

## NOTEWORTHY LICHEN-FORMING AND LICHENICOLOUS FUNGI FROM THE BÜKK MTS, HUNGARY

J. VONDRÁK<sup>1\*</sup>, J. ŠOUN<sup>1</sup>, L. LŐKÖS<sup>2</sup> and A. KHODOSOVTSSEV<sup>3</sup>

<sup>1</sup>Department of Botany, Faculty of Science, University of South Bohemia  
Branišovská 31, CZ-370 05, České Budějovice, Czech Republic; E-mail: j.vondrak@seznam.cz

<sup>2</sup>Department of Botany, Hungarian Natural History Museum  
H-1476 Budapest, Pf. 222, Hungary; E-mail: lokos@bot.nhmus.hu

<sup>3</sup>Department of Botany, Kherson State University  
27, 40 Rokiv Zovtnya, 27, Kherson, Ukraine; E-mail: khodosovtsev@ksu.ks.ua

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Twenty-four of treated species are reported as new to Hungary; *Agonimia allobata*, *A. repleta*, *Amphisphaeria fallax*, *Anema tumidulum*, *Bacidia fuscoviridis*, *Biatoridium monasteriense*, *Caloplaca oasis*, *C. conversa*, *C. raesaenenii*, *C. soralifera*, *Candelariella plumbea*, *Chromatochlamys muscorum*, *Diplotomma murorum*, *Lecanora leuckertiana*, *L. rouxii*, *Lepraria lesdainii*, *Lichinella cribellifera*, cf. *Mycobilimbia epixanthoides*, *Opegrapha suecica*, *Scoliciosporum curvatum*, *Stigmidium rouxianum*, *Verrucaria helvetica*, *V. sorbinea* and *Xanthoria sorediata*. Eleven species, *Agonimia opuntiella*, *Caloplaca crenulatella*, *C. xerica*, *Dirina stenhammari*, *Evernia divaricata*, *Immersaria cupreoatra*, *Lecanora bolcana*, *Leptogium magnussonii*, *Lichinella nigritella*, *Strangospora ochrophora*, and *Verrucaria bryoctona*, are new to the Bükk Mts. New records of *Agonimia tristicula* and *Caloplaca chrysodeta*, already known from the Bükk Mts, are mentioned. The known distribution of *C. raesaenenii* (= *C. thuringiaca*) is described.

Key words: *Agonimia*, Ascomycetes, biodiversity, *Caloplaca*, lichens, rare species

### INTRODUCTION

Bükk Mts, being a part of the Northern Mountain Range, belongs to the Inner Western Carpathians, which has a direct connection to the main mountain system of the Carpathians. Its main bedrock is mostly calcareous, Triassic limestone (and dolomite), which appears also in the surface as big outcrops, boulders and stone walls, rich in karst formations like dolinas and caves. Other rock types of acidic character are gabbro, diabase, radiolarit, rhyolite, sandstone, and schist.

Its highest peak is 959 m (Mt Bálvány), but there are more than 20 summits or ridges above 900 m. The main vegetation types are forests (dominated by *Acer*, *Carpinus*, *Fagus*, *Fraxinus*, *Picea*, *Quercus*, etc.) and grasslands (mostly calcareous and some siliceous rocky grasslands). A considerable part of its area (43,254 ha) is protected and has been managed by the Bükk National Park since 1977.

