS, BC, EF, GJW, GV, MSK, MW, PG, RZ, SW
<i>Riccia fluitans</i> L.		6, 7, 19	W1, A1	AS, BC, GV, SW
<i>Trichocolea tomentella</i> (Ehrh.) Dumort.	Pp	6, 9, 10, 13–16, 21	A2, A3, B1	AS, BC, BP, EF, GJW, MSK, PG, RZ, TP
MOSESSE (BRYOPHYTA)				
<i>Amblystegium juratzkanum</i> Schimp.		3, 5, 7, 12–14, 18, 19, 21	A2, B1, B2	AR, BC, MSK, MWt, SR, SW
<i>Amblystegium serpens</i> (Hedw.) Schimp.		1, 2, 4, 6, 8–10, 12, 14, 17, 19–21	B1, B2, C1, C1, C2, D2	AR, AS, BC, EF, GJW, GV, MSK, MW, MWt, RZ, SR, SW
<i>Anomodon attenuatus</i> (Hedw.) Huebener	Ps; R	18, 19	C1, C2	AR, AS, BC, GJW, MWt, SR, SW
<i>Anomodon viticulosus</i> (Hedw.) Hook. & Taylor	Ps; R	1	C2	RZ
<i>Atrichum undulatum</i> (Hedw.) P. Beauv.		2–6, 8, 9, 13, 17, 18–21	A2, A3, B1, C1	AR, AS, BC, EF, GJW, GV, MSK, MW, MWt, RZ, SR, SW
<i>Aulacomnium androgynum</i> (Hedw.) Schwägr.		21	B1	MW
<i>Aulacomnium palustre</i> (Hedw.) Schwägr.		16, 21	A1, A3, B1	AR, AS, BC, MWt, SR, SW
<i>Barbula convoluta</i> Hedw.	Pp	16, 19	A2	AR, BC, BP, EF, GJW, MWt, SR, TP
<i>Barbula unguiculata</i> Hedw.		10, 19	A2, D1	AS, BP, GJW, TP
<i>Brachythecium velutinum</i> (Hedw.) Ignatov & Huttunen		1, 16, 18–21	A2, B1, C1, C2	AR, AS, BC, EF, GJW, MSK, MWt, RZ, SR, SW
<i>Brachythecium albicans</i> (Hedw.) Schimp.		8, 19	A2	EF, GJW
<i>Brachythecium rivulare</i> Schimp.		2–10, 12–16, 21	W1, A2, A3, B1, B2	AR, AS, BC, BP, EF, GJW, GV, MSK, MW, MWt, SR, SW, TP
<i>Brachythecium rutabulum</i> (Hedw.) Schimp.		1–5, 9, 17–19, 21	A2, A3, B1, B2, C1, C2	AR, AS, BC, EF, GJW, GV, MSK, MW, MWt, SR, SW
<i>Brachythecium salebrosum</i> (Hoffm. ex F. Weber & D. Mohr) Schimp.		2, 3, 6, 7, 9, 10, 12, 14, 16, 17–21	B1, C1	AR, AS, BC, EF, GJW, MSK, MW, MWt, SR, SW
<i>Bryoerythrophyllum recurvirostrum</i> (Hedw.) P.C. Chen		1	D2	AS
<i>Bryum argenteum</i> Hedw.		12, 19, 21	A2, D2	AS, BC, GJW, MSK, SW
<i>Bryum caespiticium</i> Hedw.		12, 19	A2, D2	AS, GJW
<i>Bryum pseudotriquetrum</i> (Hedw.) P. Gaertn.		1–4, 6–9, 17, 19, 21	A1, A3, B2, D2	AS, BC, BP, EF, GJW, GV, MSK, MW, SW, TP
<i>Bryum rubens</i> Mitt.		21	A2	MSK
<i>Buckella undulata</i> (Hedw.) Ireland	Pp; M	12	A3	EF
<i>Buxbaumia viridis</i> (Mong. ex Lam. & DC.) Brid. ex Mong. & Nestl.	Ps; Th; M; R	21	B1	BC

