

New lichenized and lichenicolous fungi for the Crimean peninsula (Ukraine)

ALEXANDER KHODOSOVITSEV
JAN VONDRÁK
JAROSLAV ŠOUN

KHODOSOVITSEV A., VONDRÁK J., ŠOUN J. 2007: **New lichenized and lichenicolous fungi for the Crimean peninsula (Ukraine)**. *Chornomors'k. bot. z.*, vol. 3, N2: 109-118.

Data on 25 species of lichenized and lichenicolous fungi new to the Crimean Peninsula, collected during Czech and Ukrainian-Czech lichenological excursions in June 2006 and May 2007 respectively, are provided. Among them, *Arthonia lecanorina* (Almq.) R. Sant., *A. nideri* (J. Steiner) Clauzade, Diederich & Cl. Roux, *A. punctella* Nyl., *Caloplaca furax* Egea et Llimona, *C. soralifera* Vondrák & Hrouzek, *C. veneris* Cl. Roux & Nav.-Ros., *Carbonea assimilis* (Körber) Hafelner & Hertel, *Catillaria aff. scotinodes* (Nyl.) Coppins, *Endococcus macrosporus* (Arnold.) Nyl., *E. ramalinarius* (Lind.) D. Hawksw., *Fuscidea gothoburgensis* (H. Magn.) V. Wirth & Vězda, *Lichinella cribellifera* (Nyl.) P.P. Moreno & Egea, *Milospium graphideorum* (Nyl.) D. Hawksw., *Phaeospora lecanorae* Eitner, *Placidium pilosellum* (Breuss) Breuss, *Verrucaria biatorinaria* Zehetl, and *V. poeltiana* Clauzade & Cl. Roux are new to Ukraine. *Caloplaca irrubescens* (Nyl. ex Arnold) Zahlbr., *Lecanora rouxii* S. Ekman & Tønsberg, *Lichenothelia scopularia* (Nyl.) D. Hawksw., *Melanelia hepatizon* (Ach.) A. Thell, *Peltigera collina* (Ach.) Schrad., *Staurothele areolata* (Ach.) Lettau, *Stigmidium rouxianum* Calatayud & Triebel and *Zwackhiomyces coepulonus* (Norm.) Grube & R. Sant. are new to Crimea.

Key words: *Arthonia*, *biodiversity*, *Caloplaca*, *Crimea*, *lichenized fungi*, *lichenicolous fungi*, *Ukraine*

ХОДОСОВЦЕВ О., ВОНДРАК Я., ШОУН Я. 2007: **Нові для Кримського півострова (Україна) ліхенізовані та ліхенофільні гриби**. *Чорноморськ. бот. ж.*, vol. 3, N2: 109-118.

Вперше для Кримського півострова наводиться 25 видів ліхенізованих та ліхенофільних грибів, що були зібрані учасниками чеської (червень 2006 року) та міжнародної українсько-чеської експедиції (травень 2007 року). Серед них, *Arthonia lecanorina* (Almq.) R. Sant., *A. nideri* (J. Steiner) Clauzade, Diederich & Cl. Roux, *A. punctella* Nyl., *Caloplaca furax* Egea et Llimona, *C. soralifera* Vondrák & Hrouzek, *C. veneris* Cl. Roux & Nav.-Ros., *Carbonea assimilis* (Körber) Hafelner & Hertel, *Catillaria aff. scotinodes* (Nyl.) Coppins, *Endococcus macrosporus* (Arnold.) Nyl., *E. ramalinarius* (Lind.) D. Hawksw., *Fuscidea gothoburgensis* (H. Magn.) V. Wirth & Vězda, *Lichinella cribellifera* (Nyl.) P.P. Moreno & Egea, *Milospium graphideorum* (Nyl.) D. Hawksw., *Phaeospora lecanorae* Eitner, *Placidium pilosellum* (Breuss) Breuss, *Verrucaria biatorinaria* Zehetl та *V. poeltiana* Clauzade & Cl. Roux виявились новими для України, а *Caloplaca irrubescens* (Nyl. ex Arnold) Zahlbr., *Lecanora rouxii* S. Ekman & Tønsberg, *Lichenothelia scopularia* (Nyl.) D. Hawksw., *Melanelia hepatizon* (Ach.) A. Thell, *Peltigera collina* (Ach.) Schrad., *Staurothele areolata* (Ach.) Lettau, *Stigmidium rouxianum* Calatayud & Triebel and *Zwackhiomyces coepulonus* (Norm.) Grube & R. Sant. – новими для Криму.

Ключові слова: *Arthonia*, *різноманіття*, *Caloplaca*, *Крим*, *ліхенізовані гриби*, *ліхенофільні гриби*, *Україна*

Introduction

The Crimean landscapes are rich in biodiversity, particularly in respect of lichenized and lichenicolous fungi. Investigations in lichen biodiversity of the Crimea are as yet incomplete, but more than 350 species new for the Peninsula have been found there during the past 10 years [COPPINS et al., 2001; KHODOSOVITSEV, 1998; ХОДОСОВЦЕВ, 1997, 1999, 2000, 2001, 2002_{А,Б,В,Г,Д}, 2003_{А,Б,В}, 2004, 2005 _{А,Б,В}, 2006; ХОДОСОВЦЕВ, БОГДАН, 2005; ХОДОСОВЦЕВ, ПОПОВ, 2003; ХОДОСОВЦЕВ, РЕДЧЕНКО, 2002, etc.]. *Caloplaca albopustulata*, *C. geleverjae*, *C. karadagensis*, and *Lichenostigma svandae* were described from this territory at the beginning of this century [KHODOSOVITSEV, KONDRATYUK, KÄRNEFELT, 2002, 2003; VONDRÁK, ŠOUN, 2007]. Currently, 950 species of lichenized and lichenicolous fungi are known to occur in Crimea (Khodosovtsev, unpublished data) and by this paper, a further 25 species are added to its flora.

Materials and Methods

The lichenized and lichenicolous fungi were collected in the Alushta, Feodosia and Yalta regions and the Bahchisaraysky, Leninsky and Sudaksky districts of the Crimea Autonomous Republic during a Czech lichenological excursion (J. Vondrák, J. Šoun) in June 2006 and a Ukrainian-Czech excursion (A. Khodosovtsev, J. Vondrák, J. Šoun, Yu. Khodosovtseva) in May 2007. The specimens are deposited in the herbaria of the Kherson State University (KHER) and the Faculty of Science at the University of South Bohemia (CBFS). Lichenicolous fungi are indicated by an asterisk before their names in the list below.

