New and noteworthy lichens in the Czech Republic – genus *Caloplaca*

Nové a pozoruhodné lišejníky z České republiky – rod *Caloplaca*

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New information is provided on the distribution of 19 species of lichens belonging to the genus *Caloplaca* (*Teloschistales*) in the Czech Republic. Six species are new to this country: *C. epithallina*, *C. erodens*, *C. inconnexa*, *C. phlogina*, *C. polycarpa* and *C. thuringiaca*. The species *C. albolutescens*, *C. cerinella*, *C. chlorina*, *C. chrysodeta*, *C. dichroa*, *C. flavocitrina*, *C. herbidella* and *C. marmorata* are reported from the Czech Republic, but little is known about their distribution in this country. *Caloplaca biatorina*, *C. obliterans*, *C. rubelliana*, and *C. xantholyta* are rediscovered after more than 50 years. The presence of *Caloplaca crenulatella*, recently reported as new to this country, is confirmed and is actually one of the most common species of this genus. Ecological and chorological data are given for each species, and taxonomic and nomenclatural notes for *C. albolutescens* and *C. chlorina* are amended.

K e y w o r d s : biodiversity, distribution, ecology, lichen-forming fungi, nomenclature, taxonomy

Introduction

Caloplaca is a large cosmopolitan genus represented by presumably more than 800 species worldwide (Kärnefelt et al. 2002). Within *Teloschistales*, it is characterized by its polarilocular ascospores and the absence of a lower cortex. However, modern molecular phylogenetic studies (Arup & Grube 1999, Gaya et al. 2003, Søchting & Lutzoni 2003) indicate that the present classification is unnatural and found the genus *Caloplaca* to be paraphyletic.

Fifty-four *Caloplaca* species are reported from the Czech Republic to date (Vězda & Liška 1999, Liška 2005, Vondrák & Hrouzek 2006). However, some of them were only recorded once or a few times (e.g. *Caloplaca arnoldii*, *C. conversa*, *C. granulosa*, *C. nivalis*, and *C. magni-filii*), some are very poorly known (e.g. *Caloplaca caesiorufa* auct. and *C. vitellinula* auct.) and others erroneously reported from this country (*C. ferrarii* and *C. tetraspora*). *Caloplaca fimbriata* (Eitner) Zahlbr. is described from the Czech Republic as *Gasparrinia fimbriata* (Eitner 1911), but this name was never used later and the type material is probably missing from Eitner's collections in W, WA, and WRSL (respective curators, personal communication). Furthermore, *Caloplaca dvorakii* Suza, nom. nudum, was once reported from serpentinite rocks in SW Moravia (Suza 1927), but not validly published and the respective material was not found in Suza's herbarium in PRM.

A revision of the whole genus *Caloplaca* in the Czech Republic is not feasible at the moment, mainly because of the lack of distribution data for many species, a need to revise many species and unsolved taxonomic difficulties at the generic (Arup & Grube 1999, Gaya et al. 2003, Søchting & Lutzoni 2003) and species levels; only *Caloplaca variabilis* and *C. citrina* groups are partially resolved by molecular methods (Arup 2006, Tretiach et al. 2003). Hence, this study focus on selected species, which are new to this country, rare or poorly known.

The lack of information on some species is partly explained by the fact that many of them were only described recently (*C. dichroa*, *C. erodens* and *C. thuringiaca*) or were not widely accepted until recently (*C. flavocitrina* and *C. phlogina*). The nitrophilous species *C. crenulatella* and *C. flavocitrina* were collected mainly from man-made substrates, which are not frequently studied by lichenologists. Moreover, the species *C. epithallina*, *C. herbidella* and *C. rubelliana* are genuinely rare in Central Europe.

Materials and methods

Material for this study was mostly collected by the authors and voucher specimens are currently deposited in the herbaria CBFS, PRM, PRC, PRA (hb. Liška, hb. Palice) and private herbaria of A. Vězda (hb. Vězda) and J. Šoun (hb. Šoun).

All the species are followed by short notes on important characters, ecology, distribution, taxonomy and nomenclature. Species new to the Czech Republic are indicated by an asterisk before the name. The list of recorded localities is added in the Appendix.

The nomenclature follows, with some exceptions, Nimis & Martellos (2003); the nomenclature of insoluble lichen pigments follows Meyer & Printzen (2000). Author abbreviations are taken from Brummitt & Powell (1992).

Results

Caloplaca albolutescens (Nyl.) H. Olivier

This species is characterized by a thin whitish thallus irregularly covered with clusters of grey soredia. The cortex is not developed. Soredia are K+ sordid violet in section due to the presence of Sedifolia-grey pigment. The red to brown red apothecia are similar to those of *C. teicholyta*.

British authors (Laundon 1992a, Coppins 2002) consider *C. albolutescens* to be a synonym of *C. teicholyta*. However, most European lichenologists distinguish *C. albolutescens* as a separate species (e.g. Wade 1965, Clauzade & Roux 1985, Wirth 1995, Diederich & Sérusiaux 2000, Nimis & Martellos 2003). Our investigation of herbarium material supports a separation of these two species, because the specimens are well characterized with no intermediates. *C. albolutescens* has a thin leprose thallus, the cortex is absent or poorly differentiated at margins, and marginal lobes are missing, whereas *C. teicholyta* has a rather thick thallus sorediate in the centre, marginal lobes are more or less present and the cortex is well-developed, at least marginally. An examination of the holotype of *C. albolutescens* (Supra saxa quarcitosa ad Stockfield, Northumberland in Anglia, coll. W. Johnson, H-Nyl. 29845, sub *Lecanora albolutescens*) and of the type ma-

terial of *C. teicholyta* ("in muris et ad lapides calcarios Galliae. Du Four", sub *Lecanora teicholyta*, H-Ach. 1229, holotype!, UPS-ACH 681, isotype!) by the first author of this paper has shown that the respective type specimens are not conspecific.

Outside Europe, the species is known from Syria (John et al. 2004) and Turkey (Breuss & John 2004). It occurs on man-made substrates like bricks and concrete as well as natural habitats, e.g. calcareous sandstone rocks. Van den Boom (2005) recorded this species growing on compact sandy soil in Portugal. In the Czech Republic, *C. albolutescens* was recently reported for the first time from the karst area "Český kras" in central Bohemia (Svoboda 2007). Our new findings are from central Bohemia (Bakov nad Jizerou, Křivoklát, Kokořín, Liběchov, Netovice u Slaného), S Bohemia (Písek) and S Moravia (Milotice near Kyjov), from calcareous sandstone rocks or anthropogenous habitats.

Caloplaca biatorina J. Steiner

This species belongs to the section *Gasparrinia* and strongly resembles *C. saxicola*. However, it is clearly characterized by ascospores with thin septa when mature. Clauzade & Roux (1985) recognized two subspecies: subsp. *biatorina* with apothecia lacking pruina and subsp. *gyalolechioides* (Müll. Arg.) Clauzade et Cl. Roux with pruinose ascocarps. *C. biatorina* subsp. *biatorina* grows mostly on exposed and sunny calcareous rocks while subsp. *gyalolechioides* occurs on less sunny vertical or overhanging rocks. Both subspecies usually do not co-occur. Sometimes the subsp. *gyalolechioides* is regarded as a distinct species (Nimis 2003).

According to Nimis (1993) the centre of distribution of both subspecies is located in the Mediterranean area. Apart from S Europe, it is known from N Africa (Egea 1996, Seaward 1996) and Asia Minor (John 1996) extending to Central Asia (see distributional map in Poelt & Hinteregger 1993). The distribution in central and N Europe is very patchy with the northernmost outlier in Kuusamo province in Finland (Santesson et al. 2004).

Previously *C. biatorina* in the Czech Republic was restricted to S Moravia. A few authors (Ginzberger 1913, Suza 1925, Podpěra 1928) mention its occurrence in the Pavlovské vrchy hills, but only Podpěra (1928) gives an exact locality: Galgenberg [= Šibeničník]. Vězda & Gruna (2000) reported *C. biatorina* from several sites in the Podyjí National park. We newly record this species from Central Bohemia (subsp. *biatorina*) and confirm its occurrence in S Moravia; in each area only one subspecies was detected: the nominate subspecies in the Pavlovské vrchy hills, and subsp. *gyalolechioides* in the Podyjí National park.

Caloplaca cerinella (Nyl.) Flagey

Syn.: *Candelariella cerinella* (Nyl.) Mig. [non (Flörke) Zahlbr.]

This species superficially resembles taxa of the *C. holocarpa* complex. It is easily recognizable as it has 12–16 spores per ascus. Corticolous forms of *C. holocarpa* s.l. (including *C. cerinelloides*) frequently occur in the same habitats and it is necessary to study the asci in order to distinguish these species.

Caloplaca cerinella is mostly found on bark of *Sambucus nigra* in communities of nitrophilous lichens, such as *Lecania cyrtella*, *Phaeophyscia orbicularis* and *Strangospora ochrophora*. It is a widely distributed species in Europe (Laundon 1992a,

Wirth 1995, Santesson et al. 2004) but probably overlooked. Recently, it was reported from Slovakia (Guttová & Palice 2002) and only previously reported twice from the Czech Republic. Servít (1910) recorded *C. cerinella* near Tišnov (S Moravia) on bark of *Populus* sp.; although we have not seen the voucher material, this identification is likely to be correct, as the author noted the important character, 10–12 spores in the asci. Recently, this species was reported by Peksa et al. (2004) from the Novohradské hory Mts (S Bohemia). All the new localities are in S Bohemia (Prachatice, Tábor, Protivín).

Presently, *C. cerinella* is considered to be a strictly corticolous species (Laundon 1992a, Wirth 1995). Therefore the records referring to saxicolous occurrences in papers listed by Vězda & Liška (1999) under *Caloplaca cerinella* or its synonym *Candelariella cerinella* (Nyl.) Mig. (Kovář 1910, Los 1924, Kuťák 1927, Podzimek 1929, Müller 1951) are presumably *Candelariella aurella* [= *Candelariella cerinella* (Flörke) Zahlbr.].

Caloplaca chlorina (Flot.) H. Olivier

Syn.: *Caloplaca cerina* var. *chlorina* (Flot.) Müll. Arg., *C. cerina* var. *cyanolepra* (DC.) J. J. Kickx

The *Caloplaca chlorina* complex is in urgent need of modern taxonomic revision as is the whole *C. cerina* group to which it belongs. The characterization of *C. chlorina* is not completely clear (Poelt & Hinteregger 1993) and interpretation of this species differs among contemporary authors and the present nomenclature is rather confusing. Ecological requirements and the production of isidia/soredia serve as the main criteria for delimiting some narrower species. Since our specimens form a continuum from coarsely isidiate to finely sorediate thalli, we prefer to treat them in a broad sense, as in some recent checklists (e.g. Diederich & Sérusiaux 2000, Santesson et al. 2004) and await further taxonomic studies and their resultant nomenclatural changes. Tønsberg (1992) characterizes it as a variable species, which can form well-developed, flat areolae with marginal soredia, consoredia, or isidia-like projections, as well as completely leprose thalli. Our clearly sorediate or leprose specimens key out as *C. virescens* following Laundon (1992a). However, his description does not fully match our specimens.