Species name	Distinguishing feature	Collecting sites	Habitats and substrata	Authors
<i>Callicladium haldanianum</i> (Grev.) H.A. Crum		2-4, 7, 8, 19-21	A2, B1, C1	AR, AS, BP, GJW, MSK, MW, MWt, SR, SW, TP
<i>Calliergon cordifolium</i> (Hedw.) Kindb.		3, 6, 7, 9, 10, 13, 14, 21	W1, A1, A2, A3	AR, AS, BC, BP, EF, GJW, MSK, MW, MWt, SR, SW, TP
<i>Calliergonella cuspidata</i> (Hedw.) Loeske	Pp	2-10, 12-14, 20, 21	W1, A1, A2, A3, B1, B2, D2	AR, AS, BC, BP, EF, GJW, GV, MSK, MW, MWt, SR, SW, TP
<b><i>Campylophyllopsis sommerfeltii</i> (Myrin) Ochyra</b>		13, 14, 16, 17, 18	B1, B2	AR, AS, MWt, SR
<i>Ceratodon purpureus</i> (Hedw.) Brid.		1, 8, 18-21	A2, B1, D2	AR, AS, BC, MWt, SR
<i>Cirriophyllum piliferum</i> (Hedw.) Grout		1, 3, 4, 5, 9	A2, A3	AS, BC, BP, EF, GJW, GV, MSK, MW, SW, TP
<i>Climacium dendroides</i> (Hedw.) F. Weber & D. Mohr	Pp	2-7, 9, 10, 19, 21	A1, A2, A3, B1, B2, C1	AS, BC, EF, GJW, GV, MSK, MW, MWt, RZ, SW
<i>Cratoneuron filicinum</i> (Hedw.) Spruce		3, 6-10, 12-15, 21	A1, A3, B2	AR, AS, BC, BP, EF, GJW, GV, MSK, MW, MWt, SR, SW, TP
<i>Dicranella cerviculata</i> (Hedw.) Schimp.		19, 20	A2	BP, EF, SW, TP
<i>Dicranella heteromalla</i> (Hedw.) Schimp.		2-8, 10, 13, 16, 17, 18-21	A2, A3, B1, C1	AR, AS, BC, BP, EF, GJW, GV, MSK, MW, MWt, RZ, SR, SW, TP
<i>Dicranodontium denudatum</i> (Brid.) E. Britton	M	1, 2, 9, 10, 15, 16, 20, 21	A3, B1, B2	AR, AS, BC, BP, EF, GJW, GV, MSK, MW, MWt, RZ, SR, SW, TP
<i>Dicranum polysetum</i> Sw. ex anon.	Pp	2, 3, 7, 11-15, 17, 19-21	A2, A3	AR, AS, BC, BP, EF, GJW, MSK, MWt, RZ, SR, SW, TP
<i>Dicranum scoparium</i> Hedw.	Pp	2-4, 6-21	A2, A3, B1, C1, C2	AR, AS, BC, EF, GJW, GV, MSK, MW, MWt, RZ, SR, SW
<i>Dicranum viride</i> (Sull. & Lesq.) Lindb.	Ps; Th; R; M	3, 17, 19, 21	B1, C2	AR, AS, MSK, MWt, SR
<b><i>Didymodon rigidulus</i> Hedw.</b>		10, 12, 20	D2	AS, BC, BP, MSK, MW, SW, TP
<b><i>Ditrichum pallidum</i> (Hedw.) Hampe</b>		19	A2	EF
<i>Drepanocladus aduncus</i> (Hedw.) Warnst.		6, 8, 19	W1, A1, B2	AS, BC, EF, GJW, GV, MSK, MW, SW
<i>Eurhynchium angustirete</i> (Broth.) T.J. Kop.	Pp	4-6, 8, 10-12, 14-21	A2, A3, B1, C1	AR, AS, BC, BP, EF, GJW, GV, MSK, MW, MWt, RZ, SR, SW, TP
<i>Fissidens adianthoides</i> Hedw.		6, 17-19, 21	A2, A3, B2, C1, D2	AR, AS, BC, BP, EF, GJW, GV, MSK, MW, MWt, RZ, SR, SW, TP
<i>Fissidens taxifolius</i> Hedw.		17-19	A3	GJW
<b><i>Funaria hygrometrica</i> Hedw.</b>		19-21	A2	AR, BP, EF, GJW, MSK, MWt, SR, SW, TP
<i>Herzogiella seligeri</i> (Brid.) Z. Iwats.		2, 3, 5, 6, 9, 10, 13, 15-21	A2, A3, B1, C1	AR, AS, BC, BP, EF, GJW, GV, MSK, MW, MWt, RZ, SR, SW, TP
<i>Homalia trichomanoides</i> (Hedw.) Schimp.	Ps; R	18-20	B1, C1, C2	AR, AS, BC, BP, MSK, MW, MWt, RZ, SR, SW, TP
<i>Homalothecium sericeum</i> (Hedw.) Schimp.		1, 10	C2, D2	AS, EF
<b><i>Hygrohypnum luridum</i> (Hedw.) Jenn.</b>	M	1, 10, 12	D2	AS, BC, SW
<i>Hylcomitadelphus triquetrus</i> (Hedw.) Ochyra & Stebel	Pp	3, 5, 6, 8, 10, 21	A2, A3, B1	AS, BC, BP, EF, GJW, GV, MSK, MW, SW, TP
<i>Hylcomitium splendens</i> (Hedw.) Schimp.	Pp	2-7, 11, 12, 14, 17-21	A2, A3, B1	AR, AS, BC, EF, GJW, GV, MSK, MW, MWt, RZ, SR, SW
<i>Hypnum cupressiforme</i> var. <i>cupressiforme</i> Hedw.		1-13, 15-21	A3, B1, C1, C2, D2	AR, AS, BC, BP, EF, GJW, GV, MSK, MW, MWt, RZ, SR, SW, TP
<i>Hypnum cupressiforme</i> Hedw. var. <i>filiforme</i> Brid.		3, 8, 17-21	C1, C2	AS, BC, EF, GJW, GV, MSK, MW, SW



