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A contribution to beech forest-associated epiphytic lichen-forming and lichenicolous fungi in Crimean Mts (Ukraine)

Abstract

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A list of 57 species of rare and red-listed epiphytic lichen-forming and lichenicolous fungi associated to beech forests of Crimean Mountains (Ukraine) is presented. It includes nine species new for Ukraine: *Hawksworthiana peltigericola*, *Heterodermia japonica*, *Lecania prasinoides*, *Parmelia ernstiae*, *Phacographa zwackhii*, *Plectocarpon lichenum*, *Stigidium congestum*, *Usnea diplotypus* and *Verrucaria corticola*. Other 20 species are new to Crimea. The notes about rarity of the species in Ukraine or taxonomic differences are given. The localities of 21 species were confirmed for Crimean Mts by our study.

Key words: Biodiveristy, Cryptogams, red-list.

Introduction

The Crimean Natural Reserve is one of the biodiversity hot-spots of the Crimean Mountains in Ukraine. The area of this Reserve comprises 34500 ha, where nearly 26% is occupied by the largest old-growth beech forest of the Crimean peninsula (Yena & al. 2004). Many red-listed, indicator species of woodland key habitats or otherwise rare epiphytic lichens are associated with such forests (Coppins & Coppins 2002). Five red-listed in Ukraine species, i.e. *Lobaria pulmonaria*, *Melanohalea elegantula*, *Nephroma parile*, *Nephroma resupinatum*, *Parmeliella triptophylla* (Blum & al. 2009) were previously recorded from beech forests of the Crimean Natural Reserve. In the framework of lichen inventories carried out in the middle of 20th century (Kopachevskaya 1963, 1986) 344 species associated with beech forests have been recorded in the Reserve (Khodosovtsev & Bogdan 2006). We expect that this includes nearly 60% of the epiphytic lichen species pool of the Peninsula. The aim of this study was to revisit previously-known localities of rare epiphytic lichens as well as to discover new species of lichen-forming and lichenicolous fungi for Crimea.

Materials and Methods

The Crimean Natural Reserve is situated in the central part of the mountainous Crimea, on the alpine tops (jaila) and partially on the southern slope of the Main Ridge (Fig. 1). The climate depends on exposition of slopes and altitude: the average temperature of January $+4^{\circ}$ and of June $+22^{\circ}$ in the forest belt, but below 0° at winter months on the top of the mountains. The humidity is 430-470 mm in the forest belt, and 1000-1100 mm on the tops. The Reserve was established in 1913 for imperial hunting, and then became a hunting field for the Soviet Union leaders. The hunting reserve was re-organized into Crimean Natural Reserve in 1991 (Yena & al. 2004).

The lichen-forming and lichenicolous fungi were collected in beech forests of the Crimean Natural Reserve (Autonomous Republic of Crimea, Ukraine) and neighboring beech forest out of the Reserve in June 2010. The specimens are deposited in the herbaria of the Kherson State University (KHER) and the M.H. Kholodny Institute of Botany NASU (KW-L). Nomenclature follows Kondratyuk & al. (2010). Lichenicolous fungi are indicated by an asterisk before their names in the list below.