The first lichens were collected in the Bükk Mts by Vincze Borbás, Frigyes Hazslinszky, Sándor Mágocsy-Dietz, and Márton Vrabélyi in the 1860–70s. The first publications are from Hazslinszky (1869, 1870, 1884) after he made a longer trip in the Bükk Mts in April–May 1868. Ádám Boros, a famous Hungarian botanist and bryologist visited the Bükk Mts several times and he also collected lots of lichen specimens (mostly macrolichens, like *Cladonia*, *Lobaria*, *Parmelia*, *Peltigera*, *Solorina* spp.) between 1922 and 1957. The most famous lichenologist of this area was Ferenc Főriss, who systematically wandered all over the Bükk Mts for more than 25 years. Most of his specimens (more than 8,000) are deposited now in the lichen collection of the Hungarian Natural History Museum (BP). He planned to publish a complete lichenological monograph of the Bükk Mts (incl. 25,000 records of 1,400 species and infraspecific taxa), but he died before he could have finished it. Not even a complete checklist was prepared up to now, although several publications were published containing sporadic records on the lichen flora of the area (e.g. Asztalos *et al.* 1984, Boros 1954, Breuss 1990, Degelius 1954, Dobolyi *et al.* 1981, Erichsen 1936, 1940, Főriss 1940, 1957, Gallé 1960, 1972, Hafellner and Poelt 1979, Halda 2003, Hale 1990, Hanko 1983, Kiszelyné *et al.* 1989, Kőfaragó-Gyelnik 1940, 1942, Krog 1978, Laundon 2003, Lumbsch 1993, Magnusson 1929, 1939, 1944, 1947, Mayrhofer 1984, Mayrhofer and Poelt 1978, Mayrhofer *et al.* 1992, Motyka 1938, Nordin 2000, Räsänen 1940, Runemark 1956, Servít 1949, Szatala 1927, 1930, 1939, 1954, 1956, Thor 1988, Tibell 1971, Verseggy 1958, 1962, 1971, 1972, 1973, 1975, 1984, Vitikainen 1994, Zehetleitner 1978, etc.).

Our short contribution presents collecting data to some noteworthy species from the Bükk Mts; among them, twenty-four species are new to Hungary. Most of the presented samples were collected by the authors in the Bükk Mts (northeast Hungary) in May 2006 and June 2008. In the area, the following sites were visited: a) shaded limestone rocks and humid deciduous forest in deep inverse valleys of the brooks Lök-patak and Garadna-patak; b) sun-exposed limestone rocks around Mt Három-kő, Látó-kövek, Kemesnye-hegy and Örvény-kő in central Bükk; c) sink hole area in the karst plateau Nagy-mező in the uppermost part of Bükk; d) limestone rocks below the ruin Dédes-vár in the northern peripheral part of Bükk; e) base-rich, xerothermic magmatic bedrock (gabbro, diabase, etc.) at the ruin Szarvas-kői vár close to Eger.

Some of the listed species can be characterised as inconspicuous, but rather common (e.g. *Agonimia opuntiella*, *A. tristicula*, *Caloplaca chrysodeta*, *C. conversa* and *Strangospora ochrophora*), however, some other inconspicuous lichens are probably rare in Hungary (*Caloplaca oasis*, *Chromatochlamys muscorum*, *Dirina stenhammari*, *Opegrapha suecica*, *Scoliciosporum curvatum* and *Verrucaria sorbinea*). Some species have recently been described (e.g. *Agonimia repleta*) and some have not been recognised from similar species in Hungary (e.g. *Caloplaca crenulatella*, *Lecanora bolcana*). Further relevant locality records from other parts of Hungary are also included. The new country records of conspicuous lichens *Bacidia fuscoviridis*, *Lichinella cribellifera* and *Xanthoria soredata* are rather surprising.

Data on distribution of lichen species in Hungary are taken mostly from Verseggy (1994) and other sources published later or earlier than this work. Species new to Hungary are indicated by an asterisk. Vouchers are currently deposited in BP, CBFS, KHER or the private herbarium of J. Šoun.

## THE SPECIES

### *Lichen-forming fungi*

\**Agonimia allobata* (Stizenb.) P. James (Syn.: *Polyblastia allobata* (Stizenb.) Zschacke) – Bükk Mts; Borsod-Abaúj-Zemplén County, Ómassa: Garadna-völgy, 48° 06' 45.8" N, 20° 32' 17.3" E; alt.: ca 450 m, on bark of *Tilia cordata* in damp forest, coll. J. Vondrák, 3.6.2008, CBFS JV6374. – It is mainly characterised by its ± smooth thallus, globose, never pyriform, exposed perithecia with smooth wall and whitish ostiolar region, 8-spored asci and rather small ascospores, ca 30–35 × 10–15 µm.

\**Agonimia repleta* Czarnota et Coppins – Bükk Mts; Borsod-Abaúj-Zemplén County, Ómassa: Garadna-völgy, 48° 06' 45.8" N, 20° 32' 17.3" E; alt.: ca 450 m, on old basidioma of polypore on hardwood bark, coll. J. Vondrák, 3.6.2008, CBFS JV6391. – The recently described species is similar to *A. tristicula* in outer morphology, but the former has smaller thallus squamules, 8-spored asci and much smaller ascospores (Czarnota and Coppins 2000).