Species name	Distinguishing feature	Collecting sites	Habitats and substrata	Authors
<i>Hypnum lindbergii</i> Mitt.	M	12	D2	AS
<i>Hypnum pallens</i> (Hedw.) P. Beauv.	M	2-7, 13, 18, 20, 21	A3, B1, C1, C2	AR, AS, BC, BP, EF, GJW, GV, MSK, MW, MWt, SR, SW, TP
<i>Isoetecium alopecuroides</i> (Lam. ex Dubois) Isov.		2, 3, 4, 9, 10, 15-21	B1, C1, C2	AR, AS, BC, BP, EF, GJW, GV, MSK, MW, MWt, RZ, SR, SW, TP
<i>Kindbergia praelonga</i> (Hedw.) Ochyra		19	A2	SW
<i>Leptobryum pyriforme</i> (Hedw.) Wilson		1, 6, 14, 19	A2	AR, AS, MWt, SR
<i>Leptodictyum riparium</i> (Hedw.) Warnst.		1, 6, 19	A1, A2, B2	AS, BC, BP, EF, GJW, GV, MSK, MW, SW, TP
<i>Leskea polycarpa</i> Hedw.		1	C1, C2	AS, RZ
<i>Leskeella nervosa</i> (Brid.) Loeske	M	1, 18	B1, C1, C2	AR, AS, MWt, SR
<i>Leucobryum glaucum</i> (Hedw.) Ångstr.	Pp	2-7, 10-13, 15-17, 19-21	A2, A3	AR, AS, BC, BP, EF, GJW, GV, MSK, MW, MWt, RZ, SR, SW, TP
<i>Leucodon sciuroides</i> (Hedw.) Schwägr.		1	C1, C2	AS, RZ
<i>Mnium hornum</i> Hedw.		3-10, 12, 15, 16, 20, 21	A2, A3, B1, B2, C1	AR, AS, BC, BP, EF, GJW, GV, MSK, MW, MWt, SR, SW, TP
<i>Mnium stellare</i> Reichard ex Hedw.	M	19	D2	SW
<i>Neckera complanata</i> (Hedw.) Huebener	Ps; R	18-20	B1, C1, C2	AR, AS, BP, MSK, MWt, SR, SW, TP
<i>Neckera pennata</i> Hedw.	Ps; Th; R	19	C2	AS
<i>Nyholmella obtusifolia</i> (Brid.) Holmen & Wärncke		1	C2	AS, RZ
<i>Orthodicranum flagellare</i> (Hedw.) Loeske		2, 3, 7, 19, 21	B1, C1, C2	AS, BC, BP, EF, GJW, GV, MSK, MW, SW, TP
<i>Orthodicranum montanum</i> (Hedw.) Loeske		1-10, 12-21	A2, A3, B1, C1, C2	AR, AS, BC, BP, EF, GJW, GV, MSK, MW, MWt, RZ, SR, SW, TP
<i>Orthodicranum tauricum</i> (Sapjegin) Smirnova		3, 15, 17, 18	B1, C1, C2	AR, BC, GJW, MWt, SR, SW
<i>Orthotheciella varia</i> (Hedw.) Ochyra		4, 12, 13, 21	B2	AR, AS, MWt, SR
<i>Orthotrichum affine</i> Schrad. ex Brid.		1	C2	AS, RZ
<i>Orthotrichum anomalum</i> Hedw.		1, 10, 12	D2	AS, BC, EF, SW
<i>Orthotrichum diaphanum</i> Schrad. ex Brid.		19	D2	SW
<i>Orthotrichum lyellii</i> Hook. & Taylor	Ps; Th	1	C2	AS, RZ
<i>Orthotrichum pumilum</i> Sw. ex anon.		1	C2	AS
<i>Orthotrichum spectosum</i> Nees		1, 17	C2, D2	AS, RZ, SW
<i>Oxyrrhynchium hians</i> (Hedw.) Loeske		1-4, 6, 15, 17-19, 21	A2, A3, B1, D2	AR, AS, BC, EF, GJW, GV, MSK, MW, MWt, SR, SW
<i>Plagiomnium affine</i> (Blandow ex Funck) T.J. Kop.		3-6, 8-10, 12-21	A2, A3, B1, B2, C1	AR, AS, BC, EF, GJW, GV, MSK, MW, MWt, RZ, SR, SW
<i>Plagiomnium cuspidatum</i> (Hedw.) T.J. Kop.		1-3, 5, 17-21	A2, A3, B1, C1, C2, D2	AR, AS, BC, GJW, MSK, MWt, RZ, SR, SW
<i>Plagiomnium elatum</i> (Bruch & Schimp.) T.J. Kop.		3, 20, 21	W1, A2, A3	AR, BP, MWt, SR, SW, TP
<i>Plagiomnium ellipticum</i> (Brid.) T.J. Kop.		21	W1, A2, B1	AR, BC, MWt, SR
<i>Plagiomnium rostratum</i> (Schrad.) T.J. Kop.		2, 21	A3	BC, MW
<i>Plagiomnium undulatum</i> (Hedw.) T.J. Kop.		1, 3-6, 8-10, 14-21	A2, A3, B1, C1, C2	AR, AS, BC, BP, EF, GJW, GV, MSK, MW, MWt, SR, SW, TP
<i>Plagiothecium cavifolium</i> (Brid.) Z. Iwats.		21	B1	GJW

