

CONTRIBUTION TO THE KNOWLEDGE OF LICHENS AND LICHENICOLOUS FUNGI OF WESTERN UKRAINE

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Abstract. The results of a lichen survey carried out in the Podil's'ki Tovtry National Park (Western Ukraine) in June 2003 are presented. The study yielded 22 species new to the Ukraine: *Agonimia opuntiella* (Buschardt & Poelt) Vězda, *Anema decipiens* (A. Massal.) Forssell, *Arthonia galactinaria* Leight., *Caloplaca flavocitrina* (Nyl.) H. Olivier, *Diplotomma venustum* (Körb.) Körb., *Lecanora admontensis* Zahlbr., *L. rouxii* S. Ekman & Tønsberg, *L. xanthostoma* Cl. Roux & Frøberg, *Lecidea umbonata* (Hepp) Mudd, *Naetrocymbe saxicola* (A. Massal.) R. C. Harris, *Protoblastenia terricola* (Anzi) Lyngby, *Ramalina intermedia* (Delise ex Nyl.) Nyl., *Roselliniella cladoniae* (Anzi) Matzer & Hafellner, *Staurothele ambrosiana* (A. Massal.) Zschack, *Stigmidium rouxianum* Calatayud & Triebel, *S. tabacinae* (Arnold) Triebel, *Verrucaria bryoctona* (Th. Fr.) Orange, *V. foveolata* (Flörke) A. Massal., *V. fuscoatroides* Servit, *V. obfuscans* Nyl., *V. subdolosus* Servit, *Zwackhiomyces lecanorae* (Stein) Nik. Hoffman & Hafellner. As many as 93 species are new reports for the Khmel'nyts'ka Oblast'. In total, 208 species, including 11 lichenicolous fungi are reported from the area.

Key words: lichens, lichenicolous fungi, new records, distribution, Ukraine

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INTRODUCTION

A lichen trip to Western Ukraine, with collecting activities focused on the southeastern area of the Podil's'ki Tovtry National Park, was organized

on the occasion of the XVIII Meeting of Polish Lichenologists, held in June, 2003 in Krakow. The results of the joint project appeared worthwhile and deserving publication, especially that the lichen survey yielded numerous new country and regional records.

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The lichen flora of the Podil's'ki Tovtry National Park have not been investigated except the recent treatment concerning lichens of the Kamyants'-Podil's'kyi town by Zelenko (2004). Scarce notes on the lichens of that terrain are included in papers covering a much larger area (see Oksner 1956, 1968, 1993; Kondratyuk *et al.* 1998a and literature cited there). The lichen flora of Western Ukraine also has recently received attention by Bielczyk and Kiszka (2000). The authors contributed significantly to the knowledge of lichens of western part of Podilya Upland.

The Podil's'ki Tovtry National Park is situated in the southwestern part of the Podilya Upland in Western Ukraine. The upland is an area of hilly relief. It is cut by the network of the meridionally running, deep (reaching even up to 200 m), narrow, long valleys, gorges and ravines of rivers debouching to the Dnister River and of the Dniester River itself.

The park covers an area of 2 613 km². The northern boundary of the park adjoins to the town of Sataniv; the western and southern ones are formed by the Zbruch River and the Dnister River respectively; the eastern one runs between the towns Stara Ushitsya and Sataniv. According to the Law of Ukraine of 2000, the Podil's'ki Tovtry National Park belongs to the Podil's'ki Region of the National Ecological Network of Ukraine.

One of the greatest peculiarities of the park is the range of hills, named 'Tovtry'. It is a relatively narrow main chain with some lateral ranges. These hills occupy the western part of the park. They extend along the Zbruch River to the south and reach vicinity of the towns of Kamyants'-Podil's'kyi and Stara Ushitsya. The top part of the range abounds in rocks and rocky rubble made up of different kinds of limestone. Some limestone outcrops occur in the form of isolated plate rocks or tors. The area abounds also in limestone caves and karst systems. The ridge is the remnant of a coastal barrier reef that was formed during the Middle and Upper Miocene.

The most characteristic natural and semi-natural vegetation components of the area are oak-hornbeam and beech forests, steppe meadows of the Central-European type and calciphilous rock

plant communities. The microclimate created by the open limestone ridges of the Tovtry Range and the canyons of the Dnister River and its tributaries, provides favourable conditions for the preservation of many endemic (e.g. *Aconitum besseranum* Andr., *Euphorbia volhynica* Besser ex Szafer, Kulcz. & Pawł.), relict (e.g. *Carex alba* Scop., *Thalictrum uncinatum* Rehm.) and generally rare (e.g. *Dracocephalum austriacum* L., *Fritillaria montana* Hoppe, *Pulsatilla grandis* Wend., *Cypripedium calceolus* L.) plant species. The flora of the National Park comprises 1300 species of vascular plants, 61 of which are included in the Red Plant Data Book of Ukraine (Shelyag-Sosonka 1996).

In the investigated area suitable sites for lichens are created by carbonate sedimentary rocks, primarily limestone and gypsum, and their weathering products. Important habitats for many interesting terricolous lichens are shallow skeletal soils on slopes and hilltops.

MATERIALS AND METHODS

Sampling of materials was conducted in southeastern part of the Podil's'ki Tovtry National Park (Khmel'nyts'ka Oblast', Kamyants'-Podil's'kyi Rayon). The research was focused on five collecting sites (Fig. 1):

1. Kitaygorod village, 15 km SE of Kamyants'-Podil's'kyi, 48°38'25"N/26°46'59"E, alt. 141 m; canyon of Ternava River, limestone outcrops on south and southwest facing slope with *Crataegus* sp., *Rosa* sp. and young trees of *Juglans regia*, *Morus* sp. and *Populus* sp. 24 June 2003. (Fig. 2).