*Agonimia opuntiella* (Buschardt et Poelt) Vězda – Bükk Mts; Heves County, Szarvaskő: Szarvas-kői vár, 47° 59' 27.0" N, 20° 19' 46.1" E; alt.: ca 300 m, on base-rich soil in crevices in volcanic rock, coll. J. Vondrák, 4.6.2008, CBFS JV6367. – In Hungary this species has been recorded only from the Villány Mts (Lőkös 2000), but it is probably widely distributed in Hungary.

*Agonimia tristicula* (Nyl.) Zahlbr. – Bükk Mts; Heves County, Felsőtárkány: rocks on S-slope of Mt Három-kő, 3 km NEE of the village Répáshuta,

alt. ca 900 m, on shallow calcareous soil among mosses *Homalothecium* and *Tortella*, coll. J. Vondrák and J. Šoun, 12.5.2006, CBFS JV4380. – Aggtelek karst; Borsod-Abaúj-Zemplén County, Bódvarákó: Mt Esztramos, N-exposed rocks ca 1 km NE of village, alt. ca 300 m, over mosses on calcareous soil, coll. J. Vondrák, 5.8.2006, CBFS JV4889. – In Hungary, this species was published from the Villány Mts (Lőkös 2000, Thor 1988) and the Bükk Mts (Thor 1988).

\**Anema tumidulum* Henssen nom. ined. – Bükk Mts; Borsod-Abaúj-Zemplén County, Mályinka: Kemesnye-hegy (Kemesnye-kő), 48° 08' 00.1" N, 20° 30' 03.1" E; alt.: 600 m, on vertical limestone rock with other cyanolichens, coll. J. Vondrák, 3.6.2008, CBFS JV6363. – Uppony Mts; Borsod-Abaúj-Zemplén County, Uppony: Keresztes-kő, 48° 12' 53.7" N, 20° 26' 57.3" E, alt. ca 230 m, coll. L. Lőkös, 3.8.2005, BP.

\**Bacidia fuscoviridis* (Anzi) Lettau – Bükk Mts; Heves County, Felsőtárkány, 4 km NNE of village in deep valley of brook Lök-patak near Vaskapu rock, alt. ca 380 m, on shaded and wet vertical faces of limestone rocks, coll. J. Vondrák and J. Šoun, 12.5.2006, CBFS JV4398. – Being inconspicuous and often forming sterile populations, the species is probably strongly undercollected in many European countries. However, the data from Benelux (van den Boom *et al.* 1995), southern Germany (Wirth 1995), Slovakia (Guttová and Palice 2001), and the Czech Republic (Vondrák *et al.* 2007b) show its rather common and often predominant occurrence on shaded limestone rocks.

\**Biatoridium monasteriense* Körb. – Bükk Mts; Heves County, Felsőtárkány, 4 km NNE of village in valley of brook Lök-patak, near Vaskapu rock; alt. ca 380 m, on bark of *Fraxinus*, coll. J. Vondrák and J. Šoun, 12.5.2006, Herb. J. Šoun 54. – Bükk Mts; Borsod-Abaúj-Zemplén County, Mályinka: Csondró-völgy, on bark of *Fraxinus excelsior*, 48° 08' 14.2" N; 20° 30' 51.3" E, alt. ca 350 m, coll. L. Lőkös, 3.6.2008, BP. – Börzsöny Mts; Pest County, Kémence: Nagy-Mánabérc, ca 1.3 km S of Királyháza, along the red (-) tourist path, on bark of *Acer campestre*, 47° 58' 35.5" N; 18° 58' 11.1" E, alt. ca 500 m, coll. L. Lőkös, 29.7.2002, BP.

*Caloplaca chrysodeta* (Räsänen) Domb. – Bükk Mts; Heves County, Felsőtárkány, 4 km NNE of village in deep valley of brook Lök-patak near Vaskapu rock, alt. ca 380 m, on shaded dry limestone overhanging rock, coll. J. Vondrák and J. Šoun, 12.5.2006, CBFS JV4371. – This species has already been recorded from the Bükk Mts (Thor 1988).

