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NEW AND SOME RARE SPECIES OF THE GENUS *MICAREA* (MICAREACEAE) IN THE LICHEN FLORA OF POLAND

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Abstract: *Micarea anterior* (Nyl.) Hedl., *M. bauschiana* Wirth & Vězda, *M. deminuta* Coppins, *M. incrassata* Hedl., *M. leprosula* (Th. Fr.) Coppins & A. Fletcher, *M. marginata* Coppins & Muhr, *M. polycarpella* (Erichs.) Coppins & Palice, *M. submilliaria* (Nyl.) Coppins, *M. tuberculata* (Sommerf.) R. A. Anderson are reported for the first time from Poland. New records of *M. viridileprosa* van den Boom & Coppins, reported previously only one from this country are given. In addition, taxonomical and ecological notes on the species, as well as their distribution are also included.

Key words: lichens, lichenized fungi, *Micarea*, taxonomy, distribution, Poland

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INTRODUCTION

The genus *Micarea* Fr. is represented in Europe by nearly 60 species, of which most have been recorded in the British Isles (Coppins 1983, 2002). The genus presents a huge morphological similarity between many species, a large phenotypic plasticity of many species and also much infraspecific variability, as well as a heterogeneity of infrageneric characters. Hence, our knowledge of *Micarea* in Poland still poses many problems. Just ten years ago, the Polish checklist of lichenized and lichenicolous fungi reported only 13 species belonging to this genus (Fałtynowicz 1993). As a consequence of many (mainly floristic) lichenological studies carried out recently in different parts of the country the number of *Micarea* species has almost doubled, and most of the previously known taxa have an extended known geographical range (e.g. Kukwa *et al*. 2000; Czarnota 2000, 2002, 2003; Cieśliński 2003). The second edition of the Polish checklist includes 24 species (Fałtynowicz 2003). Intensive field studies in various parts of Poland, as well as taxonomic revisions by the author of materials housed in Polish herbaria, have resulted in a few other *Micarea* species to be added to the Polish list. Further localities of *M. viridileprosa*, discovered in Poland recently (Sparrius 2003) have also been recorded.

LIST OF TAXA

Micarea anterior (Nyl.) Hedl.

Bih. K. svenska VetenskAkad. Handl. III, **18**(3): 76, 86. 1892.

This is a rare lignicolous species reported only from a few European countries: Sweden and Finland (Coppins 1983), Komi Republic in Russia (Hermansson *et al*. 1998), Germany (Wirth 1995) and Czech Republic (Palice 1999). Polish localities presented here are the first ones for the whole Sudetes and Carpathians. *Micarea anterior* is an inconspicuous, epixylic lichen forming, in most cases, only stipitate pycnidia and probably for this reason it is overlooked during fieldwork or mistakenly identified as a non-lichenized fungus. In many respects *M. anterior* is very similar to *M. misella* (Nyl.) Hedl., and moreover they sometimes grow together, so microscopical examination of cross-sections of apothecia and of pycnidial walls are necessary to separate them. Detailed differences between them have been described by Coppins (1983). In Poland *M. anterior* was found in different mountain spruce forest of both mountain belts, in the natural ecosystems and also plantations, but never near the timber line as sug-

gested by Wirth (1995). Associated species on the specimens examined include *Micarea botryoides* (Nyl.) Coppins, *M. misella*, *M. nigella* Coppins, *M. prasina* s.l., *Placynthiella dasaea* (Stirt.) Tønsberg, *P. icmalea* (Ach.) Coppins & P. James, and *Thelocarpon lichenicola* (Fuckel) Poelt & Hafellner.

SPECIMENS EXAMINED. POLAND. SUDETES, Karkonosze Mts: Dolina Łomniczki valley [50°44,86′N/15°44,51′E] by the hiking track, *ca* 100 m below shelter-home 'Nad Łomniczką', alt. 1015 m, on decaying stump, 7 July 2003, *leg. P. Czarnota* (GPN/3526); Góry Izerskie Mts: Dolina Izery valley [50°49,11′N/15°22,63′E] *ca* 1 km W of Orle settlement, alt. *ca* 800 m, in peat-bog spruce forest, on wood of decaying spruce stump, 9 July 2003, *leg. P. Czarnota* (GPN/3530). WESTERN BESKIDY, Gorce Mts: Gorczański National Park, E slope of Tobołów Mt. above Koninki settlement, alt. 800 m, on stump in spruce mountain plantation, 23 Febr. 2002, *leg. P. Czarnota* (GPN/2729); Beskid Wyspowy Mts: NE slope of Luboń Wielki Mt. [49°39′N/19°59′E] by red hiking track, alt. *ca* 920 m, on stump within mixed mountain forest, 5 June 2003, *leg. P. Czarnota* (GPN/3248).