2. Privorot'e near Makiv village, 10 km N of Kamyants'-Podil's'kyi, 48°47'27"N/26°38'41"E, alt. 223 m; limestone outcrops with part of old quarry and forest, probably *Tilio-Carpinetum* with *Carpinus betulus*, *Tilia cordata* and *Acer campestre*. 25 June 2003.

3. Chotyry Kavalery near Verbka village (Tovtra Verbets'ka nature reserve), 13 km N of Kamyants'-Podil's'kyi, 48°48'24"N/26°35'54"E, alt. 289 m; natural limestone outcrops in open area. 25 June 2003. (Fig. 3).

4. Bagota on the Dnister near Stara Ushitsya town, 30 km SE of Kamyants'-Podil's'kyi, 48°35'10"N/26°59'57"E, alt. 259 m; limestone rocks on the side of water reservoir. 25 June 2003. (Fig. 4).

5. Ustyia village at the junction of Smotrich

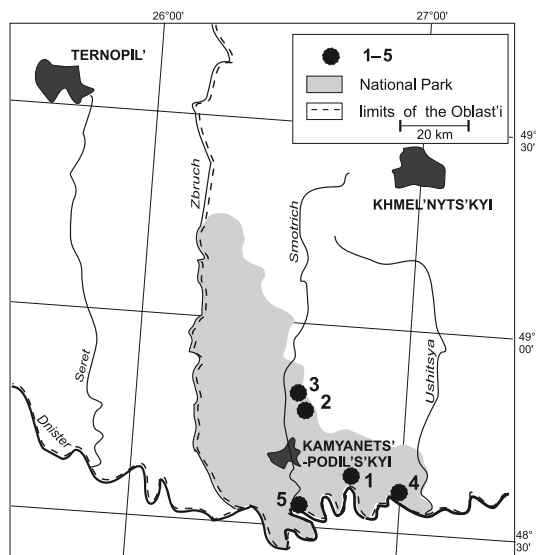


Fig. 1. Location of the collecting sites (1–5) in the Podil's'ki Tovtry National Park (Ukraine).

River and the Dniester; 48°33'54"N/26°39'24"E, alt. 136–200 m; limestone on the steep riverside in canyon of the Dniester. 26 June 2003 (Fig. 5).

Collected material was determined using standard methods. Sterile, crustose specimens were analyzed by TLC according to Orange *et al.* (2001). For each reported taxon there are given data on habitats and the list of collecting sites. Distribution is discussed in three categories: distribution in West Ukraine – in case of relatively common species in the country; distribution in Ukraine – in case of rare species; general distribution – in case of new species to Ukraine. The lichenicolous fungi are indicated in the text by the asterisk (*).

Voucher specimens are deposited at the herbarium of W. Szafer Institute of Botany of Polish Academy of Sciences (KRAM) and selected duplicates at the Museum of the Podil's'ki Tovtry National Park in Kamyanets'-Podil's'kyi.

RESULTS

The lichenological survey produced records of 197 lichen-forming and 11 lichenicolous fungi. Twenty-two species have not so far been reported from the area of Ukraine: *Agonimia opuntiella*, *Anema decipiens*, **Arthonia galactinaria*, *Caloplaca flavocitrina*, *Diplotomma venustum*, *Lecanora*

admontensis, *L. rouxii*, *L. xanthostoma*, *Lecidea umbonata*, *Naetrocymbe saxicola*, *Protoblastenia terricola*, *Ramalina intermedia*, **Roselliniella cladoniae*, *Staurothele ambrosiana*, **Stigmidium rouxianum*, **S. tabacinae*, *Verrucaria bryoctona*, *V. foveolata*, *V. fuscoatroides*, *V. obfuscans*, *V. subdolosa*, **Zwackhiomyces lecanorae*. As many as 93 species are noted in the Khmel'nyts'ka Oblast' for the first time.

LIST OF SPECIES

Acarospora cervina A. Massal.

On exposed calcareous rocks. Collecting sites: 1, 2, 3, 4.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000).

Acarospora glaucocarpa (Ach.) Körb.

On exposed limestone. Collecting sites: 1, 2, 3, 4.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000); Odes'ka Oblast' (Khodosovtsev 1999); Crimea (Kopachevskaya 1986).

Acarospora macrospora (Hepp) A. Massal. *ex* Bagl.

On limestone in sunny situation. Collecting sites: 2, 3.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Khmel'nyts'ka Oblast' (see Kondratyuk *et al.* 1998a); Crimea (Kopachevskaya 1986).

Acrocordia gemmata (Ach.) A. Massal.

On bark of *Carpinus betulus*, *Tilia cordata* and *Acer* sp. Collecting site: 2.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast' (Oksner 1956; Bielczyk & Kiszka 2000; see also Kondratyuk *et al.* 1998a); Ternopils'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast'

(Oksner 1956; Zelenko 2004; see also Kondratyuk *et al.* 1998a).

Agonimia opuntiella (Buschardt & Poelt) Vězda

On mosses over limestone. Collecting site: 1. Species new to Ukraine.

GENERAL DISTRIBUTION. Widespread in central, western and southern Europe, reported also from North America, Macaronesia and the Philippines.

Agonimia tristicula (Nyl.) Zahlbr.

On mosses over limestone. Collecting site: 5. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Coppins *et al.* 1998; Kondratyuk *et al.* 1998b); Crimea (Coppins *et al.* 2001). During the course of the field trip the authors collected the species also in Ivano-Frankivska Oblast' [Opilya area, Halych Rayon: Kosova Hora near Burshtyn town, 11 km N of Halych, 49°13'26"N/24°42'08"E, alt. 301 m; steppe vegetation with gypsum and limestone; 27 June 2003 (KRAM)].

Amandinea punctata (Hoffm.) Coppins & Scheid.

