

## NEW RECORDS OF PYRENOCARPOUS CRUSTOSE LICHENS IN THE POLISH TATRA MTS AND SURROUNDINGS

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**Abstract.** The paper is one of a series of reports from a lichenological survey of Tatra National Park and vicinity focused on the lichen diversity of various land-use types such as pasture, grassland, wet open habitat and forest. It presents records of 29 pyrenocarpous crustose lichens, of which one is reported for the first time from the Polish Carpathians (*Thelidium athellinum* Servit) and six for the first time from the Polish Tatra Mts [*Staurothele hymenogonia* (Nyl.) Th. Fr., *Thelidium minutulum* Körb., *T. zahlbrucknerii* Servit, *Verrucaria macrostoma* Dufour ex DC., *V. nigroumbrina* Servit, *V. obfuscans* (Nyl.) Nyl.]. The distribution of all species and the taxonomy of selected taxa are discussed.

**Key words:** lichenized fungi, Carpathians, distribution

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### INTRODUCTION

Although pyrenocarpous crustose lichens are considered one of the most difficult to study they have attracted the attention of contemporary lichenologists. Recent important additions to our knowledge of this group include a critical revision of saxicolous freshwater *Verrucaria* Schrad. species (Thüs 2002), a revision of calcicolous species of *Bagliettoa* A. Massal. (Halda 2003), a revision of the *Verrucaria fuscella* group (Orange 2004) and a synopsis of the genus *Placopyrenium* Breuss (Breuss 2009). Molecular studies have resolved a number of taxonomic problems and brought new insight into the phylogeny of *Verrucariales* (Gueidan *et al.* 2007, 2009; Navarro-Rosinés *et al.* 2007; Savić & Tibell 2008; Muggia *et al.* 2009). Recent regional contributions have appeared as well (e.g., Krzewicka 2009a, b; Pykälä 2011; Pykälä *et al.* 2012). The systematics and particularly the biogeography of this group of lichens seems far from complete.

Despite intensive investigations in the Polish Tatra Mts in the last decade (for brief overview of references see Śliwa & Kukwa 2012), the lichen biota of this mountain range is still insufficiently known, and new studies continue to add

new and interesting records (Czarnota 2012; Śliwa & Kukwa 2012). Pyrenocarpous lichens have drawn little interest from lichenologists and are especially poorly known in the area; only historical records are available for many species (e.g., Motyka 1924, 1926, 1927). In recent times one of the works giving many new and noteworthy records of pyrenocarpous lichens for the Polish Tatras is a comprehensive treatment of *Verrucaria* s.l. in Poland (Krzewicka 2012).

In 2004 we made a lichenological survey in the Polish Tatra Mts and the Rów Podtrzański trough (the Sub-Tatra Trough) in order to assess lichen diversity in areas under various types of land use, such as pastures, grasslands, wet open habitats (fens, bogs) and forests. The survey yielded a large and diverse lichen collection which became a source of records that are new or otherwise remarkable. Based on this material, 39 new regional records have been reported previously (Śliwa 2006a; Śliwa & Kukwa 2008, 2012). Here we present 29 more lichen records, one of which is the first record for the Polish Carpathians and six of which are first records for the Polish Tatras.

## MATERIALS AND METHODS

The study is based on material collected in the summer of 2004 for the LACOPE project (Landscape Development, Biodiversity and Co-operative Livestock Systems in Europe). We used biodiversity assessment tools to survey lichen diversity in areas under various types of land use (Scheidegger *et al.* 2002; see also Śliwa 2006a, b) on 30 sampling plots (1 ha each) representing previously pastured abandoned land, intensively and extensively managed pastures, mown grasslands, wet open habitats (fens, bogs) and forests. The plots were in or near Tatra National Park, at 890–1200 m a.s.l. The locations of the plots are marked on the map in Figure 1. Voucher specimens are deposited at KRAM.

The distribution of species in Poland and the Carpathians is discussed based on Fałtynowicz (2003) and Bielczyk (2003) respectively and on a revision by Krzewicka (2012), supplemented with minor contributions. Regional records marked ‘!’ are new for the Polish Tatra Mts, and those marked ‘!!’ are new for the Polish Carpathians.