List of taxa

***Arthonia lecanorina** (Almq.) R. Sant. in R. Sant. et al. (2004) Lichen-forming and lichenicolous fungi of Fennoscandia: 24.

?Syn. *Arthonia galactinaria* Leight.

Ref: CLAUZADE, DIEDERICH, ROUX, 1989; KOCOURKOVÁ, 2000.

Distribution in Ukraine: Crimea AR, Sevastopol, ruins of Greek town Chersones, alt. c. 10 m, lichenicolous in apothecia of *Lecanora albescens*, 12.06.2006, Vondrák (CBFS JV5181).

The species is similar to *Arthonia molendoi*, but it is specifically lichenicolous on apothecia of *Lecanora dispersa* s.l. It is probably widespread in the Palearctic. New to Ukraine.

***Arthonia nideri** (J. Steiner) Clauzade, Diederich & Cl. Roux, nom. in ed.

Ref: CLAUZADE, DIEDERICH, ROUX, 1989.

Distribution in Ukraine: **Crimea AR**, Feodosia, small hills near road from Yuzhnoye to Ordzhonikidze, alt. c. 70 m, 44°59'05.97"N, 35°18'15.10"E, on calcareous sandstone, lichenicolous on remains of *Caloplaca variabilis* s.l., 25.05.2007, Vondrák (CBFS JV6039); Karadag, close to Kurortnoye village, alt. c. 50 m, 44°54'57.85"N, 35°12'15.56"E, on limestone rock, lichenicolous on *Caloplaca albopruinosa*, 23.05.2007, Vondrák (CBFS JV5314).

The species specifically affects members of *Caloplaca* subg. *Pyrenodesmia*. Its morphology is similar to *Arthonia molendoi* and its distribution is insufficiently known. New to Ukraine.

***Arthonia punctella** Nyl. in Carroll, Nat. Hist. Rev. 6: 533 (1859).

Ref: CLAUZADE, DIEDERICH, ROUX, 1989.

Distribution in Ukraine: **Crimea AR**, Feodosia, small hills near road from Yuzhnoye to Ordzhonikidze, alt. c. 70 m, 44°59'05.97"N, 35°18'15.10"E, on calcareous sandstone, lichenicolous on *Aspicilia calcarea*, 25.05.2007, Vondrák (CBFS).

The species affects calcicolous crustose lichens and is characterized by its dark brown hypothecium in the lower part, and brown ascospores when over-mature. Its distribution is insufficiently known. New to Ukraine.

Caloplaca furax Egea & Llimona, *Collectanea Botanica*, 14: 266 (1983).

Ref: EGEA, LLIMONA, 1983.

Distribution in Ukraine: **Crimea AR**, Alushta region, Cape Plaka, on *Aspicilia*, on vertical S surface of diorite, *Vondrák, Khodosovtsev, Šoun* 28.05.2007 (CBFS JV6040, KHER).

One of the authors (J. Vondrák) has checked the isotype material of *Caloplaca furax* [VONDRÁK, SLAVÍKOVÁ-BAYEROVÁ, 2006] and considered it a good species which differs from *C. spatatensis*, *C. pellodella* and *C. xerica*. The species is characterized by its parasitic grow on *Aspicilia*, grey uneven, wavy to knobby, squamulate to areolate thallus with irregular short marginal lobes, c. 0,4-0,8 mm long, without vegetative diaspores, with presence of Sedifolia-grey pigment in the cortex, zeorine apothecia with grey outer margin and orange-brownish apothecial disk. *C. pellodella* is a similar species, which differs by its even surfaces of glossy lead-grey squamules, blackish amphithecial ring and usually non-lichenicolous growth. The similar *C. xerica*, occasionally lichenicolous on *Aspicilia*, differs in its grey to dark grey pustules or lobules as vegetative diaspores on the surface of areoles. The calcicolous *C. spatatensis* has a flat grey areolate thallus. *C. furax* has been reported from Spain [EGEA, LLIMONA, 1983], Italy [NIMIS, MARTELOS, 2003] and Bulgaria [VONDRÁK, SLAVÍKOVÁ-BAYEROVÁ, 2006]. New to Ukraine.

Caloplaca irrubescens (Nyl. ex Arnold) Zahlbr., *Verh. zool.-bot. Ges. Wien*, 48: 365 (1898).

Syn. *Caloplaca subsoluta* (Nyl.) Zahlbr.

Ref: WETMORE, 2003.

Distribution in Crimea: Alushta region, Botanical Reserve 'Kanakskaya Balka', on schist, 27.05.2007, *Vondrák, Šoun, Khodosovtsev* (CBFS JV6024, KHER).

C. irrubescens has a thin, flat, areolate to subsquamulose yellow to orange thallus, orange biatorine apothecia, 0,1-0,6 mm in diameter with paraplectenchymatous layer under the hypothecium. The latter feature is a main character of this species against similar species. In Ukraine, it was collected from one locality in the Carpathian Mts by Nádvorník [OKCHEP, КОНДРАТЮК, 1993A]. New to the Crimean Peninsula.

Caloplaca soralifera Vondrák & Hrouzek, *Graphis Scripta* 18: 8 (2006).

Ref: VONDRÁK, HROUZEK, 2006.

Distribution in Ukraine: **Crimea AR**, Alushta region, Mt. Yuzhnaya Demerdji, Dolina Privideniy, on siliceous boulder, 28.05.2007, *Vondrák* (CBFS JV6009, KHER); Botanical Reserve 'Kanakskaya Balka', on schist, 27.05.2007, *Vondrák, Khodosovtsev, Šoun* (KHER); **Khersonska oblast**, Kakhovsky district, Kakhovskiy kanal water channel, on concrete, 15.11.2006, *Khodosovtsev* (KHER); **Khmelnitska oblast**, Kamenets-Podolsk, on limestone boulder in town-wall, 6.06.2006, *Vondrák* (CBFS JV4594, 4595); **Mykolayivska oblast**, Pervomaysky district, pasture near Lyushnyubate village, alt. c. 80 m, bank of River Pivdenny Bug, 48°10'15.30"N, 030°26'55.17"E, on granite boulder in pasture, 06.06.2006, *Vondrák* (CBFS JV5171, 4614).