On bark of *Carpinus betulus*, *Tilia cordata* and *Populus* sp. Collecting sites: 1, 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast' (Bielczyk & Kiszka 2000; see also Kondratyuk *et al.* 1998a); Ternopils'ka Oblast' (Bielczyk & Kiszka 2000).

Anema decipiens (A. Massal.) Forssell

On exposed limestone. Collecting site: 5. Species new to Ukraine.

GENERAL DISTRIBUTION. Central Europe and submediterranean areas, reported also from Asia.

Anisomeridium polypori (Ellis & Everh.)

M. E. Barr

On bark of *Salix* sp. Collecting site: 1. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Coppins *et al.* 1998; Kondratyuk *et al.* 1998b).

Arthonia dispersa (Schrad.) Nyl.

On bark of *Crataegus* sp. and *Populus* sp. Collecting site: 1. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982).

****Arthonia galactinaria*** Leight.

On apothecia of *Lecanora crenulata* growing on limestone. Collecting sites: 2, 3. Species new to Ukraine.

GENERAL DISTRIBUTION. Widespread in Europe and known from North Africa and North America.

Arthonia lapidicola (Taylor) Branth & Rostr.

On limestone and on calcareous sandstone in sunny situation. Collecting sites: 1, 2, 3, 4, 5.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); Chernivets'ka Oblast', Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000).

Arthonia radiata (Pers.) Ach.

On bark of *Carpinus betulus*. Collecting site: 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast', (Oksner 1956; see also Kondratyuk *et al.* 1998a); Ternopils'ka Oblast' (Kondratyuk 1995).

Arthonia spadicea Leight.

On bark of *Carpinus betulus*. Collecting site: 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast' (Bielczyk & Kiszka 2000).

Aspicilia calcarea (L.) Mudd

On limestone in sunny situation. Collecting sites: 1, 2, 3, 5.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast' (see



Fig. 2. Canyon of Ternava River near Kitaygorod village – collecting site no. 1. Phot. Lucyna Śliwa.

Kondratyuk *et al.* 1998a); Chernivets'ka Oblast', Ternopils'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Zelenko 2004).

Aspicilia contorta (Hoffm.) Kremp. subsp. ***contorta***

On limestone and calcareous sandstone. Collecting sites: 1, 2, 3, 4, 5.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Chernivets'ka Oblast', Ternopils'ka Oblast', Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000); Odes'ka Oblast', Mykolaivs'ka Oblast', Khersons'ka Oblast' (Khodosovtsev 1999); Crimea (Kopachevskaya 1986; Khodosovtsev 1999).

Aspicilia contorta (Hoffm.) Kremp. subsp. ***hoffmanniana*** Ekman & Fröberg

On limestone. Collecting sites: 1, 2, 3, 4, 5.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Khmel'nyts'ka Oblast' (Zelenko 2004); Odes'ka Oblast', Mykolaivs'ka Oblast', Khersons'ka Oblast', Zaporiz'ka Oblast' (Khodosovtsev 1999); Crimea (Kopachevskaya 1986; Khodosovtsev 1999).

Aspicilia coronata (A. Massal.) Anzi

On exposed limestone. Collecting sites: 1, 2, 3. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Crimea (Coppins *et al.* 2001).

Aspicilia moenium (Vain.) G. Thor & Timdal

On calcareous rocks. Collecting sites: 1, 2, 3.

DISTRIBUTION IN UKRAINE. Chernivets'ka Oblast', Ternopils'ka Oblast', Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000); Khersons'ka Oblast' (Kondratyuk & Navrotskaya 1992).

****Athelia arachnoidea* (Berk.) Jülich**

On the thalli of *Physcia adscendens* and *Xanthoria parietina* growing on *Populus* sp. and *Salix* sp. Collecting site: 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Hawksworth 1992).

***Bacidia bagliettoana* (A. Massal. & De Not.) Jatta**

Over bryophytes and plant debris on calcareous rocks and on the ground in limestone grassland. Collecting sites: 1, 2.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast' (Bielczyk & Kiszka 2000; see also Kondratyuk *et al.* 1998a); Ivano-Frankivs'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Oksner 1968; Zelenko 2004; see also Kondratyuk *et al.* 1998a).

***Bacidia fraxinea* Lönnr.**

On bark of *Tilia cordata* and *Acer platanoides*. Collecting site: 2.

DISTRIBUTION IN UKRAINE. Khmel'nyts'ka Oblast' (Zelenko 2004); Kiev's'ka Oblast' (Ekman & Nordin 1993); Crimea (Coppins *et al.* 2001).

***Bacidia rubella* (Hoffm.) A. Massal.**

On bark of *Carpinus betulus* and *Acer* sp. Collecting site: 2.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast' (Oksner 1968; Bielczyk & Kiszka 2000; see also Kondratyuk *et al.* 1998a); Ternopil's'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Oksner 1968; Zelenko 2004; see also Kondratyuk *et al.* 1998a).

***Bacidina arnoldiana* (Körb.) V. Wirth & Vězda**

On calcareous rocks. Collecting sites: 1, 2.

DISTRIBUTION IN UKRAINE. Carpathians (Coppins *et al.* 1998; Kondratyuk *et al.* 1998b); L'vivs'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Zelenko 2004); Kharkivska Oblast' (Oksner 1968; see also Kondratyuk *et al.* 1998a); Crimea (Coppins *et al.* 2001).

***Bacidina inundata* (Fr.) Vězda**

On brick on the ground. Collecting site: 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982; Motiejūnaitė *et al.* 1999); L'vivs'ka Oblast' (Bielczyk & Kiszka 2000).

***Bagliettoa parmigera* (J. Steiner) Vězda & Poelt**

On limestone. Collecting site: 2, 3.