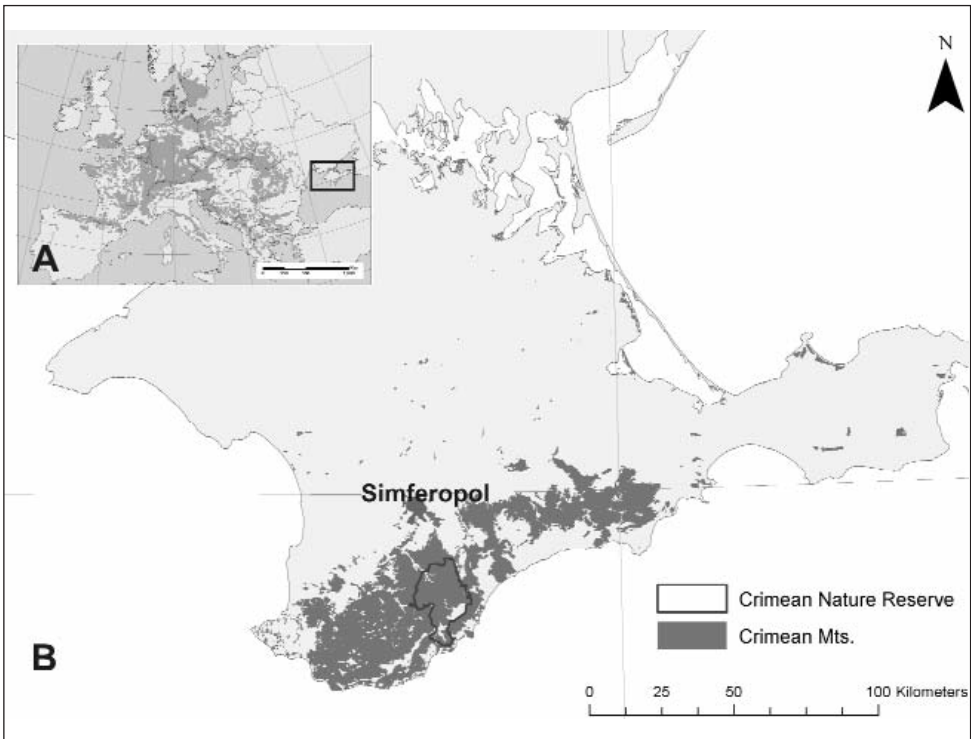


Fig. 1. A, The location of Crimean peninsula within the range of *Fagus sylvatica* L. in Europe (dark grey; source of the species distribution map: <<http://www.euforgen.org>>). B, The location of the Crimean Nature Reserve.

Results

Bacidia circumspecta (Norrl. & Nyl.) Malme

Alushta: Crimean Natural Reserve, cordon 'Bukowsky', on *Fagus*, N44°38'39.1" E34°13'42.0", 1045 m alt., 18.06.2010 (KHER 6059). It was previously known from Carpathian Mts (Kondratyuk & al. 2003). **New for Crimea.**

Bacidia rosella (Pers.) de Not.

Alushta: Crimean Natural Reserve, the valley of Alma river, near the Chorna rigde, on *Carpinus*, N44°41'49.6" E34°16'33.9", 564 m alt., 21.06.2010 (KHER 4641). The lichen is known only from a few localities in Crimea (Kopachevskaya 1986).

Belonia herculina (Rehm) Hazsl.

Alushta: Crimean Natural Reserve, cordon 'Bukowsky', at the base of *Fagus*, N44°38'39.1" E34°13'42.0", 1045 m alt., 18.06.2010; Bolshaya Chuchel Mt, at the base of *Fagus*, N44°38'55.0" E34°14'15.5", 1221 m alt., 19.06.2010 (KW-L 69532). This red-listed species (Blum & al. 2009) is widely distributed in old-growth beech forests of Carpathian Mts (Kondratyuk & al. 2003), and only one locality in Crimean Mts was known so far (Копачевская, 1963). We confirmed this locality by recording more than ten mature *Fagus* trees with this lichen during our study.

Biatora chrysantha (Zahlbr.) Printzen

Alushta: Crimean Natural Reserve, Bolshaya Chuchel Mt, at the base of *Fagus*, N44°38'55.0" E34°14'15.5", 1221 m alt., 19.06.2010 (KHER 6033; KW-L 69526). The lichen is known from Ukrainian Carpathians (Kondratyuk & al. 2003). **New for Crimea.**

Biatora epixanthodes (Nyl.) Diederich

Alushta: Crimean Natural Reserve, the valley of Alma river, near the Chorna Mt, on *Carpinus*, N44°41'48.1" E34°16'33.4", 540 m alt., 21.06.2010 (KHER 6052, 6053). The species was previously recorded for Ukrainian Carpathians (Kondratyuk & al. 2003). **New for Crimea.**

Biatora tetramera (De Not.) Coppins

Alushta: Crimean Natural Reserve, on mosses overgrowing bark at the base of *Fagus* and *Ulmus*, N44°39'06.3" E34°13'25.2", 1031 m alt., 21.06.2010 (KW-L 70040, 70046). In Ukraine only three localities of this species were known so far (Kondratyuk & al. 1998; Dymytrova & al. 2013). For Crimea it was previously reported by K. Mereschkowsky in 1920.