ADDITIONAL SPECIMENS EXAMINED. CZECH REPUBLIC. ŠUMAVA MTS, Nová Pec: glacial cirque of Plešné jezero lake [48°46′35″N/13°51′40″E] N part, alt. 1200–1250 m, on old stump beneath dropping rock, 19 June 1995, *leg. Z. Palice 124* (hb. Palice, conf. B. Coppins). SWEDEN. On coniferous wood in pine forest, 22 Apr. 1981, *leg. L.-E. Muhr 3568* (E).

Micarea bauschiana (Körb.) Wirth & Vězda *in* Vězda & Wirth

Folia Geobot. Phytotax., Praha **11**: 95. 1976.

This species has been reported earlier by Nowak (1972: 69, 77) as *Lecidea bauschiana* in his work on problems of the distribution of lichens in the Polish Western Beskids. However, he did not give any details about its localities and taxonomic characters. Moreover, revision of lichen material housed in herbarium KRAM, showed that the specimen which was probably used in this work, actually belongs to *Psilolechia clavulifera* (Nyl.) Coppins. Similar doubts refer to the second Polish report of *M. bauschiana* from Bieszczady Mts (Eastern Carpathians) (Kiszka & Kościelniak 2001), where it was found on a root-system of a fallen trunk. This was probably *P. clavulifera* as well, but confirmation is not possible today because the herbarium material has disappeared. These mistakes reflect the huge similarity between the two above-mentioned species. Indeed, they sometimes grow in the same habitat, constituting the *Micareetum sylvicolae* association (Coppins 1983). Generally, *M. bauschiana* is an epilithic lichen, preferring sheltered vertical walls of acid rocks, whereas *P. clavulifera* usually grows directly on consolidated soil and roots of underhangs on banks or the root-systems of up-ended trees in woodlands. Besides having different photobionts, the two species can be separated by the shape and size of their ascospores. (For more details see Coppins 1983).

SPECIMENS EXAMINED. POLAND. SUDETES, Karkonosze Mts: N slope of Śnieżka Mt. in Kocioł Łomniczki glacial cirque [50°44,38′N/15°44,03′E], alt. 1300 m, on shaded vertical wall of granite rock, 8 July 2003, *leg. P. Czarnota* (GPN/3282).

ADDITIONAL SPECIMENS EXAMINED. CZECH REPUBLIC. LUŽICKE HORY, Česke Švýcarsko: Tichá Soutiska, udoli Kamenice, alt. *ca* 280 m, 30 Apr. 2002, *leg. Z. Palice* (hb. Palice, dupl. in GPN);

Micarea deminuta Coppins

Bibl. Lichenol. **58**: 58 (1995)

The species was described just a few years ago (Coppins 1995), so perhaps for this reason its European records are rather few. *M. deminuta* was reported only from British Isles and Belgium (Coppins 1995) and from Šumava Mts in the Czech Republic (Palice 1999), where it was found for the first time in central part of the Continent. Polish records of this species from Sudetes and Tatras extend its geographical range to the East and distinctly increase its vertical range up to *ca* 1500 m alt. Considering this, *M. deminuta* seems to be a mountain species in Central Europe. Polish records confirm the habitat preferences suggested by Coppins (1995) and Palice (1999). Outside Europe, the species is known from Japan and Tasmania (B. Coppins pers. comm.).

In general, morphological and anatomical features of the specimens mentioned below are com-

patible with those described by Coppins (1995), although ascospore dimensions are a little larger [(7.2–)8.2–11.3(–11.8) × (4.1–)4.4–5.5(–6.1) µm]. Also pycnidia bearing mesoconidia [(4.9–)5.5–8.0(–8.3) × 1.5–2.0 µm] have been found for the first time in a Polish specimen (GPN/3492). Until now, only microconidia of *M. deminuta* were known (Coppins 1995). Moreover, a presence of olivaceous pigment in the upper part of the hypothecium, vertical streaks within hymenium as well as in the epihymenium seems to be a more important anatomical character than described by Coppins (1995). However, it is not unlikely that a concentration of the olivaceous pigment increases in open, more insolated localities as in case of the specimen from Sudetes. The olivaceous pigment in this specimen gives strong reactions, K+ dark green and HNO_3+ raspberry red, but the main brown colour of the hypothecium is still distinct in KOH. Accompanying species include *M. turfosa* (A. Massal.) Du Rietz, *Omphalina hudsoniana* (H. S. Jenn.) H. E. Bigelow and *Trapeliopsis glaucolepidea* (Nyl.) Gotth. Schneid.