DISTRIBUTION IN UKRAINE. Ivano-Frankivs'ka Oblast', Ternopil's'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Zelenko 2004); Crimea (Khodosovtsev 1999).

***Biatoridium monasteriense* J. Lahm ex Körb.**

On bark of *Acer platanoides*. Collecting site: 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Crimea (Kopachevskaya 1986).

***Bilimbia lobulata* (Sommerf.) Hafellner & Coppins**

On limestone. Collecting site: 1. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982).

***Bilimbia microcarpa* (Th. Fr.) Th. Fr.**

On mosses growing on calcareous ground. Collecting sites: 3, 5. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982). The species was also collected by the authors in L'vivs'ka Oblast' [Holohory area, Zolochiv Rayon: Hora near Pluhiv village, 10 km SE of Zolochiv, 49°44'55"N/25°01'32"E, alt. 291 m; overgrazed xerothermic vegetation; 23 June 2003 (KRAM)].

***Bilimbia sabuletorum* (Schreb.) Arnold**

On mosses, plant debris and thallus of *Peltigera* sp. on calcareous ground. Collecting sites: 1, 2, 3, 4.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast', Khmel'-

nyts'ka Oblast' (Oksner 1968; see also Kondratyuk *et al.* 1998a); Chernivets'ka Oblast' (Bielczyk & Kiszka 2000); Ternopils'ka Oblast' (Kondratyuk 1995; Bielczyk & Kiszka 2000); Khersons'ka Oblast', Mykolaivs'ka Oblast', Odes'ka Oblast' (Khodosovtsev 1999); Crimea (Kondratyuk & Khodosovtsev 1997).

Botryolepraria lesdainii (Hue) Canals, Hernández-Mariné, Gómez-Bolea & Llimona

On limestone in very shaded situation. Collecting site: 3. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Coppins *et al.* 1998; Kondratyuk *et al.* 1998b); Crimea (Khodosovtsev 1999).

Caloplaca aurantia (Pers.) Hellb.

On limestone. Collecting sites: 1, 2, 3.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopils'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Ob-

last' (Oksner 1993; see also Kondratyuk *et al.* 1998a).

Caloplaca biatorina (A. Massal.) J. Steiner

On calcareous rocks. Collecting site: 1. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Crimea (Kopachevskaya 1986; Khodosovtsev 2002).

Caloplaca cerina (Ehrh. *ex* Hedw.) Th. Fr.

On plant remains and on wood. Collecting site: 2.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Ivano-Frankivs'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Oksner 1993); Khersons'ka Oblast' (Khodosovtsev 1999); Crimea (Kopachevskaya 1986).

Caloplaca cerinella (Nyl.) Flagey

On bark of *Berberis* sp. and *Salix* sp. Collecting sites: 1, 2. Species new to Khmel'nyts'ka Oblast'.



Fig. 3. Chotyry Kavalery (Tovtra Verbets'ka nature reserve) – collecting site no. 3. Phot. Lucyna Śliwa.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Zhytomir's'ka Oblast' (Oksner 1993); Crimea (Kopachevskaya 1986).

Caloplaca chrysodeta (Vain. ex Räsänen) Dombr.

On very shaded limestone. Collecting site: 3. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Kondratyuk *et al.* 1998b); Crimea (see Kondratyuk *et al.* 1998a).

Caloplaca cirrochroa (Ach.) Th. Fr.

On limestone. Collecting site: 3. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Ternopil's'ka Oblast' (Kondratyuk 1995); Crimea (Kopachevskaya 1986).

Caloplaca citrina (Hoffm.) Th. Fr.

On sandstone, limestone and on mortar. Collecting sites: 1, 5.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); Ivano-Frankiv's'ka Oblast', Chernivets'ka Oblast' (Bielczyk & Kiszka 2000); Ternopil's'ka Oblast' (Kondratyuk 1995; Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Oksner 1993; see also Kondratyuk *et al.* 1998a).

Caloplaca coronata (Kremp. ex Körb.) J. Steiner

On calcareous sandstone and on mortar. Collecting sites: 1, 2, 3, 4.

DISTRIBUTION IN W UKRAINE. Ivano-Frankiv's'ka Oblast', Chernivets'ka Oblast' (Bielczyk & Kiszka 2000); Ternopil's'ka Oblast', Khmel'nyts'ka Oblast' (Oksner 1993; Bielczyk & Kiszka 2000; see also Kondratyuk *et al.* 1998a).

Caloplaca crenulatella (Nyl.) H. Olivier

On limestone. Collecting sites: 1, 2.

DISTRIBUTION IN UKRAINE. Khmel'nyts'ka Oblast' (Zelenko 2004); Odes'ka Oblast', Myko-

laivs'ka Oblast', Kherson's'ka Oblast', Zaporiz'ka Oblast', Crimea (Khodosovtsev 2001). The species was also collected by the authors in Ivano-Frankiv's'ka Oblast' [Opilya area, Halych Rayon: Kosova Hora near Burshtyn town, 11 km N of Halych, 49°13'26"N/24°42'08"E, alt. 301 m; steppe vegetation with gypsum and limestone; 27 June 2003 (KRAM)].

Caloplaca decipiens (Arnold) Blomb. & Forssell

On limestone. Collecting sites: 1, 2, 3, 4, 5.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); Chernivets'ka Oblast' (Bielczyk & Kiszka 2000); Ternopil's'ka Oblast' (Kondratyuk 1995; Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Oksner 1993; Zelenko 2004; see also Kondratyuk *et al.* 1998a).

Caloplaca diphyodes (Nyl.) Jatta

On calcareous sandstone. Collecting site: 1. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Crimea (Oksner 1993).

Caloplaca erythrocarpa (Pers.) Zwackh

On limestone. Collecting site: 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Kherson's'ka Oblast' (Khodosovtsev 1999); Crimea (Kopachevskaya 1986).