Species name	Distinguishing feature	Collecting sites	Habitats and substrata	Authors
<i>Plagiothecium curvifolium</i> Schlieph. ex Limpr.		2, 3, 6-10, 15, 17-21	A2, A3, B1, C1, C2	AR, AS, BC, EF, GJW, MSK, MWt, SR, SW
<i>Plagiothecium denticulatum</i> (Hedw.) Schimp.		2, 3, 18-21	A2, A3, B1, C1, C2	AR, AS, BC, BP, GJW, MSK, MW, MWt, SR, SW, TP
<i>Plagiothecium laetum</i> Schimp.		2, 5-9, 15, 16, 18-21	A2, A3, B1, C1, C2	AR, GJW, MSK, MWt, SR, SW
<i>Plagiothecium nemorale</i> (Mitt.) A. Jaeger		1, 3, 4, 6, 9, 16-21	A2, A3, B1, C1, C2	AR, AS, BC, BP, EF, GJW, MSK, MW, MWt, SR, TP
<b><i>Plagiothecium ruthae</i> Limpr.</b>		4, 5, 6, 9, 10, 20	A1, A2, A3, B1	BC, BP, EF, MSK, MW, SW, TP
<i>Plagiothecium succulentum</i> (Wilson) Lindb.	M	18	C1	BC
<i>Platygyrium repens</i> (Brid.) Schimp.		1-6, 8-10, 12, 15, 17-21	B1, B2, C1, C2	AR, AS, BC, BP, EF, GJW, GV, MSK, MW, MWt, RZ, SR, SW, TP
<i>Pleurozium schreberi</i> (Willd. ex Brid.) Mitt.	Pp	2-8, 10-21	A2, A3, B1	AR, AS, BC, EF, GJW, GV, MSK, MW, MWt, RZ, SR, SW
<i>Pohlia nutans</i> (Hedw.) Lindb.		3, 4, 5, 7, 10, 15-21	A2, A3, B1, C1	AS, BC, EF, GJW, GV, MSK, MW, RZ, SW
<b><i>Pohlia wahlenbergii</i> (F. Weber &amp; D. Mohr) A.L. Andrews</b>		15	A2	SW
<i>Polytrichastrum formosum</i> (Hedw.) G.L. Sm.		2-21	A2, A3, B1, C1	AR, AS, BC, EF, GJW, GV, MSK, MW, MWt, RZ, SR, SW
<b><i>Polytrichastrum longisetum</i> (Sw. ex Brid.) G.L. Sm.</b>		9, 16-19	A2, A3	AR, BP, MW, MWt, SR, TP
<i>Polytrichum commune</i> Hedw.		1, 2, 9, 10, 12, 13, 15, 16, 20, 21	A1, A2, A3	AR, AS, EF, GJW, MSK, MWt, RZ, SR, SW
<i>Polytrichum juniperinum</i> Hedw.		19, 20, 21	A2, B1	GJW, SW
<i>Pseudoscleropodium purum</i> (Hedw.) M. Fleisch. ex Broth.	Pp	5, 6	A2, A3	AS, BC, BP, EF, GJW, GV, MSK, MW, SW, TP
<i>Pterigynandrum filiforme</i> Hedw.	M	1, 20	B1, C2	AS, RZ, SW
<i>Ptilium crista-castrensis</i> (Hedw.) De Not.	Pp	2, 3, 6, 7, 10, 12, 17, 19, 20, 21	A2, A3, B1, B2	AR, AS, BC, BP, EF, GJW, GV, MSK, MW, MWt, SR, SW, TP
<i>Pylaisia polyantha</i> (Hedw.) Schimp.		1, 12, 10	C2, D2	AS, EF, RZ
<i>Rhizomnium punctatum</i> (Hedw.) T.J. Kop.		2-10, 12-21	A1, A2, A3, B1, B2, C1, D2	AR, AS, BC, BP, EF, GJW, GV, MSK, MW, MWt, RZ, SR, SW, TP
<i>Rhodobryum roseum</i> (Hedw.) Limpr.		2, 6, 8, 20, 21	A1, A2, A3, B1	AR, AS, BC, EF, GJW, GV, MSK, MW, MWt, SR, SW
<i>Rhynchostegium murale</i> (Hedw.) Schimp.		10, 20	D2	BC, EF, SW
<i>Rhytidiadelphus squarrosus</i> (Hedw.) Warnst.	Pp	2, 3, 5, 7, 8, 20, 21	A2, A3, B1	AS, BC, EF, GJW, GV, MSK, MW, SW
<b><i>Rhytidiadelphus subpinnatus</i> (Lindb.) T.J. Kop.</b>	M	21	A2, A3	AR, AS, BC, BP, MWt, SR, TP
<i>Rosulabryum capillare</i> (Hedw.) J.R. Spence		2, 17, 18, 21	B1, C2	AR, BC, MWt, SR
<i>Rosulabryum moravicum</i> (Podp.) Ochyra & Stebel		1, 3-5, 12, 14-17, 19, 20	B1, C1, C2, D2	AR, AS, BC, MSK, MWt, RZ, SR
<i>Santonia uncinata</i> (Hedw.) Loeske	M	2, 4, 5, 17-19, 21	A2, A3, B1	AR, AS, BC, EF, GJW, GV, MSK, MW, MWt, RZ, SR, SW
<b><i>Schistidium crassipilum</i> H.H. Blom</b>		1, 12	D2	AS
<i>Sciuro-hypnum oedipodium</i> (Mitt.) Ignatov & Huttunen		2, 3, 5, 7, 16, 21	A2, A3	AR, AS, BC, BP, MWt, SR, SW, TP
<i>Sciuro-hypnum reflexum</i> (Starke) Ignatov & Huttunen	M	21	A2, B1	EF, SW