## RESULTS AND DISCUSSION

Seven of the 28 pyrenocarpous lichen taxa treated here are new for the Polish Tatra Mts, including one new for the Polish Carpathians: *Staurothele*

*hymenogonia*, *Thelidium athellinum*, *T. minutulum*, and *T. zahlbrucknerii*, *Verrucaria macrostoma*, *V. nigroumbrina* and *V. obfuscans*. The majority of the newly reported species are calcicolous lichens. They vary in frequency and in their known distribution in Poland and the Carpathians.

## LIST OF SPECIES

### *Acrocordia gemmata* (Ach.) A. Massal.

The species is commonly reported in Poland (Fałtynowicz 2003) and also relatively frequently recorded in the Polish Carpathians, including the Tatras (Bielczyk 2003; Flakus 2006). Common on rough bark of old trees.

**SPECIMEN EXAMINED.** WEST TATRA MTS. Tatra National Park: Dolina Kościeliska valley, Stare Kościeliska glade, 49°15'31"N, 19°52'08"E (plot 62), alt. 965 m, intensive pasture, on bark of *Tilia cordata*, 7 July 2004, L. Śliwa 2686.

### *Bagliettoa baldensis* (A. Massal.) Vězda

In Poland it is a rare species but locally abundant (Krzewicka 2012). It grows in large xerothermic areas of calcareous outcrops. In the Polish

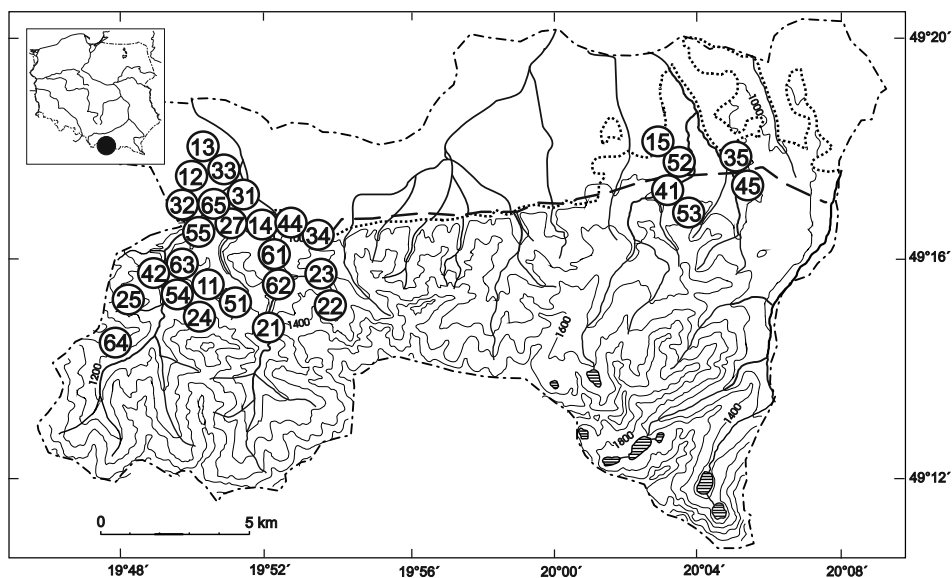


Fig. 1. Location of the study plots in the Polish Tatra Mts and the Rów Podtatrzański trough.

Carpathians it is known exclusively from two calcareous mountain regions: the Pieniny Mts and West Tatras (Bielczyk 2003). There are only a few documented records from the Polish Tatras.

SPECIMENS EXAMINED. WEST TATRA MTS. Tatra National Park: Dolina Kościeliska valley, Wyżnia Miętusia Polana glade, 49°15'09"N, 19°53'46"E (plot 22), alt. 1160 m, previously pastured abandoned land, on rock, 17 June 2004, *L. Śliwa* 2349, 2372; Dolina Chochołowska valley, Polana Chochołowska glade, 49°14'16"N, 19°47'47"E (plot 64), alt. 1105 m, intensive pasture, on rock, 16 July 2004, *L. Śliwa* 3121.

***Bagliettoa calciseda* (DC.) Gueidan & Cl. Roux**

Apparently it is not a common species in Poland. It is frequent only in the Wyżyna Śląsko-Krakowska upland (Fałtynowicz 2003; Krzewicka 2012). In the Polish Tatras it is known mainly from historical data (Bielczyk 2003).