Caloplaca chlorina is a widely distributed species in the Northern Hemisphere (Poelt & Hinteregger 1993, Wetmore 1996). In the Catalogue of Czech lichens (Vězda & Liška 1999), *C. chlorina* is included as a synonym of *C. cerina* and was rarely reported from the Czech Republic in the past. Recently, it was recorded a few times, both as an epiphyte (Dětinský 1997, Halda 1999) and rock-growing species (Vězda 1998, Vondrák & Palice 2004, Vondrák 2006). Additional recent findings of *C. chlorina* indicate this species is rather common and widely distributed in this country. Siliceous stones in old walls, pebbles on railroads, bricks, roofing-tiles and bases of hardwood tree trunks are the most favourable habitats.

Caloplaca chrysodeta (Vain. ex Räsänen) Dombr.

Syn.: *Leproplaca chrysodeta* (Vain. ex Räsänen) J. R. Laundon

Caloplaca chrysodeta is always sterile, with a more or less ochraceous leprose thallus containing K+ anthraquinones. It typically grows under the overhangs of lime-rich rocks, often accompanied by *C. xantholyta*. It occurs mostly on hard limestones but also on schist, sandstones and basalts. It may also occupy anthropogenic habitats like mortar or

concrete on shaded walls (Laundon 1974; see also one locality mentioned above) and may occasionally switch to dry bark of trees or wood (Poelt & Hinteregger 1993). It is a widespread, apparently subcosmopolitan species occurring in both Hemispheres (Laundon 1992b).

In the Czech Republic, *C. chrysodeta* is reported from the Bohemian cretaceous basin: the Metuje river valley (Bayerová & Kukwa 2004), České Švýcarsko (Palice et al. 2007), Český kras karst (Svoboda 2007) and the limestone area near Český Krumlov (Vondrák 2006). According to our observations, *C. chrysodeta* is a widely distributed but local species within the Czech Republic, which was probably overlooked in the past due to its sterile leprose habit.

Caloplaca crenulatella (Nyl.) H. Olivier

This species belongs to the *C. lactea* group and is characterized by its ascospores [(10.0–) 11.5–22.0 (–28.0) × (3.0–) 4.0–7.5 µm in size, septum only 1.5–2.0 µm thick] and its thallus usually forming a yellow "collar" surrounding older apothecia. For the differences between *C. crenulatella* and related species, mainly *C. aquensis* Houmeau et Cl. Roux and *C. ferrarii* (Bagl.) Jatta, see Navarro-Rosinés & Hladun (1996).

Caloplaca crenulatella is a widely distributed species in Europe (Navarro-Rosinés & Hladun 1996, Scholz 2000, Hafellner & Türk 2001, Santesson et al. 2004). It was recently discovered in Bulgaria (Vondrák & Slavíková-Bayerová 2006), Estonia (Jüriado et al. 2002), Poland (Kukwa 2000), Romania (Vondrák 2005), Slovakia (Pišút 2002) and Ukraine (Khodosovtsev 2001). The only published record for the Czech Republic until recently refers to the type specimen of *C. ferrarii* var. *diabasicola* Servít et Černohorský collected on a diabase rocky outcrop near Loděnice in central Bohemia (Servít & Černohorský 1935). It was examined and synonymized with *C. crenulatella* by Navarro-Rosinés & Hladun (1996). The recent records come from limestone outcrops near Český Krumlov (Vondrák 2006) and two anthropogenous sites: Kostelní (near Kraslice) in the Krušné hory Mts (Bayerová et al. 2004) and Chvaletice in E Bohemia (Palice & Soldán 2004). According to our field observations, *C. crenulatella* is one of the most frequent *Caloplaca* species in the Czech Republic. It occurs on calcareous and base-rich siliceous rocks as well as on concrete, mortar and bitumen. We have confirmed two samples of *C. crenulatella* from Vězda's herbarium, which were collected from loess. In one case, we found it on the basal part of a tree-trunk (*Quercus robur*) growing together with the *C. cerina* agg.

Caloplaca dichroa Arup

This recently described species (Arup 2006) belongs to the *C. citrina* group. It is well-defined by the granular, blastidiate or sorediate thalline surface and occurs in two colour variants, yellow and orange. When fertile, thick-walled ascospores of sand-glass type are characteristic. In the somewhat similar *C. coronata*, true isidia are developed and the ascospores have thin walls. Also, *C. citrina* s. str. has thin-walled ascospores.

Caloplaca dichroa occurs in Austria, Denmark, Finland, Germany, Norway and Sweden (Arup 2006). In the Czech Republic, this species is not rare and occurs on natural lime-rich rocks as well as on concrete and mortar. It was recently reported from S Bohemia (Vondrák 2006), but not highlighted as a new species for the Czech Republic.

**Caloplaca epithallina* Lynge

Caloplaca epithallina is a lichenicolous lichen, which does not form its own thallus. The rust-red apothecia are sessile on the host thallus and the lichen does not cause any conspicuous damage to its hosts. It is known to grow on thalli of the crustose and foliose lichens *Dimelaena oreina*, *Lecanora muralis*, *L. polytropa*, *Lecidea* sp., *Melanelia disjuncta*, *Psorinia conglomerata*, *Rhizoplaca melanophthalma*, *R. subdiscrepans* and *Umbilicaria cylindrica.*

It is a widely distributed holarctic-alpine species known also from the Canary Islands (Poelt 1985). The record from the Krkonoše Mts (Mt Sněžka) is the first from the mountain range of the Sudetes.

**Caloplaca erodens* Tretiach, Pinna et Grube

Caloplaca erodens is a recently described species placed in the section *Pyrenodesmia*. It has a mostly sterile bluish-grey orbicular thallus, which is mostly endolithic but sorediate centrally and delimited by an epilithic, obscurely lobate prothallus. The Sedifolia-grey pigment is present in soredia. Thalli of *C. erodens* typically form shallow depressions in calcareous substrates. Apothecia were only observed at the type locality (Tretiach et al. 2003).

Caloplaca erodens occurs in Italy, in the montane and subalpine belt of the Apennines and the S Alps (Tretiach et al. 2003), Austria (Hafellner & Muggia 2006) and Bulgaria (Vondrák & Slavíková-Bayerová 2006). In the Czech Republic, it has only been found in the limestone area of the Pavlovské vrchy hills (S Moravia, distr. Břeclav) and on several sites in central Bohemia. However, this species is a very common lichen at most of the listed localities and predominates in lichen communities. *Caloplaca erodens* grows exclusively on exposed hard limestone rocks at altitudes between 250 and 450 m.

Samples were compared with the isotype specimen (Vězda: Lich. Rar. Exsic. 499).

Caloplaca flavocitrina (Nyl.) H. Olivier

This species is characterized by a thallus composed of irregularly lobed yellow squamules, which become sorediate at the edges. Most authors place this taxon within the variable *C. citrina* (e.g. Wade 1965, Santesson et al. 2004, Wetmore 2004b), but some recent studies consider *C. flavocitrina* to be a separate species (van den Boom et al. 1998, Sérusiaux et al. 1999, Sparrius & Vervoort 2003). This concept was confirmed by Arup (2006) using molecular methods. *Caloplaca flavocitrina* is already accepted in the checklists of Coppins (2002) and Diederich & Sérusiaux (2000).

Caloplaca flavocitrina is considered to be less nitrophilous than *C. citrina* by Diederich & Sérusiaux (2000). In the Czech Republic, it commonly occurs on concrete walls, mortar and on natural lime-rich rocks and pebbles. We have also observed the species on the bases of trees and *Sambucus nigra* trunks and twigs. *Caloplaca flavocitrina* is occasionally accompanied by *C. citrina*, but it is more frequent on man-made substrates than *C. citrina* s. str. Reported earlier only by Palice & Soldán (2004) and Vondrák (2006).

Caloplaca herbidella (Hue) H. Magn.

Caloplaca herbidella shares important characters with *C. ferruginea* and *C. furfuracea*, e.g. flexuose and strongly anastomosed paraphyses, a C+ violet reaction of apothecial

margin and the red pycnidia. However, *C. herbidella* is clearly characterized by its isidia, which are in part elongated (Wetmore 2004a).

Growing on bark of coniferous and deciduous trees or rarely on wood, *C. herbidella* is distributed throughout Europe (e.g. Magnusson 1944, van Herk 1993, Thor & Nordin 1998, Diederich & Sérusiaux 2000, Czarnota 2002, Motiejūnaite & Andersson 2003). It is reported also from Tunisia (cf. Seaward 1996), Morocco (Burgaz et al. 2002), Turkey (e.g. John 1996), Syria (John et al. 2004) and Japan (Harada et al. 2004). Previous North American records are misidentifications of other species (Wetmore 2004a). Wetmore regards *C. herbidella* as a European species and compares it to the widely distributed *C. furfuracea*.

Caloplaca herbidella has recently been recorded from the Czech Republic for the first time from old-growth forest in the Šumava Mts (Palice 1999) in S Bohemia. It is reported here from the Hrubý Jeseník Mts in N Moravia. Records published by Suza (1921) and Vězda (1961) as *Blastenia*/*Caloplaca ferruginea* from the Hrubý Jeseník Mts also belong to this species on account of the well developed isidiate thalli of the specimens (PRM 631059! and hb. Vězda!).

**Caloplaca inconnexa* (Nyl.) Zahlbr.

This species is characterized by a yellow to yellow-orange, parasitic thallus, which is usually incorporated among the areoles of a host lichen species (Poelt 1958). Photographs of typical specimens are available in Nimis (2003). The host lichen is most frequently *Acarospora cervina*, but can also be *Aspicilia calcarea*, *Lecanora muralis*, *Lobothallia radiosa*, *Placocarpus schaereri* or other calciphilous crustose lichens. The anatomical structures of the apothecia are similar to those of *C. dolomiticola* s.l.

This lichen is traditionally regarded as a parasitic species (e.g. Poelt 1958, Clauzade & Roux 1985, Nimis & Poelt 1987, Nimis 1993, Wirth 1995, Nimis 2003) but mature thalli are often non-parasitic in later stages as implied by the comments of several authors (e.g. Vězda 1970, Diederich & Sérusiaux 2000) and observed in luxuriantly developed populations in S Europe by the first author. Furthermore, its holotype (France, Montpellier, H-Nyl. 29575!, sub *Lecanora inconnexa*) does not show any traces of parasitism. As this lichen forms a thallus of its own, the extent of parasitism and autotrophy cannot be exactly determined as stated by Sipman & Raus (1999). When parasitic, *C. inconnexa* does not cause any visible damage to the thallus of the host.