Biatoridium monasteriense J. Lahm

Simpheropol region: Chatyrdag Mt, forest near Sosnovka vill., above Simpheropol-Alushta road, on *Fagus*, N44°48'10.8" E34°20'20.9", 556 m alt., 22.06.2010 (KHER 4640; KW-L 70030). The lichen was previously reported from Monastyrskyi Ridge in Crimean Nature Reserve (Kopachevskaya 1963). This is the second locality for Crimean Mts.

Buellia griseovirens (Turner & Borrer ex Sm.) Almb.

Alushta: Crimean Natural Reserve, Bolshaya Chuchel Mt, at the base of *Fagus*, N44°38'55.0" E34°14'15.5", 1221 m alt., 19.06.2010 (KHER 6012, 6032, 6047). The species was known from Karadag Nature Reserve only (Khodosovtsev 2003). This is the second locality for Crimean Mts.

Chaenotheca brachypoda (Ach.) Tibell

Alushta: Crimean Natural Reserve, the valley of Alma river, near the Chorna Mt, on *Carpinus*, N44°41'49.6" E34°16'33.9", 564 m alt., 21.06.2010 (KHER 6045). Only one locality in the Reserve was known so far (kordon 'Berezovyi') (Titov 1988). This is the second locality for Crimean Mts.

Caloplaca monacensis (Leder.) Lettau

Alushta: Crimean Natural Reserve, cordon 'Bukowsky', on mosses at the base of *Fagus*, N44°38'39.1" E34°13'42.0", 1045 m alt., 22.05.2010 (KHER 6110). This species was rediscovered recently and is formally new for Crimea (Šoun & al. 2011).

Collema nigrescens (Huds.) DC.

Alushta: Crimean Natural Reserve, Bolshaya Chuchel Mt, at the base of *Fagus*, N44°38'55.0" E34°14'15.5", 1221 m alt., 19.06.2010 (KHER 6006). This lichen was known from three localities in Crimea only: Yalta (Lévêille 1842), Kastel Mt (Rishavi 1881) and Babugan jaila (Khodosovtsev & Bogdan 2006).

Cyphelium tigillare (Ach.) Ach.

Alushta: N slope of Babugan Mt, pine forest, on dry wood, N44°37'16.5" E34°14'10.6", 1190 m alt., 20.06.2010 (KW-L 69524). This species was previously recorded from Carpathian Mts and Donetsk region (Kondartyuk & al. 1998). **New for Crimea.**

Fuscidea cyathoides (Ach.) V. Wirth var. ***corticola*** (Fr.) Kalb

Alushta: Crimean Natural Reserve, the valley of Alma river, near the Chorna Mt, on *Carpinus*, N44°41'49.6" E34°16'33.9", 564 m alt., 21.06.2010 (KHER 6044). Only one locality of this species was previously known from the Carpathians, Uzhansky Nature Park (Kondartyuk & al. 2003). **New for Crimea.**

Gyalecta truncigena (Ach.) Hepp

Alushta: Crimean Natural Reserve, Bolshaya Chuchel Mt, at the base of *Fagus*, N44°38'56.1" E34°14'16.8", 1202 m alt., 19.06.2010 (KW-L 69538, 70053). This red-listed species (Blum & al. 2009) is widely distributed in old-growth beech forests of Carpathian Mts (Kondratyuk & al. 2003; Dymytrava & al. 2013). **New for Crimea.**

Gyalecta ulmi (Sw.) Zahlbr.