Specimens examined. POLAND. Sudetes, Karkonosze Mts: Karkonoski National Park, N slope of Śnieżka Mt., a road below the top, alt. *ca* 1500 m, on humus among terricolous bryophytes on a block field, 8 July 2003, *leg. P. Czarnota* (GPN/3492). Tatras, High Tatra Mts: NW slope of Żabia Grań Mt. near the border of Slovakia, alt. *ca* 1550 m, on decaying wood of coniferous log in upper spruce forest, 7 July 2002, *leg. P. Czarnota* (GPN/2923, conf. B. J. Coppins).

Additional specimens examined. SCOTLAND. Stirlingshire, Inversnaid: Pollochro Woods, on decaying log, 30 Apr. 1987, *leg. A. Orange 4928* (E – isotype). CZECH REPUBLIC. Šumava Mts, Železná Ruda: glacial cirque of Černé jezero lake, on rotting wood, alt. 1100–1200 m, 11 Oct. 1995, *leg. Z. Palice* (Hb. Palice, det. B. J. Coppins).

Micarea incrassata Hedl.

Bih. K. svenska VetenskAkad. Handl. III **18**(3): 82, 94. 1892.

This species appeared in the recent checklist of Polish lichenized fungi (Fałtynowicz 2003) on the basis of 19th century records made by Stein in Sudetes, in the massif of Śnieżka Mt. (Schneekoppe) (Stein 1879, Migula 1931, as *Lecidea assimilata* Nyl. β *infuscata* Th. Fr.). However, revision of the Stein's materials housed in WRSL herbarium showed that his specimen from this locality refers to *Helocarpon crassipes* Th. Fr. Even though the specimen is very small and damaged, its not numerous, especially young apothecia have a strongly developed excipulum, and some of them are distinctly stipitate. The hypothecium is black-brown but its upper part reacts K+ dark green. Also the granular, pale grey thallus without cephalodia growing over moribund bryophytes is characteristic of *H. crassipes* (Coppins 1983). It is very probably that *M. incrassata* does occur in high-level parts of the Polish Sudetes, but more field studies are needed to confirm this.

However, *M. incrassata* was previously collected in the Tatras by Tobolewski (see below), but misidentified as *Lecidea assimilata* Nyl. So, *M. incrassata* is confirmed here for the first time in the lichen flora of the Polish Tatra. Considering its arctic-alpine distribution (Coppins 1983) the species may well occur more in Poland, but only in the two mountain regions mentioned above.

In morphological appearance *M. incrassata* is most similar to *M. assimilata* (Nyl.) Coppins (see Coppins 1983), but owing to the dark brown hypothecium it could be mistaken for the quite common *Protomicarea limosa* (Ach.) Hafellner [= *Lecidea limosa* Ach.], which resembles both *Micarea* species in morphology and occurs in the same habitats in high mountains. Nevertheless, *P. limosa* lacks cephalodia, and its thallus contains pannarin (reacting P+ reddish), whereas thalli of both the *Micarea* species lack lichen substances (P–).

Specimens examined. POLAND. Tatras, High Tatra Mts: Szpiglasowa Pass, alt. *ca* 2110 m, on humus in crevices of granite stones, 10 Sept. 1958, *leg. Z. Tobolewski* (POZ), as *Lecidea assimilata*.

Additional specimens examined. NORWAY. Svalbard, Spitsbergen: Hørnsund, rocks of Ariekammen, alt. 25 m, on decaying mosses, 24 July 1985, *leg. B. Godzik & K. Grodzińska* (KRAM-L 33741). SCOTLAND. Westerness, Ben Navis range: Aonach

Mór, alt. 1150–1221 m, summit plateau, on solifluction terrain, 26 June 1990, *leg. B. J. Coppins et al. 13804* (E). SWEDEN. T. LAPPMARK, Abisko N.P.: Mt. Slåttatjåkka, NNE slope, alt. 1070 m, on humus and bryophytes over rock, 21 July 2002, *leg. Z. Palice* (hb. Palice).

EXSICCATA. Hertel *Lecid. exs.* 152 (E), together with *M. assimilata*.

Micarea leprosula (Th. Fr.) Coppins & A. Fletcher *in* Fletcher

Lichenologist **7**: 111. 1975.

A few specimens of *M. leprosula* from the Tatras and Bieszczady Mts have been found during revision of materials housed in the herbaria KRAM and POZ. They were confused with other terricolous lichens, especially with *M. lignaria* (Ach.) Hedl., so perhaps for this reason the species was not previously identified and reported in Polish lichenological works. Indeed, *M. leprosula* occurs frequently in the Tatras and also in the Sudetes, as confirmed by recent collections made by the author (see below). It grows there on plant detritus and moribund bryophytes in the alpine belt, directly on the ground or among crevices of granite rocks in open places, but not directly exposed to strong insolation. *Micarea lignaria* is the most frequent accompanying species; others include *Helocarpon crassipes*, *M. submilliaria* (Nyl.) Coppins [syn. *M. subleprosula* (Vězda) Vězda], *Porina mammilosa* (Th. Fr.) Vain. (in Tatras) and *Protomicarea limosa*. In its ecorticate, grey granular-areolate thallus often eroding to form sorediate patches *M. leprosula* could be confused with *M. submilliaria*, which is sometimes identical in morphology, and both species usually form only sterile thalli. If TLC is not available they can be distinguished by their P reactions: P+ ginger (argopsin, with gyrophoric acid) in *M. leprosula*, and P+ yellow (alectorialic acid) in *M. submilliaria*. See Coppins (1983) for further details.