\**Caloplaca conversa* (Kremp.) Jatta – Bükk Mts; Heves County, Szarvaskő: Szarvas-kői vár, 47° 59' 27.0" N, 20° 19' 46.1" E; alt.: ca 300 m, on base-rich volcanic outcrop, coll. J. Vondrák, 4.6.2008, CBFS JV 6408.

*Caloplaca crenulatella* (Nyl.) H. Olivier – Bükk Mts; Heves County, Felsőtárkány, Répáshuta, 3 km NEE of village, rocks on S-slope of Mt Három-kő, alt. ca 900 m, on sun-exposed limestone rock, coll. J. Vondrák and J. Šoun, 12.5.2006, CBFS JV4409. – In Hungary, this species has hitherto been recorded

from Komárom (Farkas *et al.* 2001), Upponyi-szoros (Molnár and Lőkös 2006) and from loess at several places (Baranya Hills, Gerecse Mts, Geresd Hills, Gödöllő Hills, Hegyalja Hills, Mátra Mts, Mezőföld, Szekszárd Hills, Tihany Peninsula, Villány Mts, Völgység) (Lőkös 2003).

\**Caloplaca oasis* (A. Massal.) Szatala – Bükk Mts; Heves County, Felsőtárkány: rocks on S-slope of Mt Három-kő, 3 km NEE of the village Répáshuta, alt. ca 900 m, on sun-exposed limestone rock, coll. J. Vondrák and J. Šoun, 12.5.2006, CBFS JV4320, dupl. in herb. Arup. – In the neighbouring countries, the species is known from Austria: Styria and Tirolia (cf. Hafellner and Türk 2001), Croatia (e.g. Dalmatia, Southern Velebit, coll. J. Poelt 1973, GZU!; Istria, Opatija, coll. J. Poelt 1955, GZU!), Romania: Munții Banatului Mts, Băile Herculane (Moruzi *et al.* 1967, Ciurchea 2004), and Slovakia (Vězda 1972). It is probably widespread in the Mediterranean (e.g. Nimis 2003).

\**Caloplaca raesaenii* Bredkina (Syn.: *Caloplaca thuringiaca* Sřchting et Stordeur) – Bükk Mts; Heves County, Felsőtárkány: Három-kő rock, 3 km NEE of the village Répáshuta, alt. ca 900 m, on remains of mosses, lichens, and plant debris on calcareous ground, coll. J. Vondrák and J. Šoun, 12.5.2006, Herb. J. Šoun 59. – Aggtelek karst; Borsod-Abaúj-Zemplén County, Bódvarákó: Mt Esztramos, N-exposed rocks ca 1 km NE of village, alt. ca 300 m, on dead woody stems of minute shrubs in steppe on limestone rock, coll. J. Vondrák, 5.8.2006, CBFS JV 4792. – Duna–Tisza köze; Bács-Kiskun County, Fülöpháza, on sand dunes along the road to Solt, on dried cattle excrement, coll. P. K. Versegthy, 1977, BP 85780 (sub *C. pyracea* f. *musciicola*). – Nagykunság; Jász-Nagykun-Szolnok County, Karczag, ad terram natronato-argillaceam, coll. Timkó, 1926, BP 27887 (sub *C. pyracea* f. *musciicola*). – Recently, the species is rather known under the name *Caloplaca thuringiaca*, however it is a later synonym of *C. raesaenii* (Khodosovtsev 2008). *Caloplaca raesaenii* (= *C. geophila* Räsänen nom. illeg.) is known from mountain steppes of Russia, Kazakhstan, Tajikistan (Khodosovtsev *et al.* 2004, Bredkina and Makarova 2005), Kirghizia (Bredkina 1981, 1986, 1988) and Ukraine (Khodosovtsev 2006). Under the name *C. thuringiaca*, it is further known from Thuringia, central Germany (Sřchting and Stordeur 2001), Austria, Germany, Italy, Switzerland (Stordeur 2003), the Czech Republic (Vondrák *et al.* 2007a) and Mongolia (Hauck and Javkhlan 2006). Stordeur (2003) regarded it a sub-Mediterranean-Turanic to west Pontic element and expected further findings in the Mediterranean and southeastern Europe.