Caloplaca flavocitrina (Nyl.) H. Olivier

On sandstone and limestone. Collecting site: 1, 3. Species new to Ukraine.

GENERAL DISTRIBUTION. Scattered in Europe.

Caloplaca flavorubescens (Huds.) J. R. Laundon

On bark of *Salix* sp. Collecting site: 2.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopil's'ka Oblast' (Kondratyuk 1995); Khmel'nyts'ka Oblast' (Oksner 1993; see also Kondratyuk *et al.* 1998a).



Fig. 4. Bagota on the Dnister – collecting site no. 4. Phot. Lucyna Śliwa.

Caloplaca flavovirescens (Wulfen) Dalla Torre & Sarnth.

On mortar. Collecting site: 1.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast', Khmel'nyts'ka Oblast' (Oksner 1993; see Kondratyuk *et al.* 1998a).

Caloplaca holocarpa (Hoffm. *ex* Ach.)

A. E. Wade

On twigs of *Populus alba*, *Pinus sylvestris*, *Salix* sp. and on wood. Collecting sites: 1, 2, 3.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopils'ka Oblast' (Kondratyuk 1995); Khmel'nyts'ka Oblast' (Oksner 1993; see also Kondratyuk *et al.* 1998a).

Caloplaca lactea (A. Massal.) Zahlbr.

On limestone and calcareous sandstone. Collecting sites: 1, 2, 3, 5.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopils'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Zelenko 2004).

Caloplaca marmorata (Bagl.) Jatta

On limestone. Collecting sites: 1, 3. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Kherstons'ka Oblast', Crimea (Khodosovtsev 1999).

Caloplaca obscurella (J. Lahm *ex* Körb.) Th. Fr.

On bark of *Quercus* sp. Collecting site: 4.

DISTRIBUTION IN UKRAINE. Khmel'nyts'ka

Oblast' (Zelenko 2004); Kherstons'ka Oblast' (Khodosovtsev 1999).

Caloplaca saxicola (Hoffm.) Nordin

On limestone, calcareous sandstone and on mortar. Collecting sites: 1, 2, 3, 4, 5.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopils'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Oksner 1993; Bielczyk & Kiszka 2000; Zelenko 2004; see also Kondratyuk *et al.* 1998a).

Caloplaca variabilis (Pers.) Müll. Arg.

On calcareous rocks. Collecting sites: 1, 2, 3, 4, 5.

DISTRIBUTION IN W UKRAINE. Ternopils'ka Oblast', Chernivets'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Oksner 1993; Bielczyk & Kiszka 2000; see also Kondratyuk *et al.* 1998a).

Caloplaca velana (A. Massal.) Du Rietz
[including *Caloplaca dolomiticola* (Hue) Zahlbr.]

On limestone and calcareous sandstone. Collecting sites: 1, 2, 3, 4, 5.

DISTRIBUTION IN UKRAINE. Ternopils'ka Oblast', Chernivets'ka Oblast', Ivano-Frankivs'ka Oblast', Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000); Crimea (Kopachevskaya 1986; Oksner 1993).

Caloplaca xerica Poelt & Vězda

On calcareous sandstone. Collecting site: 1. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Crimea (Khodosovtsev 2002).

Candelariella aurella (Hoffm.) Zahlbr.

On limestone, calcareous sandstone and on mortar. Collecting sites: 1, 2, 3, 4, 5.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopils'ka Oblast' (Kondratyuk 1995; Bielczyk & Kiszka 2000); L'vivs'ka Oblast', Ivano-Frankivs'ka Oblast'

(Oksner 1993); Chernivets'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Oksner 1993; Bielczyk & Kiszka 2000; Zelenko 2004; see also Kondratyuk *et al.* 1998a).

Candelariella medians (Nyl.) A. L. Sm.

On limestone and on mortar. Collecting sites: 1, 2, 3, 5.

DISTRIBUTION IN W UKRAINE. Ternopils'ka Oblast', Khmel'nyts'ka Oblast' (Oksner 1993; Bielczyk & Kiszka 2000; see also Kondratyuk *et al.* 1998a); Ivano-Frankivs'ka Oblast' (Bielczyk & Kiszka 2000).

Candelariella reflexa (Nyl.) Lettau

On bark of *Carpinus betulus* and *Pyrus* sp. Collecting sites: 2, 3. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Khersons'ka Oblast', Mykolaivs'ka Oblast' (Kondratyuk & Navrotskaya 1992; Khodosovtsev 1999).

Candelariella vitellina (Hoffm.) Müll. Arg.

On bark of *Rosa* sp. and on sandstone. Collecting sites: 1, 2, 5.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopils'ka Oblast', L'vivs'ka Oblast', Khmel'nyts'ka Oblast' (Oksner 1993; see also Kondratyuk *et al.* 1998a).

Candelariella xanthostigma (Ach.) Lettau

On bark of *Carpinus betulus* and *Tilia cordata*. Collecting site: 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopils'ka Oblast' (Bielczyk & Kiszka 2000); L'vivs'ka Oblast' (Oksner 1993; see also Kondratyuk *et al.* 1998a).

Catillaria lenticularis (Ach.) Th. Fr.

On limestone. Collecting sites: 1, 2, 3.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Khmel'nyts'ka Oblast'

(Zelenko 2004); Crimea (Kopachevskaya 1986; Khodosovtsev 1999).

Catillaria nigroclavata (Nyl.) Schuler

On bark of *Carpinus betulus*, *Salix* sp., *Populus* sp. and on twigs of *Pinus sylvestris* and *Juniperus communis*. Collecting sites: 1, 2, 4.

DISTRIBUTION IN UKRAINE: Carpathians (Makarevich *et al.* 1982); Ternopils'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Zelenko 2004); Crimea (Coppins *et al.* 2001).

