New remarkable records and range extensions in the central European lichen biota

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Abstract: Palice Z., Malíček J., Peksa O. & Vondrák J. 2018: New remarkable records and range extensions in the central European lichen biota. – Herzogia **31**: 518–534.

Noteworthy findings of 24 lichen species are presented. Nine of them are reported as new to Central Europe (*Chaenotheca hygrophila, Cladonia krogiana, C. imbricarica, Gyalideopsis muscicola, Lecidea altissima, L. consimilis, Placynthiella hyporhoda, Rinodina stictica,* and *Waynea giraltiae*). Most of further species are largely unrecorded taxa, and new distributional data remarkably extend their known ranges, at the same time being often new country records for Austria, the Czech Republic, Germany, Slovakia or Switzerland. A wider ecological amplitude is pinpointed for three species of Ostropomycetidae (*Gyalideopsis helvetica, G. muscicola, Ramonia luteola*). The fumarprotocetraric acid strain of *Cladonia acuminata* is newly reported from Europe. The poorly known taxon *Lecidea consimilis* is described in detail and lectotypified herein.

Zusammenfassung: Palice Z., Malíček J., Peksa O. & Vondrák J. 2018: Neue bemerkenswerte Funde und Arealvergrößerungen in der Flechtenbiota von Mitteleuropa. – Herzogia **31**: 518–534.

Es werden bemerkenswerte Funde von 24 Flechten angegeben, wovon die folgenden 9 Sippen neue Angaben für Mitteleuropa darstellen: *Chaenotheca hygrophila, Cladonia krogiana, C. imbricarica, Gyalideopsis muscicola, Lecidea altissima, L. consimilis, Placynthiella hyporhoda, Rinodina stictica, Waynea giraltiae.* Auch fast alle restlichen Arten stellen für unterschiedliche Gebiete bisher großteils nicht dokumentierte Sippen dar. Die neuen Fundpunkte erweitern deren bisher bekanntes Verbreitungsgebiet und sind oft gleichzeitig Neumeldungen für Österreich, die Tschechische Republik, Deutschland, die Slowakei oder die Schweiz. Für drei Arten der Ostropomycetidae (*Gyalideopsis helvetica, G. muscicola*, *Ramonia luteola*) werden breitere ökologische Amplituden aufgezeigt. Ein Chemotyp von *Cladonia acuminata*, nämlich mit Fumarprotocetrarsäure, wird für Europa neu angegeben. Die bisher ungenügend bekannte *Lecidea consimilis* wird genau beschrieben und lectotypifiziert.

Key words: Biodiversity, biogeography, Malmideaceae, Muránska planina National Park, rare species, substrate specifity

Introduction

The central European lichen biota is among the most thoroughly studied in the world, thanks to the long lichenological tradition lasting more than two centuries. Central Europe plays a key role as a refuge and migration bridge for Mediterranean, arctic-alpine, boreal and other elements that may reach their distributional or ecological limits and have outpost populations. Endemic central European lichens are however likely rare or non-existent. Evidently several species were rare already in the past in this area and reached the brink of extinction due to environmental changes. This is mainly the case of sensitive epiphytic or epibryophytic old-growth forest species. An example may be the boreal microlichen *Gyalecta friesii* Flot.

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ex Körb., originally described from the western Sudetes. Its last published central European record from the Carpathians dates back to 1948 (Vězda 1958). Several sensitive epiphytic species seem to have definitely vanished and are regarded as extinct in central Europe, such as *Caloplaca pollinii* (A.Massal.) Jatta, *Pyxine sorediata* (Ach.) Mont., *Dendriscosticta wrightii* (Tuck.) B.Moncada & Lücking and *Stictis urceolata* (Ach.) Gilenstam (Wirth et al. 2013, Nimis et al. 2018). On the other hand some unexpected species have been reported again after a long absence, e.g. *Teloschistes chrysophthalmus* (L.) Norman ex Tuck. (Spinelli 2015), recently rediscovered in Switzerland, while others may be new arrivals, such as *Usnea flavocardia* Räsänen (Otte 2011), a spreading suboceanic species. These findings may be attributed to global climate changes. Surprisingly, several rare but conspicuous macrolichens were discovered in central Europe quite recently, such as the epiphytic *Phaeophyscia rubropulchra* (Degel.) Moberg (Berger et al. 1998), which may have been confused with similar species in the past, and the saxicolous species *Pilophorus strumaticus* Nyl. ex Cromb., which was found on difficult-to-access, steep rock-walls in glacial cirques in the western Sudetes (Halda et al. 2011).

The central European lichen biota still seems to be partly underexplored. When comparing recent national checklists of the countries that occur in this territory (Austria, Czech Republic, Germany, Slovakia, Switzerland) to each other, a considerable number of taxa may be expected to be discovered. The main goal of this paper is to shed more light on the distribution and ecology of lichens so far undercollected, sparsely recorded or unrecorded in central Europe. It deals with lichens that are either new to central Europe or species for which the range has been remarkably enlarged by the new findings. We regard most of below treated taxa as rare species that are not largely overlooked but are likely to occur at additional localities in suitable habitats. We highlight species known only from a couple of localities until now and those for which new ecological observations were made.

Methods

The lichens were studied by standard microscopy under dissecting and light microscope. Hand-made sections were studied in water-mounted preparations. Measurements were done under 1000× magnifications in water, if not stated otherwise. Chemistry was studied by standard spot reagents and by TLC following Orange et al. (2010) in three solvent systems A, B', C, if not stated otherwise in the following text. Selected taxa were photographed, indicated under the respective taxa. Identity of two taxa was also confirmed DNA sequences: ITS and mtSSU (*Biatora vacciniicola*) or ITS (*Caloplaca brachyspora*); sequences and Genbank accession numbers are mentioned under the respective taxa. Vouchers from the following herbaria were studied: H-NYL, PL, PRA, PRC, PRM and the private herbaria of Franz Berger (FB) and Jiří Malíček (JM). Some duplicates of presented taxa are kept also in other herbaria; abbreviations follow Index Herbarium (Thiers 2018). For descriptions, relevant studies are referenced under each species with the exception of the poorly known taxon *Lecidea consimilis*, which is described in detail, based both on the type material and recent vouchers; it is also lectotypified here. The delimitation of central Europe is defined here in the traditional sense (following Encyclopædia Britannica) encompassing Austria, the Czech Republic, Germany, Hungary, Liechtenstein, Poland, Slovakia, Slovenia, and Switzerland. Sampled material originates from the territories of five countries: Austria, the Czech Republic, Germany, Slovakia and Switzerland.

Results

With a few exceptions, we regard most of the lichens presented here as rare species deserving a Red List status in the respective countries. Some of the records likely represent relictual elements surviving only due to a long continuity of their habitats (e.g. *Lecidea altissima*, *L. consimilis*). Several predominantly (sub)Mediterranean-suboceanic (*Gyalideopsis muscicola, Strigula jamesii, S. ziziphi, Waynea giraltiae*), mild-temperate (*Catapyrenium psoromoides*) or boreal (*Chaenotheca gracillima, Ch. hygrophila, Sclerophora coniophaea*) lichens may have regional distributional limits or outposts in Central Europe. Predominantly mountain species being previously known only in the Alps and/or high Carpathian ranges in the central European space include e.g. *Biatora vacciniicola, Caloplaca brachyspora*, *Lecidea haerjedalica*, *Rinodina malangica*, *Schaereria corticola* and *Stereocaulon symphycheilum*. Some involved species are poorly known as they were previously reported only from their type localities (*Lecidea altissima, L. consimilis*), from a small territory (*Cladonia krogiana, Waynea giraltiae*) or a couple of localities worldwide (*Caloplaca alstrupii, Rinodina stictica*). Examples of a rare niche specialist and of a previously misunderstood taxon are *Placynthiella hyporhoda* and *Lecanora hypoptoides*, respectively.