\**Caloplaca soralifera* Vondrák et Hrouzek – Bükk Mts; Borsod-Abaúj-Zemplén County, Ómassa: Garadna-völgy, 48° 06' 45.8" N, 20° 32' 17.3" E; alt.: ca 450 m, on concrete at forest road, coll. A. Khodosovtsev, L. Lőkös & J. Vondrák, 3.6.2008, CBFS JV6356. – Aggtelek karst; Borsod-Abaúj-Zemplén County, Bódvarákó, in village; alt.: ca 160 m, on concrete, coll. J. Vondrák,

5.8.2006, CBFS JV4875. – In the Czech Republic, the species is common on artificial substrata, often accompanied by *Caloplaca crenulatella* (Vondrák and Hrouzek 2006) and it is expected to be frequently recorded from similar sites in Hungary. The specimen from the Bükk Mts is sterile and it may represent a recently described species *C. concreticola*, which is distinguished with certainty only when fertile (Vondrák *et al.* 2008).

*Caloplaca xerica* Poelt et Vězda – Bükk Mts; Heves County, Szarvaskő: Szarvas-kői vár, 47° 59' 27.0" N, 20° 19' 46.1" E; alt.: ca 300 m, on base-rich volcanic outcrop, coll. J. Vondrák, 4.6.2008, CBFS JV6369. – In Hungary, this species has only been known from the Mátra Mts (Kiszelyné-Vámosi 1983).

\**Candelariella plumbea* Poelt et Vězda – Bükk Mts; Borsod-Abaúj-Zemplén County, Mályinka: Kemesnye-hegy (Kemesnye-kő). Lat.: 48° 08' 00.1" N; Long.: 20° 30' 03.1" E; alt.: 600 m a.s.l., 3.6.2008, coll. A. Khodosovtsev, L. Lőkös and J. Vondrák, CBFS JV6358, KHER.

\**Chromatochlamys muscorum* (Fr.) H. Mayrhofer et Poelt subsp. *muscorum* (Syn.: *Thelenella muscorum* (Fr.) Vain.) – Bükk Mts; Heves County, Nagyvisnyó: sink hole area in west part of karst plateau Nagy-mező, 3.5 km NE of the village Répáshuta, alt. ca 780 m, over calcicolous mosses, coll. J. Vondrák and J. Šoun, 13.5.2006, rev. J. Vondrák 2007, CBFS JV4383, sub *Polyblastia vouauxii* de Lesd. – Zemplén Mts; Borsod-Abaúj-Zemplén County, Erdőbénye: Mt Mula-tó-hegy, on acidic soil, 48° 15' 39.5" N, 21° 21' 41.4" E, alt.: 236 m, coll.: Lőkös, L., 26.08.2002, BP 91953.

\**Diplotomma murorum* (A. Massal.) Coppins – Bükk Mts; Borsod-Abaúj-Zemplén County, Mályinka: Kemesnye-hegy (Kemesnye-kő). 48° 08' 00.1" N; 20° 30' 03.1" E; alt.: 600 m, on *Caloplaca chalybaea*, on limestone, coll. A. Khodosovtsev, 3.6.2008, KHER. – Although known from *Caloplaca teicholyta* (e.g. Purvis 1992), we consider our specimen from *C. chalybaea* conspecific with *Diplotomma murorum*.

*Dirina stenhammari* (Fr.) Poelt et Follmann – Bükk Mts; Borsod-Abaúj-Zemplén County, Mályinka: Kemesnye-hegy (Kemesnye-kő), 48° 08' 00.1" N, 20° 30' 03.1" E; alt.: 600 m, on vertical limestone rock below overhang, coll. J. Vondrák, 3.6.2008, CBFS JV6379. – Heves County, Felsőtárkány, 4 km NNE of village in deep valley of brook Lök-patak near Vaskapu rock, alt. ca 380 m, on shaded dry limestone underhang, coll. J. Vondrák and J. Šoun, 12.5.2006, CBFS JV4401. – In Hungary, this species has hitherto been known from Aggtelek karst and Bakony regions (Verseghy 1994).