SPECIMENS EXAMINED. WEST TATRA MTS. Tatra National Park: Dolina Kościeliska valley, Wyżnia Miętusia Polana glade, 49°15'09"N, 19°53'46"E (plot 22), alt. 1160 m, previously pastured abandoned land, on rock, 17 June 2004, *L. Śliwa* 2329, 2352; Dolina Kościeliska valley, Przysłop Miętusi glade, 49°15'48"N, 19°53'22"E (plot 23), alt. 1160 m, previously pastured abandoned land, on bark of *Picea abies*, 15 July 2004, *L. Śliwa* 3021; Dolina Chochołowska valley, Polana Dudowa glade, 49°14'58"N, 19°49'37"E (plot 24), alt. 1185 m, previously pastured abandoned land, on rock, 16 July 2004, *L. Śliwa* 3163; Dolina Chochołowska valley, Polana Huciska glade, 49°15'32"N, 19°49'07"E (plot 42), alt. 1000 m, mown grassland, on bark of *Picea abies*, 19 June 2004, *L. Śliwa* 2535.

***Bagliettoa parmigerella* (Zahlbr.) Vězda & Poelt**

In Poland it is a rare species (Fałtynowicz 2003). Its distribution is associated with larger areas of calcareous outcrops. Surprisingly this species has only one documented locality in the Polish Tatras (Krzewicka 2012). It was reported from the area with no collection sites given (Nowak & Tobilewski 1975; Alstrup & Olech 1992).

SPECIMEN EXAMINED. WEST TATRA MTS. Tatra National Park: Dolina Lejowa valley, Niżnia Polana Kominiarska glade, 49°15'12"N, 19°50'54"E (plot 51), alt. 1140 m, extensive pasture, on rock, 15 June 2004, *L. Śliwa* 2167.

***Naetrocymbe saxicola* (A. Massal.) R. C. Harris**

This is a rare species. In Poland it was recorded only from the Tatras (Nowak 1974).

SPECIMENS EXAMINED. WEST TATRA MTS. Tatra National Park: Dolina Kościeliska valley, Polana Pisana glade, 49°14'33"N, 19°51'53"E (plot 21), alt. 1040 m, previously pastured abandoned land, on rock, 14 July 2004, *L. Śliwa* 2962; Dolina Chochołowska valley, Polana Dudowa glade, 49°14'58"N, 19°49'37"E (plot 24), alt. 1185 m, previously pastured abandoned land, on rock, 16 July 2004, *L. Śliwa* 3133.

***Parabagliettoa dufourii* (DC.) Gueidan & Cl. Roux**

In Poland it is a rare species occurring only in the Tatras. Its localities from the Pieniny Mts and the Wyżyna Krakowska-Częstochowska upland were not confirmed by Krzewicka (2012).

SPECIMEN EXAMINED. WEST TATRA MTS. Tatra National Park: Dolina Kościeliska valley, Wyżnia Miętusia Polana glade, 49°15'09"N, 19°53'46"E (plot 22), alt. 1160 m, previously pastured abandoned land, on rock, 17 June 2004, *L. Śliwa* 2354; Dolina Chochołowska valley, Polana Huciska glade, 49°15'28"N, 19°49'19"E (plot 63), alt. 1025 m, intensive pasture, on stone, 19 June 2004, *L. Śliwa* 2585b.

***Polyblastia albida* Arnold**

It is a rare species known from a few scattered localities in Poland (Fałtynowicz 2003). In the Polish Carpathians it is known exclusively from the Pieniny Mts and Tatras (Bielczyk 2003; Flakus 2007). It occurs mainly on limestone on unshaded bedrock but was also found in the High Tatras on mylonite rock (Flakus 2007).

SPECIMEN EXAMINED. WEST TATRA MTS. Tatra National Park: Dolina Lejowa valley, Niżnia Polana Kominiarska glade, 49°15'12"N, 19°50'54"E (plot 51), alt. 1140 m, extensive pasture, on rock, 15 June 2004, *L. Śliwa* 2163; Dolina Chochołowska valley, Polana Dudowa glade, 49°14'58"N, 19°49'37"E (plot 24), alt. 1185 m, previously pastured abandoned land, on rock, 16 July 2004, *L. Śliwa* 3156; Dolina Chochołowska valley, Polana Huciska glade, 49°15'28"N, 19°49'19"E (plot 63), alt. 1025 m, intensive pasture, on stone, 19 June 2004, *L. Śliwa* 2585a.