In several cases, we also report species showing a more variable chemistry and/or a broader ecology than previously believed. The substrate ecology is often used as a helpful character in identifications of taxa, sometimes included within descriptions and even declared to be one of the key characters in distinguishing among some closely related species. For several species of gyalectoid lichens, the problematics of substrate specifity is briefly discussed under the respective taxa, namely in the cases where we demonstrated an aberrant substrate ecology (*Gyalideopsis muscicola, G. helvetica, Ramonia luteola*). Similarly, underevaluating chemical characters may hinder identification of species, which is the case of a previously unreported chemical race for Europe (*Cladonia acuminata*).

New records and range extensions

Biatora vacciniicola (Tønsberg) Printzen

Description: Tønsberg 1992: 184 & 186; Printzen 1995: 143–144.

Most collections of this amphiboreal sorediate lichen in Europe originated from western and northern Scandinavia (Tønsberg 1992, Printzen 1995). It was also rarely reported from the highest mountain ridges in Europe: the Pyrenees, the Tatra Mountains and the Alps (Tønsberg 1992, Printzen 1995, Tønsberg et al. 2001, Nimis et al. 2018). Since the species is frequently sterile it might have been overlooked in the past. Due to sparse data available it was even regarded for extinct in Central Europe in the end of the 20th century (Printzen & Palice 1999). As shown below the species may occur also in well-lit spruce forests in non-alpine central European ranges. Both presented samples are sterile, largely covering *Vaccinium* stems. Identification of the Czech voucher was confirmed by mtSSU and ITS rDNA markers (GB numbers: MH174254 and MH174255). – TLC: Gyrophoric acid.

Specimens examined: CZECH REPUBLIC, N Moravia, Hrubý Jeseník Mts, Karlova Studánka, old-growth spruce forest on N-facing slope 0.5 km E of Ovčárna, 50°04'14"N, 17°14'54"E, alt. 1280 m, on twigs of *Vaccinium myrtillus*, 2015, Malíček 8520, Kocourková, Vondrák & Zemanová [herb. JM]. **– GERMANY, Bayern,** NP Bayerischer Wald, Rachel, Rachelwiese, auf *Vaccinium myrtillus*, alt. 1320 m, 2013, Berger 27670 [herb. FB, PRA].

Caloplaca alstrupii Søchting [figure 1A]

Description: Søchting 1999: 59.

This is a well-characterized epiphytic species with blister-like protuberances bursting to expose crater like soralia somewhat resembling those of *Caloplaca obscurella* (Lahm ex Körb.) Th.Fr. (Søchting

1999) but with a persistent 'skeleton' of thalline verrucae, initially only apically disrupted with a more pigmented lid-like structure (see figure 1A). It was known only from the type locality until Sparrius et al. (2002) reported its occurrence in The Netherlands. It was also included in the electronic version of the German checklist (Wirth et al. 2011), but later the species was removed (Wirth et al. 2013). Although the species was described from rather damp and partly shaded conditions on bark at base of a solitary *Platanus* tree, it may be a heliophilous species growing preferrably on subneutral bark higher up on the trunk, as shown in the Bohemian locality and also in the record from tree crowns in Switzerland. The latter record (supplementary material in Kiebacher et al. 2016) was until now the only central European record. A putative preference for upper parts of trunks and canopies would explain why such a distinctive taxon is so rarely recorded. The Bohemian material is sterile but fits well to the voucher collected at the type locality (Vondrák 6969).

Specimen examined: CZECH REPUBLIC, W Bohemia, Šumava Mts, Modrava, Javoří Pila: Mt Medvěd [1137] – the top plateau – spruce plantation with dispersed veteran sycamore trees, along forestry roadside, 49°00'25.5"N, 13°25'09.5"E, on bark of *Acer pseudoplatanus* (W-exposition, 4 – 6 m above the ground), alt. 1139 m, 2015, Palice 19745 [PRA].

Caloplaca brachyspora Mereschk. [figure 1B]

Description: Vondrák et al. 2010: 242–243.

Up to now, this species has been known only from Crimea, Turkey, the Caucasus and the western Carpathians (Malíček et al. 2014, Vondrák et al. 2016, as *Athallia brachyspora*, 2017). In all documented localities it is locally common on limestone rocks above the timberline. The species is newly recorded in the Alps (see Nimis et al. 2018), but we consider it likely that herbarium specimens exist under other names (e.g. *Caloplaca holocarpa* (Hoffm. ex Ach.) A.E.Wade and *C. macrocarpa* (Anzi) Zahlbr.). Identification of the Austrian specimen was confirmed by ITS rDNA (GB number: MG948164).

Specimen examined: AUSTRIA, Salzburg, Hohe Tauern, Krumltal valley, just 100 m N of Bräuhütte, 47°07'00.5"N, 12°55'54"E, serpentinized mica-schist erratic boulder near brook, on dry rock below overhang, alt. 1605 m, 2014, Palice 18684, det. Vondrák [PRA]. – **SWITZERLAND, Ticino**, Alpe di Manio, at upper stream of river Ticino, on base-rich schist in alpine zone, N46.47315, E8.42540, alt. 2019 m, 2016, Frolov & Vondrák 15114 [PRA].

Catapyrenium psoromoides (Borrer) R.Sant.

Description: Breuss 1990: 66 – 67.

The species shows southern boreal to Mediterranean distribution with oceanic bias (Bratli et al. 2010). Most central European records (Bavarian Alps, Switzerland) date back to the 19th century (Breuss 1990, Wirth et al. 2013). In the Alps no records are known from Austria and the species seems to be more frequent in the western and southern Alps (Nimis et al. 2018). Reports from eastern part of central Europe were absent until now. Similarly to recent Norwegian findings (Bratli et al. 2010), the species has been collected both on bark and mossy rock within a relatively small area.

Specimens examined: SLOVAKIA, W Carpathians, Muránska planina, Tisovec, nature reserve Kášter, a top rock-outcrop in NW part of the reserve, 48°42'01.5"N, 19°54'17"E, on bryophytes on shaded vertical S-facing dolomitic rock-face, alt. 945 m, 2013, Palice 17190 [PRA]; Ibid.: nature reserve Šarkanica: Mt Macov vrch [1096], a well-lit deciduous forest on a SSE declining crest above Maselníková gully, 48°43'09"N, 19°59'37"E, on bark of *Quercus petraea* agg., alt. 780 m, 2016, Blanár & Palice 23953 [PRA].

Chaenotheca gracillima (Vainio) Tibell

Description: Tibell 1999: 35.

