

## NEW LICHENIZED FUNGI OF THE POLISH KARKONOSZE MOUNTAINS

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**Abstract.** The paper reports the occurrence of seven lichen species new to the Polish part of the Karkonosze Mountains: *Bacidia sulphurella*, *Candelariella efflorescens*, *Lecanora leptyrodes*, *Melanelixia subaurifera*, *Opegrapha vermicellifera*, *Pertusaria leioplaca* and *Trapeliopsis pseudogranulosa*. Most of them are widespread in Poland but they have been recorded at only a few collecting sites in the whole Sudety Mountains. Some of the reported species are frequent in the study area, but most of them are very rare and have only a few localities.

**Key words:** Lichenized fungi, distribution, Karkonosze Mts, Sudety Mts

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### INTRODUCTION

The Karkonosze Mts are the highest mountain range in the Sudety Mts. Mt. Śnieżka (1602 m a.s.l.) is the highest peak. Scholars, researchers and amateurs have studied the area intensively since the 16<sup>th</sup> century. By the 19<sup>th</sup> century the Karkonosze Mts were one of the best-investigated areas of Central Europe. Studies of the lichen biota of the Karkonosze Mts began in the first half of the 19<sup>th</sup> century, done by eminent German researchers including Flotow (1850, 1851), Körber (1855, 1865), Stein (1879, 1889) and Eitner (1896, 1901, 1911), as well as Czech scientists (Kuták 1926; Suza 1928, 1929). In the postwar years, when the Silesian part of the Karkonosze Mts became part of Polish territory, Polish lichenologists joined in this research and produced many publications (Tobolewski 1954; Fabiszewski 1978; Miądlkowska 1993; Kossowska 2002, 2003, 2008, 2009, 2010; Szczepańska & Szczepański 2006; Wawrecka & Kossowska 2006; Dimos-Zych & Czarnota 2007; Kossowska *et al.* 2007; Pietrzykowska & Kossowska 2010).

The studies conducted so far have yielded reports of about 600 species of lichenized fungi from

this area, among them many taxa that are rare, endangered or new to science. Kossowska (2006) published a checklist of lichens of the Karkonosze Mts. Despite the work of many lichenologists, there are new discoveries to be made in this mountain range.

Here we report seven lichen species new to the Karkonosze Mts. These include *Lecanora leptyrodes* and *Opegrapha vermicellifera*, taxa that are relatively rare in Poland, and *Candelariella efflorescens*, a taxon recently reported for the first time from the country. The other species (*Bacidia sulphurella*, *Melanelixia subaurifera*, *Pertusaria leioplaca*, *Trapeliopsis pseudogranulosa*) are common in Poland. Most of these taxa have very few confirmed localities in the Sudety Mts, and some of them were first reported there as late as the present century.

### MATERIAL AND METHODS

The material was collected in 2001–2005 by the second author and was determined using standard techniques. The distribution of the examined taxa are given in the

ATPOL grid square system (see Cieśliński & Fałtynowicz 1993) but geographic coordinates are also given for all localities. The herbarium material is housed in the Herbarium of Wrocław University (WRSL).

#### LIST OF TAXA

##### *Bacidia sulphurella* Samp.

This species probably is widespread in Poland but incorrectly noted as *Bacidina arnoldiana* (Körb.) Wirth & Vězda (Kubiak *et al.* 2010), which grows mainly on rocks and has arched or curved, sometimes almost straight conidia. *B. sulphurella* is mostly corticolous and has conidia strongly hooked and slightly enlarged at one end (Brand *et al.* 2009). The species was first reported from Poland by Brandt *et al.* (2009) from two collecting sites, one of them in the Góry Sowie Mts. This is the second record of the species in the Sudety Mts.

This is a very frequent species in the study area. It was noted especially in acidophilous montane beech forest and in rich montane beech forest from 520 to 860 m a.s.l.

SPECIMENS EXAMINED. SUDETY MTS. KARKONOSZE MTS. Grid square Ea78 – Wodospad Szklarki waterfall: 50°49'922"N, 15°33'575"E, on rotten wood of *Fagus sylvatica*; Dolne Gawry rocks: 50°48'245"N, 15°33'540"E, on bark of *Picea abies* stump; Płozczań Mt.: 50°49'115"N, 15°34'715"E, on bark of *Picea abies* stump; Ea79 – Wężówka Mt.: 50°48'472"N, 15°36'232"E, on wood of *Picea abies*; valley of Sopot stream: 50°47'962"N, 15°37'282"E, on bark and wood of decaying log and stump; Chojnik Mt.: 50°50'211"N, 15°38'858"E, on wood of *Fagus sylvatica* log; Eb80 – Karpacz town: 50°45'726"N, 15°45'562"E, on *Fagus sylvatica* root plate and bark of decaying log; Podgórze Mt.: 50°46'698"N, 15°50'557"E, on wood and bark of *Fagus sylvatica*.

##### *Candelariella efflorescens* R. C. Harris & W. R. Buck

This species was noted in Poland recently (Kubiak & Westberg 2011). It is frequent in the northern and central parts of the country. It probably is widespread but incorrectly determined as *C. reflexa* (Nyl.) Lettau, which has 8-spored asci and a larger thallus with soralia in the center of

the areoles. *C. efflorescens* has polysporous asci and soralia which arise from the margin of the areoles (Kubiak & Westberg 2011).

SPECIMENS EXAMINED. SUDETY MTS. KARKONOSZE MTS. Grid square Ea79 – Chojnik Mt.: 50°50'116"N, 15°38'681"E, 577 m a.s.l., on bark of *Fagus sylvatica* snag in the rich montane beech forest.