All specimens mentioned below were tested by TLC in solvent A (methods according to White & James 1985; Orange *et al*. 2001).

SPECIMENS EXAMINED. POLAND. SUDETES, Karkonosze Mts: Karkonoski National Park: N slope of Śnieżka Mt. in Kocioł Łomniczki glacial cirque [50°44,38′N/15°44,03′E], alt. 1300 m, on moribund bryophytes in alpine meadow, 8 July 2003, *leg. P. Czarnota* (GPN/3281); W slope of Śnieżka Mt., on the border of Czech Republic [50°44,18′N/15°44,18′E], alt. 1520 m, 8 July 2003, *leg. P. Czarnota* (GPN/3555); above Mały Staw Lake, below hiking track [50°45,03′N/15°41,75′E], alt. 1360 m, on decaying bryophytes and humus in crevices of granite stones, 8 July 2003, *leg. P. Czarnota* (GPN/3541, 3542, 3544). TATRAS, Western Tatra Mts: NW slope of Jarząbczy Wierch Mt. above Dolina Jarząbcza valley, on plant debris, alt. *ca* 1680 m, 18 Oct. 1956, *leg. Z. Tobolewski* (POZ), as *Bacidia lignaria*; High Tatra Mts: Dolina Gąsienicowa valley, near Zmarzły Staw Lake, alt. 1860 m, on decaying terricolous bryophytes in crevices of granite stones, 18 Sept. 1955, *leg. Z. Tobolewski* (GPN/3654); Dolina Waksmundzka valley, Za Popaski region below Turnia nad Dziadem Mt. [49°14,60′N/20°04,32′E], alt. 1650 m, on decaying terricolous bryophytes, 9 Aug. 2003, *leg. P. Czarnota* (GPN/3576); Wołoszyn Wielki Mt. near Krzyżne Pass [49°13,73′N/20°02,91′E], alt. 2140 m, on decaying terricolous bryophytes and humus, 9 Aug. 2003, *leg. P. Czarnota* (GPN/3602) with apothecia; Dolina Waksmundzka valley below Wołoszyńska Wyżnia Pass [49°13,74′N/20°03,13′E], alt. 2050 m, on decaying terricolous bryophytes and plant debris, 9 Aug. 2003, *leg. P. Czarnota* (GPN/3294); Dolina Waksmundzka valley below Pośredni Wołoszyn Mt. [49°13,79′N/20°03,23′E], alt. 2050 m, on plant debris, 9 Aug. 2003, *leg. P. Czarnota* (GPN/3301); Hala za Mnichem alpine meadow below Szpiglasowa Pass, 1800 m, on plant debris among granite rocks, 6 June 1971, *leg. J. Nowak* (KRAM-L 23048), as *M. lignaria*; Dolina Pięciu Stawów valley, Niżnie Solnisko region near W bank of Wielki Staw Lake [49°12,61′N/20°01,91′E], alt. 1750 m, on decaying bryophytes growing on granite stones, 8 Aug. 2003, *leg. P. Czarnota* (GPN/3583). EASTERN CARPATHIANS, Western Bieszczady Mts: on the top of Bukowe Berdo Mt., alt. 1200 m, on decaying bryophytes growing on thin soil over sandstones, 12 Aug. 1958, *leg. Z. Tobolewski* (GPN/3611); on the top of Krzemień Mt., alt. 1330 m, on humus and plant debris in crevices of sandstones, 22 June 1956, *leg. Z. Tobolewski* (POZ), as *Bacidia lignaria*, (dupl. GPN/3656).

ADDITIONAL SPECIMENS EXAMINED. CZECH REPUBLIC. PRACHATICE DISTR.: Zabrdská skála, alt. 610 m, on a small petal of stony scree, 14 Sept. 2002, *leg. Z. Palice & J. Vondrák* (hb. Palice, dupl. in GPN). KRKONOŠE MTS: E slope of the Velky Kotel corrie [50°45′07″N/15°31′57″E] on humus and over bryophytes on rock, alt. 1350 m, 29 Aug. 2002, *leg. Z. Palice* (hb. Palice, dupl. in GPN). SCOTLAND.