*Evernia divaricata* (L.) Ach. – Bükk Mts; Heves County, Nagyvisnyó, sink hole area in west part of karst plateau Nagy-mező, 3.5 km NE of the village Répáshuta, alt. ca 780 m, on bark of *Acer platanoides*, coll. J. Vondrák and J. Šoun, 13.5.2006, CBFS JV4393. – Although not included in Verseghy (1994), the

species was recorded several times from Hungary (Gyelnik 1928, Kiszelyné-Vámosi 1983, Lőkös 2000, Lőkös and Versegly 2001). New to the Bükk Mts.

*Immersaria cupreoatra* (Nyl.) Calatayud et Rambold – Bükk Mts; Heves County, Szarvaskő: Szarvas-kői vár, 47° 59' 27.0" N, 20° 19' 46.1" E; alt.: ca 300 m, on xerothermic volcanic outcrop, coll. A. Khodosovtsev and J. Vondrák, 4.6.2008, CBFS JV6375. – In Hungary, this species was collected in several places (incl. Bükk Mts, Szarvaskő ca 70 years ago), but it was published only from the Balaton-felvidék (Versegly 1968, sub *Aspicilia cupreoatra*) and from the Mátra Mts (Kiszelyné-Vámosi 1983, sub *Aspicilia cupreoatra*). Published as new to Bükk Mts.

*Lecanora bolcana* (Pollini) Poelt – Bükk Mts; Heves County, Szarvaskő: Szarvas-kői vár, 47° 59' 27.0" N, 20° 19' 46.1" E; alt.: ca 300 m, on base-rich volcanic outcrop, coll. J. Vondrák, 4.6.2008, CBFS JV6364. – This species has only been known from the Mátra Mts in Hungary (Kiszelyné-Vámosi 1983). It is probably widely distributed on siliceous rocks throughout Hungary, but it has been hitherto considered a morphotype of *Lecanora muralis*.

\**Lecanora leuckertiana* Zedda – Bükk Mts; Heves County, Felsőtárkány, 4 km NNE of village in deep valley of brook Lök-patak near Vaskapu rock, alt. ca 380 m, on shaded dry limestone rock below overhang, coll. J. Vondrák and J. Šoun, 12.5.2006, det. Š. Slavíková-Bayerová, CBFS JV4390. – Determination was confirmed by TLC (usnic acid, zeorin).

\**Lecanora rouxii* S. Ekman et Tonsberg (Syn.: *Lepraria flavescens* Clauzade et Cl. Roux) – Bükk Mts; Heves County, Felsőtárkány, 4 km NNE of village in deep valley of brook Lök-patak near Vaskapu rock, alt. ca 380 m, on shaded dry limestone rock below overhang, coll. J. Vondrák and J. Šoun, 12.5.2006, det. Š. Slavíková-Bayerová, CBFS JV4395. – Although the KC+ and C+ reactions are indistinct, determination was confirmed by TLC (atranorin, flavescin, sordidone, + unknown substances).

\**Lepraria lesdainii* (Hue) R. C. Harris (Syn.: *Botryolepraria lesdainii* (Hue) Canals, Hern.-Mar., Gómez-Bolea et Llimona) – Bükk Mts; Heves County, Felsőtárkány, 4 km NNE of village in deep valley of brook Lök-patak near Vaskapu rock, alt. ca 380 m, on wet fissures in shaded limestone overhang, coll. J. Vondrák and J. Šoun, 12.5.2006, CBFS JV4406.

*Leptogium magnussonii* Degel. et P. M. Jorg. – Bükk Mts; Heves County, Szarvaskő: Szarvas-kői vár, 47° 59' 27.0" N; 20° 19' 46.1" E; alt.: ca 300 m, on siliceous rocks and mosses, coll. A. Khodosovtsev and J. Vondrák, 4.6.2008, CBFS JV6397, KHER. – In Hungary, this species has only been known from the Visegrád Mts (Czeika *et al.* 2004). In Europe, it is further known from Belgium, Germany, the Netherlands, Norway, Sweden (Jørgensen 1994), Spain (Aragón and Otálora 2004) and Ukraine (Khodosovtsev and Popov 2003).