Alushta: Crimean Natural Reserve, way to Babugan Mt, near road, on *Fraxinus*, N44°37'28.6" E34°14'12.8", 1056 m alt., 20.06.2010 (KW-L 69559). The species is rare in Europe, but in the mentioned locality was rather abundant.

Heterodermia japonica (M. Sato) Swinscow & Krog

Alushta: Crimean Natural Reserve, cordon 'Bukowsky', on *Fagus*, N44°38'39.1'' E34°13'42.0'', 1045 m alt., 18.06.2010 (KHER 6066, 6107, 4642). This species is similar to *H. speciosa* which occurs on tree bark in Carpathian Mts. However, the former differs by ecorticate lower surface with yellow spots or ochraceous arachnoid layer and dark rhizines (Lendemer 2009). The previous record of *H. speciosa* from Crimea (Léveillé 1842) is dubious and probably refers to *H. japonica*. **New for Ukraine.**

Jamesiella anastomosans (P. James & Vězda) Lucking, Serus. & Vězda

Alushta: N slope of Babugan Mt, beech forest, on moisted wood, N44°37'16.6'' E34°14'10.6'', 1190 m alt., 20.06.2010 (KHER 4674). It was known from Ukrainian Carpathians (Kondratyuk & al. 2003). **New for Crimea.**

Lecania prasinoides Elenk.

Alushta: Crimean Natural Reserve, cordon 'Bukowsky', on wood, N44°38'39.1'' E34°13'42.0'', 1045 m alt., 22.05.2010 (KHER 6114). The species is rediscovered recently (Næsborg 2008), and differs from *L. cyrtella* by granular thallus, more narrow ascospores and prefers humid habitats. **New for Ukraine.**

Leptogium saturninum (Dicks.) Nyl.

Alushta: Crimean Natural Reserve, Bolshaya Chuchel Mt, at the base of *Fagus*, N44°38'55.0'' E34°14'15.5'', 1221 m alt., 19.06.2010 (KW-L 69539); way to Babugan Mt, on *Acer*, N44°37' 28.6'' E34°14'12.8'', 1056 m alt., 20.06.2010. This red-listed lichen is known in Ukraine from Crimea and Carpathians only (Blum & al. 2009). It was reported for Crimea by K. Mereschkowsky (1920) without certain location. There is the first confirmed record for Crimean peninsula.

Leptogium teretiusculum (Flörke) Arnold

Simpheropol region: W slope of Chatyrdag Mt, forest near Sosnovka vill., above road Simpheropol-Alushta, on the base of *Fagus*, N44°48'10.8'' E34°20'20.9'', 556 m alt., 22.06.2010 (KHER 4633, 6092; KW-L 69556). A few records are referring to the southern coast of Crimean peninsula (Redchenko 2001; Khodosovtseva 2008). It is the first locality for Crimean Mts.

Melanohalea elegantula (Zahlbr.) Blanco & al.

Alushta: Crimean Natural Reserve, cordon 'Bukowsky', at the base of *Fagus*, N44°38' 39.1'' E34°13'42.0'', 1045 m alt., 18.06.2010; Bolshaya Chuchel Mt, at base of *Fagus*, N44°38' 55.0'' E34°14'15.5'', 1221 m alt., 19.06.2010. This red-listed lichen (Blum & al. 2009) was known from several localities in Crimea, but our finding is the first record from Crimean Nature Reserve.

Nephroma resupinatum (L.) Ach.

Alushta: Crimean Natural Reserve, cordon 'Bukowsky', at the base of *Fagus*, N44°38'39.1'' E34°13'42.0'', 1045 m alt., 18.06.2010 (KHER 6073); Bolshaya Chuchel Mt, at the base of *Fagus*, N44°38'55.0'' E34°14'15.5'', 1221 m alt., 19.06.2010 (KHER

6094). This red-listed lichen (Blum & al. 2009) is known in Ukraine from Carpathians and Crimea only. We refer the new locality in Crimean Nature Reserve, where the species were recorded at the base of twelve beech trees.