C. soralifera is a recently described lichenized fungus [VONDRÁK, HROUZEK, 2006] with dark grey to violet-grey marginal soralia on areoles or squamules and zeorine apothecia. It is distinguished from *C. xerica*, *C. furax* and *C. geleverjae* by its sorediate thallus and from *C. chlorina* and *C. virescens* by its zeorine apothecia. *C. soralifera* is known from Austria, Bulgaria, Czech Republic, Germany, Slovakia and Romania [VONDRÁK, HROUZEK, 2006]. New to Ukraine.

Caloplaca veneris Cl. Roux & Nav.-Ros., *Bull. Soc. Linn. Provence*, 43: 100 (1992).

Ref: ROUX, NAVARRO-ROSINES, 1992.

Distribution in Ukraine: **Crimea AR**, Sudaksky district, Cape Meganom, on vertical face of conglomerate exposed to sea, alt. c. 1 m, 26.05.2007, *Khodosovtsev, Vondrák, Šoun* (KHER).

C. veneris has an indistinct, endolithic to areolate grey thallus. Apothecia biatorine, orange, (0,1-)0,2-0,5(-0,8) mm diam., parathecium prosoplectenchymatous, amphithecium

reduced. Paraphyses 1,5-2 μm thick with swollen apical cells up to 4-6 μm in diameter. Asci 8-spored, 39-45 x 13-20 μm , ascospores (8-)9-12(-13) x 5-6(-7) μm , septa (2-)3-4(-5) μm . It grows on calcareous rocks in the littoral zone. *C. aquensis* has a similar ecology and may be related to *C. veneris*, but differs in its larger apothecia 0,3-1,2 mm in diameter and larger ascospores 13-18 x 6-8 μm , with somewhat thinner septa, 2,5-4 μm thick. *C. navasiana*, another similar species distributed in the Crimean Peninsula, possesses thicker septa, (3,5-)4,5-6,0(-9,0) μm , different shaped ascospores and lighter, yellow-orange apothecia. *C. veneris* is known from Cyprus, Greece [ROUX, NAVARRO-ROSINES, 1992] and Italy [NIMIS, MARTELLOS, 2003]. New to Ukraine.

***Carbonea assimilis** (Körber) Hafellner & Hertel, in V. Wirth (1987) Flechten Baden-Württembergs: 511.

Ref: АНДРЕЕВ, 2003.

Distribution in Ukraine: **Crimea AR**, Alushta region, Botanical Reserve 'Kanakskaya Balka', on *Diploschistes actinostomus*, on schist, 27.05.2007, Khodosovtsev, Vondrák, Šoun (KHER).

C. assimilis has a small brown thallus up to 3-5 mm wide, black apothecia with concave disk and flexuose distinct margin resembling *Rimularia insularis*. However, *Carbonea assimilis* differs by its emerald-green epihymenium and *Lecanora*-type asci. Non-lichenicolous *C. vorticosa* has dirty-white to grey thallus and brown-black hypothecium. The third Ukrainian species, *C. vitellinaria* is a lichenicolous fungus on thallus of *Candelariella vitellina* and its apothecial structure is similar to *C. vorticosa*. *Carbonea assimilis* is known from Europe, Asia (China) and North America [АНДРЕЕВ, 2003]. New to Ukraine.

Catillaria aff. scotinodes (Nyl.) Coppins, Lichenologist 21: 223 (1989).

Ref: COPPINS, 1992.

Distribution in Ukraine: **Crimea AR**, Sudak region, Sudak, coastal rocks at W part of Cape Meganom, 44°48'31.36"N, 35°02'59.94"E, on siliceous rock, 26.05.2007, Vondrák (CBFS JV5924).

The specimen from Crimea agrees with the description of *C. scotinodes* in COPPINS [1992] in most characters, but its epihymenium is brownish (K-, N-).

***Endococcus macrosporus** (Arnold) Nyl., Bull. Soc. Bot. France 25: 504 (1878).

Ref: SERUSIAUX et al., 1999.

Distribution in Ukraine: **Crimea AR**, Alushta region, Luchyste village, Mt. Yuzhnaya Demerdji, Dolina Privideniy, on *Rhizocarpon geographicum* subsp. *lindsayanum*, on conglomerate, 28.05.2007, Khodosovtsev, Vondrák, Šoun (KHER).

According to the narrow species concept of SERUSIAUX et al. [1999], three different species of *Endococcus* are lichenicolous on species of *Rhizocarpon*. Among them, *Endococcus macrosporus* is characterized by its perithecia, 130-220 μm diam., immersed in host areoles and its large ascospores, 16,5-19,5 x 5,5-7 μm . As yet, known only from Luxembourg [SERUSIAUX et al., 1999]. New to Ukraine.

***Endococcus ramalinarius** (Lind.) D. Hawksw., Bot. Notiser 132: 287 (1979).

Ref: HAWKSWORTH, 1979a.

Distribution in Ukraine: **Crimea AR**, Bakhchisaraysky district, pasture c. 500 m W of Mashino village, 200 m, 44°41'50.95"N, 033°01'46.16"E, on *Ramalina canariensis* on bark of *Quercus pubescens*, 10.06.2006, Vondrák (CBFS JV5240).

The species was described from New Zealand as lichenicolous on *Ramalina leiodea*, but in Spain it was recorded on *R. farinacea* [MARTÍNEZ, 2002]. New to Ukraine.

Fuscidea gothoburgensis (H. Magn.) V. Wirth & Vězda, Beitrage Naturk. Forsch. Sudw.-Deutschl. 31: 92 (1972).

Ref: OBERHOLLENZER, WIRTH, 1984; МАКАРОВА, 2004.

Distribution in Ukraine: **Crimea AR**, Alushta region, Botanical Reserve 'Kanakskaya Balka', on schist, 27.05.2007, *Khodosovtsev, Vondrák, Šoun* (KHER).

F. gothoburgensis has a black, fine prothallus with disperse convex greyish areoles, rare green-greyish soralia (0,2-0,4 mm diam.) surrounded by thin thallus margin and negative chemical tests are its main characters. Widespread in Europe [МАКАРОВА, 2004]. New to Ukraine (but lacking apothecia).