Both examined specimens are too scanty for TLC but the characteristic pigment, forming violet plate-like crystals, were observed in the microscope after KOH. As one of the best indicator species of old-growth boreal forests, it was reported from central Europe only recently from the Slovak Tatra Mountains (Titov & Lisická 2001); the only other record originates from Germany (see Wirth et al. 2013). Surprisingly there have been no records from the Alps to date (see Nimis et al. 2018). The species may be in part overlooked, as it is able to occupy rather shaded niches in deep bark crevices, among roots or hollows at foots of old trees and snags.

Specimens examined: CZECH REPUBLIC, E Bohemia, W Sudetes, Krkonoše Mts, Pec pod Sněžkou, valley of Jelení potok, extensively managed montane spruce forest, 50°44'07.5"N, 15°45'46"E, on shaded foot of dead *Picea* near the stream, associated with *Psilolechia clavulifera*, alt. 1145 m, 2015, Palice 20408 [PRA]. Ibid., old-growth spruce forest at N-facing slope, 50°44'16"N 15°45'32"E, on shaded bark of standing dry *Picea*, associated with *Chaenotheca sphaerocephala*, alt. 1225 m, 2015, Palice 20462 [PRA].

Chaenotheca hygrophila Tibell

Description: Tibell 1999: 36.

The species shares a similar chemistry with *Chaenotheca stemonea* (Ach.) Müll.Arg. and *Ch. sphaerocephala* Nádv. It differs from the first species by the more roughly sorediate and more grayish thallus containing a trebouxioid photobiont (vs. *Stichococcus*). It can be distinguished from the second species in its well-developed exciple and its preference for growing on wood (Tibell 1999). *Chaenotheca hygrophila* is an amphiboreal species that has not previously been reported from central Europe. – TLC: Barbatic and obtusatic acids.

Specimens examined: CZECH REPUBLIC, S Bohemia, Šumava Mts, Nová Pec: „Jezerní luh" peat-bog, moist spruce forest around, 48°47'24.5"N, 13°52'26.5"E, on stump of *Picea*, alt. 915–920 m, 2006, Palice 10422 [PRA]. Šumava Mts, Zátoň: Boubínský prales, managed, c. 120 years old spruce forest at E-facing slope, 0.4 km NNE of top of Mt Boubín (1362 m), 48°59'42"N, 13°49'06"E, on wood of *Picea* stump, alt. 1270–1275 m, 2015, Malíček & Palice 19267 [PRA]; Ibid., old-growth spruce forest at ENE-facing slope, 350 m ENE of top of Mt Boubín (1362 m), 48°59'33"N, 13°49'17"E, on wood of *Picea* snag and stump, alt. 1250–1260 m, 2015, Palice 19517, 19518 & 20370 [PRA].

Cladonia acuminata (Ach.) Norrl.

Description: Ahti 2000: 236–237.

This is a cosmopolitan species found in both hemispheres, known also from Patagonia and the tropical mountains (Ahti 2000). In Europe it exhibits a predominantly arctic to temperate-montane distribution (Ahti & Stenroos 2013, Wirth et al. 2013). However, central European records are concentrated mainly in the Alps and Tatra Mountains. According to available European identification keys the specimen cited here would be impossible to identify on account of its aberrant chemistry. The fumarprotocetraric acid strain was so far reported only from Tierra del Fuego (Argentina) for this taxon (Stenroos & Ahti 1990). – TLC: Atranorin, fumarprotocetraric acid.

Specimen examined: GERMANY, Sachsen, Hinterhermsdorf, Sächsische Schweiz, sandstone cliffs with relic pine forest above the Kirnitschtal valley, 50°53'55.5"N, 14°22'40"E, on humus at SE-facing sandstone rock-outcrop, *Cladonia merochlorophaea* associated, alt. 340 m, 2010, Marková & Palice 13852, det. Ahti [PRA].

Cladonia krogiana Løfall & Timdal

Description: Løfall & Timdal 2002: 277–278.

This is the only *Cladonia* species known to produce xanthones. It has so far been recorded only in southern Norway, where it occurs in humid habitats near lakes and large rivers (Løfall & Timdal 2002). The Bohemian site is located in a semi-native pine forest on a plateau with an ultramafic bedrock (peridotite – olivine-rich gabbro). The dual ecology is hardly to explain, however the ultramafic rocks are well-known to host aberrant lichen communities (Favero-Longo et al. 2004), including taxa otherwise preferring more humid microhabitats, e.g. *Normandina pulchella* (Borrer) Nyl. (e.g. Suza 1931). The specimen produces only large squamules, somewhat resembling *C. symphycarpa* (Flörke) Fr.; podetia are missing. – TLC: Barbatic acid, chlorovinetorin, + additional xanthone(s) in trace amount.

Specimen examined: CZECH REPUBLIC, E Bohemia, Žďárské vrchy Mts, Ransko: Ranský Babylon («Židovský hřbitov»), ca 2 km SW of Staré Ransko, pine forest with serpentine stone-outcrops, on humus, infected by *Lichenosticta alcicornaria*, alt. 670 m, 2003, Halda, Palice 11510 & Peksa [PRA].

Cladonia imbricarica Kristinsson

Description: Ahti 2000: 123–124.

This is a rare species recorded only as single collections from northern Europe and high mountains in the Neotropics (Ahti 2000, Ahti & Stenroos 2013). The Slovak locality is a 'classical' lichenolo-

gical spot famous because of the azonal occurence of *Flavocetraria cucullata* (Bellardi) Kärnefelt & A.Thell (Suza 1930, as *Cetraria cucullata*). New to central Europe. – TLC: Sphaerophorin.

Specimen examined: SLOVAKIA, W Carpathians, distr. Poprad, Primovce, nature reserve Primovské skaly, NE-facing steep eroding slope, 49°00'56.5"N, 20°23'00"E, terricolous on melaphyric rock, *Cladonia polycarpoides* associated, alt. 606 m, 2014, Guttová, Lackovičová, Liška & Palice 18103 [PRA].

Gyalideopsis muscicola P.James & Vězda

Description: Coppins et al. 2009: 424.

Although species of the genus *Gyalideopsis* seem to be fairly substrate-specific, several taxa display a broader ecological amplitude (Lücking et al. 2006). Among them is *G. muscicola*, which typically occurs on bryophytes overgrowing bark or stones in humid microhabitats, but may sometimes grow directly on bark. Our record from a specific kind of clay soil (kaolin) shows that the ecological amplitude of this taxon is even wider. The only other species of *Gyalideopsis* known in the Czech Republic, *G. helvetica* van den Boom & Vězda (Liška et al. 2008) appears not to be strictly lignicolous/epiphytic as previously reported (e.g. van den Boom & Vězda 2000, van den Boom & Palice 2006, Spribille & Björk 2008, Spribille et al. 2009). This species has recently been found to colonize a free-lying, low stone in a damp microsite as a pioneer species (see the additional specimen examined). Caution should be used when identifying members of *Gyalideopsis* (and other ostropalean lichens; see also *Ramonia luteola* below) following the substrate as a key character.

Gyalideopsis muscicola has not been reported from central Europe before. Voucher specimens contain no apothecia but characteristic hand-shaped hyphophores, containing filiform diahyphae, are richly developed (see Lücking et al. 2006).