Caloplaca inconnexa is distributed mainly in the Mediterranean area (e.g. Nimis 1993) with outliers in W and central Europe. The northern distribution limit is in Slovakia (Vězda 1970, Guttová & Palice 2005), the Czech Republic (this paper), Germany (e.g. Wirth 1995) and Belgium (Diederich & Sérusiaux 2000). It is a species of xerothermic sites in the Czech Republic. Most localities are known from the Pavlovské vrchy hills (S Moravia), where *C. inconnexa* commonly grows on limestone rocks at altitudes between 250 and 450 m. Additionally, we have recorded *C. inconnexa* on calcareous rock in S Moravia (Brno) and central Bohemia (Praha, Český kras karst).

Caloplaca marmorata (Bagl.) Jatta

This species has a whitish endolithic thallus and small, deep red apothecia. It belongs to the *Caloplaca lactea* group and strongly resembles *C. lactea*, which however differs in rather orange apothecia, and broadly ellipsoid and shorter ascospores (Navarro-Rosinés & Hladun 1996).

According to Navarro-Rosinés & Hladun (1996), *C. marmorata* is widely distributed in Europe, the Near East and N Africa. In the Czech Republic, it was previously reported only once from the the Pavlovské vrchy hills (S Moravia) by Navarro-Rosinés & Hladun (1996), but the specimen (leg. A. Vězda, 1957) was erroneously attributed to Slovakia. Recently, *C. marmorata* was found in several new localities in the region of the Český kras karst in central Bohemia (Svoboda 2007). Our observations show that this species commonly occurs in the larger limestone areas in central Bohemia (Praha, Český kras karst) and S Moravia (Moravský kras karst, Pavlovské vrchy hills).

During the revision of herbarium material of *C. lactea* and *C. pyracea*, we found additional records of *C. marmorata* from central Bohemia: Beroun, Císařská rokle, coll. J. Podpěra (PRC 283!, sub *C. pyracea*), and S Moravia: Blansko, Jestřebí, coll. J. Suza (PRM 580938!, sub *C. lactea*), Mikulov, the hill Svatý kopeček, coll. J. Suza (PRM 580935!, sub *C. lactea*), and Mikulov, the hill Šibeničník, coll. J. Suza (PRM 580937!, sub *C. lactea*).

Caloplaca obliterans (Nyl.) Blomb. et Forssell

This species resembles *C. cirrochroa* and *C. proteus* and is mainly a montane lichen of shaded and mineral/lime-rich siliceous rocks (for details of ecology see Wirth 1995). It is widely distributed in the Northern Hemispere but is very rare and local (Laundon 1992a, Khodosovtsev et al. 2004). It is also known from Australia (Kalb 1996).

Only three localities at lower altitudes were previously reported from the Czech Republic: Tišnov, the hill Čebínka, on limestone (Servít 1910), Mohelno, on serpentinite (Suza 1931) and Sv. Jan pod skalou, on limestone (Servít & Černohorský 1935). The two Moravian records are revised here but we were unable to locate the Bohemian specimen in the PRM herbarium. The voucher specimen from Čebínka (PRC 53!) belongs to *C. cirrochroa*, whereas the identity of the specimen from Mohelno was confirmed (PRM 631205!). Reports from sites at lower altitudes exist for neighbouring countries (e.g. Verseghy 1971, Berger 2000). The new findings presented here are from high altitudes in the Krkonoše Mts (E Bohemia) and the Hrubý Jeseník Mts (N Moravia).

**Caloplaca phlogina* (Ach.) Flagey

Sérusiaux et al. (1999) considered *C. phlogina* a separate, well-defined species of the *C. citrina* group. Based on molecular data, *C. phlogina* forms a monophyletic, well-supported clade next to the *Xanthoria candelaria* group (Arup 2006) and is thus not closely related to the other species of *C. citrina* group.

Apart from its corticolous occurrence, it differs from *C. citrina* by smaller soredia (25–50 μm in diameter), slightly smaller ascospores and the yellow colour of the apothecial disc. However, the morphological differences are slight, thus the substrate ecology seems to be the best way to separate these two species (Arup 2006). Another similar species, *C. flavocitrina*, has a different thallus consisting of distinct squamules, which become sorediate at the margin. The general distribution of *C. phlogina* is unknown, because this taxon was previously synonymized with *C. citrina*.

The two records presented here, from central and S Bohemia, establish that this is a new species for the Czech Republic (identification confirmed by U. Arup, Lund). Care should be taken to distinguish corticolous *C. flavocitrina*, which is more common than *C. phlogina* in the Czech Republic.

**Caloplaca polycarpa* (A. Massal.) Zahlbr.

Syn.: *Caloplaca tenuatula* (Nyl.) Zahlbr.

This species belongs, according to Wirth (1995), to the *Caloplaca dolomiticola* group and is characterized by reduced areoles and inconspicuous marginal lobes. *Caloplaca polycarpa* grows mostly parasitically on *Verrucaria calciseda*, but we have observed free-living mature thalli.

Caloplaca polycarpa is distributed in N Africa (Egea 1996), the Near East (John et al. 2004) and S to central Europe (e.g. Nimis 1993, Wirth 1995), with the northernmost occurrence on the islands of Gotland and Öland (Santesson et al. 2004). *Caloplaca polycarpa* is obviously a common inhabitant of limestone areas in the Czech Republic, but largely overlooked and probably confused with the similar *C. holocarpa*. Recently it was found in central Bohemia (Praha, Český kras karst), S Bohemia (Český Krumlov) and S Moravia (Moravský kras karst, Pavlovské vrchy hills).

Caloplaca rubelliana (Ach.) Lojka

Caloplaca rubelliana is a very characteristic species having immersed apothecia and a rust-red thallus. Its crustose-rimose thalli usually form orbicular patches with a grey marginal prothallus. According to Nimis (2003) it is a warm-temperate to subtropical, widespread lichen, found on steeply inclined, hard, basic siliceous rocks (especially basalt), often with species of *Peltula*.

Caloplaca rubelliana is known from W North America (Wetmore & Kärnefelt 1999), N and S Africa (Egea 1996, Wirth et al. 2005), the Near East (John et al. 2004) and S to central Europe; the northernmost occurrence is in Estonia (Randlane & Saag 1999).

In the Czech Republic, its distribution is restricted to xerothermic rocks in Central Bohemia and SW Moravia. In Bohemia, the species is reported from the central and lower part of the Vltava river valley (Suza 1934, 1940) and Berounka river valley (Suza 1934, Wirth 1972, Vězda 1996). Additionally, Kuťák (1927) reports *C. rubelliana* from E Bohemia growing on diorite rock in Vrbatův Kostelec (distr. Chrudim) but the voucher specimen is missing from the Kuťák's herbarium (depon. in PRM). In Moravia, the species is only known from the locality "Ivančice, Biskoupky, on granulite rock in the Jihlavka river valley" (Suza 1932a, 1932b, 1935, 1944, 1947). This occurrence was recently confirmed by Vězda (1998). We found the species in two new localities in central Bohemia (Křivoklátsko).

**Caloplaca thuringiaca* Søchting et Stordeur

Caloplaca thuringiaca is closely related to the widespread *C. holocarpa*, from which it differs by its "delicate apothecia that are initially immersed in the thallus" (Søchting & Stordeur 2001). The other morphological characters studied in *C. thuringiaca* fall within the variability of *C. holocarpa* s.l. *Caloplaca thuringiaca* is otherwise characterized ecologically, as a species growing on plant-debris and bryophytes in steppe-like grasslands in xerothermic habitats.

Caloplaca thuringiaca is only known from several localities in E Austria, central Germany, N Italy and Switzerland (Stordeur 2003) and was recently reported from Mongolia (Hauck & Javkhlan 2006). In the Czech Republic, we found it in the Pavlovské vrchy hills

in southernmost Moravia, where it commonly occurs on the woody stems of perennials (e.g. *Thymus*) and tiny shrubs growing in rocky steppes on limestone, associated with other calciphilous lichens, such as *Agonimia opuntiella*, *Bacidia bagliettoana*, *B. herbarum* and *Caloplaca stillicidiorum*. Additionally, we recorded the species at localities in S Moravia (Tišnov) and central Bohemia (Praha, Český kras karst).

Caloplaca xantholyta (Nyl.) Jatta

Syn.: *Leproplaca xantholyta* (Nyl.) Hue

Caloplaca xantholyta is always sterile, with a bright yellow leprose thallus containing K+ anthraquinones. The thallus is clearly delimited into circular patches, sometimes with a sublobate margin. It grows typically under overhangs of lime-rich rocks, often accompanied by *C. chrysodeta*. Laundon (1992b) reports this species from Europe, the Middle East and New Zealand. It is also known from Tajikistan (Kudratov & Mayrhofer 2002) and Tibet (Obermayer 2004). According to Wetmore (2001) it is a European species not occurring in North America.

From the Czech Republic, it was previously reported only by Suza (1922) as a common species in the Moravský kras karst (S Moravia). According to our observations, it occurs also in central Bohemia (Křivoklát, Zruč nad Sázavou).

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Souhrn

Práce přispívá k poznání diverzity lichenizovaných hub rodu *Caloplaca* (*Teloschistales*) na území České republiky. Zahrnuto je 19 druhů, z nichž 6 je pro území nových: *C. epithallina*, *C. erodens*, *C. inconnexa*, *C. phlogina*, *C. polycarpa* a *C. thuringiaca*. Druhy *C. albolutescens*, *C. cerinella*, *C. chlorina*, *C. chrysodeta*, *C. dichroa*, *C. flavocitrina*, *C. herbidella* a *C. marmorata* byly pro území objeveny v nedávné době a znalosti o jejich ekologii a rozšíření v ČR jsou nedostatečné. *Caloplaca biatorina*, *C. obliterans*, *C. rubelliana* a *C. xantholyta* uvádíme jako znovuobjevené po více než padesáti letech. Teprve nedávno z ČR publikovaný druh *C. crenulatella* považujeme za dosud přehlížený a velmi běžný na antropogenních substrátech.

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Appendix 1. – Localities of the taxa studied.