Lecanora rouxii S. Ekman & Tønsberg, Mycol. Res. 108: 512 (2004).

Syn. *Lepraria flavescens* Clauzade & Roux

Ref: BARUFFO et al. 2006; CLAUZADE, ROUX, 1977.

Distribution in Crimea: Bakhchisaray, limestone cliff above town, alt. 300 m, 44°45'04.68"N, 033°53'06.88"E, on well-lit limestone rock under overhang, 9.06.2006, *Vondrák, Šoun* (CBFS JV4588, sub *Lepraria flavescens*).

Recent phylogenetic analyses support the placement of *Lepraria flavescens* in the *Lecanora rupicola* group [GRUBE, BALOCH, ARUP, 2004] and the "nomen novum" *L. rouxii* was introduced. It is an easily identified leprarioid species with lobate, C+ orange thallus (atranorin, sordidon and flavescin). It is known from Europe [e.g. CLAUZADE, ROUX, 1977; SERUSIAUX et al., 1999; WIRTH, 1995; BIELCZYK et al., 2005] and fertile specimens were recently found in Luxembourg [KUKWA, DIEDERICH, 2007]. New to Crimea.

***Lichenothelia scopularia** (Nyl.) D. Hawksw., Lichenologist, 13: 147 (1981).

Ref: HAWKSWORTH, 1981; HENSSEN, 1987.

Distribution in Crimea: Alushta region, Botanical Reserve 'Kanakskaya Balka', on schist, 27.05.2007, *Khodosovtsev, Vondrák, Šoun* (KHER).

This microfungus has a blackish cracked non-lichenized thallus developing on naked siliceous rocks, with immersed perithecia c. 2 mm wide and ascospores often up to 4-celled, about 16-22 × 8-11 μm. *L. convexa* differs in its smaller dot-like 'thallus' and ascospores, 11-13(-15) × 5,5-7,5 μm. *L. scopularia* is known in Europe and North America [NIMIS, 1993]; it has recently been found in Ukraine from Polissya [ФЕДОРЕНКО, НАДСІНА, КОНДРАТЮК, 2007]. New to Crimea.

Lichinella cribellifera P.P. Moreno & Egea, Cryptogamie, Bryol. Lichénol., 13: 3: 243 (1992).

Ref: MORENO, EGEE, 1992.

Distribution in Ukraine: **Crimea AR**, Sudaksky district, above Vesele village, alt. c. 200 m, 44°50'57.04"N, 034°52'05.87"E, on lime-rich rock, with some other cyanolichens, 13.06.2006, *Vondrák* (CBFS JV5260, 5286); Karadag Mts, Mt Svyataya, alt. 320 m, 44°56'03.27"N, 35°13'06.17"E, 24.05.2007, *Vondrák* (CBFS JV5975, 5977).

The species is similar to *Lichinella nigritella*, but differs in its thinner and warped lobes. New to Ukraine.

Melanelia hepatizon (Ach.) A. Thell, Nova Hedwigia 60: 419 (1995).

Ref: RICO et al., 2005.

Distribution in Crimea: Alushta region, Luchyste village, Mt. Yuzhnaya Demerdji, Dolina Privideniy, on conglomerate, 28.05.2007, *Khodosovtsev, Vondrák, Šoun* (KHER).

Reports of this lichen from the Carpathian Mts, mainly in 1920-1940, were made by M. Servít, J. Nádvorník, J. Suza, T. Sulma and J. Hruby [ОКСНЕР, КОНДРАТЮК, 1993б]; it has also been collected *M. hepatizon* from Mt. Pip Ivan (Zakarpatska oblast) [МАКАРЕВИЧ и др., 1982]. New for Crimea.

***Milospium graphideorum** (Nyl.) D. Hawksw., Trans. Br. mycol. Soc. 65: 228 (1975)

Ref: HAWKSWORTH, 1975, 1979b.

Distribution in Ukraine: **Crimea AR**, Bakhchisaraysky district, Mashine village, on base of limestone cliff 500 m NW of village, alt. c. 350 m, 44°42'03.87"N, 033°54'26.49"E, lichenicolous on *Dirina stenhammari*, 10.06.2006, Vondrák (CBFS JV4613); Yalta region, Nature Reserve 'Cape Martian', on *Dirina stenhammari* and *Lecanographa grumulosa* growing on vertical surfaces of limestone rock, alt. 50 m, 44°30'26.3"N, 034°14'50.8"E, 29.05.2007, Khodosovtsev, Vondrák, Šoun (CBFS JV5020, KHER).

This lichenicolous hyphomycete is characterized by its lobate, brown conidia, with 2-6 mostly incomplete septa and unevenly thickened walls, 8-12 × 8-10 µm in size, which are often aggregated into black sporodochia on a host thallus. It was previously known from Spain and Portugal [HAWKSWORTH, 1975; VAN DEN BOOM, ETAYO, 2000; VAN DEN BOOM, 1999]. New to Ukraine.

Peltigera collina (Ach.) Schrad., J. Bot., 1: 78 (1803).

Ref: VITIKAINEN, 1994.

Distribution in Crimea: Alushta region, Alupka, Ai-Petrinska yaila, c. 1 km S of Mt. Bedene-Kyr, alt. c. 1000 m, 44°28'28.25"N, 033°01'46.16"E, on bark of *Carpinus betulus*, 11.06.2006, Vondrák, Šoun (CBFS JV5051).

This species is reported from the Carpathian Mts [МАКАРЕВИЧ и др., 1982; KONDRATYUK et al., 2003] and plain part of Ukraine [KONDRATYUK et al., 1998]. New to the Crimean Peninsula.

***Phaeospora lecanorae** Eitner, Jahresber. Schles. Ges. Vaterl. Cult., 78 ('1900'), 2. Abt., b: 26 (1901).

Ref: SERUSIAUX et al., 1999.

Distribution in Ukraine: **Crimea AR**, Alushta region, Botanical Reserve 'Kanakskaya Balka', on *Lecanora dispersa*, on schist, Khodosovtsev, 27.05.06 (KHER).