Species name	Distinguishing feature	Collecting sites	Habitats and substrata	Authors
<i>Sphagnum capillifolium</i> (Ehrh.) Hedw.	Ps	1, 2, 7, 16, 20, 21	A1, A2, A3	AR, AS, BC, BP, EF, GJW, MSK, MW, MWt, SR, SW, TP
<i>Sphagnum fallax</i> (H. Klinggr.) H. Klinggr.	Pp	12–15, 17, 21	A1, A3	AR, AS, MW, MWt, SR, SW
<i>Sphagnum fimbriatum</i> Wilson	Ps	10, 13, 16, 21	A1, A2, A3	AR, AS, BP, MWt, SR, SW, TP, xxx
<i>Sphagnum gigensohnii</i> Russow	Ps; M	6, 10, 12, 15, 20, 21	A2, A3	AR, BC, BP, MSK, MW, MWt, SR, SW, TP
<i>Sphagnum palustre</i> L.	Ps	5, 6, 8–10, 12, 14–17, 21	A1, A2, A3, B1	AR, AS, BC, BP, EF, GJW, GV, MSK, MW, MWt, SR, SW, TP
<i>Sphagnum russowii</i> Warnst.	Ps; M	2, 12, 15, 20, 21	A2, A3	AR, GJW, MW, MWt, SR, SW
<i>Sphagnum squarrosum</i> Crome	Pp	2, 4–6, 10, 12, 16, 21	A1, A2, A3	AR, AS, BC, EF, GJW, GV, MSK, MW, MWt, RZ, SR, SW
<i>Straminogon stramineum</i> (Dicks. ex Brid.) Hedenäs		21	A1	SW
<i>Syntrichia papillosa</i> (Wilson) Jur.	Ps; Th	1	D2	AS
<i>Syntrichia ruralis</i> (Hedw.) F. Weber & D. Mohr		1	D2	AS
<i>Syntrichia virescens</i> (De Not.) Ochyra	Ps; Th	1	C1, C2, D2	AS, RZ
<i>Tetraphis pellucidata</i> Hedw.		2–6, 8–21	A3, B1, C1, C2	AR, AS, BC, BP, EF, GJW, GV, MSK, MW, MWt, RZ, SR, SW, TP
<i>Thuidium delicatulum</i> (Hedw.) Schimp.	Pp	21	C1	MSK
<i>Thuidium philibertii</i> Limpr.	Pp	14	D2	AS
<i>Thuidium recognitum</i> (Hedw.) Lindb.	Pp	20	B1	GJW
<i>Thuidium tamariscinum</i> (Hedw.) Schimp.	Pp	3–21	A1, A2, A3, B1, B2, C1	AR, AS, BC, BP, EF, GJW, GV, MSK, MW, MWt, RZ, SR, SW, TP
<i>Tortula muralis</i> Hedw.		1, 10, 12, 19	A1, D2	AS, BP, EF, SW, TP
<i>Tortula truncata</i> (Hedw.) Mitt.		2, 4	A2	BC, BP, TP
<i>Ulota crispa</i> (Hedw.) Brid.	Ps; Th; R	18, 20	C2	AR, AS, MWt, SR, SW