ARGYLL: *ca* 10 km N of Lochgoilhead village by the road [56°12,95′N/4°53,07′W], alt. *ca* 100 m, on soil accumulation in crevices of schist stone, 13 Sept. 2003, *leg. P. Czarnota & B. J. Coppins* (GPN/3427). ORKNEY: Shapinsay East Hill, NE of Mor Stein, alt. 30 m, on peaty debris by old trackway through heathland, 26 Aug. 1999, *leg. B. J. Coppins 18629* (E).

EXSICCATA. Migula *Crypt. Germ. 1 p. min. p.* (E), Tønsberg *Lich. Isid. Sored. Crust.* 44 (E).

Micarea marginata Coppins & Muhr *in* Coppins

Notes R. Bot. Gard. Edinburgh **45**: 164. 1988.

Considering the many localities of this species discovered recently in the Sudetes and Tatras (see below), *M. marginata* must have been a permanent component of the lichen flora in higher parts of these mountains in the past. Perhaps, it was overlooked or mistakenly determined in the field as some other saxicolous species, of e.g. *Lecidea* s.l., because of its well-developed margin, at least in young apothecia. A taxonomic reappraisal of Polish material is needed to check this.

Hitherto *M. marginata* was reported only from four European regions. Coppins (1988) gives localities from Sweden, Fryday (1996) from the Scottish highlands, and Palice (1999) from Transcarpathian Ukraine and the Czech part of Karkonosze Mts near the Polish border (see also additional specimens below). Localities from the Tatras reported here are the first for the whole Western Carpathians.

In many respects the Polish finds confirm the ecological preferences of *M. marginata* described in the works mentioned above. It was found on vertical walls of granite rocks in shaded, wet gullies of glacial cirques, in sites of prolonged snow cover, and above all on granite boulders in riverbeds of high-level mountain streams.

SPECIMENS EXAMINED. POLAND. SUDETES, Karkonosze Mts: Karkonoski National Park: N slope of Śnieżka Mt. in Kocioł Łomniczki glacial cirque [50°44,38′N/15°44,03′E], alt. 1300 m, on vertical wall of granite stones, 8 July 2003, *leg. P. Czarnota* (GPN/3280); ibid., 1320 m, 8 July 2003, *leg. P. Czarnota* (GPN/3488); NW slope of Śnieżka Mt., by waterfalls of the Łomniczka stream [50°44,56′N/15°43,88′E], alt. 1250 m, on vertical, shaded walls of granite rocks, 7 July 2003, *leg. P. Czarnota* (GPN/3462); Dolina Łomniczki valley near 'Betonowy Most' bridge, [50°45,52′N/15°45,62′E], alt. 750 m, on granite stone in river-bed of Łomniczka stream, 7 July 2003, *leg. P. Czarnota* (GPN/3693). TATRAS, High Tatra Mts: Dolina Waksmundzka valley, by Potok Waksmundzki stream [49°14,91′N/20°04,33′E], alt. 1340 m, on granite stone in old river-bed, 9 Aug. 2003, *leg. P. Czarnota* (GPN/3587); Dolina Roztoki valley below Niżnia Kopa Mt. [49°13,08′N/20°03,08′E], alt. 1480 m, on granite stones in river-bed of intermittent small stream, 8 Aug. 2003, *leg. P. Czarnota* (GPN/3579); Dolina Pięciu Stawów valley below Szpiglasowa Pass, Szpiglasowa Perć region by hiking track [49°12,11′N/20°02,04′E], alt. 1790 m, on shaded granite stones, 8 Aug. 2003, *leg. P. Czarnota* (GPN/3664); Dolina Pięciu Stawów valley, SE bank of Czarny Staw Polski Lake [49°12,32′N/20°01,83′E], alt. 1720 m, on granite stones in small mountain peatbog among *Pinus mugo* community, 8 Aug. 2003, *leg. P. Czarnota* (GPN/3571); Dolina Gąsienicowa valley below Pośrednia Turnia Mt. [49°13,01′N/20°00,35′E], alt. 1950 m, on granite pebbles in shady place, 20 Sept. 2003, *leg. P. Czarnota* (GPN/3340).