Caloplaca albolutescens (Nyl.) H. Olivier

Central Bohemia: Bakov nad Jizerou, railway station, alt. 220 m, 50°28'30"N, 14°25'30"E, on calcareous sandstone SE-exposed rock, 23. 4. 2003, coll. J. Vondrák (CBFS 1053); Bakov nad Jizerou, ruin of Zvířetice castle, alt. 250 m, 50°28'10"N, 14°25'10"E, on calcareous sandstone boulders in ruin walls, 23. 4. 2003, coll. J. Vondrák (CBFS 1057); Beroun, Křivoklát, in village near castle, 50°02'10"N, 13°52'30"E, on horizontal side of brick in old wall, 23. 3. 2003, coll. J. Vondrák (CBFS 1152); Kladno, Netovice u Slaného, xerothermic slope, ca 600 m NE of village, 50°13'01"N, 14°06'05"E, on sandstone boulder, 12. 7. 2000, coll. J. Zázvorka (hb. Palice 5245); Mělník, Kokořín, ruin of Kokořín castle, alt. 260 m, 50°25'30"N, 14°34'E, on base-enriched sandstone in ruin wall, 12. 5. 2004, coll. J. Vondrák (CBFS 1871); Mělník, Liběchov, in town, alt. 170 m, 50°24'30"N, 14°28'E, on concrete, 12. 5. 2004, coll. J. Vondrák (CBFS 1893). **Southern Bohemia:** Písek, in town, alt. 370 m, 49°18'20"N, 14°09'E, on W-exposed, lime-enriched gneiss outcrops under town walls, 8. 1. 2005, coll. J. Vondrák (CBFS 2492). **Southern Moravia:** Kyjov, Milotice, on horizontal side of bricks in old wall, 2. 7. 2003, coll. J. Vondrák (CBFS 1307).

Caloplaca biatorina J. Steiner

Central Bohemia: Beroun, Tmáň, rocks in Kotýz protected area next to limestone quarry Čertovy schody, alt. 300-350 m, on sun-exposed limestone rock, 19. 7. 2006, coll. J. Vondrák (CBFS 4836, subsp. *biatorina*). **Southern Moravia:** Mikulov, limestone rocks under Svatý kopeček hill, ca 0.2 km E of town, alt. 290 m, 48°48'13.9"N, 16°38'28.9"E, on sunny limestone outcrop, 15. 4. 2005, coll. J. Vondrák & J. Šoun (CBFS 2838; subsp. *biatorina*); Mikulov, Bavory, Tabulová protected area (rocks on W slope of Mt Stolová hora), alt. 445 m, 48°50'22.9"N, 16°38'09.3"E, on sunny limestone outcrop, 15. 4. 2005, coll. J. Vondrák & J. Šoun (CBFS 2812; subsp. *biatorina*); Znojmo, Čížov, rock in Dyje river valley, under asphaltic road to Hardegg ca 2 km SSE of Čížov, alt. 325 m, 48°51'17.0"N, 15°52'14.8"E, on S-exposed lime-rich rock, 14. 4. 2005, coll. J. Vondrák & J. Šoun (CBFS 2819, 2850; subsp. *gyalolechioides*).

Caloplaca cerinella (Nyl.) Flagey

Southern Bohemia: Šumava Mts: Prachatice, near Horní Vltavice, at road, on twigs of *Acer pseudoplatanus*, alt. 880 m, 11. 5. 1996, coll. J. Horáková (PRM 890547); Šumava Mts: Volary, alley of old trees between Stožec and České Žleby, on bark of old *Fraxinus* together with *Rinodina pyrina*, alt. 850 m, 23. 4. 1994, coll. Z. Palice (hb. Palice 4088); Prachatice, Záblatí, Mlynářovice, above village, alt. ca 1000 m, 48°58'N, 13°52'E, on bark of *Salix caprea*, 29. 7. 2004, coll. J. Vondrák, det. M. Bartoš (CBFS 2277); Prachatice, Záblatí, Řepešín, nearby village, alt. ca 750 m, 49°00'N, 13°55'E, on bark of *Sambucus nigra* with *C. holocarpa*, 29. 7. 2004, coll. J. Vondrák, det. M. Bartoš (CBFS 2486); Protivín, Nuzov, near village, alt. 450 m, 49°14'20"N, 14°15'E, on bark of *Sambucus nigra* with *Lecania cyrtella*, 10. 1. 2003, coll. J. Vondrák (CBFS 1451); Tábor, Opařany, Skrýchov, near village, alt. 500 m, 49°25'30"N, 14°29'40"E, on twigs of *Sambucus nigra*, 8. 5. 2004, coll. J. Vondrák (CBFS 1869).

Caloplaca chlorina (Flot.) H. Olivier

Central Bohemia: Beroun, Křivoklát, in village near castle, 50°02'10"N, 13°52'30"E, on nutrient-rich rock below castle, 23. 3. 2003, coll. J. Vondrák (CBFS 1196); Nový Knín, Velká Lečice, in valley of Kocába river NE of village, alt. 241 m, 49°49'47.5"N, 14°20'57.5"E, on sunny base of bulky trunk of *Ulmus laevis*, 30. 12. 2004, coll. J. Vondrák (CBFS 2513); Rakovník, Kalubice, in village, alt. 370 m, 50°03'N, 13°49'40"E, on schist stone, 12. 9. 2003, coll. J. Vondrák (CBFS 1320); Ibid., on old iron on agricultural machine, 5. 9. 2004 (CBFS 2166); Rakovník, Skryje, locality "Kouřimecká rybárna" ca 4 km NE of village, alt. 257 m, 49°59'29.4"N, 13°47'18.6"E, on remote volcanic stones around old settlement, 24. 4. 2005, coll. J. Vondrák & J. Liška (CBFS 2858); Rakovník, Skryje, ruin of Týřov castle, alt. 295 m, 49°58'24.6"N, 13°47'24.1"E, on half-shaded andesite rock, 22. 3. 2005, coll. J. Vondrák (CBFS 2764); Ibid., on bark of *Fraxinus excelsior*, 23. 4. 2005, coll. J. Vondrák (CBFS 2982); Sedlčany, Kamýk nad Vltavou, Velká, in Vltava river valley, N of village, alt. 278 m, 49°39'53.0"N, 14°14'55.2"E, on large granite stones, 14. 5. 2002, coll. J. Vondrák (CBFS 2957). **Northern Bohemia:** Česká Lípa, Bezděz: scree forest at SSW-facing slope below castle-ruin, 50°32.33'N, 14°43.22'E, on vertical part of shaded phonolite boulder, alt. 590 m, 4. 6. 2004, coll. Š. Bayerová & Z. Palice (hb. Palice 9209); Jablonec n. Nisou, Bedřichov, in village, at pond, on stone wall by side of waterfall, on granite, alt. 750 m, MTB 5256 B, 16. 7. 2001, coll. J. Kocourková (PRM 895910). **Southern Bohemia:** Český Krumlov, rock on top of hill Kleť, alt. 1080 m, S exp., 48°52'N, 14°17'10"E, on horizontal to overhanging rock, 9. 6. 2004, coll. J. Vondrák (CBFS 1971); Husinec, in

Blanice river valley, under dam of "Husinecká přehrada" water reservoir, alt. 520 m, 49°02'20"N, 13°59'40"E, on granitic stones in steep concrete wall near river, 29. 6. 2004, coll. J. Vondrák (CBFS 1982); Milevsko, Chyšky, Střítež, in village, alt. 550 m, 49°30'N, 14°25'30"E, wet stones at base of old stony wall, 10. 9. 2004, coll. J. Vondrák (CBFS 2056); Novohradské hory Mts: Pohoří na Šumavě, near cemetery in village, alt. 905 m, on bark of *Acer platanoides*, 6. 7. 2005, coll. Z. Palice (hb. Palice 8906); Písek, in town, alt. 370 m, 49°18'20"N, 14°09'E, on W-oriented lime-enriched gneiss outcrops under town walls, 15. 5. 2003, coll. J. Vondrák (CBFS 1421, 2506); Písek, Zvíkovské Podhradí, Zvíkov castle, alt. 360 m, 49°26'20"N, 14°11'40"E, on stone in castle-wall, 8. 2. 2004, coll. J. Vondrák (CBFS 1279); Prachatice, Husinec, Výrov, in village, alt. 520 m, 49°03'00"N, 13°59'50"E, on gneiss stone in N-facing wall, 5. 6. 2003, J. Vondrák (CBFS 1292); Ibid., 4.9.2003 (CBFS 1323); Šumava Mts: Frymburk, Vítkův kámen, area of castle ruin, alt. 1030 m, on bark of *Acer platanoides*, 19. 4. 1997, coll. Z. Palice (hb. Palice); Šumava Mts: Volary, by road between villages České Žleby and Hliniště, alt. ca 850 m, on bark of *Acer pseudoplatanus*, 23. 6. 1995, coll. R. Dětinský, J. Horáková & Z. Palice (hb. Palice); Šumava Mts: Kvilda, at road-side, direction to Horská Kvilda near the turn of the blue marked tourist line, alt. 1065-1070 m, 49°02'N, 13°35'E, on bark of *Populus* sp., 22. 10. 2003, coll. Z. Palice (hb. Palice 8160); Týn nad Vltavou, in town, alt. 360 m, 49°13'30"N, 14°24'40"E, on upper side of brick wall, 29.4.2004, coll. J. Vondrák (CBFS 1770); Vimperk, Onšovice, Spulka river, alt. 590 m, 49°06'10"N, 13°46'E, on gneiss stones at river bank, 11. 6. 2003, coll. J. Vondrák (CBFS 1193). **Western Bohemia:** Karlovy Vary, Andělská Hora, ruin of medieval castle N of village, alt. 700 m, 50°12'20"N, 12°58'E, basaltic, S-oriented rock beneath castle, 21. 3. 2003, coll. J. Vondrák (CBFS 1103); Konstantinovy Lázně, Krasíkov, ruin of Krasíkov castle, alt. ca 600 m, 49°52'30"N, 12°57'E, on basaltic stones beneath ruin wall, 1. 11. 2004, coll. J. Vondrák (CBFS 2294); Šumava Mts: Kašperské Hory, Modrava, on top of Mt Medvěd, alt. 1130 m, on bark of *Acer pseudoplatanus* with *Bacidia beckhausii* and *Rinodina* cf. *exigua*, 1983, coll. J. Liška (hb. Liška, CBFS 2921); Šumava Mts: Prášily, Nová Hůrka, on solitary *Acer pseudoplatanus* at roadside (abundant on base of trunk), 23. 5. 1996, coll. Z. Palice (hb. Palice); Šumava Mts: Modrava, Javoří Pila, Medvědí hřbet (just W of Mt Medvěd) – a spruce plantation with dispersed old maples, alt. 1140 m, 49°00.38'N, 13°24.79'E, on bark of *Acer pseudoplatanus* snag, 26. 10. 2005, coll. F. Bouda, Z. Palice, O. Peksa & J. Steinová (hb. Palice 9335); Šumava Mts: Modrava, Modravské slatě, S-SE of Javoří slať bog, ca 0.8 km W of Smrkový vrch, spruce forest around a brooklet, alt. 1100 m, 49°01.72'N, 13°24.78'E, on bark of solitary *Acer pseudoplatanus*, 27. 6. 2006, coll. A. Kučera, E. Loskotová, Z. Palice & O. Peksa (hb. Palice 10901, 10902); Šumava Mts: Modrava, well-lit mixed forest in a saddle area NE of spot height 1132.6 m, 4 km WSW of village, alt. 1120 m, 49°00.96'N, 13°26.61'E, on bark of solitary old *Acer pseudoplatanus*, 28. 6. 2006, coll. E. Loskotová, Z. Palice & O. Peksa (hb. Palice 10909). **Southern Moravia:** Kyjov, Milotice, on top of brick wall, 2. 7. 2003, coll. J. Vondrák (CBFS 1373); Kroměříž, Buchlov castle, on sandstone boulder in shaded wall and on concrete, 5. 7. 2003, coll. J. Vondrák (CBFS 1294); Velká nad Veličkou, Vápenky, locality "Kamenná búda", 3 km NE from village, 48°53'30"N, 17°39'30"E, bark of old oak on road bifurcation, 29. 5. 2002, coll. J. Vondrák (CBFS 548).