\**Lichinella cribellifera* (Nyl.) P. P. Moreno et Egea – Bükk Mts; Borsod-Abaúj-Zemplén County, Mályinka: Kemesnye-hegy (Kemesnye-kő), 48° 08' 00.1" N, 20° 30' 03.1" E; alt.: 600 m, on vertical limestone rock with other cyanolichens, coll. J. Vondrák, 3.6.2008, CBFS JV6360. – Aggtelek karst; Borsod-Abaúj-Zemplén County, Jósvalfő, rocky outcrops by road to Szin, ca 2 km E of village, 48° 28' 40" N, 20° 34' 30" E, on xerothermic limestone outcrop, coll. J. Vondrák, 5.8.2006, CBFS JV 4957.

*Lichinella nigritella* (Lettau) P. Moreno et Egea – Bükk Mts; Heves County, Szarvaskő: Szarvas-kői vár, 47° 59' 27.0" N, 20° 19' 46.1" E; alt.: ca 300 m, on base-rich volcanic outcrop, coll. J. Vondrák, 4.6.2008, CBFS JV6401. – Aggtelek karst; Borsod-Abaúj-Zemplén County, Jósvalfő, rocky outcrops by road to Szin, ca 2 km E of village, 48° 28' 40" N, 20° 34' 30" E, on xerothermic limestone outcrop, coll. J. Vondrák, 5.8.2006, CBFS JV 4638, 4639. – In Hungary, this species has been known from the Mátra Mts (Kiszelyné-Vámosi 1980) and the Uppony Mts (Molnár and Lőkös 2006).

\*cf. *Mycobilimbia epixanthoides* (Nyl.) Vitik., Ahti, Kuusinen, Lommi et T. Ulvinen – Bükk Mts; Heves County, Felsőtárkány, 4 km NNE of village in deep valley of brook Lök-patak near Vaskapu rock, alt. ca 380 m, on bark of *Fraxinus*, coll. J. Vondrák and J. Šoun, 12.5.2006, rev. L. Sparrius, O. Vitikainen, CBFS JV4316. – *Mycobilimbia epixanthoides* is known to grow over mosses on tree trunks (e.g. Wirth 1995), but it may commonly grow directly on bark (Czarnota 2003). According to our observation, this species commonly occurs and occasionally predominates on barks of various broad-leaved trees at fresh and shaded sites in Central Europe. Unfortunately, the Hungarian material is sterile and cannot be identified with certainty. No lichen substances were detected by TLC.

\**Opegrapha suecica* Källsten ex Thor – Bükk Mts; Heves County, Felsőtárkány, 4 km NNE of village in deep valley of brook Lök-patak near Vaskapu rock, alt. ca 380 m, on shaded and damp vertical limestone rock under overhang, coll. J. Vondrák and J. Šoun, 12.5.2006, conf. L. Sparrius, CBFS JV4317. – In contrast to other limestone-inhabiting *Opegrapha* species, it is characterised by its K+ purple epithecium (Thor 2004).

*Phaeophyscia hirsuta* (Mereschk.) Moberg (Syn.: *Phaeophyscia cernohorskyi* (Nádv.) Essl.) – Bükk Mts; Borsod-Abaúj-Zemplén County, Mályinka: Kemesnye-hegy (Kemesnye-kő), 48° 08' 00.1" N, 20° 30' 03.1" E; alt.: 600 m, on limestone, among and over bryophytes, coll. J. Vondrák, 3.6.2008, CBFS JV6378.

\**Scoliosporum curvatum* Sérus. – Bükk Mts; Heves County, Nagyvisnyó, Répáshuta, sink hole area in west part of karst plateau Nagy-mező, 3.5 km NE of village, alt. ca 780 m, on thin twigs and leaves of *Picea abies*, coll. J. Vondrák and J. Šoun, 13.5.2006, CBFS JV4397.



*Strangospora ochrophora* (Nyl.) R. A. Anderson (Syn.: *Piccolia ochrophora* (Nyl.) Hafellner) – Bükk Mts; Heves County, Nagyvisnyó, Répáshuta, near hut Hármaskút ca 6 km NW of village, by tourist way marked by blue cross, alt. ca 840 m, on bark of *Sambucus nigra*, coll. J. Vondrák and J. Šoun, 13.5.2006, CBFS JV4375. – Budapest: Soroksár, Sósomocsár, on bark of *Sambucus nigra*, 47° 24' 33.2" N, 19° 8' 58.0" E, coll.: L. Lőkös, 6.11.2004, BP. – The species has already been recorded from central Hungary, close to Kecskemét (Thor 1988).