Nephroma parile (Ach.) Ach.

Alushta: Crimean Natural Reserve, Bolshaya Chuchel Mt, on mosses at the base of *Fagus*, N44°38'55.0'' E34°14'15.5'', 1221 m alt., 19.06.2010 (KHER 6034); cordon 'Bukowsky', at the base of *Fagus*, N44°38'39.1'' E34°13'42.0'', 1045 m alt., 18.06.2010 (KHER 6155). This red-listed lichen (Blum & al. 2009) was reported for Crimea in the middle of 20th century from Crimean Natural Reserve (Oxner 1956). We confirmed this locality and recorded four beech trees with this lichen.

Ochrolechia szatalaensis Verseghy

Alushta: Crimean Natural Reserve, Bolshaya Chuchel Mt, on *Fagus*, N44°38'55.0'' E34°14'15.5'', 1221 m alt., 19.06.2010 (KHER 6088; KW-L 69548). The species was recently recorded from the only one locality in Crimea (Khodosovtsev 2006). This is the second locality for Crimea.

Pachyphiale fagicola (Arnold) Zwackh

Alushta: Crimean Natural Reserve, Bolshaya Chuchel Mt, on *Fagus*, N44°38'55.0'' E34°14'15.5'', 1221 m alt., 19.06.2010 (KHER 6030). The species is known from Crimea, however the only one locality was referred more than 50 years ago in Angarsky pass (Oxner 1956). This is the second locality for Crimea.

Parmelia ernstiae Feurer & A. Thell

Alushta: Crimean Natural Reserve, N slope of Babugan Mt, pine forest, on dry wood, N44°37'16.6'' E34°14'10.6'', 1190 m alt., 20.06.2010 (KHER 6099); near the Chorna Mt, on *Carpinus*, N44°41'49.6'' E34°16'33.9'', 564 m alt., 21.06.2010 (KHER 6040). The pruinose lobe edges and isidia are distinguishing this species from close *P. saxatilis*. It is known in Europe (Louwhoff & al. 2009) and **we firstly reported it for Ukraine**.

Parmelia submontana Nád. ex Hale

Alushta: Crimean Natural Reserve, Bolshaya Chuchel Mt, on *Fagus*, N44°38'55.0'' E34°14'15.5'', 1221 m alt., 19.06.2010 (KHER 4629; KW-L 69530). The species is known from Ukrainian Carpathians (Kondratyuk & al. 2003). **New for Crimea**.

Parmeliella triptophylla (Ach.) Müll. Arg.

Alushta: Crimean Natural Reserve, Bolshaya Chuchel Mt, on *Fagus*, N44°38'55.0'' E34°14'15.5'', 1221 m alt., 19.06.2010 (KW-L 70049). This species was collected in Crimea (near kordon "Central'naya Kotlovina") only once (Oxner 1956). This is the second locality for Crimea.

Peltigera collina (Ach.) Schrad.

Alushta: Crimean Natural Reserve, N slope of Babugan Mt, beech forest, on *Peltigera collina*, N44°37'16.6'' E34°14'10.6'', 1190 m alt., 20.06.2010 (KHER 4708). It was col-

lected in the Mt Ai-Petri in Crimea recently (Khodosovtsev & al. 2007). This is the second locality for Crimea.

Peltigera elisabethae Gyeln.

Alushta: Crimean Natural Reserve, the valley of Alma river, near the Chorna Mt, on *Carpinus*, N44°41'49.6" E34°16'33.9", 564 m alt., 21.06.2010 (KHER 6051). The species was known from Ukrainian Carpathians (Kondratyuk & al. 2003). **New for Crimea.**

Pertusaria coronata (Ach.) Th. Fr.