Caloplaca chrysodeta (Vain. ex Räsänen) Dombr.

Central Bohemia: Beroun, Křivoklát, protected area Brdatka (rocks 2 km NE of village), alt. 300 m, 50°03'N, 13°53'40"E, under overhanging rock on lime-rich schist, 13. 12. 2004, coll. J. Vondrák (CBFS 2439); Beroun, Srbsko, rocks in bottom of Císařská rokle gorge ca 1-1.5 km S of village, alt. 230-320 m, on shaded dry limestone underhang, 20. 5. 2006, coll. J. Vondrák (CBFS 4443); Rakovník, Roztoky, U Eremita nature reserve, in slope above right bank of Berounka river, on base rich shale, 300 m, MTB 5949 C17, 25. 4. 1997, coll. J. Kocourková (PRM 907177); Ibid., 25. 4. 2005, coll. J. Vondrák (CBFS 2953). **Eastern Bohemia:** Choceň, Bezpráví, in Tichá Orlice river valley, alt. ca 320 m, on medium-lit vertical face of soft cretaceous limestone rock, 31. 7. 2005, coll. J. Vondrák (CBFS 3032); Náchod, 2 km NE of Nové Město n. Metují, valley of Metuje river, by path leading to Peklo settlement, 320 m, MTB 6356 A, on underhanging rock, on calcareous phyllite, 21. 4. 2001, coll. J. Kocourková & F. Berger (PRM 895845); Krkonoše Mts: Obří důl valley, Rudník, alt. ca 1150 m, 50°43.84'N, 15°43.93'E, on crystalline limestone outcrop above left bank of Rudný potok brook, 9. 6. 2005, coll. Z. Palice & Š. Bayerová (hb. Palice 9096). **Western Bohemia:** Šumava Mts, Železná Ruda, glacial cirque of Černé jezero lake, alt. ca 1230 m, on very shaded mica-schist overhang, 23. 10. 1996, coll. Z. Palice (PRC). **Northern Moravia:** Bystřice pod Hostýnem, Chvalčov, woodland of Smrdutá protected area, alt. 616 m, 49°20'38.0"N, 17°58'59.8"E, under overhanging sandstone rock, enriched by lime from carbonate inclusions, 16. 4. 2005, coll. J. Vondrák & J. Šoun (CBFS 2855); Bystřice pod Hostýnem, Hostýnské vrchy Mts, near Čerňava virgin forest, alt. 580 m, on vertical face of concrete wall, 12. 5. 1995, coll. B. Gruna & Z. Palice (hb. Palice); Jeseník, Lipová Lázně, locality "Na Pomezí", alt. ca 600 m, 50°14'40"N, 17°08'20"E, on shaded, crystalline limestone rock in beech forest, 24. 4. 2004, coll. J. Vondrák (CBFS 1729). **Southern Moravia:** Blansko, 2 km W of Vilémovice, Vývěry Punkvy national nature reserve, Suchý žleb glen, above locality "Mastný flek", 49°21'40"N, 16°43'10"E, scree forest on S-

facing slope, alt. 430 m, MTB 6666 A13, on calcareous outcrop, 16. 5. 2003, coll. J. Kocourková (PRM 907063); Blansko, 2.5 km W of Vilémovice, Vývěry Punkvy national nature reserve, Kateřinská jeskyně cave, S-facing vertical wall of calcareous rock at entrance to cave, alt. 400 m, MTB 6666 A13, on limestone, 17. 5. 2003, coll. J. Kocourková (PRM 907173); Blansko, Ostrov u Macochy, Pustý žleb valley, on shaded vertical limestone rock, with *Botryolepraria lesdainii*, 15. 5. 2004, coll. J. Vondrák (CBFS 1896); Brno, Ochoz u Brna, mouth of Pekárna cave, on limestone rock, 14. 5. 2004, coll. J. Vondrák (CBFS 1799); Brno, W of Veverská Bítýška, NW part of Brněnská přehrada water basin, Jelení žlíbek nature reserve, alt. 380 m, 49°16'28"N, 16°27'27"E, MTB 6763 B, on conglomerate rock at nature trail, 25. 6. 2005, coll. J. Kocourková & A. Vězda (PRM 907170); Znojmo, Čížov, rock in Dyje river valley, under asphaltic road to Hardegg ca 2 km SSE of Čížov, alt. 325 m, 48°51'17"N, 15°52'14.8"E, on overhanged lime-rich rock, 14. 4. 2005, coll. J. Vondrák & J. Šoun (CBFS 2817).

Caloplaca crenulatella (Nyl.) H. Olivier

Central Bohemia: Bakov nad Jizerou, railway station, alt. 220 m, 50°28'30"N, 14°25'30"E, on concrete and on calcareous sandstone SE-exposed rock, 23. 4. 2003, coll. J. Vondrák (CBFS 1056, 1060); Beroun, Hudlice, small, sunny rock in valley of Libotický potok brook, ca 300 m ESE of Stará Ves protected area, alt. 295 m, 49°57'39.4"N, 13°59'54.7"E, on lime-rich, S-exposed diabase rock, 22. 4. 2005, coll. J. Vondrák (CBFS 2851); Beroun, Králův Dvůr, Trubín, S-exposed rocks in Trubínský vrch protected area, alt. 330-350 m, 49°56'40"N, 13°59'40"E, on basaltic rock, 25. 7. 2004, coll. J. Vondrák (CBFS 2380); Beroun, Křivoklát, Amalín, in village, 50°02'10"N, 13°53'E, on concrete, 23. 3. 2003, coll. J. Vondrák (CBFS 1150); Beroun, Roztoky u Křivoklátu, WSW-exposed rocks "Na andělu", 1 km SW of village, alt. 250 m, 50°01'10"N, 13°51'40"E, on horizontal side of concrete wall beneath rock, 1. 6. 2003, coll. J. Vondrák (CBFS 1213); Beroun, Srbsko, S-exposed rocks in Koda protected area ca 1.5 km SW of village, alt. 300-350 m, 49°56'N, 14°08'E, on hard limestone rock, with *C. dolomiticola* s.l. and *C. marmorata*, 23. 7. 2004, coll. J. Vondrák (CBFS 2613); Beroun, Zdice, near railway station, alt. 260 m, 49°54'30"N, 13°59'E, on concrete, 26. 9. 2004, coll. J. Vondrák (CBFS 2297); Beroun, Zdice, S-facing rock on W edge of town, alt. 300 m, 49°54'30"N, 13°58'20"E, on sunny rock of basalt (diabase), with *Staurothele frustulenta*, 11. 9. 2003, coll. J. Vondrák (CBFS 1368); Hořovice, Točník, in village, 340 m, 49°53'20"N, 13°53'10"E, on horizontal side of concrete, 31. 5. 2003, coll. J. Vondrák (CBFS 1210); Mělník, Liběchov, Rimáň, in village, alt. 260 m, 50°24'30"N, 14°29'E, on concrete, 12. 5. 2004, coll. J. Vondrák (CBFS 1895); Milín, Solenice, rocks on left side of Vltava river, 1 km NE of village, alt. 300-400 m., 49°37'35"N, 14°12'20"E, on well-lit S-exposed base-rich rock, 6. 12. 2002, coll. J. Vondrák (CBFS 910); Praha, near Nová Ves settlement, Prokopské údolí valley, "Hemrovy skály" diabase rocks, on S-facing slope below steppe, alt. 280 m, MTB 5952, on low outcrop, 18. 4. 1988, coll. J. Horáková (PRM 760590, in specimen of *Caloplaca teicholyta*); Ibid., 24. 9. 1999, coll. J. Kocourková (PRM 761628); Praha, Podbaba, left bank of Vltava river, S-facing slope with low outcrops, alt. 250 m, MTB 5852 C, on small scree, on slightly calcareous pebbles, 1. 10. 2002, coll. J. Kocourková (PRM 907172); Praha, Trója, at canoe slalom course, on top of concrete post, alt. 178 m, MTB 5852, 24.10.1997, coll. J. Kocourková (PRM 760652); Příbram, in town, near Railway station, on horizontal face of concrete, coll. J. Vondrák (CBFS 2852); Příbram, Jince, in village, on asphalt in pathway, 31. 5. 2003, coll. J. Vondrák (CBFS 1183); Rakovník, Kalubice, in village, alt. 370 m, 50°03'N, 13°49'40"E, on mortar, 12. 9. 2003, coll. J. Vondrák (CBFS 1316, 1317) and on concrete wall, with *Aspicilia moenium*, 14. 4. 2004, coll. J. Vondrák (CBFS 1732); Rakovník, Skryje, "Jankovský mlýn" water-mill, alt. 310 m, 49°56'05"N, 13°44'50"E, on concrete wall, 21. 9. 2004, coll. J. Vondrák (CBFS 2069); Rakovník, Skryje, ruin of Týřov castle, alt. 295 m, 49°58'24.6"N, 13°47'24.1"E, on lime-enriched andesite rock under ruin walls, on sunny S-exposed slope, 22. 3. 2005, coll. J. Vondrák (CBFS 2760). **Northern Bohemia:** Lovosice, Třebenice, ruin of Košťál castle, 2 km N of village, alt. 470 m, 50°29'30"N, 13°59'10"E, on basaltic, S-oriented rock beneath castle, 9. 5. 2003, coll. J. Vondrák (CBFS 1111); Lovosice, Třebenice, Vlastislav, ruin of Skalka castle, alt. 310 m, 50°30'N, 13°58'E, on base-rich, soft inclusion in basaltic rock, with *Rinodina gennarii*, 9. 5. 2003, coll. J. Vondrák (CBFS 1142). **Southern Bohemia:** Bechyně, military airport SE of town, alt. 440 m, 49°17'N, 14°30'E, on horizontal side of concrete wall, 9. 9. 2004, coll. J. Vondrák (Sel. Exsic. of *Caloplaca*, no 21); České Budějovice, in town, alt. 390 m, 48°58'41"N, 14°27'30"E, on concrete wall, 20. 1. 2003 and 9. 4. 2003, coll. J. Vondrák (CBFS 964, 989, 986); České Budějovice, park Stromovka, alt. 390 m., 48°58'20"N, 14°27'30"E, on concrete wall, 1. 4. 2003, coll. J. Vondrák (CBFS 959); České Budějovice, Křemže, rocky outcrops S of town, alt. 510 m, 48°54'15"N, 14°18'40"E, on S-exposed serpentinite outcrop, 8. 11. 2003, coll. J. Vondrák (CBFS 1402); Kaplice, Benešov nad Černou, in town, alt. 670 m, on concrete, 27. 9. 2004, coll. J. Vondrák (CBFS 2334); Milevsko, northern edge of town, alt. 450 m, 49°28'N, 14°22'E, concrete on pond-dam, 1. 5. 2004, coll. J. Vondrák (CBFS 1757); Písek, in town, alt. 370 m, 49°18'20"N, 14°09'E, on W-oriented lime-enriched gneiss outcrops under town walls and on concrete, 15. 5. 2003, coll. J. Vondrák (CBFS 1171, 1413); Písek, Mirovice, "Nerestský lom" quarry, 49°30'30"N, 14°04'E, on