Chaenotheca furfuracea (L.) Tibell

On soil associated with rock. Collecting site: 4. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast' (Oksner 1956; see also Kondratyuk *et al.* 1998a).

Cladonia furcata (Huds.) Schrad.

On soil in xerothermic grassland. Collecting site: 3.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast', Ternopils'ka Oblast', Khmel'nyts'ka Oblast' (Oksner 1968; see also Kondratyuk *et al.* 1998a).

Cladonia monomorpha Aptroot, Sipman & van Herk

On limestone. Collecting site: 3. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Kowalewska & Kukwa 2004).

Cladonia pocillum (Ach.) Grognot

On calcareous ground. Collecting sites: 1, 3. Species new to Khmel'nyts'ka Oblast'.



Fig. 5. The junction of the Dnister and Smotrich River – collecting site no. 5. Phot. Lucyna Śliwa.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Khersons'ka Oblast', Zaporiz'ka Oblast', Crimea (Khodosovtsev 1999).

Cladonia pyxidata (L.) Hoffm.

On mineral soil. Collecting site: 1.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast' (Bielczyk & Kiszka 2000); Ternopils'ka Oblast' (Kondratyuk 1995; Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Oksner 1968; Bielczyk & Kiszka 2000; see also Kondratyuk *et al.* 1998a).

Cladonia symphyrcarpia (Flörke) Fr.

On calcareous soil among mosses. Collecting sites: 2, 3. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982). The species was also collected by the authors in Ivano-Frankivs'ka Oblast' [Opilya area, Halych Rayon: Kosova Hora near Burshtyn town, 11 km N of Halych, 49°13'26"N/24°42'08"E, alt. 301 m; steppe vegetation with gypsum and limestone; 27 June 2003 (KRAM)].

Clauzadea monticola (Schaer.) Hafellner & Bellem.

On calcareous rocks. Collecting site: 1. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982).

Collema crispum (Huds.) Weber *ex* F. H. Wigg.

On limestone and soil. Collecting sites: 1, 2, 3, 4.

DISTRIBUTION IN UKRAINE. Khmel'nyts'ka Oblast' (Zelenko 2004; see also Kondratyuk *et al.* 1998a); Kiev's'ka Oblast' (see Kondratyuk *et al.* 1998a); Crimea (Kopachevskaya 1986).

Collema cristatum (L.) Weber *ex* F. H. Wigg.

On limestone and soil. Collecting sites: 1, 2, 3, 5.

DISTRIBUTION IN UKRAINE. Carpathians (Fałtynowicz & Sulma 1994); Khmel'nyts'ka

Oblast' (Oksner 1956; Bielczyk & Kiszka 2000; Zelenko 2004; see also Kondratyuk *et al.* 1998a); Kiev's'ka Oblast' (Oksner 1956; see also Kondratyuk *et al.* 1998a); Khersons'ka Oblast' (Khodosovtsev 1999); Crimea (Kopachevskaya 1986; Khodosovtsev 1999).

Collema fuscovirens (With.) J. R. Laundon

On exposed calcareous rocks and soil. Collecting sites: 1, 3, 4.

DISTRIBUTION IN UKRAINE. L'vivs'ka Oblast', Ternopils'ka Oblast', Chernivets'ka Oblast', Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000); Crimea (Kopachevskaya 1986).

Collema limosum (Ach.) Ach.

On clayey soil. Collecting site: 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopils'ka Oblast' (Oksner 1956; see also Kondratyuk *et al.* 1998a); Khersons'ka Oblast' (Khodosovtsev 1999).

Collema polycarpon Hoffm.

On exposed limestone. Collecting site: 5. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Crimea (Kopachevskaya 1986).

Collema tenax (Sw.) Ach. *emend.* Degel.

On calcareous soil and among bryophytes on clayey soil. Collecting sites: 1, 5.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Oksner 1956; Zelenko 2004; see also Kondratyuk *et al.* 1998a); Crimea (Kopachevskaya 1986).

Collema undulatum Laurer *ex* Flot.

On limestone. Collecting sites: 1, 2, 3. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Crimea (Kopachevskaya 1986).

Dermatocarpon miniatum (L.) W. Mann

On calcareous rocks. Collecting site: 1.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopils'ka Oblast', Khmel'nyts'ka Oblast' (Oksner 1956; see also Kondratyuk *et al.* 1998a).

Diploschistes muscorum (Scop.) R. Sant.

On squamules of *Cladonia pocillum* and mosses on calcareous ground. Collecting site: 1. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Ivano-Frankivska Oblast' (Bielczyk & Kiszka 2000); Khersons'ka Oblast', Mykolaivs'ka Oblast' (Khodosovtsev 1999); Crimea (Kopachevskaya 1986).

Diplotomma alboatrum (Hoffm.) Flot.

[including *Diplotomma epipolium* (Ach.) Arnold]

On calcareous rocks. Collecting sites: 1, 2, 3, 5.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopils'ka Oblast', Chernivets'ka Oblast', Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000).

Diplotomma venustum (Körb.) Körb.

On calcareous rocks. Collecting sites: 1, 2, 3. Species new to Ukraine.

GENERAL DISTRIBUTION. Widespread in southern Central Europe and the Mediterranean area.

Dirina massiliensis f. *sorediata* (Müll. Arg.) Tehler

On calcareous sandstone. Collecting site: 1. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Crimea (Khodosovtsev 1999).

Endocarpon adscendens (Anzi) Müll. Arg.

On calcareous ground. Collecting site: 1. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982).

Endocarpon pusillum Hedw.

On calcareous ground. Collecting sites: 1, 4.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast' (Oksner 1956; Bielczyk & Kiszka 2000; see also Kondratyuk *et al.* 1998a); Ternopils'ka Oblast', Chernivets'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000; Zelenko 2004); Khersons'ka Oblast', Mykolaivs'ka Oblast', Odes'ka Oblast' (Khodosovtsev 1999).