##### *Lecanora leptyroides* (Nyl.) Degel.

This species is not very frequent in Poland. It has only a few scattered localities in the country (Fałtynowicz 2003). In the Sudety Mts it was reported for the first time from one locality on the Śnieżnik massif (Szczepańska 2007). This is the second locality of this species in the Sudety Mts. It has been noted in the Czech Republic (Vězda & Liška 1999) but no localities from the Krkonoše Mts are known. Probably this is a new species for the whole area of the Karkonosze Mts.

SPECIMENS EXAMINED. SUDETY MTS. KARKONOSZE MTS. Grid square Ea79 – valley of Sopot stream: 50°48'234"N, 15°37'263"E, 686 m a.s.l., on wood of *Fagus sylvatica* log in acidophilous montane beech forest.

##### *Melanelixia subaurifera* (Nyl.) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch

This species is widespread in Poland (Fałtynowicz 2003) but has only a few records in the Polish Sudety Mts. This is a very rare taxon in the study area. It has been noted in the Czech Republic (Vězda & Liška 1999) but no localities from the Krkonoše Mts are known. This species has a historical locality on the Czech side of the Králický Sněžník Mts in the East Sudety Mts (Klement 1956) but no contemporary station has been noted (Halda 2008).

SPECIMENS EXAMINED. SUDETY MTS. KARKONOSZE MTS. Grid square Ea79 – Chojnik Mt.: 50°50'116"N, 15°38'681"E, 577 m a.s.l., on bark of *Fagus sylvatica* snag in rich montane beech forest.

##### *Oppegapha vermicellifera* (Kunze) J. R. Laundon

This species is relatively rare in Poland and has only a few scattered localities in the country

(Fałtynowicz 2003). It is a very rare taxon in the study area. *O. vermicellifera* has been reported from only one locality in the Sudety foothills (Otte 2005). This is its second locality in the Sudety Mts. It was noted in the Czech Republic (Vězda & Liška 1999) but no localities from Czech side of the Sudety Mts and the Krkonoše Mts are known. This probably is a new species for the whole area of the Karkonosze Mts.

**SPECIMENS EXAMINED.** SUDETY MTS. KARKONOSZE MTS. Grid square Ea79 – Chojnik Mt.: 50°50'204"N, 15°38'867"E, 520 m a.s.l., on bark of *Fagus sylvatica* stump in acidophilous montane beech forest.

### *Pertusaria leioplaca* DC.

This species is widespread in Poland (Fałtynowicz 2003) but not very frequent in the Polish Sudety Mts. It is a very rare taxon in the study area, known from only one locality. It has been noted in the Czech Republic (Vězda & Liška 1999). It has two historical localities on the Czech side of the Krkonoše Mts, at Medvedí důl (Kuták 1926) and Mumlavsky vodopad (Erichsen 1936). This species is also known from the Czech side of the Králický Sněžník Mts in the East Sudety Mts (Kovář 1911; Halda 2008).

**SPECIMENS EXAMINED.** SUDETY MTS. KARKONOSZE MTS. Grid square Ea79 – Chojnik Mt.: 50°50'209"N, 15°38'899"E, 522 m a.s.l., on bark of *Fagus sylvatica* snag in acidophilous montane beech forest.

### *Trapeliopsis pseudogranulosa* Coppins & P. James

This species has scattered localities throughout Poland (Fałtynowicz 2003). It was first reported in the Polish Sudety Mts on the Śnieżnik massif (Szczepańska 2007). It has been noted in the Czech Sudety Mts in the Králický Sněžník Mts (Halda 2008).

This is a very frequent species in the study area. It was noted especially in acidophilous montane beech forest, rich montane beech forest (540 to 800 m a.s.l.) and fir-spruce montane forests in the subalpine belt.

**SPECIMENS EXAMINED.** SUDETY MTS. KARKONOSZE MTS. Grid square Ea78 – valley of Szrenicki

stream: 50°48'911"N, 15°34'219"E, on soil among root system of fallen *Picea abies* and on bark of *Picea abies*; Wodospad Szklarki waterfall: 50°49'660"N, 15°33'381"E, on wood of *Picea abies* stump; Dolne Gawry rocks: 50°48'444"N, 15°33'991"E, on bark of *Picea abies* log; Ea79 – Piechowicka Góra Mt.: 50°50'040"N, 15°35'479"E, on wood of *Picea abies*; Grzybowiec Mt.: 50°49'318"N, 15°35'515"E, on wood of *Betula pendula* log; valley of Wrzosówka stream: 50°47'779"N, 15°35'566"E, on wood of *Picea abies* log, Wężówka Mt.: 50°48'418"N, 15°36'393"E, on bark and wood of *Fagus sylvatica* log; valley of Sopot stream: 50°47'833"N, 15°37'141"E, on uprooting tree; Chojnik Mt.: 50°50'148"N, 15°38'604"E, on wood of *Fagus sylvatica* stump; Eb80 – Karpacz-Wilcza Poręba: 50°45'688"N, 15°44'745"E, on wood of *Picea abies* log; Sowa Dolina valley: 50°45'286"N, 15°45'666"E, on bark and wood of *Picea abies* and on uprooting tree; Łysa Góra Mt.: 50°47'117"N, 15°48'171"E, on wood of *Fagus sylvatica* log; Eb70 – Kowarski Grzbiet ridge: 50°46'939"N, 15°48'358"E, on wood of *Fagus sylvatica* stump.

**ACKNOWLEDGEMENTS.** We are grateful to the anonymous reviewers for helpful remarks on the manuscript.

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Received 18 July 2011