***Polyblastia cupularis* A. Massal.**

In Poland it is known from a few scattered localities in the Carpathians (Bielczyk 2003). In the Polish Tatras it is reported mainly on mylonite rock (Flakus 2007). It occurs on limestone and on slightly calcareous siliceous rock.

SPECIMEN EXAMINED. WEST TATRA MTS. Tatra National Park: Dolina Chochołowska valley, Polana Huciska glade, 49°15'28"N, 19°49'19"E (plot 63), alt. 1025 m, intensive pasture, on stone, 19 June 2004, *L. Śliwa* 2627.

***Staurothale bacilligera* (Arnold) Arnold**

In Poland the species is known from the Tatras where it was reported only once previously on mylonite rock in the High Tatra Mts (Flakus & Bielczyk 2006).

SPECIMENS EXAMINED. WEST TATRA MTS. Tatra National Park: Dolina Kościeliska valley, Wyżnia Miętusia Polana glade, 49°15'09"N, 19°53'46"E (plot 22), alt. 1160 m, previously pastured abandoned land, on rock, 17 June 2004, *L. Śliwa* 241.

**! *Staurothele hymenogonia* (Nyl.) Th. Fr.**

The species is known from numerous localities in Poland including the Carpathians (Bielczyk 2003; Fałtynowicz 2003) but was not reported from the Tatras previously.

SPECIMENS EXAMINED. WEST TATRA MTS. Tatra National Park: Dolina Kościeliska valley, Wyżnia Miętusia Polana glade, 49°15'09"N, 19°53'46"E (plot 22), alt. 1160 m, previously pastured abandoned land, on rock, 17 June 2004, *L. Śliwa* 2369; Dolina Lejowa valley, Niżnia Polana Kominiarska glade, 49°15'12"N, 19°50'54"E (plot 51), alt. 1140 m, extensive pasture, on rock, 15 June 2004, *L. Śliwa* 2187; Dolina Chochołowska valley, Polana Huciska glade, 49°15'28"N, 19°49'19"E (plot 63), alt. 1025 m, intensive pasture, on stone, 19 June 2004, *L. Śliwa* 2582.

**!! *Thelidium athallinum* Servít**

In Poland it is a very rare species, reported previously only from the Góry Świętokrzyskie Mts (Toborowicz 1983). The present locality from the Tatras is the second one in the country. It is known from the Tatras in Slovakia (Lisická 2005). This

species is distinguished by its pale endolithic thallus, half- to 3/4-immersed perithecia with a dark involucrellum only in the upper part of excipulum, and spores that are 2-celled, 26–31 × 11–13 μm (Krzewicka 2012).

SPECIMENS EXAMINED. WEST TATRA MTS. Tatra National Park: Dolina Chochołowska valley, Polana Jamy glade, 49°15'21"N, 19°49'15"E (plot 54), alt. 1085 m, extensive pasture, on rock, 16 July 2004, *L. Śliwa* 3193; Dolina Kościeliska valley, Stare Kościeliska glade, 49°15'31"N, 19°52'08"E (plot 62), alt. 965 m, intensive pasture, on stone, 7 July 2004, *L. Śliwa* 2722.

***Thelidium decipiens* (Nyl.) Kremp.**

The species is widespread in Poland (Fałtynowicz 2003) including the Carpathians (Bielczyk 2003), but with no published localities from the Tatras. It is listed on the Tatra Mts checklist of lichens by Alstrup and Olech (1992) with no collection site mentioned.

SPECIMEN EXAMINED. WEST TATRA MTS. Tatra National Park: Dolina Chochołowska valley, Polana Dudowa glade, 49°14'58"N, 19°49'37"E (plot 24), alt. 1185 m, previously pastured abandoned land, on rock, 16 July 2004, *L. Śliwa* 3168.

***Thelidium incavatum* Mudd**

It is a widespread species in Europe but rarely recorded in Poland, where it is known only from the southern part of the country (Fałtynowicz 2003). In the Polish Carpathians it was reported exclusively from the Pieniny Mts and West Tatras (Bielczyk 2003).