Specimens examined: CZECH REPUBLIC, W Bohemia, Plzeň, Nevřeň, terricolous, alt. 445 m, 2010, Peksa, Pecháčková & Sofron [PL]. **S Bohemia,** Šumava Mts, Nová Pec: Mt Hraničník – N-NNE slope, remnants of montane mixed forest, alt. 1150 m, 48°45'08"N, 13°54'50"E, over bryophytes on bark of *Fagus sylvatica*, 2007, Vondrák 7552 [PRA]; Ibid., N48°45'12.5", E013°54'25", on bryophytes on *Fagus* tree (NE exposition), alt. 1175 m, 2013, Palice 16923 & Pouska [PRA].

Saxicolous specimen of ***Gyalideopsis helvetica*** examined: **CZECH REPUBLIC, S Bohemia**, Šumava Mts, Nová Pec: glacial cirque of the lake Plešné jezero, foot of a rock-wall, E-ENE facing steep slope, 48°46'26.5"N, 013°51'26.5"E, on recently exposed low granite rock, alt. 1254 m, 2016, Palice 22300 [PRA].

Lecanora hypoptoides Nyl.

Description: van den Boom and Brand 2008: 483 – 484.

The species is taxonomically closer to the *Lecanora fuscescens* group than to the *L. saligna* group. Unlike *Lecanora saligna* and allied species, *L. hypoptoides* lacks epipsammoid granules in apothecia (van den Boom & Brand 2008). According to own observations the asci show conical axial bodies not protruding all amyloid parts of tholus, thus approaching more '*Bacidia*-type' than '*Lecanora*-type' (as illustrated by Ekman et al. 2008). The presence of the aliphatic substance paraensic acid is diagnostic for this species.

The name *Lecanora hypoptoides* used to be often misapplied to a superficially similar species, '*Lecanora*' *phaeostigma* (Körb.) Almb. or occasionally to dark-pigmented members of the *L. saligna* morphological group (e.g. *Lecanora mughicola* Nyl., *L. subintricata* (Nyl.) Th.Fr.). For distinctions between these taxa see van den Boom & Brand (2008) and Wirth et al. (2013). – TLC: Paraensic acid.

Specimens examined: CZECH REPUBLIC, S Bohemia, Šumava Mts: Mt Trojmezná hora [1361], dead climatic spruce forest at N-facing slope 370 m NW of the top, 48°46'25"N, 13°49'34"E, on wood of branch of *Picea* snag, alt. 1330 m, 2013, Koubková, det. Palice 17465 [PRA]. **E Bohemia**, Králický Sněžník, [on snags at slope] 1920, Kuťák (V. Kuťák: Lichenes Bohemiae n. 531, 2088) [PRC, PRM-754831, 754839, sub *Lecanora mughicola*]. – **SLOVAKIA, W Carpathians**, Muránska planina plateau: Mt Vrbiarka – a light forest above SE-exposed rocks facing to Javorníková valley (c. 48°44'30"N, 20°00'E), on wood of dead *Larix*, alt. 1100 m, 1999, Guttová, Orthová & Palice 4205 [PRA]. Muráň: nature reserve Šiance, well-lit forest at S-SSE-facing steep slope just below the crest ca 0.4 km WSW of the point Nižná Skalka [980], 0.8 km NW of Muránska Huta, 48°46'31.5"N, 20°05'35.6"E, on wood of dry standing trunk of *Abies alba*, alt. 966 m, 2011, Bouda, Černajová, Maliček, Palice 14471, Syrovátková & Vondrák [PRA].

'Lecidea' altissima H.Magn. [figure 1C]

Description: Degelius 1948: 140–141.

The specimen consists of differently aged, creamy coloured thalli (obscurely grey colour noted in the original description) with only localized, sparsely developed apothecia that tend to be botryose with age (see figure 7 in Jørgensen & Nordin 2009). Young thalli form quite large, subcrenulate areoles, dispersed on a dark prothallus (see figure 1C) and becoming confluent with age. Older thalli are distinctly cracked, forming quite tall stacks reaching a height of almost 1 mm, basally with a dominating dark hypothallus.

An arctic-alpine species. It is one of a few lichen species that were claimed to be potentially endemic to Norway (Jørgensen & Nordin 2009). Until now the species has been reported only from the highest Norwegian peak, Galdhøpiggen (National Park Jotunheimen). – TLC: Psoromic acid.

Specimen examined: AUSTRIA, Salzburg, Hohe Tauern, Goldberggruppe, Mt Hoher Sonnblick [3106], E slope, valley of a left-handside tributary of Hüttwinklache, ca 300 m WSW of 'Neubau Hütte' chalet, 47°03'18"N, 12°59'01"E, on vertical side of a low gneiss rock-face, alt. 2180 m, 2014, Bouda, Palice 18724 & Peksa, conf. Haugan [PRA, O].

'Lecidea' consimilis Nyl. [figure 1D]

Typus: Finlandia, Evois, 1865, J.P. Norrlin [type in H-NYL (20700), lectotype selected here; isolectotype in H-NYL (20701)].

Description: Thallus white to grayish-white, somewhat glossy, semi-immersed, forming mildly elevated prolonged areoles above the surface, in direction of the wood fibres, becoming granulose in part, eventually completely immersed, in herbarium darkening, having a creamy to orange tint; photobiont chlorococcoid, small-celled, 4–7 µm. Apothecia lecideine, dark brown to blackish, 0.3–0.6(–0.8) mm in diam., plane with discernable darker margin, soon becoming convex with exciple convoluting underside and constricted below. Hymenium rather shallow, (30–)35–40(–45) µm high, basally with a greenish pigment (subhymenium). Asci with an amyloid, tube-like, slightly apically widened structure (*Micarea*-type). Ascospores simple, bacilliform to dacryoid, (4–)4.5–7(–8) × (1.4–)1.6–2.3(–2.5) µm, (8–)12–16(–32) per ascus. Epihymenium ± pale in thinner sections, or more usually dark, indistinctly delimited, with dispersed dark olive-green pigments in a gelatinous matrix near and at paraphyses tips, non-granulose or with dispersed colourless granules (of norstictic acid), paraphyses ± simple or sparingly branched, 1.0–1.5 µm broad, apically slightly enlarged up to 2.5–3 µm, uncoloured or distinctly but thinly capped, hypothecium dark brown inwards (orange-brown in thin sections), olive-green outwards, composed of intricately interwoven, lepto- to meso-dermatous melanized hyphae, ca 1.5–2 µm in diam. Excipulum of dark-wall pigmented hyphae with a broad lumina, 1.5–2.5(–3.5) µm broad, anticlinally arranged, moderately intricate towards centre, somewhat radiating after amendment of KOH, distal part of excipular hyphae enlarged, capitate, 2.5–4(–5) µm at upper exposed part near hymenium, towards the base the distal parts are strongly gelatinized appearing as vesicle-like, colourless cells, 5–8 µm broad, forming a thin, c. 3–8 µm broad, colourless rim at base. Dark capped ends of outermost part of excipular hyphae are at different distances to the edge of the margin, giving the impression of a 'layered' excipulum. Pycnidia dark brown to blackish, almost sessile, barrel-shaped to shortly cylindrical, often constricted below, 0.2–0.3 mm high, 0.08–0.15 mm in diam. The wall of pycnidia brown, KOH–, of intricately branched and melanized thick hyphae, with distinctly enlarged distal capped cells like in exposed excipular hyphae. Conidia narrowly-ellipsoid to bacilliform (2.8–)3–4.6(–4.8) × (1.0–)1.2–1.4(–1.6) µm.