*Verrucaria bryoctona* (Th. Fr.) Orange – Bükk Mts; Borsod-Abaúj-Zemplén County, Mályinka: Kemesnye-hegy (Kemesnye-kő), 48° 08' 00.1" N, 20° 30' 03.1" E; alt.: 600 m, on calcareous soil among bryophytes, coll. J. Vondrák, 3.6.2008, CBFS JV6350. – In Hungary, this species has been only known from the Villány Mts (Lőkös 2000).

\**Verrucaria helvetica* B. de Lesd. (Syn.: *Verrucula helvetica* (B. de Lesd.) Nav.-Ros. et Cl. Roux) – Bükk Mts; Borsod-Abaúj-Zemplén County, Mályinka: Kemesnye-hegy (Kemesnye-kő), 48° 08' 00.1" N, 20° 30' 03.1" E; alt.: 600 m, on limestone rock, lichenicolous on *Caloplaca cirrochroa*, coll. J. Vondrák, 3.6.2008, CBFS JV6384.

\**Verrucaria sorbinea* Breuss – Bükk Mts; Borsod-Abaúj-Zemplén County, Mályinka: Kemesnye-hegy (Kemesnye-kő), 48° 08' 00.1" N; 20° 30' 03.1" E; alt.: 600 m, on bark of *Quercus*, coll. A. Khodosovtsev, 3.6.2008, KHER. – It is a rare corticolous *Verrucaria*, which is known from Luxembourg (Breuss 1998), Spain (van den Boom 1999), Ukraine (Khodosovtsev and Khodosovtseva 2007) and Russia (Otte 2005).

\**Xanthoria soreliata* (Vain.) Poelt – Bükk Mts; Borsod-Abaúj-Zemplén County, Mályinka: Kemesnye-hegy (Kemesnye-kő), 48° 08' 00.1" N, 20° 30' 03.1" E; alt.: 600 m, on limestone outcrop, coll. J. Vondrák, 3.6.2008, CBFS JV6394. – Bükk Mts; Heves County, Nagyvisnyó, sink hole area in west part of karst plateau Nagy-mező, 3.5 km NE of the village Répáshuta, alt. ca 780 m, on limestone outcrop, coll. J. Vondrák and J. Šoun, 13.5.2006, CBFS JV4404. – Bükk Mts; Heves County, Szarvaskő: Szarvas-kői vár, 47° 59' 27.0" N, 20° 19' 46.1" E; alt.: ca 300 m, on base-rich volcanic outcrop, coll. J. Vondrák, 4.6.2008, CBFS JV6371.

#### *Lichenicolous, non-lichenized fungi*

\**Stigmidium rouxianum* Calat. et Triebel – Bükk Mts; Borsod-Abaúj-Zemplén County, Dédestapolcsány: rocks on E-slope below ruin Dédes-vár, near Mályinka, alt. ca 570 m, on sun-exposed limestone rock parasitic on thallus of *Acarospora cervina* A. Massal., coll. J. Vondrák and J. Šoun, 14.5.2006, CBFS JV4407.

*Lichenostigma elongata* Nav.-Ros. et Hafellner – Bükk Mts; Borsod-Abaúj-Zemplén County, Dédestapolcsány: rocks on E-slope below ruin Dédesvár, near Mályinka, alt. ca 570 m, on sun-exposed limestone rock parasitic on thallus of *Lobothallia radiosa* (Hoffm.) Hafellner, coll. J. Vondrák and J. Šoun, 14.5.2006, CBFS JV4377 (Vondrák and Šoun 2007).

*Non-lichenized microfungi*

\**Amphisphaeria fallax* De Not. – Bükk Mts; Borsod-Abaúj-Zemplén County, Mályinka: Kemesnye-hegy (Kemesnye-kő), 48° 08' 00.1" N, 20° 30' 03.1" E; alt.: 600 m, on bark of *Quercus pubescens*, coll. J. Vondrák, 3.6.2008, CBFS JV6398.

\*

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