ADDITIONAL SPECIMENS EXAMINED. CZECH REPUBLIC. SUDETES, Krkonoše Mts: Sněžka Mt., Koulovy potok brook valley below Růžohorské sedlo saddle [50°43′40″N/15°45′E], alt. 1200–1250 m, on horizontal flats of wet siliceous stone in the bedrock of the brook, 30 Aug. 2000, *leg. Š. Beyerova, J. Liška & Z. Palice* (hb. Palice). SCOTLAND. WESTERNESS: Creag Meagaidh, on small pebble above area of late snow-lie, NW of summit, alt. 1000 m, 14 Sept 1994, *leg. A. Frayday 5629* (E). SWEDEN. VÄRMLAND: par. Norra Finnskoga, *ca* 400 m SE of Brännknölen, by the small stream Fisk-husbäcken [60°57′N/14°41′E], alt. 500 m, on boulder by the stream, shaded habitat, 1 June 1984, *leg. L.-E. Muhr 7014* (E – Holotype). UKRAINE. EASTERN CARPATHIANS: Čorna Hora Mts, *ca* 2 km N of Čorna Hora Mt., alt. 1900 m, on small stone below sandstone underhanging, 26 June 1997, *leg. Z. Palice* (hb. Palice); Čorna Hora Mts, Turkul Mt., alt. *ca* 1900 m, on shaded sandstone rock, 27 June 1997, *leg. Z. Palice* (hb. Palice).

Micarea polycarpella (Erichs.) Coppins & Palice *in* Coppins *et al.*

Bryonora **16**: 23. 1995.

The species is reported here for the first time in Poland, but has possibly been collected previously many times, and misidentified as *Lecidea*

atomaria Th. Fr. The latter was recorded in different regions of Poland (see Fałtynowicz 2003), and Palice (1999) found that many of Arnold's specimens named *L. atomaria* in the Munich herbarium were *M. polycarpella*. A revision of Polish materials reported as *L. atomaria* is necessary to establish the actual distribution and abundance of *M. polycarpella* in Poland. Also necessary is more intensive exploration of the anthropogenic and secondary habitats often inhabited by this species (Coppins *et al*. 1995; Palice 1999).

SPECIMENS EXAMINED. POLAND. WESTERN BESKIDY, Beskid Wyspowy Mts: NE slope of Luboń Wielki Mt., by the red hiking track, *ca* 0.5 km W of Glisne village, alt. *ca* 650 m, on small siliceous pebble in cart-road, 5 June 2003, *leg. P. Czarnota* (GPN/3244).

ADDITIONAL SPECIMENS EXAMINED: CZECH REPUBLIC. THE LABE VALLEY, Chvaletice: sedimentation basin near the power station, *ca* 1 km E of the village, graphitic slate, alt. 220 m, May 1995, *leg. Z. Soldán* (E). TŘEBOŇSKO: Hajnice settlement near Mirochov village, alt. 480 m, on small granite rock in sand-pit, 12. Apr. 2002, *leg. P. Czarnota* (GPN/3310).

Micarea submilliaria (Nyl.) Coppins

Graphis Scripta **6**: 37. 1994.

This mountain species is more frequently reported from different European countries under the synonyms *M. subleprosula* (Vězda) Vězda or *M. granulans* (Vain.) Timdal, even in recent lichenological works, e.g. from Slovakia (Pišút *et al*. 1996), Czech Republic (Vězda & Liška 1999), Germany (Scholz 2000), Spain (Llimona & Hladun 2001). Moreover it has been found in Great Britain (Coppins 1983, 2002), Fennoscandia (Santesson 1993; Vitikainen *et al*. 1997) and Austria (Hafellner & Türk 2001).

Just over 30 years ago *M. submilliaria* was collected by J. Nowak from the alpine belt in the Tatra Mts (KRAM-L 23048), but it was mixed with dominating *M. lignaria* and overlooked. Hence, *M. submilliaria* is reported here for the first time from Poland. Recent records made by the author confirms its occurrence in the highest mountains of this part of the Continent and also in the Sudetes, from where it was described as *Bacidia subleprosula* (Vězda & Wirth 1976).

In most cases it forms only a sterile thallus morphologically identical to *M. leprosula*, and then distinguished only by a different chemistry: thallus C+ raspberry red, K–, P+ yellow; TLC: alectorialic acid in *M. submilliaria* (see also comments under *M. leprosula*).

All specimens mentioned bellow were tested by TLC in solvent A (methods according to White & James 1985; Orange *et al*. 2001).