The content of norstictic acid seems to be variable and unevenly distributed. It is not always detectable by spot tests, being localized mainly in some parts of thalli. Putative crystals of norstictic acid were occasionally observed in the exciple and epihymenium. Norstictic acid was sometimes revealed by formation of red, needle-like crystals after KOH.

The species shows close affinities to the three poorly known taxa of the so-called '*Lecidea malmeana* complex' (see Holien et al. 2016). This complex (*Lecidea albolivida* Lettau, *L. malmeana* Zahlbr. and *L. tianensis* Vainio) belongs to the '*Lecidea*' *plebeja* group (Printzen 1995, Holien et al. 2016),

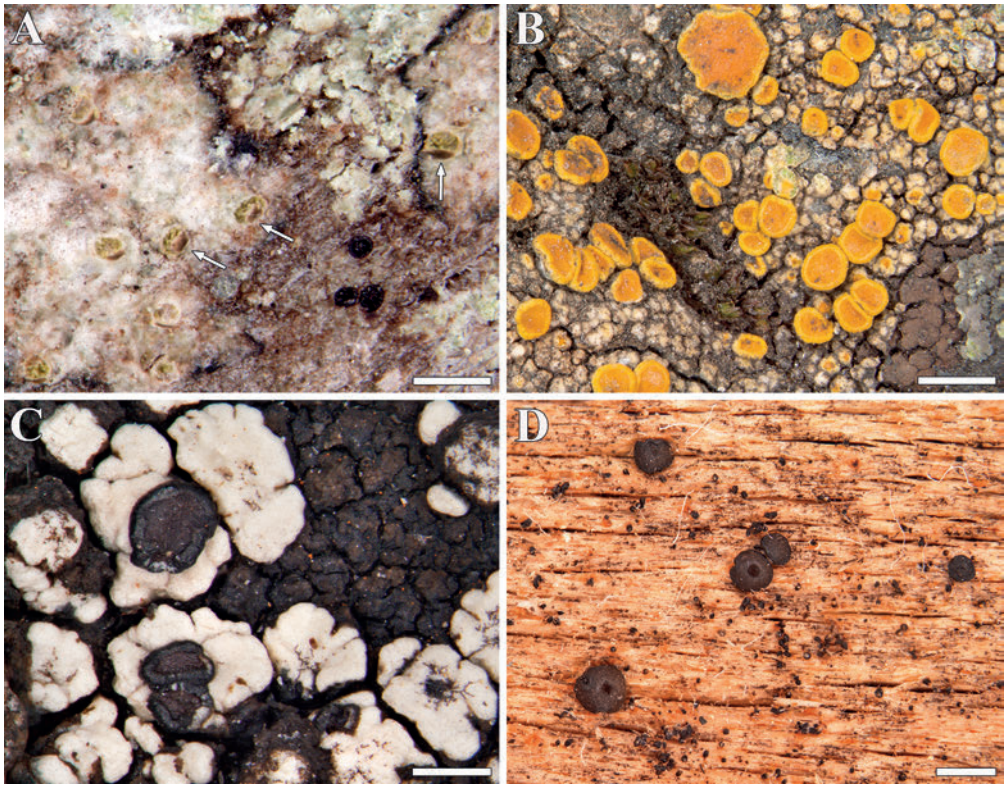

Figure 1: A) *Caloplaca alstrupii* (Palice 19745). Disrupted thalline verrucae with crateriform soralia at the bottom; arrows indicate lid-like structures derived from the apical part of the verrucae, associated lichens: *Rinodina subpariata* (Nyl.) Zahlbr. (grey sorediate areolae upper right) and *Amandinea punctata* (Hoffm.) Coppins & Scheid. (black apothecia down right). – **B)** *Caloplaca brachyspora* (Vondrák 15114). Yellow-orange apothecia contrasting with the pale thallus. – **C)** '*Lecidea*' *altissima* (Palice 18724). Young apothecia and thalli of subcrenulate areolae on a dark prothallus. – **D)** '*Lecidea*' *consimilis* (H-NYL 20701, isolectotype). Apothecia, barrel-shaped pycnidia and semi-immersed areolate/granulose thallus (best developed in the right upper corner). – Scales: A,C = 0.5 mm; B,D = 1 mm.

which includes mainly rare, old-growth forest species. According to Ertz et al. (2013), *L. plebeja* Nyl. and related species likely belong to an undescribed genus within the family *Malmideaceae*, a sister lineage of *Pilocarpaceae*. The morphological observations on *Lecidea consimilis* are in concordance with these results. The '*L. malmeana* complex' and '*L.*' *consimilis* share the same chemistry (content of norstictic acid), anatomy of apothecia that possess a layered exciple composed of unevenly pigmented, rather thick excipular hyphae with distinctly swollen, capitate, and capped terminal cells, and plusiosporic, *Micarea*-type asci containing (8–)12–16(–32) ascospores. '*Lecidea*' *consimilis* differs from similar taxa of the group mainly by its habitat requirements (lignicolous habit) and by producing distinct, dark, sessile to shortly stipitate pycnidia that are constricted below. The rarity of members of this group makes difficult to solve interspecific relationships and it cannot be ruled out that the '*Lecidea malmeana* complex' and '*Lecidea*' *consimilis* are only two taxa or that they are even extreme phenotypes of a single taxon. In that case the latter epithet would be the oldest and has nomenclatural priority. At this stage we however prefer to keep '*Lecidea*' *consimilis* separate, characterizing and distinguishing the species by its barrel-shaped pycnidia and lignicolous habit from the corticolous specimens of '*Lecidea malmeana* complex', which lack large pycnidia.

The taxon is evidently a rare old-growth forest species. It deserves special attention because of its bioindicative potential as an easily identifiable and distinctive taxon for biodiversity studies. The Slovak specimens were growing on shaded, slowly decaying, hard wood of a short conifer snag, apparently of *Abies alba*, in an old-growth fir-beech forest. *Arthonia vinosa* Leight., *Chrysothrix candelaris* (L.) J.R.Laundon, *Lepraria* spp. div. and unidentified species of the *Micarea prasina* complex were the associated lichens.

Interestingly this species has not been recorded since its description by Nylander (1867). The original material was studied by B. J. Coppins (in sched.) and C. Printzen (see Printzen 1995). Printzen (in sched.) indicated possible affinities to *Micarea*, apparently based on the tubular-ascus structure, small-sized photobiont and sessile to shortly stipitate pycnidia. – TLC: Norstictic acid.

Specimens examined: SLOVAKIA, W Carpathians, Muránska planina plateau, Zlatno: valley of Sviniarka brook, nature reserve Zlatnica, 48°49'20"N, 20°06'04"E, on decaying wood of snag, alt. 805 m, 2000, Guttová, Halda, Orthová & Palice 4693 [PRA]; Ibid., 2001, Palice 5780 [PRA].

Lecidea haerjedalica H.Magn. [figure 2A]

Description: Hertel 1977: 251.

The locality of Petrovy Kameny (Peterstein) in the Hrubý Jeseník Mountains is a solitary, wind-exposed phyllite outcrop with a unique vascular flora as well as lichen biota (Suza 1933). Several lichens are known only from this locality within the Czech Republic (Palice 2017). The world-wide distribution of *Lecidea haerjedalica* was mapped by Hertel (2006), who characterized it as an arctic-alpine species with bipolar distribution, preferring siliceous rocks in wind-swept habitats. The specimen was identified following the key by Hertel (2009). The externally roughened apothecial disc (see figure 2A) as well as the anatomy and KOH+ purplish intensifying pigmentation of hymenium correspond well to the microscopic picture presented therein.