This lichenicolous fungus on *Lecanora dispersa* agg. has perithecioid ascomata 120-220 µm in diameter and brown, 3-septate ascospores 12,5-16 × 5,5-6 µm in size [SERUSIAUX et al., 1999]. The similar *P. parasitica* grows on *Rhizocarpon* and has larger ascospores (18-23 × 8-11,5 µm). *P. lecanorae* was described from Silesia [EITNER, 1901]; it was recently recorded from Luxembourg and France [SERUSIAUX et al., 1999]. New to Ukraine.

Placidium pilosellum (Breuss) Breuss, Ann. Naturhist. Mus. Wien., 98 B Suppl.: 39 (1996).

Ref: BREUSS, 1990.

Distribution in Ukraine: **Crimea AR**, Feodosiya region, WSW of Koktebel village, alt. 200 m, 44°57'31.12"N, 035°12'22.93"E, limestone hill, on calcareous soil with *Collema tenax* and *Fulgensia subbracteata*, 13.06.2006, Vondrák, Šoun (CBFS JV5041).

Placidium pilosellum is distinguished from *P. squamulosum*, a widespread species in Ukraine, by its colourless hairs on the margins of squamules and by marginal picnidia. It is known from Europe and Australia [BREUSS, 1996]. New to Ukraine.

Staurothele areolata (Ach.) Lettau, Hedwigia, 52: 84 (1912).

Ref: FOUCARD, 2001.

Distribution in Crimea: Alushta region, Luchyste village, Mt. Yuzhnaya Demerdji, Dolina Privideniy, on conglomerate, 28.05.2007, Khodosovtsev, Vondrák, Šoun (KHER).

This species is known from few sites in the Carpathian Mts [МАКАРЕВИЧ и др., 1992] and Ukrainian plain [KONDRATYUK et al., 1998]. New for Crimean Peninsula.

***Stigmatidium rouxianum** Calatayud & Triebel, Lichenologist, 35: 109 (2003).

Ref: CALATAYUD, TRIEBEL, 2003.

Distribution in Crimea: Bakhchisaraysky district, pasture c. 500 m W of Mashino village, 350 m, 44°42'03.87"N, 033°54'26.49"E, on thallus of *Acarospora cervina*, 10.06.2006, *Vondrák, Šoun* (CBFS JV4583); Alushta region, Alupka, Ai-Petrins'ka yaila, c. 1 km S from Mt. Bedene-Kyr, alt. c. 1100 m, 44°28'28.25"N, 034°01'46.16"E, on thallus of *Acarospora cervina*, 11.06.2006, *Vondrák, Šoun* (CBFS JV4589); Luchyste village, Mt Yuzhnaya Demerdji, Dolina Privideniy, on thallus of *Acarospora cervina*, on conglomerate, 28.05.2007, *Khodosovtsev, Vondrák, Šoun* (KHER).

As well as being restricted to *Acarospora cervina*, *Stigmatidium rouxianum* is characterized by its negative reaction with Lugol's solution and ascospore size, (14-)14.5-18(-21) × (5-)6-7(-8) μm [CALATAYUD, TRIEBEL, 2003]. It is known from Spain, France, Italy, Switzerland and western Ukraine [CALATAYUD, TRIEBEL, 2003; BIELCZYK et al., 2005]. New to Crimea.

Verrucaria biatorinaria Zehetl., Nova Hedwigia, 29: 721 (1978).

Syn. *Verrucula biatorinaria* (Zehetl.) Nav.-Ros. & Cl. Roux.

Ref: NAVARRO-ROSINÉS et al., 2007; ZEHETLEITNER, 1978.

Distribution in Ukraine: **Crimea AR**, Alushta region, Cape Plaka, on diorite, lichenicolous on thallus of *Caloplaca biatorina*, 28.05.2007, *Vondrák* (CBFS JV5984); Alushta region, Luchyste village, Mt. Yuzhnaya Demerdji, Dolina Privideniy, on *Caloplaca biatorina*, on conglomerate, 28.05.2007, *Khodosovtsev, Vondrák, Šoun* (KHER); Sudaksky district, Sudak, *Juniperus* forest in 'Novy Svet' Nature Reserve, alt. 50 m, 44°49'31.16"N, 34°54'19.02"E, lichenicolous on *Caloplaca biatorina*, 26.05.2007, *Vondrák, Khodosovtsev* (CBFS JV6003, KHER).

Verrucaria biatorinaria forms greyish areoles on *Caloplaca biatorina* with negative medulla reaction with Lugol's solution. It has immersed perithecia with black peridium (centre 150-200 μm) and broadly ellipsoid ascospores, 8-14 × 7-8 μm in size. It is known from the Alps (Austria, Italy, France), Spanish Pyrenees and Kurdistan [e.g. NAVARRO-ROSINÉS et al., 2007; Nimis, 1993]. New to Ukraine.

Verrucaria poeltiana Clauzade & Cl. Roux, Beih. Nova Hedwigia, 79: 196 (1984).

Syn. *Verruculopsis poeltiana* (Clauzade & Cl. Roux) Gueidan, Nav.-Ros. & Cl. Roux.

Ref: CLAUZADE, ROUX, 1984; NAVARRO-ROSINÉS et al., 2007.

Distribution in Ukraine: **Crimea AR**, Yalta region, Nature Reserve 'Cape Martian', on limestone rock, lichenicolous on thallus of *Caloplaca aurantia* with *Lichenostigma* sp., alt. 50 m, 44°30'26.3"N, 034°14'50.8"E, 29.05.2007, *Khodosovtsev, Vondrák, Šoun* (CBFS JV5430, KHER).

This lichenicolous lichen, known only from *Caloplaca aurantia*, is dubiously distinguished from some other grey-thallus species described from different *Caloplaca* and *Xanthoria* species, but NAVARRO-ROSINÉS et al. [2007] consider it as a well-defined taxon. Known from France, Italy and Spain [NAVARRO-ROSINÉS et al., 2007]. New to Ukraine.

***Zwackhiomyces coepulonus** (Norman) Grube & R. Sant., in Grube & Hafellner, Nova Hedwigia, 51: 310 (1990).

Ref: GRUBE, HAFELLNER, 1990.