limestone rock, 26. 8. 2003, coll. J. Vondrák (CBFS 1335); Písek, Protivín, Čačárky, 49°12'10"N, 14°13'40"E, on concrete, 3. 5. 2003, coll. J. Vondrák (CBFS 1051); Písek, Zvíkovské Podhradí, Zvíkov castle, alt. 360 m, 49°26'20"N, 14°11'40"E, on walls of castle, 4. 8. 2003, coll. J. Vondrák (CBFS 1285); Prachatice, Husinec, near town, alt. 480 m, on concrete, 23. 5. 2003, coll. J. Vondrák (CBFS 1168); Prachatice, Husinec, Těšovice, railway station, alt. 480 m, 49°02'40"N, 14°01'40"E, on concrete, with *Candelariella aurella*, 23. 5. 2003, coll. J. Vondrák (CBFS 1167); Prachatice, Husinec, Výrov, in village, alt. 507 m, 49°02'56.9"N, 13°59'47.9"E, vertical side of concrete panel, with *Caloplaca teicholyta*, 25. 12. 2004, J. Vondrák (CBFS 2523); Vimperk, Onšovice, rocky slopes on left side of Spulka river, alt. 610-630 m, 49°06'30"N, 13°46'E, on S-exposed crystalline limestone outcrop, 1. 2. 2004, coll. J. Vondrák (CBFS 1555); Vodňany, Čížčenice, railway station, alt. 390 m, 49°09'30"N, 14°13'20"E, on concrete wall, 14. 4. 2003, coll. J. Vondrák (CBFS 966). **Western Bohemia:** Karlovy Vary, Andělská Hora, in village, alt. ca 620 m, 50°12'20"N, 12°58'E, on concrete wall, 21. 3. 2003, coll. J. Vondrák (CBFS 1407). **Northern Moravia:** Javorník ve Slezsku, railway station, alt. ca 300 m, 50°23'30"N, 17°01'E, pieces of slag in railway-line, with *Caloplaca citrina* and *C. soralifera*, 23. 4. 2004, coll. J. Vondrák (CBFS 1727); Vsetín, in town, on bank of Bečva river, 49°20'23"N, 17°59'44"E, on concrete, 15. 4. 2005, coll. J. Vondrák & J. Šoun (CBFS 2821). **Southern Moravia:** Blansko, 2 km W of Vilémovice, Suchý žleb glen, above locality "Mastný flek", 49°21'40"N, 16°43'10"E, scree forest on S-facing slope, alt. 450 m, MTB 6666 A13, on semi-shady calcareous outcrop in *Antherico-Coryletum*, 16. 5. 2003, coll. J. Kocourková (PRM 907074); Ivančice, Biskoupky, in Jihlava river valley, alt. ca 250 m, on loess with *Endocarpon pusillum*, 1971, coll. A. Vězda (hb. Vězda: Lich. Bohemoslov. 15653, sub *C. ferrarii*); Ivančice, Řeznovice, in Jihlava river valley, alt. ca 250 m, on loess, 1969, coll. A. Vězda (hb. Vězda: Lich. Bohemoslov. 15652, sub *C. ferrarii*); Kroměříž, Buchlov castle, on sunny sandstone rock, 5. 7. 2003, coll. J. Vondrák (CBFS 1297, 1299); Kyjov, Milotice, horizontal side of bricks in wall, 2. 7. 2003, coll. J. Vondrák (CBFS 1361); Mikulov, rocks on E slope of Kozí hrádek ruin, on limestone rock, 19. 5. 2004, coll. J. Vondrák (CBFS 1849); Mikulov, Kočičí kámen protected area (rock ca 2 km N of town), alt. 345 m, 48°49'49.9"N, 16°38'12.7"E, on sunny limestone outcrop, 15. 4. 2005, coll. J. Vondrák & J. Šoun (2820); Mikulov, Svatý kopeček hill, 0.3 km E of town, 48°48'30"N, 16°39'05"E, on hard limestone boulder, 24. 2. 2002, coll. J. Vondrák (CBFS 262); Mikulov, Sedlec, locality Skalky, 1.5 km SW of village, 48°53'40"N, 16°40'30"E, on soft limestone boulder, 23. 2. 2002, coll. J. Vondrák (CBFS 272, 1600); Tišnov, near Drásov, Drásovský kopeček hill, alt. 325 m, MTB 6664 D, on calcareous rock, 1. 8. 1988, coll J. Horáková (PRM 887688); Vyškov, airport, on asphalt and concrete, 3. 7. 2003, coll. J. Vondrák (CBFS 1302, 1304); Znojmo, Čížov, S-exposed slope in Dyje river valley, above asphaltic road to Hardegg ca 2 km SSE of Čížov, alt. 350 m, 48°51'17.8"N, 15°52'09.7"E, on base of *Quercus robur* trunk, 14. 4. 2005, J. Vondrák & J. Šoun (CBFS 2845).

Caloplaca dichroa Arup

Central Bohemia: Beroun, Srbsko, lower part of S-exposed rocks in Koda protected area ca 1.5 km SW of village, alt. 280-330 m, on limestone rock, 21. 5. 2006, coll. J. Vondrák (CBFS 4433). **Southern Bohemia:** České Budějovice, Brloh, Kuklov, in village, 48°55'50"N, 14°11'10"E, on mortar, 7. 2. 2002, coll. J. Vondrák (CBFS 241); České Budějovice, Křemže, graveyard N of town, 48°54'30"N, 14°18'20"E, concrete on old wall, 7. 2. 2002, J. Vondrák (CBFS 332, sub *C. coronata*); České Budějovice, Křemže, Holubov, Holubovské hadce protected area, alt. 470 m, 48°53'40"N, 14°20'20"E, on serpentinite outcrop, 9. 6. 2004, coll. J. Vondrák (CBFS 1962, sub *C. citrina*); Písek, Mirovice, "Nerestský lom" quarry, 49°30'30"N, 14°04'E, on limestone rock, 26. 8. 2003, coll. J. Vondrák (CBFS 1312, sub *C. flavogranulosa*); Týn nad Vltavou, in town, alt. 360 m, 49°13'30"N, 14°24'40"E, upper side of brick wall, 29.4.2004, coll. J. Vondrák (CBFS 1773, sub *C. citrina*). **Southern Moravia:** Kyjov, Milotice, upper side of brick wall, 2. 7. 2003, coll. J. Vondrák (CBFS 1308, sub *C. citrina*); Mikulov, Sedlec, Skalky protected area 1.5 km SW of village, 48°53'40"N, 16°40'30"E, on soft limestone boulder, 23. 2. 2002, coll. J. Vondrák (CBFS 245, sub *C. coronata*, 255, sub *C. citrina*).

**Caloplaca epithallina* Lynge

Eastern Bohemia: Krkonoše Mts: N-facing slope of Mt Sněžka, carling at stairs, alt. 1510 m, MTB 5260 C, on mica schist rock, on thallus of *Lecanora polytropa*, 10. 5. 2002, coll. M. Skalka, det. J. Kocourková (PRM 907178).

**Caloplaca erodens* Tretiach, Pinna et Grube

Central Bohemia: Beroun, Srbsko, lower part of S-exposed rocks in Koda protected area ca 1.5 km SW of village, alt. 280-330 m, on limestone rock, 21. 5. 2006, coll. J. Vondrák (CBFS 4434); Beroun, Srbsko, rocks ca 1 km NE of village center, 49°56'33.13"N, 14°08'33.32"E, on sun-exposed vertical-faced hard limestone rock, 21. 12.

2006, coll. J. Vondrák (CBFS 4918); Beroun, Svatý Jan pod Skalou, W-exposed rock E of village, alt. ca 350 m, on sunny limestone rock, 30. 9. 2005, coll. J. Vondrák (CBFS 3242); Beroun, Tmáň, rocks in protected area Kotýz next to limestone quarry Čertovy schody, alt. 300-350 m, on calcareous rock under overhang, 19. 7. 2006, coll. J. Vondrák (CBFS 4855). **Southern Moravia:** Dolní Věstonice, Pavlov, crest of Děvín towards Soutěska saddle, alt. 450 m, on exposed limestone rock, 13. 10. 2001, coll. L. Bičanová & Z. Palice (hb. Palice 8716); Mikulov, Bavory, protected area Tabulová, rocks on SW slope of Mt Stolová hora, alt. 375 m, 48°50'11.5"N, 16°38'14.8"E, on sunny limestone rock, affected by non-described *Opegrapha*, 15. 4. 2005, coll. J. Vondrák & J. Šoun (CBFS 2839); Mikulov, northern peak of Mt Šibeničník ca 2 km S of town, alt. 249 m, 48°47'21.5"N, 16°37'48"E, on SW-exposed limestone outcrop, affected by non-described *Opegrapha*, 14. 4. 2005, J. Vondrák & J. Šoun (CBFS 2849); Mikulov, limestone rocks under Svatý kopeček hill, ca 0.2 km E of town, 48°48'29"N, 16°39'00"E, 19. 5. 2004, coll. J. Vondrák, J. Šoun & M. Bartoš (CBFS 1529, Sel. Exsic. of *Caloplaca*, no 10); Mikulov, rocks on E slope of Kozí hrádek ruin, 19. 5. 2004, coll. J. Vondrák, J. Šoun & M. Bartoš (CBFS 1817); Mikulov, Svatý kopeček hill, 0.3 km E of town, 48°48'30"N, 16°39'05"E, 21. 8. 2002, coll. J. Vondrák, J. Šoun & M. Bartoš (CBFS 1839); Mikulov, Klentnice, ruin of Sirotčí hrádek castle, 20. 5. 2004, coll. J. Vondrák, J. Šoun & M. Bartoš (CBFS 1831); Mikulov, Klentnice, E slope of Mt Tabulová hora, 20. 5. 2004, coll. J. Vondrák, J. Šoun & M. Bartoš (CBFS 1838); Mikulov, Pavlov, ruin of Děvičky castle, ca 1 km W of village, alt. 422 m, 48°52'32.9"N, 16°39'41.6"E, on W-exposed limestone rock, affected by non-described *Opegrapha*, 15. 4. 2005, coll. J. Vondrák & J. Šoun (CBFS 2829, 2831).