Graphis scripta (L.) Ach.

On bark of *Carpinus betulus*. Collecting site: 2.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast' (Bielczyk & Kiszka 2000); Ternopils'ka Oblast' (Kondratyuk 1995; Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Zelenko 2004); Crimea (Kopachevskaya 1986).

Hypogymnia physodes (L.) Nyl.

On bark of *Carpinus betulus*. Collecting site: 2.

DISTRIBUTION IN UKRAINE. Widespread.

Hypogymnia tubulosa (Schaer.) Hav.

On branches of *Pinus sylvestris*. Collecting site: 2.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast', Khmel'nyts'ka Oblast' (Oksner 1993; see also Kondratyuk *et al.* 1998a).

Lecania cyrtella (Ach.) Th. Fr.

On bark of *Populus* sp. and *Salix* sp. Collecting sites: 1, 2.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast', Ivano-Frankivska Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Oksner 1993; Zelenko 2004; see also Kondratyuk *et al.* 1998a).

Lecania cyrtellina (Nyl.) Sandst.

On small branch of *Pinus sylvestris*. Collecting site: 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Coppins *et al.* 1998; Kondratyuk *et al.* 1998b).

Lecania erysibe (Ach.) Mudd

On limestone. Collecting site: 2.

DISTRIBUTION IN UKRAINE. Species new to Khmel'nyts'ka Oblast' (Zelenko 2004); Mykolaivs'ka Oblast' (Khodosovtsev 1999).

Lecania inundata (Hepp ex Körb.) H. Mayrhofer

On limestone. Collecting sites: 1, 2, 3, 5.

DISTRIBUTION IN UKRAINE. Ternopils'ka Oblast', Ivano-Frankivs'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000; Zelenko 2004); Mykolaivs'ka Oblast', Crimea (Khodosovtsev 1999).

Lecania naegelii (Hepp) Diederich & van den Boom

On bark of *Quercus* sp., *Salix* sp. and *Juniperus communis*. Collecting sites: 1, 2, 4. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopils'ka Oblast', Ivano-Frankivs'ka Oblast' (Bielczyk & Kiszka 2000); Kiev's'ka Oblast' (Kondratyuk & Navrotskaya 1992); Kherstons'ka Oblast' (Khodosovtsev 1999); Crimea (Kopachevskaya 1986).

Lecania rabenhorstii (Hepp) Arnold

On limestone. Collecting sites: 1, 3. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopils'ka Oblast' (Bielczyk & Kiszka 2000); Donets'ka Oblast' (see Kondratyuk *et al.* 1998a); Crimea (Kopachevskaya 1986; Khodosovtsev 1999).

Lecanora admontensis Zahlbr.

On limestone. Collecting site: 1. Species new to Ukraine.

GENERAL DISTRIBUTION. Known from the Alps, Carpathians and the Mediterranean mountains.

Lecanora albellula (Nyl.) Th. Fr.

On bark of *Pinus sylvestris*. Collecting site: 1. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast' (see Kondratyuk *et al.* 1998a).

Lecanora albescens (Hoffm.) Branth & Rostr.

On calcareous rocks and on mortar. Collecting sites: 1, 2, 3, 5.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast', Ternopils'ka Oblast', Chernivets'ka Oblast', Ivano-Frankivs'ka Oblast', Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000).

Lecanora allophana Nyl.

On bark of *Juglans regia* and *Salix* sp. Collecting sites: 1, 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast' (see Kondratyuk *et al.* 1998a); Khersons'ka Oblast', Mykolaivs'ka Oblast', Odes'ka Oblast' (Khodosovtsev 1999); Crimea (Kopachevskaya 1986).

Lecanora argentata (Ach.) Malme

On bark of *Carpinus betulus*. Collecting site: 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast', Donets'ka Oblast' (see Kondratyuk *et al.* 1998a); Khersons'ka Oblast' (Khodosovtsev 1999); Crimea (Kopachevskaya 1986).

Lecanora campestris (Schaer.) Hue

On calcareous sandstone. Collecting site: 3. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast', Donets'ka Oblast' (see Kondratyuk *et al.* 1998a); Zaporiz'ka

Oblast' (Khodosovtsev 1999); Crimea (Kopachevskaya 1986).

***Lecanora carpinea* (L.) Vain.**

On bark of *Carpinus betulus*, *Acer* sp. and *Quercus* sp. Collecting sites: 2, 4. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast' (see Kondratyuk *et al.* 1998a); Ternopils'ka Oblast' (Kondratyuk 1995; Bielczyk & Kiszka 2000); Khersons'ka Oblast', Mykolaivs'ka Oblast' (Khodosovtsev 1999); Crimea (Kopachevskaya 1986; Khodosovtsev 1999).

***Lecanora chlarotera* Nyl.**

On bark of *Carpinus betulus*. Collecting site: 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopils'ka Oblast', Ivano-Frankivs'ka Oblast' (Bielczyk & Kiszka 2000); Crimea (Kopachevskaya 1986).

***Lecanora crenulata* Hook.**

On limestone. Collecting sites: 1, 2, 3.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopils'ka Oblast' (Kondratyuk 1995; Bielczyk & Kiszka 2000); Ivano-Frankivs'ka Oblast', Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000).

***Lecanora dispersa* (Pers.) Sommerf.**

On calcareous sandstone. Collecting sites: 1, 2.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopils'ka Oblast' (Kondratyuk 1995; Bielczyk & Kiszka 2000); Chernivets'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000; Zelenko 2004).

***Lecanora leptyroides* (Nyl.) Degel.**

On bark of *Carpinus betulus*. Collecting site: 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982; Motiejūnaitė *et al.* 1999); Khersons'ka Oblast' (Khodosovtsev 1999); Crimea (Kopachevskaya 1986).