Until now recorded in central Europe only from the Alps (Hertel 2006).

Specimen examined: CZECH REPUBLIC, N Moravia, E Sudetes, Jeseníky Mts, Praděd, the rock-outcrop Petrovy kameny, 50°04'06.5"N, 17°14'02"E, on SE facing schist rock-wall, associated with *Lecanora polytropa* and *L. intricata*, alt. 1435 m, 2015, Palice 20577 [PRA].

Placynthiella hyporhoda (Th.Fr.) Coppins & P.James

Description: Hitch & Purvis 2009: 713, Printzen & Knudsen 2007: 391.

This rarely recorded species is known from the British Isles, Italy, Scandinavia, Korea, Russia and North America (Printzen & Knudsen 2007, Hitch & Purvis 2009, Urbanavichus 2010, Joshi et al. 2011, Nimis 2016). The lichen is a characteristic inhabitant of soils rich in heavy metals, e.g. abandoned mine areas (Medeiros et al. 2014); this is also the case of the presented specimen. It has so far not been reported from central Europe.

Specimen examined: CZECH REPUBLIC, W Bohemia, Krušné hory Mts, Kraslice: Mt Tisovec – SSW slope, a copper spoil heap, 50°21'04" N, 12°30'37" E, on humus, alt. 650–660 m, 2011, Halda, Palice 14696 & Uhlík [PRA, FR].

Ramonia luteola Vězda [figure 2B]

Description: Vězda 1967: 311–312.

The Bohemian material was originally published as *Gyalecta biformis* Körb. (Peksa 2011). The relevant specimen was later reinvestigated by OP and ZP and the presence of halonate ascospores and distinct periphysoids suggested the affiliation to the genus *Ramonia*. On the basis of the comparison with the holotype specimen of *Ramonia luteola* (Vězda: Lich. Sel. Exsic. 581, PRA–V-06181!) it became clear that it is a saxicolous variant of this species, originally described from bark. Many taxa of *Ramonia* are only known from their type localities and ecology serves as one of the main identification criteria; see the identification key by Aptroot et al. (2015). Nonetheless, it has been noted that some usually epiphytic species of Gyalectaceae may also grow on inorganic substrates, e.g. *Gyalecta ulmi* (Sw.) Zahlbr. (Vězda 1958) and *Thelopsis rubella* Nyl. (Hulting 1875).

Ramonia luteola is a widely distributed Eurasian taxon, occurring mainly in humid temperate deciduous forests in the Carpathians, mountains of the Balkan (Vězda 1967, 1973), the Alps (Hafellner & Türk 2016), the northern Apennines (Nimis 2016), southern Fennoscandia (Nordin et al. 2018), the Caucasus (Urbanavichus 2010) and Japan (Kashiwadani & Thor 2000). *Ramonia interjecta* Coppins (= *Ramonia luteola* auct. brit.), a non-lichenized species growing usually on bark of *Sambucus*, used to be subsumed under the lichenized *Ramonia luteola*. The record of *Ramonia luteola* from this substrate from western Europe (Ertz et al. 2008) may well belong to *Ramonia interjecta*.

Specimens examined: CZECH REPUBLIC, W Bohemia, Slavkovský les Mts, Prameny, Křížky National Nature Reserve, stone scree below the serpentinite rock ridge 110 m SEE of Three Crosses, 50°3'54.316"N, 12°45'2.173"E, on shady stones in bottom layer of the scree, alt. 795 m, 2009, Peksa 2034 [PL]; Ibid., 2013, Halda, Palice 17175 & Peksa 2035 [PL, PRA].

Rinodina malangica (Norman) Arnold

Description: Mayrhofer & Moberg 2002: 58.

The lichen was described from northern Norway in the the second half of the 19th Century, but not recorded in Scandinavia since (Mayrhofer & Moberg 2002). Most of the published collections originate from the subalpine belt in the Alps, where the lichen favours stems of *Rhododendron* (Hinteregger 1994) or grows on basal parts of trunks of trees (Nimis 2016). Bohemian specimens are sterile but the morphology of dark blastidiate thalli fits well to the fertile material collected in the Ukrainian Carpathians and the Caucasus (Palice 19340, 21628; Malíček et al. 2018, Vondrák et al., unpublished results). The ecology also corresponds well to the requirements of the species known to us from the above-mentioned territories and as described by Hinteregger (1994). Thalli of the Bohemian specimens formed large patches covering basal, creeping branches of a solitary sycamore (*Acer pseudoplatanus*) at a site with late-lying snow. Although the Šumava Mountains (Bohemian Forest, Böhmerwald) is a medium-elevation ridge with only one peak (Gr. Arber) hosting typical high-mountain vegetation, glacial cirques of lakes provide suitable sites for several rare, arctic-boreal/montane species. – TLC: No substances.

Specimen examined: CZECH REPUBLIC, S Bohemia, Šumava Mts, Nová Pec: glacial cirque of the lake Plešné jezero, below a rock-wall, E-ENE facing steep slope, 48°46'24.5"N, 13°51'27.5"E, on branch of *Acer pseudoplatanus*, alt. 1266 m, 2016, Palice 22050, 22051 [PRA].

Rinodina stictica Sheard & Tønsberg

Description: Sheard & Tønsberg 1995: 41.

This species was originally described as an epiphytic species from the Pacific Northwest of North America (Sheard & Tønsberg 1995), but later found to be a more widespread species growing also at humid sites in Norway (Tønsberg 1998) and Taiwan (Giralt & van den Boom 2008). Its locality in the eastern Alps is very humid, characterized by high annual precipitation as well as the direct influence of moisture from the nearby Krimml waterfall. – TLC: Atranorin, zeorin, stictic acid.

Specimen examined: AUSTRIA, **Salzburg,** Hohe Tauern National Park Krimml, trees along Krimmler Ache between town and Krimmler Wasserfall, 47°12'44"N, 12°10'09"E, alt. 1050 m, on bark of *Alnus incana*, 2012, Malíček 5423, det. Tønsberg [herb. JM].

Schaereria corticola Muhr & Tønsberg

Description: Tønsberg 1992: 295 & 297.

This boreal taxon has not yet been found fertile in Central Europe. The voucher displays characteristic dark brown, dispersed rounded soralia, which are not confluent. TLC of sampled material revealed a trace amount of 5-O-methylhiascic acid as an accessory compound to gyrophoric acid. Some morphs of *Placynthiella dasaea* (Stirt.) Tønsberg from bark with more corticate soralia may be somewhat similar but TLC helps to distinguish between both taxa. The Bohemian material was compared with Norwegian specimens, kindly sent by T. Tønsberg.

Schaereria corticola has previously been reported from central Europe only once, from the eastern Alps (Tønsberg et al. 2001). The glacial lake Plešné jezero locality hosts also other, rare, boreal-high

mountain lichen peculiarities with similar ecological requirements, that are only rarely encountered in central Europe outside the Alps or the high Carpathians, such as *Lecanora exspersa* Nyl. (Malíček et al. 2017) or the above-mentioned *Rinodina malangica*. – TLC (C solvent only): Gyrophoric acid, 5-O-methylhiascic acid (trace amount).