Alushta: Crimean Natural Reserve, Bolshaya Chuchel Mt, on *Fagus*, N44°38'55.0" E34° 14'15.5", 1221 m alt., 19.06.2010 (KHER 6003). Only one locality of this species in Crimea was known so far (Oxner 1968). This is the second locality for Crimea.

Phaeophyscia endophoenicea (Harm) Moberg

Alushta: Crimean Natural Reserve, cordon 'Bukowsky', on mosses growing on *Fagus*, N44°38'39.1" E34°13'42.0", 1045 m alt., 18.06.2010 (KHER 6058). It was previously collected in Crimea only once (Khodosovtsev 2000). This is the second locality for Crimea.

Protopannaria pezizioides (Weber) P.M. Jorg. & S. Ekman

Simpheropol region: Chatyrdag ridge, forest near Sosnovka vill., above road Simpheropol-Alushta, on *Fagus*, N44°48'10.8" E34°20'20.9", 556 m alt., 22.06.2010 (KHER 4643; KW-L 69529). It was known from Ukrainian Carpathians only (Kondratyuk & al. 2003). **New for Crimea.**

Pycnora praestabilis (Nyl.) Hafellner

Alushta: N slope of Babugan Mt, pine forest, on dry wood, N44°37'25.6" E34° 14' 18.5", 1193 m alt., 20.06.2010 (KHER 4605; KW-L 69521). It was previously recorded from Karadag Nature Reserve only (Khodosovtsev 2003). This is the second locality for Crimea.

Rinodina albana (A. Massal.) A. Massal.

Alushta: Crimean Natural Reserve, Bolshaya Chuchel Mt, on the base of *Fagus*, N44° 38' 55" E34° 14' 15.5", 1221 m alt., 19.06.2010 (KHER 6029). This very rare in Europe species was firstly recorded for Ukraine (Ternopil region) at the end of 19th century (Boberski 1885). However, related specimens are absent in the Ukrainian herbaria. If we assume the record of J. Boberski as true, then we report the second locality of this species for Ukraine after almost 130 years. **New for Crimea.**

Rinodina archaea (Ach.) Arnold

Alushta: Crimean Natural Reserve, E of Monastyrskiy Ridge, on the stump, 800 m alt., 20.07.1957, leg. Ye. Kopachevskaya (KW-L 39186, 2465). The specimens of this species form KW-L were misidentified as *R. exigua*. **New for Crimea.**

Rinodina griseosoralifera Coppins

Alushta: Crimean Natural Reserve, cordon 'Bukowsky', on mosses, on *Fagus*, N44°38'39.1" E34°13'42.0", 1045 m alt., 18.06.2010 (KHER 4638). It was known from Transcarpathian region only (Kondratyuk & al. 2003). **New for Crimea.**

Rinodina olivaceobrunnea Dodge & Barker

Alushta: Crimean Natural Reserve, Roman-Kosh peak, N44°36'46.1" E34°14'34.1", 1540 m alt., on the stem of small shrub, 20.06.2010 (KW-L 69844). This species was firstly recorded for Ukraine from the same locality in Crimean Mts recently (Shvets 2005).

Steinia geophana (Nyl.) Stein

Alushta: N slope of Babugan Mt, beech forest, on decaying wood, N44°37'16.6" E34°14'10.6", 1190 m alt., 20.06.2010 (KHER 4610). The locality from Babugan Mt (Kopachevskaya 1965) was confirmed.

Thelenella muscorum (Fr.) Vain.

Alushta: Crimean Natural Reserve, cordon 'Bukowsky', on mosses at the base of *Fagus*, N44°38'39.1" E34°13'42.0", 1045 m alt., 18.06.2010 (KHER 6060). It is a recently contributed from eastern part of Ukraine (Nadyeina 2006). **New for Crimea.**

Tephromela atra var. ***corticola*** (Hepp) Hafellner & Jerzer

Alushta: Crimean Natural Reserve, cordon 'Bukowsky', on *Fagus*, N44°38'39.1" E34°13'42.0" ', 1045 m alt., 18.06.2010 (KHER 6158). This rare corticolous intraspecific taxon was reported for Crimea by K. Mereschkowsky (1920) without certain locality.