SPECIMEN EXAMINED. WEST TATRA MTS. Tatra National Park: Dolina Chochołowska valley, Polana Huciska glade, 49°15'28"N, 19°49'19"E (plot 63), alt. 1025 m, intensive pasture, on rock, 19 June 2004, *L. Śliwa* 2596.

**! *Thelidium minutulum* Körb.**

Apparently this species is not very frequent in Poland, occurring at scattered localities (Fałtynowicz 2003). It is known mainly from lower altitudes in the Carpathians (Bielczyk 2003).

SPECIMEN EXAMINED. WEST TATRA MTS. Tatra National Park: Dolina Chochołowska valley, between

Polana Huciska and Polana Jamy glades, 49°15'24"N, 19°49'20"E (plot 11), alt. 1060 m, forest with *Picea abies* and *Abies alba*, on stone, 18 June 2004, *L. Śliwa* 2456.

### *Thelidium papulare* (Fr.) Arnold

This species is relatively frequent and has a scattered distribution in Poland (Fałtynowicz 2003). From the Tatras it was reported from a few localities on mylonite rock (Flakus 2007).

SPECIMEN EXAMINED. WEST TATRA MTS. Tatra National Park: Dolina Kościeliska valley, Wyżnia Miętusia Polana glade, 49°15'09"N, 19°53'46"E (plot 22), alt. 1160 m, previously pastured abandoned land, on rock, 17 June 2004, *L. Śliwa* 2375.

### !*Thelidium zahlbruckneri* Servít

It is a rare species in Poland, occurring only at scattered sites in the Carpathians (Kiszka 1967; Kozik 1977; Kiszka & Piórecki 1991; Nowak 1998; Czarnota 2000, 2010). It inhabits only permanently moist places.

SPECIMEN EXAMINED. WEST TATRA MTS. Tatra National Park: Dolina Chochołowska valley, between Polana Huciska and Polana Jamy glades, 49°15'24"N, 19°49'20"E (plot 11), alt. 1060 m, forest with *Picea abies* and *Abies alba*, on stone, 18 June 2004, *L. Śliwa* 2455.

### *Thelidium zwackhii* (Hepp) A. Massal.

This is a widespread species in Poland (Fałtynowicz 2003). In the Carpathians it is known from a few scattered localities (Bielczyk 2003). It grows in moist places.

SPECIMENS EXAMINED. WEST TATRA MTS. Tatra National Park: Dolina Kościeliska valley, Wyżnia Miętusia Polana glade, 49°15'09"N, 19°53'46"E (plot 22), alt. 1160 m, previously pastured abandoned land, on rock, 17 June 2004, *L. Śliwa* 2409; Dolina Chochołowska valley, Polana Jamy glade, 49°15'21"N, 19°49'15"E (plot 54), alt. 1085 m, extensive pasture, on rock, 16 July 2004, *L. Śliwa* 3181.

### *Verrucaria bryoctona* (Th. Fr.) Orange

The species is reported mainly from northern and central Poland, where it seems to be frequent

(Ceynowa-Giełdon 1998, 2001; Kubiak 2005). In southern Poland it was recorded from a few scattered localities (Krzewicka 2012). In the Polish Tatras it was reported from only two localities in the West Tatras (Olech 1983, 1985).

SPECIMEN EXAMINED. RÓW PODTATRZANSKI TROUGH. Tatra National Park: near Małe Ciche village, Pańszczykowa Polana glade, 49°17'30"N, 20°03'35"E (plot 41), alt. 925 m, mown grassland, on mosses growing on concrete, 16 June 2004, *L. Śliwa* 2289.

### *Verrucaria caerulea* DC.

It is a rare species reported from southern and central Poland (Fałtynowicz 2003). In the Polish Carpathians it was confirmed exclusively from the Pieniny Mts and West Tatras (Krzewicka 2012).

SPECIMEN EXAMINED. WEST TATRA MTS. Tatra National Park: Dolina Kościeliska valley, Wyżnia Miętusia Polana glade, 49°15'09"N, 19°53'46"E (plot 22), alt. 1160 m, previously pastured abandoned land, on rock, 17 June 2004, *L. Śliwa* 2353b.