Specimen examined: CZECH REPUBLIC, W Bohemia, Šumava Mts, Modrava, Javoří Pila: Mt Medvěd [1137] - the top plateau - a spruce plantation with dispersed veteran sycamore trees, 49°00'25.5"N, 13°25'09.5"E, on bark of *Acer pseudoplatanus* 4–6 m above the ground, alt. 1139 m, 2009, Loskotová, Palice 10437 & Peksa [PRA]. **S Bohemia,** Šumava Mts, Nová Pec: glacial cirque of the lake Plešné jezero, below a rock-wall, E-ENE facing steep slope, 48°46'24.5"N, 13°51'27.4"E, on bark of *Acer pseudoplatanus*, alt. 1266 m, 2016, Palice 22026 [PRA].

Sclerophora coniophaea (Norman) Mattsson & Middelb.

Description: Tibell 1999: 62–63.

A widespread boreal-montane lichen that has only rarely been reported from the temperate forest zone, mainly from historical reports from the Carpathians or (once) from the Hercynian region (Nádvorník 1942). Only two recent records come from central Europe, one from an old-growth forest in the eastern Carpathians (Vondrák et al. 2015), the second from an abandoned orchard in the Polish Carpathians (Kościelniak et al. 2017). Findings from the western part of the Czech Republic and the Alps considerably extend its known distributional range.

Specimens examined: AUSTRIA, Lower Austria, Ybbstaler Alpen Mts, Wildnisgebiet Dürrenstein, Lunz am See, primeval beech-silver fir forest Kleiner Urwald (part of Rothwald), 4.5 km SE of Obersee, 47°46'26"N, 15°06'48"E, alt. 1060–1080 m, on bark of old *Abies alba*, 2015, Malíček 8437, Berger, Breuss & Türk [herb. JM]. **CZECH REPUBLIC, S Bohemia,** Šumava Mts, Nová Pec: Mt Hraničník, N slope, remnants of montane mixed forest, N48°45.22', E013°54.12', on dry bark of *Acer pseudoplatanus*, alt. 1175 m, 2007 & 2017, Palice 11363, 23950 [PRA]. Ibid., N48°45'14", E013°54'16.5", on bark of hollow *Acer pseudoplatanus*, alt. 1165–1170 m, 2017, Malíček 11318, Palice 24471 & Vondrák 18643 [herb. JM, PRA]. Ibid., 1.2 km E of Mt Hraničník, group of *Acer pseudoplatanus* in turning of road, 48°45'N, 13°55'14"E, alt. 1125 m, 2012, Malíček 4744 et al. [herb. JM]. **W Bohemia,** distr. Domažlice, PLA Český les, Přimda, nature reserve Diana, old-growth mixed forest with predominant beech, 49°37'55.5"N, 12°34'44.5"E, on bark of *Fagus* and *Tilia*, alt. 515 m, 2016, Malíček 9587, Palice 21017 & Vondrák 13845 [herb. JM, PRA]; Ibid., along path at SW edge of reserve, 49°37'47"N, 12°34'43.5"E, alt. 525 m, on bark of old *Quercus robur*, 2015, Malíček 8090 et al. [herb. JM].

Stereocaulon symphycheilum I.M.Lamb [figure 2C]

Description: Gilbert et al. 2009: 864.

This is an arctic-alpine species, with most European records from Scandinavia and the Alps. In the British Isles it is frequently recorded in mine spoil heaps on rocks rich in iron and copper, and therefore it has been considered a metallophyte (Purvis & Halls 1996). Consistent with this, the sandstone rocks in the area of the so-called 'Saxon-Bohemian Switzerland' (German: Sächsisch-Böhmische Schweiz, Czech: Českosaské Švýcarsko) appear to be rich in iron oxides as evidenced by the presence of the strictly ferrophytic species *Rhizocarpon furfurosum* H.Magn. & Poelt on some of the localities where *Stereocaulon symphycheilum* occurs. In the area of Saxon-Bohemian Switzerland it seems to be a quite common species on the exposed sandstone-top-plateaus, i.e. on relatively hard but continuously weathering sandstone outcrops in well illuminated, wind- and rain- exposed parts. Our specimens are sterile with short pseudopodetia and characteristic terminal globose soralia (see figure 2C). Juvenile specimens lacking soralia (e.g. Palice 24940) are quite similar to *Stereocaulon vesuvianum* Pers. but the content of lobaric acid (UV + blue) excludes the misidentification for that species. – TLC: Atranorin, lobaric acid.

Specimens examined: CZECH REPUBLIC, N Bohemia, Vysoká Lípa: National Park České Švýcarsko, nature reserve Babylon, ca 2.5 km NW of Jetřichovice, relic pine forest, 50°52'20"N, 14°22'45"E, terricolous on a sandstone outcrop, alt. 350–360 m, 2002, Bayerová, Palice 6364 & Voříšková [PRA]; Ibid.: sandstone labyrint in N part of the reserve, on sandstone, cum *Lepraria caesioalba*, alt. 290 m, 2006, Peksa 1315 et al. [PL]; Ibid.: W-declining crest, 50°52'14.4"N, 14°22'58.7"E, on half-shaded sandstone rock outcrop, alt. 345 m, 2012, Marková & Palice 15334 [PRA]; Ibid., sandstone rocks above Gabrielina stezka road, on sandstone, alt. 450 m, 2004, Peksa 536 (PL); Ibid.: Mezná: Křídelní stěna, S-facing rock outcrops above the Gabrielina stezka trail, 1.5 km NW of Mezní Louka, 50°52'54.2"N, 14°18'01.6"E, on exposed sandstone rock-outcrop, alt. 450 m, 2012, Palice 15323 [PRA]; Ibid.:

100 m NW of the point 456, 50°52'53"N, 14°17'36"E, alt. 450 m, 2012, Marková & Palice 15329 [PRA] & 2017, Palice 24760 [PRA]; ibid.: 80 m SSE of the point 'Homole' and 100 m N of the point 456, 50°52'54.5"N, 14°17'41"E, 454 m, 2014, Palice 18498 [PRA]; Ibid.: SSW-facing rock outcrops just NW of the rock-tower 'Posed' above the Gabrielina stezka trail, 50°52'52.1"N, 14°17'37.4"E, alt. 440 m, 2017, Palice 24759 [PRA]; Ibid.: E-facing rock outcrops of the point ‚Věž Křížové stěny', 85 m SW of the point 471, 50°52'56.1"N, 14°18'01.8"E, alt. 450 m, 2018, Palice 24877 & Uhlík [PRA]; Ibid.: on the view point near Pravčická brána rock, 50°53'06.6"N, 14°16'50.6"E, on sandstone, alt. 441 m, 2014, Peksa 2032 [PL]. – **GERMANY, Sachsen,** Hinterhermsdorf, Nationalpark Sächsische Schweiz, Wobspitze, S-facing rock-outcrops, 50°53'12.5"N, 14°18'06.7"E, on exposed sandstone rock, alt. 460 m, 2018, Palice 24875, 24940 & Uhlík [PRA].