Verrucaria corticola (Arnold) Servit

Alushta: Crimean Natural Reserve, Bolshaya Chuchel Mt, on *Fagus*, N44°38'55.0" E34°14'15.5", 1221 m alt., 19.06.2010 (KHER 4639). This epiphytic species is characterized by thin thallus, black perithecia (0.15-0.25 mm diam.), involucrellum reaching down to basal level of excipulum and narrow ascospores (14-18 × 5-7 μm) (Lendemer & Breuss 2009). **New for Ukraine.**

Usnea barbata (L.) Weber ex F.H. Wigg.

Alushta: Crimean Natural Reserve, cordon 'Bukowsky', on *Fagus* and *Salix*, N44°38'39.1" E34°13'42.0", 1045 m alt., 18.06.2010 (KHER 6066, 6164, 6165, 6114, 6168, 6169); N slope of Babugan ridge, Bolshaya Chuchel Mt, on *Fagus*, N44°37'16.6" E34°14'10.6", 1190 m alt., 20.06.2010 (KHER 6098). This lichen was very rarely collected in Crimea before (Oxner & Golubkova 1993).

Usnea diplotypus Vain.

Alushta: Crimean Natural Reserve, cordon 'Bukowsky', on *Fagus* and *Salix*, N44°38'39.1" E34°13'42.0", 1045 m alt., 18.06.2010 (KHER 6160). The *U. diplotypus*, *U. lapponica* and *U. substerilis* are morphologically similar. First species has subpendent thallus, twisted branch tips and comparatively long isidia. *U. substerilis* forms short isidia only on young soralia while *U. lapponica* doesn't have isidia (Randlane & al. 2009). **New for Ukraine.**

Usnea lapponica Vain.

Alushta: Crimean Natural Reserve, cordon 'Bukowsky', on *Fagus* and *Salix*, N44°38'39.1" E34°13'42.0", 1045 m alt., 18.06.2010 (KHER 6163, 6170). This lichens was recorded in Crimea from Yalta Mountain-Forest Nature Reserve (slope of Nikitskaya jaila) (Oxner & Golubkova 1993).

Usnea subfloridana Stirt.

Alushta: Crimean Natural Reserve, cordon 'Bukowsky', on *Fagus* and *Salix*, N44°38'39.1" E34°13'42.0", 1045 m alt., 18.06.2010 (KHER 6076). The species was recorded only once for Crimea from Northern Demerdji Mt (Khodosovtsev & Marsak 2003).

Usnea substerilis Motyka

Alushta: Crimean Natural Reserve, N slope of Babugan ridge, Bolshaya Chuchel Mt, on *Fagus*, N44°37'16.6" E34°14'10.6", 1190 m alt., 20.06.2010 (KHER 6102). **New for Crimea.**

Usnea wasmuthii Räsänen

Alushta: Crimean Natural Reserve, cordon 'Bukowsky', on *Fagus* and *Salix*, N44°38'39.1" E34°13'42.0", 1045 m alt., 18.06.2010 (KHER 6067). This species differ from *U. glabrescens* by oblong-cylindrical soralia and contain barbatic acid as main substance (Randlane & al., 2009). It was reported as new for Ukraine from Carpathians recently (Dymytriva & al. 2013). **New for Crimea.**

Lichenicolous fungi****Abrothallus bertianus*** de Not.

Alushta: Crimean Natural Reserve, the valley of Alma river, near the Chorna Mt, on *Melanelixia glabratula*, growing on bark of *Carpinus*, N44°41'49.6" E34°16'33.9", 564 m alt., 21.06.2010 (KHER 4645). This species was reported for Carpathians, however without certain location (Kondratyuk & al. 2003). **New for Crimea.**

****Biatoropsis usnearum*** Räsänen

Alushta: Crimean Natural Reserve, Mt Bolshaya Chuchel, on *Usnea* sp. growing on *Fagus*, N44°38'55.0" E34°14'15.5", 1221 m alt., 19.06.2010 (KHER 4724). The lichenicolous fungus was collected once on *Usnea subfloridana* from Mt Demerdji (Khodosovtsev & Marsak 2003).