SPECIMENS EXAMINED. POLAND. SUDETES, Karkonosze Mts: Karkonoski National Park, N slope of Śnieżka Mt. in Kocioł Łomniczki glacial cirque [50°44,38′N/15°44,03′E], alt. 1300 m, on moribund bryophytes over granite boulder, 8 July 2003, *leg. P. Czarnota* (GPN/3281, conf. B. J. Coppins) together with *M. leprosula*; ibid., Łomniczka stream [50°44,56′N/15°43,88′E], alt. 1250 m, on bryophytes growing on granite walls near waterfalls, 7 July 2003, *leg. P. Czarnota* (GPN/3461). TATRAS, High Tatra Mts: Dolina Waksmundzka valley below Wołoszyńska Wyżnia Pass [49°13,74′N/20°03,13′E], alt. 2050 m, on moribund bryophytes and thin soil among granite boulders, 8 Aug. 2003, *leg. P. Czarnota* (GPN/3655); Hala za Mnichem alpine meadow below Szpiglasowa Pass, alt. 1800 m, on plant debris among granite stones, 6 June 1971, *leg. J. Nowak* (KRAM-L 23048), together with *M. lignaria*; Dolina Pięciu Stawów valley below Szpiglasowa Pass, Szpiglasowa Perć region by hiking track [49°12,11′N/20°02,04′E], alt. 1790 m, on humus and plant debris among granite rocks, 8 Aug. 2003, *leg. P. Czarnota* (GPN/3563); Dolina Pięciu Stawów valley, Niżnie Solnisko region near W bank of Wielki Staw Lake [49°12,61′N/20°01,91′E], alt. 1750 m, on plant debris over granite boulder, 8. Aug. 2003, *leg. P. Czarnota* (GPN/3582); Dolina Roztoki valley below shelter-house in Dolina Pięciu Stawów valley [49°12,92′N/20°03,15′E], alt. 1620 m, on decaying bryophytes growing on granite boulders, 8 Aug. 2003, *leg. P. Czarnota* (GPN/3624); Dolina Pięciu Stawów valley below Niżni Liptowski Kostur Mt. [49°12,23′N/20°01,85′E], alt. 1750 m, on humus on granite boulders, 8 Aug. 2003, *leg. P. Czarnota* (GPN/3616, dupl. in UGDA–L)].

ADDITIONAL SPECIMENS EXAMINED. CZECH REPUBLIC. SUDETES, Krkonoše Mts: Mumlava valley near Harrachov, 900 m, over decaying mosses on granitic rocks, 1960, *leg. A. Vězda* (E – Isotype of *M. subleprosula*). SCOTLAND. V.C. 88 MID-PERTH,

Ben Lawers range: Meall Corranaich, lower slopes on E side, on mossy boulder, alt. *ca* 850 m, 23 June 1989, *leg. A. Fryday s.n.* (E).

Micarea tuberculata (Sommerf.) R. A. Anderson

Bryologist **77**: 46. 1974.

This rare, epilithic species resembles in morphology and anatomy some specimens of *M. sylvicola* that form small and tuberculate apothecia. It can be distinguished from the last mainly by its narrower, ±oblong ascospores (see Coppins 1983). Both species can grow also in similar habitats, so previous overlooking or misidentification of *M. tuberculata* could have been possible in Poland. However, taxonomic revision of nearly all Polish specimens of *M. sylvicola* has excluded that possibility. Indeed, the record below of *M. tuberculata* from Polish Karkonosze Mts, is the first one for the Sudetes. Until now, the locality from Slovak Tatra Mts (Coppins 1983) was the closest one to Poland, but also on the Polish side of this mountain region *M. tuberculata* has been recently found (Flakus 2004).

It is widely distributed in Europe, from the Iberian Peninsula in the south (Llimona & Hladun 2001) up to far north (Coppins 1983; e.g. specimens seen – *Coppins 6054* from Sweden, >66°N [E]), but more frequently recorded only in Fennoscandia (Santesson 1993; Vitikainen *et al*. 1997). *M. tuberculata* has been rarely reported from the British Isles (Seaward 1994; Coppins 1983, 2002), from northern and alpine lands of Germany (Scholz 2000), Austria (Hafellner & Türk 2001), Italy (Coppins 1983) and Czech Republic (Vězda & Liška 1999) and also from North America (Esslinger 1997).

Specimens examined. POLAND. Sudetes, Karkonosze Mts: Karkonoski National Park, Dolina Łomniczki valley, by hiking track [50°45,36′N/15°45,42′E], alt. 770 m, on shaded granite boulders in upper mountain spruce forest, 7 July 2003, *leg. P. Czarnota* (GPN/3516).

Additional specimens examined. SCOTLAND. V.C. 96, Easterness, Rothiemurchus Forest: Allt a'Mharcaidh, on granitic rock underhang in steep-sided valley, alt. 380 m, 7 July 2000, *leg. B. J. Coppins 19308* (E), together with *M. bauchsiana*.

Micarea viridileprosa van den Boom & Coppins

Lichenologist **33**(2): 87. 2001.

The species belonging to the *Micarea prasina* complex have long presented many difficulties with correct identification. In Coppins's monograph (1983) this problem could be seen at least in the complicated synonymy of the species *M. prasina* Fr. After detailed taxonomic studies based on identification of lichen substances (Elix *et al*. 1984) this complex has been later separated again as *M. prasina* Fr. s.str., *M. micrococca* (Körb.) Gams *ex* Coppins and *M. subviridescens* (Nyl.) Hedl. (Coppins 2002). The first two species are common in Poland (Czarnota unpublished), but the last has not yet been found in this country. Moreover, the *M. prasina* group includes a few other, mostly sterile sorediate species, morphologically and anatomically similar to *M. prasina* s.str. These are: *M. hedlundii* Coppins, *M. xanthonica* Coppins & Tønsberg (Coppins & Tønsberg 2001), *M. levicula* (Nyl.) Coppins – known only from Cuba, and *M. viridileprosa* (v.d. Boom & Coppins 2001). Only the last two species have gyrophoric acid in their thallus and apothecia, both reacting C+ reddish. More taxonomic details of *M. viridileprosa* and also similarities and differences to other species are described in the last two cited papers.