### *Verrucaria cataleptoides* (Nyl.) Nyl.

This species was distinguished previously in Poland under the name *V. aethiobola* (Krzewicka 2012). Apparently it is widely distributed in the country (Fałtynowicz 2003) but from the Tatras it was known only from historical records (Motyka 1926, 1927).

SPECIMENS EXAMINED. WEST TATRA MTS. Tatra National Park: Dolina Chochołowska valley, Polana Huciska glade, 49°15'32"N, 19°49'07"E (plot 42), alt. 1000 m, mown grassland, on rock, 19 June 2004, *L. Śliwa* 2533, 2561.

### *Verrucaria dolosa* Hepp

It is a frequent species reported throughout Poland (Fałtynowicz 2003; Kubiak 2005), but a recent revision of it indicated that it is less frequent; some of the records in fact belong to *V. maculiformis* Kremp. or *V. acrotella* auct. (Krzewicka 2012). In the Polish Tatras it was recorded previously from only one locality (Bielczyk 1999).

SPECIMEN EXAMINED. WEST TATRA MTS. Tatra National Park: Dolina Chochołowska valley, Polana

Huciska glade, 49°15'28"N, 19°49'19"E (plot 63), alt. 1025 m, intensive pasture, on stone, 19 June 2004, *L. Śliwa* 2572; Dolina Chochołowska valley, Polana Jamy glade, 49°15'21"N, 19°49'15"E (plot 54), alt. 1085 m, extensive pasture, on rock, 16 July 2004, *L. Śliwa* 3179.

**!Verrucaria macrostoma** Dufour ex DC.

The species is not very frequent in Poland but is locally abundant (Krzewicka 2012). It occurs mainly in the Carpathians and Wyżyna Krakowsko-Częstochowska upland. This is the first documented record of it from the Polish Tatras. In Poland it was known mainly as *V. velana* (A. Massal.) Zahlbr. (Krzewicka 2012).

SPECIMENS EXAMINED. WEST TATRA MTS. Tatra National Park: Dolina Kościeliska valley, Przystół Miętusi glade, 49°15'48"N, 19°53'22"E (plot 23), alt. 1160 m, previously pastured abandoned land, on bark of *Picea abies*, 15 July 2004, *L. Śliwa* 3025.

**Verrucaria muralis** Ach.

The species is widespread and frequent, reported throughout the country (Fałtynowicz 2003). It is one of the most frequently recorded *Verrucaria* species in Poland (Krzewicka 2012). Surprisingly, from the Tatras this species was known only from historical data (Bielczyk 2003).

SPECIMENS EXAMINED. WEST TATRA MTS. Tatra National Park: Dolina Chochołowska valley, Polana Huciska glade, 49°15'32"N, 19°49'07"E (plot 42), alt. 1000 m, mown grassland, on rock, 19 June 2004, *L. Śliwa* 2531; Dolina Chochołowska valley, Polana Huciska glade, 49°15'28"N, 19°49'19"E (plot 63), alt. 1025 m, intensive pasture, on stone, 19 June 2004, *L. Śliwa* 2600; Dolina Kościeliska valley, Stare Kościeliska glade, 49°15'31"N, 19°52'08"E (plot 62), alt. 965 m, intensive pasture, on stone, 7 July 2004, *L. Śliwa* 2716. RÓW PODTATRZANSKI TROUGH. Tatra National Park: between Dolina Lejowa and Kościeliska valleys, above Polana Biały Potok glade, 49°16'40"N, 19°51'18"E (plot 14), alt. 930 m, forest with *Picea abies* and *Abies alba*, on rock, 12 July 2004, *L. Śliwa* 2866.

**Verrucaria myriocarpa** Hepp

In Poland this species was known under its synonym *V. congregata* Hepp or as *V. murina* Leight.

(Krzewicka 2012). It is a rare species, reported from the Tatras by Alstrup & Olech (1990).

SPECIMEN EXAMINED. WEST TATRA MTS. Tatra National Park: Dolina Kościeliska valley, Wyżnia Miętusia Polana glade, 49°15'09"N, 19°53'46"E (plot 22), alt. 1160 m, previously pastured abandoned land, on rock, 17 June 2004, *L. Śliwa* 2333.