Distribution in Ukraine: **Crimea AR**, Sudaksky district, Cape Meganom, on *Caloplaca maritima* growing on vertical face of conglomerate rock, alt. c. 1 m, 26.05.2007, *Khodosovtsev, Vondrák, Šoun* (KHER). **Mikolayivska oblast**, Pervomaiskky district, pasture near Lyushnyuvate village, alt. c. 80 m, 48°10'15.30"N, 030°26'55.17"E, in apothecia and thallus of *Caloplaca crenulatella* growing on nutrient-rich granite rock, 6.06.2006, *Vondrák* (CBFS JV5155).

This lichenicolous fungus was once reported from Ukraine, natural reserve Medobory [КОНДРАТЮК, КОЛОМІЄЦЬ, 1997]. New for the Crimean Peninsula.

Acknowledgements

We are grateful to the Director of the "Cape Martian" Nature Reserve of the Nikitsky Botanical Garden – National Science Centre (Yalta, Crimea AR), to Prof. Dr I. Maslov and his wife Dr I. Sarkina for hospitality and substantial help during fieldwork. The financial support of the Grant of President of Ukraine № GP/F13/0196 (A. Khodosovtsev) and the Grant of Academy of Sciences of the Czech Republic KJB 601410701 (J. Vondrák & J. Šoun) are gratefully acknowledged. Last but not least, Prof. M. R. D. Seaward kindly provided useful criticisms and linguistic corrections.

Literature

- АНДРЕЕВ М.П. Сем. Lecanoraceae. – В кн. Андреев М.П., Бредкина Л.И., Голубкова Н.С. и др. Определитель лишайников России. Вып. 8. Бацидиевые, Катиляриевые, Леканоровые, Мегалариевые, Микобилимбиевые, Ризокарповые, Трапелиевые. – Спб.: Наука, 2003. – С.111-184.
- КОНДРАТЮК С.Я., КОЛОМІЄЦЬ І.В. Нові для України види лишайників та ліхенофільних грибів заповідника «Медобори» // Укр. ботан. журн. – 1997. – Т. 54, № 1. – С. 43-47.
- МАКАРЕВИЧ М.Ф., НАВРОЦКАЯ И.Л. ЮДИНА И.В. Атлас географического распространения лишайников в Украинских Карпатах. – К.: Наук. думка, 1982. – 403 с.
- МАКАРОВА И.И. Сем. Fuscidaeae. – В кн. Кондратюк С.Я., Макарова И.И., Окснер А.М., Ходосовцев А.Е. Определитель лишайников России. Вып. 9. Фузцидеевые, Телосхистовые. – Спб.: Наука, 2004. – С.10-36.
- ОКСНЕР А. М., КОНДРАТЮК С.Я. Рід 150. Калоплака – *Caloplaca* Th. Fr. – В кн.: Окснер А.М. Флора лишайників України. – К.: Наук. думка, 1993а. – Т. 2, вип. 2. – С. 390-490.
- ОКСНЕР А. М., КОНДРАТЮК С.Я. Рід 135. Цетрарія – *Cetraria* Ach. – В кн.: Окснер А.М. Флора лишайників України. – К.: Наук. думка, 1993б. – Т. 2, вип. 2. – С. 225-248.
- ХОДОСОВЦЕВ О.Є. Новий для ліхенофлори України рід *Digina* Fr. // Укр. ботан. журн. – 1997. – Т.54, №5. – С. 381-383.
- ХОДОСОВЦЕВ О.Є. Лишайники причорноморських степів України. – Київ: Фітосоціоцентр, 1999. – 236 с.
- ХОДОСОВЦЕВ О.Є. Нові для Криму та України види лишайників // Укр. ботан. журн. – 2000. – Т.57, №5. – С. 612-615.
- ХОДОСОВЦЕВ О.Є. Нові для України види роду *Caloplaca* Th. Fr. (*Teloschistaceae*) // Укр. ботан. журн. – 2001. – Т.58, № 4. – С. 460-465.
- ХОДОСОВЦЕВ О.Є. Нові для України та Кримського півострова види лишайників з Кримських яйл // Укр. ботан. журн. – 2002а. – Т.59, №2. – С. 171-178.
- ХОДОСОВЦЕВ О.Є. Нові та рідкісні для України види роду *Caloplaca* Th. Fr. (*Teloschistaceae*) з півдня України // Укр. ботан. журн. – 2002б. – Т.59, № 3. – С. 321-329.
- ХОДОСОВЦЕВ О.Є. *Absconditella* Vezda (*Ostropales*) та *Gonohymenia* J. Steiner (*Lichinales*) – нові роди для ліхенофлори Кримського півострова // Укр. ботан. журн. – 2002в. – Т.59, № 5. – С. 612-615.
- ХОДОСОВЦЕВ О.Є. Екологічні індекси лишайників кам'янистих відслонень Карабі-яйли (АР Крим, Україна) // Природничий Альманах. Серія: Біологічні науки. – Вип. 2, № 3. – Херсон, 2002г. – С. 225-239.
- ХОДОСОВЦЕВ О.Є. Лишайники карстових обнажень Чатырдага (Крым) // Ботан. журн. – 2002д. – Т.87, № 1. – С. 46-56.
- ХОДОСОВЦЕВ О.Є. Нові для України та Криму види лишайників з силікатних відслонень // Укр. ботан. журн. – 2003а. – Т.60, №1. – С. 70-78.
- ХОДОСОВЦЕВ О.Є. Рід *Bagliettoa* A. Massal. (*Verrucariales* Mattik ex D. Hawksw. & O. Eriksson) Кримського півострова (Україна) // Укр. ботан. журн. – 2003б. – Т.60, №2. – С. 131-138.
- ХОДОСОВЦЕВ О.Є. Анотований список лишайників Карадазького природного заповідника // Вісті Біосферного заповідника "Асканія-Нова". – 2003в. – Т.5. – С. 31-43.
- ХОДОСОВЦЕВ О.Є. *Lichenothelia* D.Hawksw. – новий рід для мікобіоти України // Укр. ботан. журн. – 2004. – Т.61, №6. – С. 32-34.
- ХОДОСОВЦЕВ О.Є. *Placopyrenium* O. Breuss – (*Lichens, Verrucariaceae*) новий рід для ліхенофлори Кримського півострова // Укр. ботан. журн. – 2005а. – Т.62, №1. – С. 111-114.
- ХОДОСОВЦЕВ О.Є. Нові для України роди лишайників // Укр. ботан. журн. – 2005б. – Т.62, №2. – С. 170-174.
- ХОДОСОВЦЕВ А.Е. Род *Candellariella* (Candelariaceae, Lecanorales) юга України // Новости систематики низших растений. – Т. 39. – 2005в. – С. 233-248.
- ХОДОСОВЦЕВ О.Є. Нові для України види лишайників з Криму // Укр. ботан. журн. – 2006. – Т. 63, № 2. – С. 196-202.