Considering the huge number of examined specimens of *M. viridileprosa*, coming from many European countries (v.d. Boom & Coppins 2001), it has clearly been an overlooked species, coupled with an aversion by many lichenologists to collect sterile lichens on account of their difficulty in identification.

The species was reported for the first time from Poland by Sparrius (2003) after his exploration of Biebrza Valley. Further reports presented here from different regions of the country expand the known geographical range of *M. viridileprosa* to the East and indicate that also in this part of Europe this species could be frequent (compare its distribution in v.d. Boom & Coppins 2001).

Based on known ecological data, *M. viridileprosa* seems to be a species of a wide ecological tolerance (v.d. Boom & Coppins 2001). However, in Poland it is a woodland lichen, which

was mainly collected inside large natural forests as well as conifer plantations. It grows there as an epiphyte on deciduous (*Alnus*, *Sorbus*) and coniferous trees (*Pinus*), and also on lignum of stumps in the company of *Micarea denigrata*, *M. micrococca*, *M. misella*, *M. nigella*, *Placynthiella dasaea* and *P. icmalea*.

SPECIMENS EXAMINED. POLAND. MASURIAN LAKES, Pojezierze Olsztyńskie lakeland: Olsztyn town, Las Miejski reserve, on soft wood of stump, 21 Oct. 2000, *leg. D. Kubiak* (OLTC). POJEZIERZE LITEWSKIE LAKELAND, Równina Augustowska plateau: Puszcza Augustowska forest, Wigry National Park, Maćkowa Ruda forest district, forest section no. 18b, *ca* 3.5 km SE of Mikołajewo village, on bark of *Sorbus aucuparia*, Sept. 1984, *leg. K. Toborowicz* (UGDA-L 2702), as *M. prasina*. KOTLINA SANDOMIERSKA BASIN, Równina Biłgorajska plateau: Landscape Park of Lasy Janowskie, Porytowe Wzgórze forest area, *ca* 2.5 km S of Flisy village [50°37,97′N/22°28,20′E], alt. *ca* 220 m, on decaying coniferous stump and bark of *Pinus sylvestris* within pine-fir forest, 10 Oct. 2003, *leg. P. Czarnota* (GPN/3438, 3434, 3432); Równina Tarnobrzeska plateau: by the road between Nowa Dęba town and Bojanów village [50°24,86′N/21°50,92′E] on bark of *Pinus sylvestris* within pine forest, 6 Aug. 2003, *leg. P. Czarnota* (GPN/3638); Dolina Dolnego Sanu valley: near Przemyśl town, on bark of *Pinus sylvestris*, 5 Aug. 2003, *leg. A. Nowakowska* (GPN/3662). POGÓRZE ZACHODNIOBESKIDZKIE FOOTHILLS, Pogórze Wielickie foothills: Bukowiec nature reserve [49°49′50″N/20°35′00″E], alt. 430–460 m, on wood of log, 21 May 1999, *leg. L. Śliwa & B. Krzewicka 1033c* (KRA), as *M. prasina*. WESTERN BESKIDY MTS. Gorce Mts: Burcane Mt., W slope above Poręba Górna – Buchole settlement, alt. *ca* 650 m, on wood of coniferous stump within a young spruce forest, 4 Oct. 2003, *leg. P. Czarnota* (GPN/3436).

ADDITIONAL SPECIMENS EXAMINED. BRITISH ISLES. ENGLAND, V.C. 5, South Somerset: Haddeo Valley, between Haddon Hill and southern arm of Wimbleball Lake, Upton Cleeve (EWS 44), alt. *ca* 250 m, on trunks of mature *Quercus*, 22 July 2002, *leg. B. J. & A. M. Coppins 20624* (E). FRANCE. DEPT. FINISTÉRE: 10 km W of Douarnenez, Pointe du Millier, Moulin de Keriolet, on old *Castanea* bark, 21 July 1997, *leg. P. v.d. Boom 24014* (E–Isotype). THE NETHERLANDS. PROV. NOORD-BRABANT: SW of Leende, ‘t Leenderbos, open place in *Pinus* wood, on rooting fallen *Pinus* trunk, 2000, *leg. P. v.d. Boom 24314* (E).

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