Explanations: **Species name** – taxa new for RPN are marked in bold; **distinguishing features**: M – mountain species, Pp – species partly protected in Poland; Ps – species strictly protected in Poland; Th – species threatened in Poland, R – old-growth forests relicts; **collecting sites** – according to Table 1; **habitats and substrata**: W – aquatic (W1 – mineral springs, W2 – in water of ponds and river), A – terrestrial (A1 – wet soil, A2 – fresh to dry soil, A3 – humus), B – epixylic (B1 – logs and stumps on ground, B2 – logs and stumps in water), C – epiphytic (C1 – base of trees, C2 – trunk of trees), D – epilithic (D1 – stones beside a river, D2 – anthropogenic concrete elements); **authors**: AR – A. Rusińska, AS – A. Stebel, BC – B. Cykowska, BP – B. Piwowarski, EF – E. Fudali, GJW – G.J. Wolski, GV – G. Voncina, MSK – M. Staniaszek-Kik, MW – M. Wilhelm, MWt – M. Wojterska, PG – P. Górski, RZ – R. Zubeł, SR – S. Rosadziński, SW – S. Wierzcholska, TP – T. Paciorek.

and in Poland (R category; ŻARNOWIEC et al. 2004). It is scattered within the whole area of our country but most of sites were known from the Carpathians (STEBEL et al. 2011). Recently numerous new sites have been also reported from other regions of Poland: Chełmińsko-Dobrzyńskie Lakeland, Lower Silesia, Woźnicko-Wieluńska Upland, Krakowsko-Częstochowska Upland (STEBEL et al. 2008), Opawskie Mountains (STEBEL 2008), Wysoczyzna Polanowska in Western Pomerania (RUSIŃSKA et al. 2010), Mazury Lakeland (SAWICKI 2010), Lublin region (ARMA-

TA 2012), Suwałki Lakeland (Wigry National Park – WIERZCHOLSKA et al. 2010) and from Świętokrzyskie Mountains (STEBEL et al. 2013).