****Hawksworthiana peltigericola*** (D. Hawksw.) U. Braun.

Alushta: Crimean Natural Reserve, N slope of Babugan Mt, beech forest, on *Peltigera collina*, N44°37'16.6" E34°14'10.6", 1190 m alt., 20.06.2010 (KHER 4708). This lichenicolous fungus forms galls on the tallus of *Peltigera* species. **New for Ukraine.**

**Lichenostigma maureri* Hafellner

Alushta: Crimean Natural Reserve, cordon 'Bukowsky', on *Fagus*, N44°38'39.1" E34°13'42.0", 1045 m alt., 18.06.2010 (KHER 6183). The species is known from Carpathians only (Hawksworth 1992). **New for Crimea.**

**Phacographa zwackhii* (A. Massal. Ex Zwackh.) Hafellner

Alushta: Crimean Natural Reserve, cordon 'Bukowsky', on *Phlyctis argena* growing on *Fagus*, N44°38'39.1" E34°13'42.0", 1045 m alt., 18.06.2010 (KHER 6028); Mt Bolshaya Chuchel, on *Phlyctis argena* growing on *Fagus*, N44°38'55.0" E34°14'15.5", 1221 m alt., 19.06.2010 (KHER 6091, 6035). The species belongs to a recently proposed genus *Phacographa* (Hafellner 2009), and is characterized by small ascomata (0,2-0,4 mm diam.), dark-brown hypothecium, brown epihymenial pigment (K-), 8-spored asci with young hyaline ascospores surrounded by a thin perispodium, becoming brown-verrucose when mature, 18-22(-26) × 5-6(-7) μm. This lichenicolous fungus may be confused with mainly epiphytic lichen *Amandinea punctata* but the former grows on the thallus of *Phlyctis argena*. The species is known from several European countries and possibly belongs to indicators of long-term ecological continuity in mountain mixed deciduous forest (Hafellner 2009). **New for Ukraine.**

**Plectocarpon lichenum* (Sommerf.) D. Hawksw.

Alushta: Crimean Natural Reserve, Bolshaya Chuchel Mt, on *Lobaria pulmonaria* growing on *Fagus*, N44°38'55.0" E34°14'15.5", 1221 m alt., 19.06.2010 (KW-L 70050). This lichenicolous fungus is known from Europe, Asia and North America (Diederich & Etayo, 1994; Zhurbenko 2007). **New for Ukraine.**

**Sphinctrina turbinata* (Pers.) de Not.

Alushta: Crimean Natural Reserve, cordon 'Bukowsky', on *Pertusaria flavida* growing on *Fagus*, N44°38'39.1" E34°13'42.0", 1045 m alt., 18.06.2010 (KW-L 70036). It was previously recorded from Inzhesyrt Mt (Kopachevskaya 1961). This is the second locality in Crimea.

**Stigmidium congestum* (Körb.) Triebel

Crimean Natural Reserve, Bolshaya Chuchel Mt, in apothecia of *Lecanora chlarothesa* group growing on *Fagus*, N44°38'55.0" E34°14'15.5", 1221 m alt., 19.06.2010 (KHER 6069). The species is known from Europe and Asia (Roux & Triebel 1994; Hawksworth 2003; Zhurbenko 2007). **New for Ukraine.**

**Tremella hypogymniae* Diederich & M.S. Christ.

Alushta: Crimean Natural Reserve, cordon 'Bukowsky', on *Hypogymnia* growing on *Fagus*, N44°38'39.1" E34°13'42.0", 1045 m alt., 18.06.2010 (KHER 6106). This lichenicolous fungus was known in Carpathians (Motiejūnaitė & al. 1999). **New for Crimea.**

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