- ХОДОСОВЦЕВ О.С., БОГДАН О.В. Анотований каталог лишайників Ялтинського гірсько-лісового природного заповідника // Чорномор. ботан. журн. – 2005. – Т.1, №1. – С. 117-132.
- ХОДОСОВЦЕВ О.С., ПОПОВ Є.В. *Leptogium imbicatum* P. Jørg. та *L. magnussonii* Degel. & P. Jørg. нові види для ліхенофлори України // Метода. – 2003. – Вип. “Magistr”. – С. 25-28.
- ХОДОСОВЦЕВ О.С., РЕДЧЕНКО О.О. Анотований список лишайників заповідника "Мис Март'ян" // Укр. ботан. журн. – 2002. – Т.59, № 1. – С. 64-71.
- ФЕДОРЕНКО Н.М., НАДСІНА О.В., КОНДРАТЮК С.Я. Нові та рідкісні види ліхенофільних грибів з України // Укр. ботан. журн. – 2007. – Т. 64, № 1. – С. 47-56.
- BARUFFO L., ZEDDA L., ELIX J.A., TREPACH M. A revision of the lichen genus *Lepraria* s.lat. in Italy // Nova Hedwigia. – 2006 – Vol. 83. – P. 387-429.
- BIELCZYK U. et al. Contribution to the knowledge of lichens and lichenicolous fungi of western Ukraine // Polish Botanical Journal. – 2005. – Vol. 50, № 1. – P. 39-64
- BOOM P.P.G. VAN DEN. Some lichens and lichenicolous fungi from Majorca (Spain) // Linzer boil. Beitr. – 1999. – Vol. 31, N2. – P. 785-800.
- BOOM P.P.G. VAN DEN., ETAYO J. Contribution to the knowledge of lichenicolous fungi and lichens from Portugal and Spain // Öster. Z. Pilzk. – 2000. – N9. – P. 151-162.
- BREUSS O. Die flechtengattung *Catapyrenium* (Verrucariaceae) in Europa // Stapfia. – 1990. – Vol. 23. – P.1-174.
- BREUSS O. Ein verfeinertes Gliederungskonzept für *Catapyrenium* (Lichenisierte Ascomyceten, Verrucariaceae) mit einem Schlüssel für die bisher bekannten Arten // Ann. Naturhist. Mus. Wien. – 1996. – Suppl. 98 B. – P. 35-50.
- CALATAYUD V., TRIEBEL D. Three new species of *Stigmidium* s.l. (lichenicolous ascomycetes) on *Acarospora* and *Squamarina* // Lichenologist. – 2003. – Vol. 35, N 2. – P. 103-116.
- CLAUZADE G., DIEDERICH P., ROUX C. Nelikenigintaj fungoj likenlogaj. Ilustrita determinlibro // Bulletin de la Societe Linneenne de Provence, Numero Special – 1989. – Vol. 1. – P. 1-142.
- CLAUZADE G., ROUX C. Taxons nouveaux et interessant pour le de la France // Bull. Soc. Linn. Provence. – 1977. – Vol. 30. – P. 9-36.
- CLAUZADE G., ROUX C. Deux especes nouvelles de lichens mediterraneens: *Lecanora poeltiana* Clauz. et Roux sp. nov., *Verrucaria poeltiana* Clauz. et Roux sp. nov. // Beiheft zur Nova Hedwigia – 1984. – Vol. 79. – P. 187-201.
- COPPINS B.J. *Catillaria* – In: O.W. Purvis et al. (eds.): The lichen flora of Great Britain and Ireland. – Natural History Museum Publications & British Lichen Society, London. – 1992. – P. 166-171.
- COPPINS B., KONDRATYUK S.YA., KHODOSOVTSSEV A.YE., WOLSELEY P., ZELENKO S.D. New for Crimea and Ukraine Species of the lichens // Укр. ботан. журн. – 2001. – Т. 58, №6. – С. 716-722.
- EGEA J.M., LLIMONA X. *Caloplaca furax* Egea & Llimona, un Nuevo liquen parasito sobre *Aspicilia* siliciolas, en la Sierra del Relumbar (Albacete, SE de Espana) // Collectanea Botanica. – 1983. – N14. – P. 265-269.
- EITNER E. II. Nachtrag zur Schlesischen Flechtenflora // Jahresber. Schles. Ges. Vaterl. Cult. – 1901. – Vol. 78 ('1900'), N 2, Abt., b. – P. 5-27.
- FOUCARD T. Svenska Skorplavar – Interpublishing, Stockholm, 2001.
- GRUBE M. BALOCH E., ARUP. U. A phylogenetic study of the *Lecanora rupicola* group (Lecanoraceae, Ascomycota) // Mycol. Res. – 2004. – Vol. 108, N 5. – P. 506-514.
- GRUBE M., HAFELLNER J. Studien an flechtenbewohnenden Pilzen der ammelgattung *Didimella* (Ascomycetes, Dothideales) // Nova Hedwigia. – 1990. – Vol. 51. – P. 283-360.
- HAWKSWORTH D.L. A revision of lichenicolous fungi accepted by Keissler in *Coniothecium* // Trans. Br. Mycol. Soc. – 1975. – Vol. 65. – P.219-238.
- HAWKSWORTH D.L. Studies in the genus *Endococcus* (Ascomycotina, Dothideales) // Botaniska Notiser. – 1979a. – Vol. 132. – P. 283-290.
- HAWKSWORTH D.L. The lichenicolous Hyphomycetes // Bulletin of the British Museum (Natural History), Botany Series – 1979b. – Vol. 6. – P. 183-300.
- HAWKSWORTH D. L. *Lichenothelia*, a new genus for the *Microthelia alterrima* group // Lichenologist. – 1981. – Vol. 13, N 2. – P. 141-153.
- HENSSEN A. *Lichenothelia*, a genus of microfungi on rocks. – In.: Peveling E. (ed.): Progress and Problems in Lichenology in the Eighties // Bibl. Lichenol. – 1987. – Vol. 25. – P. 257-293.
- KHODOSOVTSSEV A.YE. New lichen species for the biota of Ukraine // Ukr. botan. jurn. – 1998. – Vol. 55, N1. – P. 88-91.
- KHODOSOVTSSEV A. YE., KONDRATYUK S.YA., KÄRNEFELT I. *Caloplaca albopustulata*, a new lichen from Crimea peninsula (Ukraine) // Graphis Scripta. – 2002. – Vol. 13, N 1. – P. 5-8.
- KHODOSOVTSSEV A.YE., KONDRATYUK S.YA., KÄRNEFELT I. Two new species of *Caloplaca* from Crimean peninsula // Ukr. botan. journ. – 2003. – T.60, N3. – P. 293-297.
- KOCOURKOVÁ J. Lichenicolous fungi of the Czech Republic (The first commented checklist) // Acta Mus. Nat. Pragae, Ser. B., Hist. Nat. – 2000. – Vol. 55/1999. – P. 59-169.
- KONDRATYUK S.YA., KHODOSOVTSSEV A.YE., ZELENKO S.D. The second checklist of lichen forming, lichenicolous and allied fungi of Ukraine. – Kiev: Phytosociocentre, 1998. – 180 p.
- KONDRATYUK S.YA., POPOVA L.P., LACKOVIČOVÁ A., PIŠUT I. A catalogue of the Eastern Carpathian Lichens. – Kiev-Bratislava: M.H. Kholodny Institute of Botany, 2003. – 264 p.