Caloplaca flavocitrina (Nyl.) H. Olivier

Central Bohemia: Bakov n. Jizerou, ruin of Zvířetice castle, alt. 250 m, 50°28'10"N, 14°25'10"E, on calcareous sandstone boulders in walls, 23. 4. 2003, coll. J. Vondrák (CBFS 1058); Beroun, Hudlice, small, sunny rock in valley of Libotický potok brook, ca 300 m ESE of protected area Stará Ves, alt. 295 m, 49°57'39.4"N, 13°59'54.7"E, on lime-rich S-exposed diabase rock, with *Lecania inundata*, 22. 4. 2005, coll. J. Vondrák (CBFS 2805); Beroun, Křivoklát, in village near castle, 50°02'10"N, 13°52'30"E, on bricks in old wall and on nutrient-rich rock under castle, 23. 3. 2003, coll. J. Vondrák (CBFS 1148, 1195); Praha, Jinonice, in quarry Kační, alt. 250 m, MTB 5952 C03, on diabase outcrop, 2. 11. 1999, coll. J. Kocourková (PRM 907165); Praha, Malá Chuchle, in forest Chuchelský háj, alt. 240 m, MTB 5952 C12, on calcareous rock at small brook, 6. 5. 1996, J. Horáková, det. J. Vondrák (PRM 758304); Rakovník, valley of Rakovnický stream, near Dolní Chlum, at path, on railway viaduct wall, alt. 300m, MTB 5948 B12, on mortar, 3. 1. 1998, coll. J. Kocourková & P. Kocourek, det. J. Vondrák (PRM 892486); Rakovník, Kalubice, in village, alt. 370 m, 50°03'N, 13°49'40"E, on mortar, 31. 5. 2003, coll. J. Vondrák (CBFS 1185) and on base of old trunk of *Fraxinus excelsior*, 7. 1. 2005, J. Vondrák (CBFS 2531); Rakovník, Skryje, locality "Kouřimecká rybárna" ca 4 km NE of village, alt. 257 m, 49°59'29.4"N, 13°47'18.6"E, on bark and thin twigs of *Sambucus nigra*, 24. 4. 2005, J. Vondrák & J. Liška (CBFS 2822, 2835); Rakovník, Skryje, ruin of Týřov castle, alt. 295 m, 49°58'24.6"N, 13°47'24.1"E, on lime-enriched andesite rock under ruin walls, on sunny S-exposed slope, with sterile *C. chlorina* and on base of trunk of *Fraxinus excelsior* with sterile *Rinodina pityrea*, 22. 3. 2005, coll. J. Vondrák (CBFS 2756, 2761); Rakovník, Skřiváň, Valachov protected area, 1 km SE from village, in valley of Tyterský potok brook, 50°01'N, 13°46'30"E, on sulphate and carbonate layers in SW-exposed basaltic rock, 16. 9. 2002, coll. J. Vondrák (CBFS 619). **Southern Bohemia:** Bechyně, military airport SE of town, alt. 440 m, 49°17'N, 14°30'E, on horizontal side of concrete wall, with *Staurothele frustulenta*, 9. 9. 2004, coll. J. Vondrák (CBFS 2436); Český Krumlov, Staré Dobrkovice, Kalamandra protected area ca 1 km of village, on old wall built of crystalline limestone and silicate stones (without concrete), 22. 10. 2001, coll. J. Vondrák (CBFS 227); Prachatice, Husinec, Výrov, in village, alt. 530 m., 49°03'00"N, 13°59'50"E, on calcareous mortar on W-oriented wall, under arid conditions, 5. 4. 2003, coll. J. Vondrák (CBFS 962, Sel. Exsic. of *Caloplaca*, no 1); Prachatice, Těšovice, in village, alt. 420 m, 49°03'04.2"N, 14°01'21.5"E, on vertical side of S-exposed concrete wall, 3. 1. 2005, coll. J. Vondrák (CBFS 2520); Vodňany, Číčenice, railway station, alt. 390 m, 49°09'30"N, 14°13'20"E, on vertical W-oriented side of concrete wall, 14. 12. 2004, coll. J. Vondrák (CBFS 2473). **Western Bohemia:** Radnice, Bohy, ruin of Krašov castle in valley of Berounka river, alt. 300 m, 49°57'N, 13°35'30"E, on schist stone in wall of ruin, 14. 9. 2003, coll. J. Vondrák (CBFS 1336). **Southern Moravia:** Znojmo, Čížov, S-exposed slope in Dyje river valley, above asphaltic road to Hardegg ca 2 km SSE of Čížov, alt. 350 m, 48°51'17.8"N, 15°52'09.7"E, on base of trunk of *Quercus robur* trunk and on wooden remains of plants, 14. 4. 2005, coll. J. Vondrák & J. Šoun (CBFS 2844, 2846).

Caloplaca herbidella (Hue) H.Magn.

Northern Moravia: Jeseníky Mts, old-growth mixed forest with beech prevailing beneath Františkova myslivna (Bučina nature reserve), alt. 1050-1100 m, on bark of *Ulmus glabra*, 9. 6. 2002, coll. J. Halda & Z. Palice (hb. Palice 6701).

**Caloplaca inconnexa* (Nyl.) Zahlbr.

Central Bohemia: Beroun, Svatý Jan pod Skalou, WSW-facing xerothermic slope, steppe below view-point, alt. 380 m, 49°58'11"N, 14°08'13"E, associated with *Verrucaria* sp. on loose limestone pebble, 21. 4. 2005, coll. J. Halda & Z. Palice (hb. Palice 8843); Ibid., on *Acarospora cervina*, 30. 9. 2005, coll. J. Vondrák (CBFS 3240); Beroun, Tmáň, rocks in Kotýz protected area next to limestone quarry Čertovy schody, alt. 300-350 m, on limestone rock, locally parasitic on *Lobothallia radiosa*, 19. 7. 2006, coll. J. Vondrák (CBFS 4841); Praha, near Nová Ves settlement, Prokopské údolí valley, above "Bílé skály" calcareous rocks, on low calcareous outcrops of rocks at upper edge of rocks, alt. 300 m, MTB 5952, on thallus of *Acarospora cervina*, 24. 9. 1999, coll. J. Kocourková (PRM 907167). **Southern Moravia:** Mikulov, northern peak of Mt Šibeničník ca 2 km S of town, alt. 249 m, 48°47'21.5"N, 16°37'48.0"E, on SW-exposed limestone outcrop, parasitic on *Acarospora cervina*, 14. 4. 2005, coll. J. Vondrák & J. Šoun (CBFS 2848); Mikulov, southern peak of Mt Šibeničník ca 2 km S of town, alt. 238 m, 48°47'15.2"N, 16°37'48.0"E, on flat limestone outcrop, parasitic on *Acarospora cervina*, 14. 4. 2005, coll. J. Vondrák & J. Šoun (CBFS 2800); Mikulov, limestone rocks under Svatý kopeček hill, ca 0.2 km E of town, 48°48'29"N, 16°39'00"E, exposed hard limestone rock, on *Acarospora cervina*, 19. 5. 2004, coll. J. Vondrák, J. Šoun & M. Bartoš (CBFS 1806); Mikulov, Svatý kopeček hill, 0.3 km E of town, 48°48'30"N, 16°39'05"E, parasitic on *Acarospora cervina*, 24. 2. 2002, coll. J. Vondrák (CBFS 248); Mikulov, rocks on E slope of Kozí hrádek ruin, 21.8.2002, coll. J. Vondrák (CBFS 1531); Mikulov, Kočičí kámen protected area (rock ca 2 km N of town), alt. 345 m, 48°49'49.9"N, 16°38'12.7"E, on sunny limestone outcrop, parasitic on *Acarospora cervina*, 15. 4. 2005, coll. J. Vondrák & J. Šoun (CBFS 2827); Mikulov, Kočičí skála protected area (rock ca 1.5 km N of town), alt. 361 m, 48°49'33.9"N, 16°38'30.3"E, on sunny SW-exposed limestone outcrop, free-living or parasitic on *Verrucaria* aff. *nigrescens* and *Acarospora cervina*, 15. 4. 2005, coll. J. Vondrák & J. Šoun (CBFS 2813, 2842); Mikulov, Bavory, Tabulová protected area (rocks on SW slope of Mt Stolová hora), alt. 375 m, 48°50'11.5"N, 16°38'14.8"E, on sunny limestone outcrop, parasitic on *Acarospora cervina*, 15. 4. 2005, coll. J. Vondrák & J. Šoun (CBFS 2824); Mikulov, Klentnice, E slopes of Mt Tabulová hora, 20. 5. 2004, coll. J. Vondrák, J. Šoun & M. Bartoš (CBFS 1830); Mikulov, Sedlec, locality Skalky, 1.5 km SW of village, 48°53'40"N, 16°40'30"E, on soft limestone boulder, 23. 2. 2002, coll. J. Vondrák (CBFS 253, 268).

Caloplaca marmorata (Bagl.) Jatta

Central Bohemia: Beroun, Srbsko, S-exposed rocks in Koda protected area ca 1.5 km SW of village, alt. 300-350 m, 49°56'N, 14°08'E, on hard limestone rock, 23. 7. 2004, coll. J. Vondrák (CBFS 2606, 2614); Praha, near Nová Ves settlement, Prokopské údolí valley, "Bílé skály" calcareous rocks, alt. 280 m, MTB 5952**,** on vertical side of rock, 24. 9. 1999, coll. J. Kocourková (PRM 760579); Praha, Prokopské údolí valley, alt. 280 m, MTB 5951 C, on calcareous rocks above old swimming pool "Holyňské koupaliště", 6. 11. 1994, coll. J. Horáková (PRM 907187); Praha, Prokopské údolí valley, alt. 270 m, MTB 5952, on calcareous outcrops near "Stydlá voda" water spring, 22. 3. 1994, coll. J. Horáková (PRM 886370). **Southern Moravia:** Blansko, Ostrov u Macochy, ruin of Blansek castle, 15. 5. 2004, coll. J. Vondrák (CBFS 1888); Dolní Věstonice, Pavlov, Soutěska, alt. 330 m, on loose limestone pebble, 13. 10. 2001, coll. Z. Palice (hb. Palice 8717); Mikulov, rocks on eastern slope of Kozí hrádek ruin, 19. 5. 2004, coll. J. Vondrák, J. Šoun & M. Bartoš (CBFS 1800); Mikulov, between Svatý kopeček hill and limestone quarry, 1 km E of town, SE exp., 48°48'40"N, 16°39'20"E, 21. 8. 2002, coll. J. Vondrák (CBFS 921); Mikulov, limestone rocks under Svatý kopeček hill, ca 0.2 km E of town, 48°48'29"N, 16°39'00"E, 19. 5. 2004, coll. J. Vondrák, J. Šoun & M. Bartoš (CBFS 1816); Mikulov, Svatý kopeček hill, 0.3 km east from town, 48°48'30"N, 16°39'05"E, 24. 2. 2002, coll. J. Vondrák (CBFS 244); Mikulov, Bavory, Tabulová protected area (rocks on SW slope of Mt Stolová hora), alt. 375 m, 48°50'11.5"N, 16°38'14.8"E, on sunny limestone outcrop, 15. 4. 2005, coll. J. Vondrák & J. Šoun (CBFS 2833); Mikulov, Klentnice, E slopes of Mt Tabulová hora, 20. 5. 2004, coll. J. Vondrák, J. Šoun & M. Bartoš (CBFS 1812, 1837).