These reports arise a question whether the species is actually spreading, what is suggested by ARMATA (2012), or nowadays researchers are searching more carefully in the field. The first suggestion seems to be very probable, since in the majority of new sites it occurs in the form of small and young cushions, almost always sterile (STEBEL et al. 2011). *Dicranum viride* was reported from the Roztocze region, from

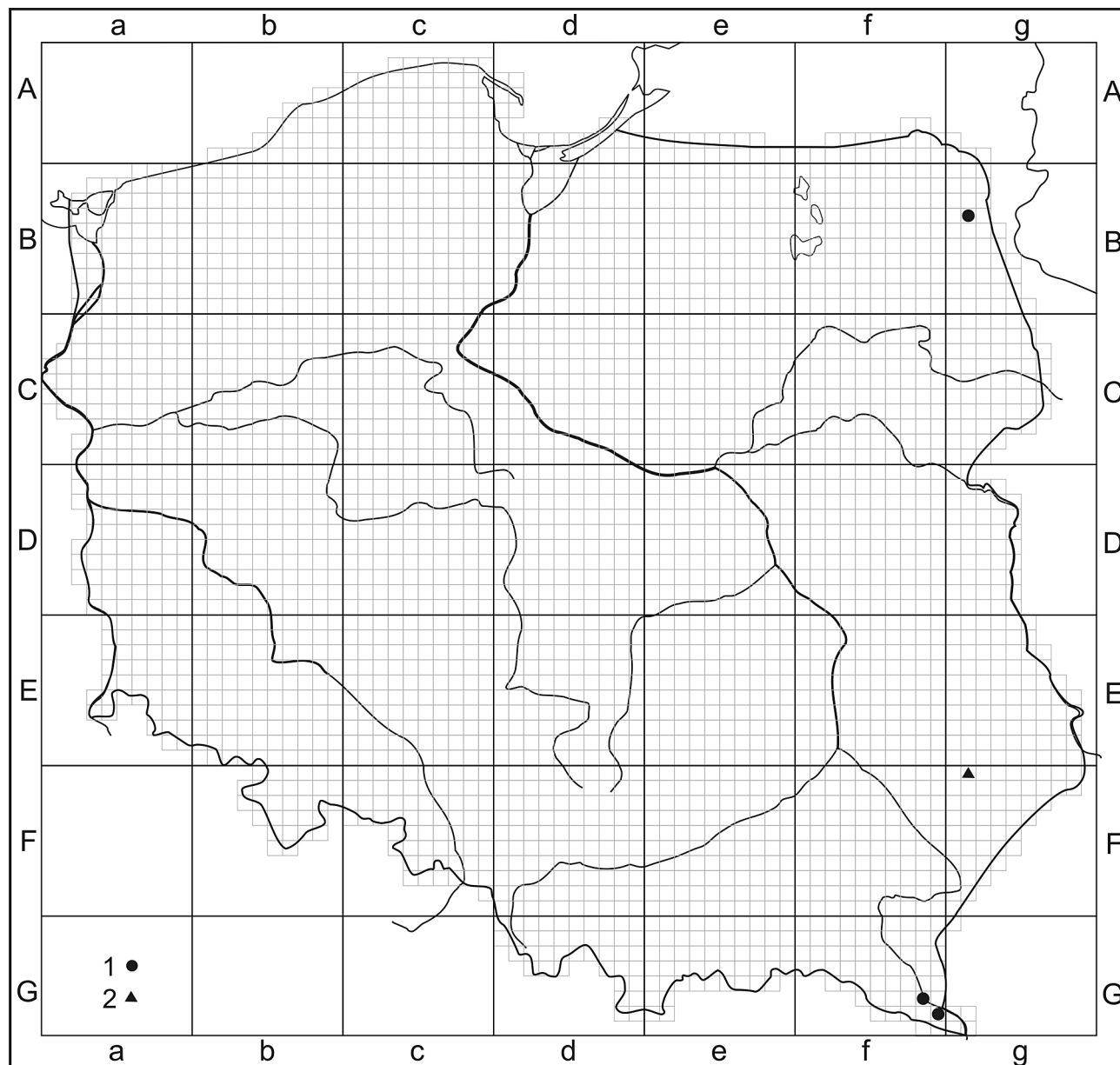


Fig. 4. Distribution of *Campylophyllopsis sommerfeltii* (Myrin) Ochyra in Poland: 1 – historical sites, 2 – new site in the Świerszcz river valley

Description of historical sites: RÓWNINA AUGUSTOWSKA UPLAND, ATMOS Ba-31, Puszcza Augustowska Primeval Forest, Płaska Forest Inspectorate, forest section 31, „Starożyn” nature reserve, decayed wood in wet alder forest, leg. S. Lisowski, 30.10.1958 (POZG-B 12835, 12836), rev. A. Rusińska; BIESZCZADY ZACHODNIE, ATMOS Gf-58, southern slope of the Smrek mountain, decayed log of *Fagus sylvatica*, leg. S. Lisowski, 1.09.1954 (POZG-B 12837), rev. A. Rusińska; ATMOS Gf-69, Ustrzyki Górne (680 m a.s.l.), decayed wood, leg. S. Lisowski, 8.09.1955 (POZG-B 12838), rev. A. Rusińska; slope of Połonina Caryńska, decayed wood, leg. S. Lisowski, 8.07.1960 (POZG-B 12839), rev. A. Rusińska; below Terebowiec mountain, stone in beech forest, leg. R. Ochyra, 18.08.1972 (KRAM-B 28492, LUBL), rev. A. Rusińska.

two sites: Hrebenne village and Kamienna Góra near Zwierzyniec village (LISOWSKI 1958b).