- KUKWA M., DIEDERICH P. New records of leprarioid lichens from Luxembourg and France with first report of fertile *Lecanora rouxii* // Bull. de la Soc. des nature. luxemburg. – 2007. – Vol. 108. – P. 15-19.
- MARTÍNEZ I. Lichenicolous fungi from the Iberian Peninsula and the Macaronesian area // Nova Hedwigia. – 2002. – Vol. 74. – P. 51-67.
- MORENO P.P., EGEA J.M. El genero Lichinella Nyl. En el sureste de Espana y norte de Africa // Criptogamie, Bryol. Lichenol. – 1992. – Vol. 13, N 3. – P. 237-260.
- NAVARRO-ROSINES P., ROUX C., GUEIDAN C. La genroj *Verrucula* kaj *Verruculopsis* (*Verrucariaceae*, *Verrucariales*) // Bull. Soc. Linn. Provence. – 2007. – Vol. 58. – P. 133-180.
- NIMIS P.L. The Lichens of Italy. An annotated catalogue. – Monografie XII. – Torino, 1993. – 897 p.
- NIMIS P.L., MARTELOS S. A second checklist of the lichens of Italy with thesaurus of synonyms. – Museo Regionale di Scienze Naturali. – Aosta, 2003.
- OBERHOLLENZER H., WIRTH V. Beitrage zur Revision der Flechtengattung Fuscidea // Nova Hedwigia. – 1984. – Bd 79. – S. 537-595.
- RICO V.J., BOOM P.P.G. VAN DEN, BARROSA J.M. Morphology, chemistry and distribution of *Melanelia soreidiella* (Parmeliaceae) and similar species in Iberian peninsula // Lichenologist. – 2005. – Vol. 37, N3. – P. 199-215.
- ROUX C., NAVARRO-ROSINES P. *Caloplaca egeana* Roux et Nav.-Ros. sp. nov. kaj *Caloplaca veneris* Roux et Nav.-Ros. sp. nov., du novaj likenspecioj de la mediterranea marbordo // Bull. Soc. Linn. Provence. – 1992. – Vol. 43. – P. 97-103.
- SERUSIAUX E., DIEDERICH P., BRAND A.M., BOOM P.P.G. VAN DEN. New or interesting lichens and lichenicolous fungi from Belgium and Luxemburg. VIII. // Lejeunia. – 1999. – Vol. 162. – P. 1-96.
- VITIKAINEN O. Taxonomic revision of *Peltigera* (lichenized Ascomycotina) in Europe // Acta Botanica Fennica. – 1994. – Vol. 152. – P. 1-96.
- VONDRÁK J., HROUZEK P. *Caloplaca soralifera*, a new species from Europe // Grapis Scripta. – 2006. – Vol. 18. – P. 6-15.
- VONDRÁK J., SLAVÍKOVÁ-BAYEROVÁ S. Contribution to the lichenized and lichenicolous fungi in Bulgaria. II, the genus *Caloplaca* // Mycologica Balcanica. – 2006. – N 3. – P. 61-69.
- VONDRÁK J., ŠOUN J. *Lichenostigma svandae*, a new lichenicolous fungus on *Acarospora cervina* // Lichenologist. – 2007. – Vol. 39, N3. – P. 211-216.
- WETMORE C.M. The *Caloplaca squamulosa* group in North and Central America // The Bryologist. – 2003. – Vol. 106, N1. – P. 147-156.
- WIRTH V. Die Flechten Baden-Württembergs. – Ulmer, Stuttgart, 1995. – Vol. 1-2. – 1006 p.
- ZEHETLEITNER G. Über einige parasitische Arten der Flechtengattung *Verrucaria* // Nova Hedwigia. – 1978. – Vol. 29. – P. 683-734.

Рекомендує до друку
М.Ф. Бойко

Отримано 10.10.2007

Адреси авторів:

О.Є. Ходосовцев
Херсонський державний університет, кафедра
ботаніки
вул. 40 років Жовтня, 27
Херсон, 73000
Україна
e-mail: khodosovtsev@ksu.ks.ua

Author's addresses:

A. Ye. Khodosovtsev
Kherson State University
27, 40 Rokiv Zhovtnya str.
Kherson, 73000
Ukraine
e-mail: khodosovtsev@ksu.ks.ua

Я. Вондрак, Я. Шоун
Кафедра ботаніки наукового факультету
Університету Південної Богемії
Бранішовська, 31
CZ-37005
Чеське Будейовице
Чеська Республіка
e-mail: j.vondrak@seznam.cz

J. Vondrák, J. Šoun
Department of Botany,
Faculty of Sciences,
University of South Bohemia
Branišovská, 31
CZ-37005,
České Budějovice,
Czech Republic
e-mail: j.vondrak@seznam.cz