**Verrucaria nigrescens** Pers.

The species is known from numerous localities in Poland (Fałtynowicz 2003; Kubiak & Sucharzewska 2004; Kubiak 2005). It is one of the most frequently reported *Verrucaria* species, but probably it is less common; it has been confused with other species such as *V. tectorum* (A.) Massal.) Korb. or *V. nigroumbrina* Servit (Krzewicka 2012).

SPECIMENS EXAMINED. WEST TATRA MTS. Tatra National Park: Dolina Kościeliska valley, Polana Pisana glade, 49°14'33"N, 19°51'53"E (plot 21), alt. 1040 m, previously pastured abandoned land, on bark of *Picea abies*, 14 July 2004, *L. Śliwa* 2965; Dolina Kościeliska valley, Wyżnia Miętusia Polana glade, 49°15'09"N, 19°53'46"E (plot 22), alt. 1160 m, previously pastured abandoned land, on rock, 17 June 2004, *L. Śliwa* 2373; Dolina Chochołowska valley, Polana Huciska glade, 49°15'32"N, 19°49'07"E (plot 42), alt. 1000 m, mown grassland, on rock, 19 June 2004, *L. Śliwa* 2520, 2534, 2539; Dolina Chochołowska valley, Polana Huciska glade, 49°15'28"N, 19°49'19"E (plot 63), alt. 1025 m, intensive pasture, on stone, 19 June 2004, *L. Śliwa* 2580.

**!Verrucaria nigroumbrina** Servit

It is a poorly known species in Poland, reported from scattered localities in the Wyżyna Śląsko-Krakowska upland (Krzewicka 2012). Probably it is more frequent but has been overlooked in the field due to its similarity to *V. nigrescens*.

SPECIMENS EXAMINED. WEST TATRA MTS. Dolina Chochołowska valley, Polana Huciska glade, 49°15'28"N, 19°49'19"E (plot 63), alt. 1025 m, intensive pasture, on stone, 19 June 2004, *L. Śliwa* 2602.

**!Verrucaria obfuscans** (Nyl.) Nyl.

It is a rare species reported from scattered localities mainly in southern and central Poland

(Fałtynowicz 2003). Previously it was not recorded in the Tatras but is known from other ranges in the Carpathians, such as the Gorce Mts, Beskid Niski Mts and Góry Słonne Mts (Krzewicka 2012).

**SPECIMENS EXAMINED.** WEST TATRA MTS. Dolina Chochołowska valley, Polana Huciska glade, 49°15'28"N, 19°49'19"E (plot 63), alt. 1025 m, intensive pasture, on stone, 19 June 2004, *L. Śliwa* 2577, 2592; Polana Dudowa glade, 49°14'58"N, 19°49'37"E (plot 24), alt. 1185 m, previously pastured abandoned land, on rock, 16 July 2004, *L. Śliwa* 3158.

### *Verrucaria pingicula* A. Massal.

In Poland it is a very rare species. This taxon was neglected in Poland until the most recent treatment of *Verrucaria* s.l. by Krzewicka (2012). In the paper by Krzewicka (2012) it was reported from the Wyżyna Śląsko-Krakowska upland, and from the Carpathians where it was recorded on single localities in the Pieniny Mts and Tatras.

**SPECIMEN EXAMINED.** WEST TATRA MTS. Tatra National Park: Dolina Chochołowska valley, between Polana Huciska and Polana Jamy glades, 49°15'24"N, 19°49'20"E (plot 11), alt. 1060 m, forest with *Picea abies* and *Abies alba*, on rock, 18 June 2004, *L. Śliwa* 2488.

### *Verrucaria viridula* (Schrod.) Ach.

It is a frequent species reported from many scattered localities in Poland (Fałtynowicz 2003). In the Polish Carpathians it is known from the Tatras, Pieniny Mts and Bieszczady Mts (Bielczyk 2003), but recorded very rarely in the Tatras (Motyka 1924; Alstrup & Olech 1992).

**SPECIMEN EXAMINED.** WEST TATRA MTS. Tatra National Park: Dolina Lejowa valley, Niżnia Polana Kominiarska glade, 49°15'12"N, 19°50'54"E (plot 51), alt. 1140 m, extensive pasture, on rock, 15 June 2004, *L. Śliwa* 2168.

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