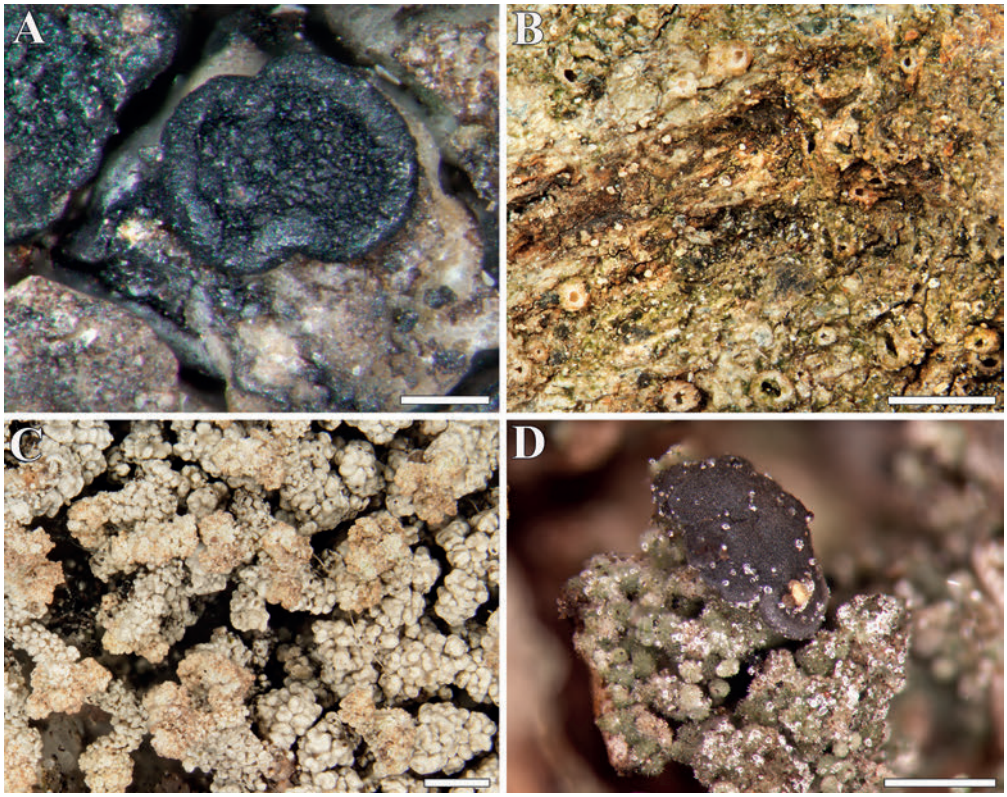

Figure 2: A) *Lecidea haerjedalica* (Palice 20577). Detail of apothecium, note the rough disc surface. – **B)** *Ramonia luteola* (Palice 17175). Urceolate apothecia on the rock surface; note the differently aged apothecia (from narrow-opened juvenile stages to wide-opened senescent ones). – **C)** *Stereocaulon symphycheilum* (Palice 18498). Detail of pseudopodetia with peltate squamules and globose apical soralia. – **D)** *Waynea giraltiae* (Palice 16946). Detail of apothecium and thallus composed of finely hairy granules or squamules. – Scales: A = 0.2 mm; B,D = 1 mm; C = 0.5 mm.

Strigula jamesii (Swinscow) R.C.Harris

Description: Roux & Sérusiaux 2004: 65–66.

The species with a predominantly western Atlantic distribution in Europe with inland records in Switzerland and Austria (Roux & Sérusiaux 2004). The localities in Moravia and Slovakia seem to represent its most continental occurrences in Europe.

Specimens examined: CZECH REPUBLIC, S Moravia, Moravský kras karst, Blansko, nature reserve 'Vývěry Punkvy', oak-hornbeam forest at steep SW-facing slope near the rock-point 'Rorejsy', N49°22'24.3", E016°43'26.8",

on bark at foot of *Quercus*, alt. 440 m, 2014, Fačkovcová & Palice 18332 [PRA], Ibid.: old-growth mixed forest along tourist trail at steep, W-facing slope above the Pustý Žleb glen, 49°22'31.5"N 16°43'24.5"E, on dry sheltered root of *Abies alba* (stump) at trail cutting, alt. 405 m, 2015, Palice 19545 & Uhlík [PRA]. – **SLOVAKIA, W Carpathians**, Muránska planina plateau: nature reserve Poludnica, Zadné Piecky, S-SSE-facing crest, well-lit lime/oak forest, 48°45'28"N, 20°01'37.5"E, on bark at foot of *Quercus*, alt. 700 m, 2009, Palice 12683 [PRA].

Strigula ziziphi (A.Massal.) Cl.Roux & Sérus**.**

Description: Roux & Sérusiaux 2004: 55.

The species is known almost exclusively from the Mediterranean (Roux & Sérusiaux 2004) but it has been recorded a few times also at lower elevations of the western and southern Alps (Nimis et al. 2018). The recent record from Poland (Flakus & Kukwa 2009) suggests it may be an overlooked species in more northern, humid forest areas. Like in the Polish material, no perithecia are produced. The voucher contains only pycnidia with characteristic, relatively broad (c. 4 µm), two-celled macroconidia with gelatinose appendages. The below cited locality belongs to the best-preserved old-growth forests in the Czech Republic, which host also other lichens with suboceanic distributions, such as *Gyalideopsis muscicola* (see under that species).

Specimen examined: CZECH REPUBLIC, S Bohemia, Šumava Mts, Nová Pec: Mt Hraničník, NE slope, remnants of montane mixed forest, c. 300 m ENE of the top, N48°45'01.5", E013°54'31", on weathered bark of *Fagus* (S-exp.), 1213 m, 2014, Palice 18432 [PRA].

Waynea giraltiae van den Boom [figure 2D]

Description: van den Boom 2010: 30–32.

The habitus of the thallus, forming finely hairy granules to squamules, and quite large *Bacidia*-like apothecia is characteristic for this taxon (see figure 2D). The examined specimens were compared to the duplicate of a paratype specimen kindly sent by P. van den Boom (van den Boom 31139) and corresponded in all aspects except chemistry. In the original paper (van den Boom 2010) protocetraric acid has been reported as a diagnostic substance for the species but we did not obtain any positive spot reaction with *para*-phenylenediamine and also failed to detect it by TLC both in Portuguese and Slovak material.

The lichen seems to be ombrophobic, growing in deep fissures of an old *Quercus* accompanied with *Bacidia rubella* (Hoffm.) A.Massal. and *Sclerophora pallida* (Pers.) Y.J.Yao & Spooner. The finding of this distinctive lichen so far known only from the Iberian Peninsula, and quite recently reported also from southern Italy (Sicily) by Cataldo and von Brackel (in Ravera et al. 2018), is unexpected. Nevertheless, the region of Muránska planina is known to host several other remarkable lichen species with a predominantly Mediterranean distribution (Palice et al. 2006, Etayo et al. 2009). – TLC: No substances.

Specimens examined: SLOVAKIA, W Carpathians, Muránska planina plateau: Mt Šiance, S-SSE slope, light scree forest (48°46'10"N, 20°04'30"E), on *Quercus*, alt. 800–860 m, 1998, Palice 381 [PRA]; Ibid.: Šiance, S-SSE-facing slope in the saddle between the points Cigánka and Šiance not far from the cave Wesselenyho jaskyňa, N 48°45'50" E 020°03'53", on dry bark of old *Quercus petraea* agg. (S exp.), alt. 837 m, 2013, Palice 16946 [PRA, UPS].

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