Caloplaca obliterans (Nyl.) Blomb. et Forssell

Eastern Bohemia: Krkonoše Mts: Pec pod Sněžkou, Obří důl valley, side gully in "Malá Čertova zahrádka" nature reserve, alt. 1150-1200 m, 50°43'30-35"N, 15°43'30"E, on shaded porphyric rock, 27. 7. 2000, coll. Š.

Bayerová & Z. Palice (hb. Palice 4990). **Northern Moravia:** Jeseníky Mts: Mt Vysoká hole, NE part of Velký kotel corrie, "Beckeho skála" rock-face, alt. 1195 m, 50°03'23"N, 17°14'20"E, overhanging ESE-facing phyllitic rock, 23. 9. 2001, coll. Z. Palice (hb. Palice 9888); Ibid., central part of Velký kotel corrie, Vitásek ravine, third/fourth rock-ledge below wall of Šmarda, alt. 1260-1270 m, on overhanging schist rock, 11. 6. 2002, coll. Z. Palice (hb. Palice 7030); Ibid., 6. 5. 2004, coll. J. Vondrák (CBFS 1848).

**Caloplaca phlogina* (Ach.) Flagey

Central Bohemia: Rakovník, Skryje, locality "Kouřimecká rybárna" ca 4 km NE of village, alt. 257 m, 49°59'29.4"N, 13°47'18.6"E, abundant on bark of *Sambucus nigra*, 24. 4. 2005, coll. J. Vondrák & J. Liška, conf. U. Arup, 2006 (CBFS 2836). **Southern Bohemia:** Prachatice, Hracholusky, ca 1 km SE of village, alt. 510 m, 49°03'12.5"N, 14°06'08.45"E, on bark of *Populus nigra* f. *pyramidalis*, 2. 10. 2006, coll. J. Vondrák , conf. U. Arup, 2006 (CBFS 4625).

**Caloplaca polycarpa* (A.Massal.) Zahlbr.

Central Bohemia: Beroun, Srbsko, S-exposed rocks in Koda protected area ca 1.5 km SW of village, alt. 300-350 m, 49°56'N, 14°08'E, on hard limestone rock with *Verrucaria calciseda*, 23. 7. 2004, coll. J. Vondrák (CBFS 2615); Praha, Hlubočepy, Prokopské valley, Bašta, on south-facing slope, alt. 230 m, MTB 5952 C, parasitic on *Verrucaria calciseda*, 13. 11.2004, coll. J. Kocourková (PRM 907175); Praha, Prokopské valley, above "Holyňské koupaliště" swimming pool, S-facing slope of calcareous rocks, at upper edge in front of pine forest, on limestone, alt. 250 m, MTB 5951 C, on *Verrucaria calciseda*, 14. 11. 2004, coll. J. Kocourková (PRM 907176). **Southern Bohemia:** Český Krumlov, Nové Dobrkovice, on border of Vyšenské kopce protected area, alt. 478 m, 48°49'08.8"N, 14°17'30.8"E, parasitic on *Verrucaria* cf. *calciseda*, 24. 3. 2005, coll. J. Vondrák (CBFS 2725). **Southern Moravia:** Blansko, Vilémovice, Srnčí cave, S-facing grassy slope below cave, alt. 462 m, 49°22'21.8"N, 16°44'39.3"E, on calcareous outcrop on *Verrucaria calciseda*, 18. 9. 2003, coll. J. Kocourková (PRM 907009); Blansko, Ostrov u Macochy, Balcarka cave, alt. 455 m, on calcareous rock outcrop above parking place, on *Verrucaria calciseda*, 17. 9. 2003, coll. J. Kocourková (PRM 907012); Mikulov, Klentnice, ruin of Sirotčí hrádek castle, on hard limestone rock, 20. 5. 2004, coll. J. Vondrák, J. Šoun & M. Bartoš (CBFS 1818); Tišnov, Čebín, on south foot of hill Čebínka, on hard limestone rock, 16. 4. 2005, coll. J. Vondrák & J. Šoun (CBFS 2854).

Caloplaca rubelliana (Ach.) Lojka

Central Bohemia: Rakovník, Skryje, ruin of Týřov castle, alt. 295 m, 49°58'24.6"N, 13°47'24.1"E, on lime-enriched schist under ruin walls, on sunny S-exposed slope, MTB 6048 B13, 7. 6. 1996, coll. J. Horáková (PRM 907164); Ibid., 8. 8. 1999, coll. J. Kocourková (PRM 907189); Ibid., 22. 3. 2005, coll. J. Halda, P. Havránek, J. Liška, Z. Palice (hb. Palice 8821) & J. Vondrák (CBFS 2753); Rakovník, between Nezabudice and Roztoky villages, Nezabudické skály nature reserve, at SE margin of reserve, alt. 270 m, 50°01'17"N, 13°51'04"E, on steep SW-facing slope above Berounka river, in thin scree oak forest, on greywacke stone, 3. 9. 1997, coll. J. Kocourková (PRM 907163).

**Caloplaca thuringiaca* Søchting et Stordeur

Central Bohemia: Beroun, rocks above right bank of Berounka river between villages Karlštejn and Srbsko, close to hill Střevíc, alt. 250-300 m, on dead stems of plants in steppe-like grassland on limestone rock, 19. 7. 2006, coll. J. Vondrák (CBFS 4797, 4823); Beroun, Koněprusy, in steppe vegetation on south slope of hill Kotýz, alt. ca 410 m, 49°54'56.0"N, 14°02'56.6"E, on dead plant debris, 17. 5. 2006, coll. J. Šoun (hb. Šoun 52); Beroun, Svatý Jan pod Skalou – Sedlec, on SE-facing slope, alt. 310 m, MTB 6050, in steppe on diabase rocks, 15. 4. 1993, coll. J. Horáková (PRM 907185); Praha, Prokopské údolí valley, alt. 280 m, MTB 5951 C, on limestone outcrops on slope W of old swimming pool "Holyňské koupaliště", 21. 10. 1994, coll. J. Horáková (PRM 907161). **Southern Moravia:** Mikulov, SE slope of Svatý kopeček hill ca 1 km E of town, alt. 340-350 m, on remains of dead plants, 15. 4. 2005, coll. J. Vondrák & J. Šoun (CBFS 2841); Mikulov, limestone quarry 1 km E of town, 48°48'40"N, 16°39'30"E, on plant debris in steppe-like grassland on terrace of limestone quarry with *Caloplaca stillicidiorum* and *Bacidia baglietoana*, 21. 8. 2002, coll. J. Vondrák (CBFS 2488); Mikulov, northern peak of Mt Šibeničník ca 2 km S of town, alt. 249 m, 48°47'21.5"N, 16°37'48.0"E, on remains of small shrubs and herbs, 14. 4. 2005, coll. J. Vondrák & J. Šoun (CBFS 2908); Mikulov, Kočičí kámen protected area (rock ca 2 km N of town), alt. 345 m, 48°49'49.9"N, 16°38'12.7"E, on remains of small shrubs and herbs, 15. 4. 2005, coll. J. Vondrák &

J. Šoun (CBFS 2913); Mikulov, Kočičí skála protected area (rock ca 1.5 km N of town), alt. 361 m, 48°49'33.9"N, 16°38'30.3"E, on remains of small shrubs and herbs with *C. stillicidiorum*, 15. 4. 2005, coll. J. Vondrák & J. Šoun (CBFS 2912); Mikulov, Bavory, Tabulová protected area (rocks on SW slope of Mt Stolová hora), alt. 375 m, 48°50'11.5"N, 16°38'14.8"E, on remains of small shrubs and herbs with *C. stillicidiorum*, 15. 4. 2005, coll. J. Vondrák & J. Šoun (CBFS 2906); Mikulov, Pavlov, E slope under ruin of Děvičky castle, ca 1 km W of village, alt. 400 m, 48°52'34.1"N, 16°39'44.9"E, on wooden remains of dead small shrubs, 15. 4. 2005, coll. J. Vondrák & J. Šoun (CBFS 2840); Znojmo, Čížov, S-exposed slope in Dyje river valley, above asphaltic road to Hardegg ca 2 km SSE of Čížov, alt. 350 m, 48°51'17.8"N, 15°52'09.7"E, on wooden remains of plants with *Agonimia opuntiella*, 14. 4. 2005, coll. J. Vondrák & J. Šoun (CBFS 2904).

Caloplaca xantholyta (Nyl.) Jatta

Central Bohemia: Rakovník, Křivoklát, near school, at beginning of nature-trail, oak-hornbeam forest on S-facing slope, alt. 280 m, 50°01.85'N, 13°51.93'E, on underhanging shale outcrop, on calcareous inclusion, MTB 5949 C07, 31. 3. 2002, coll. J. Kocourková (PRM 900092); Zruč nad Sázavou, 1 km N of Bernartice, S of Švihov water basin, above bank, alt. 380 m, 49°41'03"N, 15°08'02"E, on serpentinite rock outcrop, 14. 5. 2005, coll. J. Kocourková & W. v. Brackel (PRM 907171). **Southern Moravia:** Blansko, Moravský kras landscape protected area, 2.5 km W of Vilémovice, Kateřinská jeskyně cave, S-facing vertical wall of calcareous rock at entrance to cave, alt. 400 m, MTB 6666 A13, on limestone, 17. 5. 2003, coll. J. Kocourková (PRM 907174); Blansko, Moravský kras landscape protected area, 2 km W of Vilémovice, Vývěry Punkvy national nature reserve, Suchý žleb glen, above locality "Mastný flek", alt. 430 m, 49°21'40"N, 16°43'10"E, scree forest on S-facing slope, on calcareous outcrop, 17. 4. 2004, coll. J. Kocourková (PRM 907190); Brno, Moravský kras landscape protected area, Ochoz u Brna, nearby Pekárna cave, on overhanged limestone rock, 17. 5. 2002, coll. J. Vondrák (CBFS 2484).