Noteworthy is also a new site of *Buxbaumia viridis* (Moug. ex Lam. & DC.) Brid. ex Moug. & Nestl., the epixylic moss species classified as threatened in Europe (V category; SCHUMACKER & MARTINY 1995) and Poland (E category; ŻARNOWIEC et al. 2004). Since many historical European sites of *Buxbaumia viridis* have disappeared in the last decades of the 20th century the species became protected by international law (Annex I of the Bern Convention in 1978 and Annex II of the Habitat Directive in 1992). It is also strictly protected in Poland (REGULATION... 2012).

*Buxbaumia viridis* was reported from singular localities from the whole area of the country but the majority of them were situated in the southern part of Poland, in the mountains (SZMAJDA et al. 1991). In the last decade a visible increase of reports on *Buxbaumia viridis*, both concerning new sites and confirming historical ones, was observed in various regions of Poland (PHILIPPE & OCHYRA 2004, CYKOWSKA 2008, HAJEK 2008, SMOCZYK & WIERZCHOLSKA 2008, VONČINA 2008, CHACHUŁA & VONČINA 2010, HAJEK 2010, CYKOWSKA & VONČINA 2011, VONČINA et al. 2011, KOZIK & VONČINA 2012, VONČINA & CHACHUŁA 2012, ZARZECKI 2012). The species colonizes mainly decayed logs of spruce and silver fir and sporadically humus. *Buxbaumia viridis* has been reported from Roztocze region from four sites (KUC 1963, 1964, KARCZMARZ 1965, BLOCH & KARCZMARZ 1973) in mixed forests with silver fir, colonizing logs or humus. New site is localized in an oak-spruce forest *Quercus-Piceetum* at 252 m a.s.l. on decayed spruce log, lying in the waters of the Świerszcz river. Similarly to the case of previous species, it seems that the recent increase of the number of *Buxbaumia viridis* sites may be an effect of the increase of researchers' interest.

Among liverworts the most valuable is a finding of mountain species *Calypogeia suecica* (Arnell et J. Perss.) Müll. Frib. never reported earlier from the Roztocze region. In Poland the distribution centre of that species is situated in the Carpathians, especially in the Tatra Mountains where there are known about 100 sites at elevations between 800 and 1750 m a.s.l. (SCHIFFNER 1911, SZWEYKOWSKI 1960, ŠMARDA 1961, GÓRSKI – unpubl.). It occupies logs in spruce forests. The species occurs quite frequently also in the Bieszczady Mountains, where it was found in sites situated at lower altitudes (560–1000 m a.s.l.) (SZWEYKOWSKI & BUCZKOWSKA 1996). In the Świerszcz river valley *Calypogeia suecica* was observed at the altitude of 252 m a.s.l.

Noteworthy is also the finding of liverwort *Cephalozia catenulata* (Huebener) Lindb. regarded to be a rare relict species of primeval forests (CIEŚLIŃSKI et al. 1996), which colonizes decayed wood and sometimes peat. Similarly to the previous species it is classified as threatened in Poland (KLAMA 2006b). The

species has been known both from the northern Poland and all the mountain ranges situated in southern part of the country (SZWEYKOWSKI 1953, 1958, 1961, 2006; KLAMA 2002, 2004). Recently it has been reported from the Puszcza Borecka forests (GÓRSKI & PAWLIKOWSKI 2014), Puszcza Augustowska forests (GÓRSKI & PAWLIKOWSKI, unpubl.), Western Pomerania (GÓRSKI 2013) and Tatra Mountains (KLAMA 2008). In the latter area *Cephalozia catenulata* was recorded on 17 localities situated at elevations between 860–1300 m a.s.l., according to the literature and unpublished data collected by P. Górski. The site in the Świerszcz river valley is the second one known from the Roztocze National Park (ZUBEL & MACIEJEWSKI 2011).

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