***Lecanora pulicaris* (Pers.) Ach.**

On bark of *Populus* sp. Collecting site: 1.

DISTRIBUTION IN UKRAINE. Widespread.

***Lecanora rouxii* S. Ekman & Tønsberg (syn. *Lepraria flavescens* Clauzade & Tønsberg)**

On limestone. Collecting site: 3. Species new to Ukraine.

GENERAL DISTRIBUTION. Scattered in Europe, reported also from Turkey.

***Lecanora saligna* (Schrad.) Zahlbr.**

On bark of *Pinus sylvestris* and on wood. Collecting sites: 1, 2.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast', Ternopils'ka Oblast', Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000); Khersons'ka Oblast', Mykolaivs'ka Oblast' (Khodosovtsev 1999).

***Lecanora sambuci* (Pers.) Nyl.**

On bark of *Salix* sp. Collecting site: 2.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Khersons'ka Oblast', Mykolaivs'ka Oblast' (Khodosovtsev 1999); Crimea (see Kondratyuk *et al.* 1998a).

***Lecanora umbrina* (Ach.) A. Massal.**
[including *Lecanora hagenii* (Ach.) Ach.]

On bark of *Populus* sp. and calcareous rocks. Collecting sites: 1, 2, 3, 5.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopils'ka Oblast' (Kondratyuk 1995; Bielczyk & Kiszka 2000); Ivano-Frankivs'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Zelenko 2004); Khersons'ka Oblast', Mykolaivs'ka Oblast',

Odes'ka Oblast' (Khodosovtsev 1999); Crimea (Kopachevskaya 1986; Khodosovtsev 1999).

Lecanora xanthostoma Cl. Roux & Fröberg

On calcareous rocks. Collecting sites: 1, 2, 3, 4, 5. Besides Khmel'nyts'ka Oblast' the species was also collected by the authors in L'vivs'ka Oblast' [Holohory area, Zolochiv Rayon: Hora near Pluhiv village, 10 km SE of Zolochiv, 49°44'55"N/25°01'32"E, alt. 291 m; overgrazed xerothermic vegetation; 23 June 2003 (KRAM)]. Species new to Ukraine.

GENERAL DISTRIBUTION. Widespread in Europe.

Lecidea umbonata (Hepp) Mudd

On calcareous rocks. Collecting site: 4. Species new to Ukraine.

GENERAL DISTRIBUTION. Known from Europe and Turkey, the Caucasus, Greenland and North America.

Lecidella carpathica Körb.

On sandstone. Collecting site: 1. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Kiev's'ka Oblast', Donetsk'ka Oblast' (Oksner 1968; see also Kondratyuk *et al.* 1998a); Crimea (Kopachevskaya 1986).

Lecidella elaeochroma (Ach.) M. Choisy

On bark of *Carpinus betulus*, *Quercus* sp. and *Prunus* sp. Collecting sites: 1, 2, 4.

DISTRIBUTION IN UKRAINE. Widespread.

Lecidella flavosorediata (Vězda) Hertel & Leuckert

On bark of *Carpinus betulus*. Collecting site: 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (see Kondratyuk *et al.* 2003).

Lecidella stigmatea (Ach.) Hertel & Leuckert

On calcareous rocks. Collecting site: 4. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Crimea (Coppins *et al.* 2001). The species was also collected by the authors in L'vivs'ka Oblast' [Holohory area, Zolochiv Rayon: Hora near Pluhiv village, 10 km SE of Zolochiv, 49°44'55"N/25°01'32"E, alt. 291 m; overgrazed xerothermic vegetation; 23 June 2003 (KRAM)].

Lempholemma chalazanum (Ach.) de Lesd.

On soil and mosses among calcareous rocks. Collecting site: 1. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. L'vivs'ka Oblast' (Oksner 1956; see also Kondratyuk *et al.* 1998a).

Lepraria eburnea J. R. Laundon

On mortar and on plant debris. Collecting sites: 1, 4. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Kukwa 2000); Ivano-Frankivs'ka Oblast' (Bielczyk & Kiszka 2000).

Lepraria lobificans Nyl.

On mosses over calcareous rocks, on calcareous sandstone and as epiphyte on bark of *Carpinus betulus* and *Tilia cordata*. Collecting sites: 1, 2, 3. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Coppins *et al.* 1998; Kondratyuk *et al.* 1998b); L'vivs'ka Oblast', Chernivets'ka Oblast', Ternopils'ka Oblast', Ivano-Frankivs'ka Oblast' (Bielczyk & Kiszka 2000).

Leptogium lichenoides (L.) Zahlbr.

Over bryophytes on clayey calcareous soil. Collecting site: 1.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopils'ka Oblast' (Kondratyuk 1995); L'vivs'ka Oblast', Khmel'nyts'ka Oblast' (Oksner 1956; see also Kondratyuk *et al.* 1998a).

Leptogium plicatile (Ach.) Leight.

On soil on calcareous rocks. Collecting site: 1.

DISTRIBUTION IN UKRAINE. Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000); Crimea (Kopachevskaya 1986).

Leptogium teretiusculum (Wallr.) Arnold

On calcareous soil. Collecting site: 1. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Coppins *et al.* 1998; Kondratyuk *et al.* 1998b; Zalewska 1998).

Lobothallia radiosa (Hoffm.) Hafellner

On calcareous rocks in sunny situation. Collecting sites: 1, 2, 3, 4, 5.

DISTRIBUTION IN UKRAINE. Chernivets'ka Oblast', Ternopil's'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000; Zelenko 2004); Donetsk'ka Oblast' (see Kondratyuk *et al.* 1998a); Kherson's'ka Oblast', Mykolaiivs'ka Oblast', Odes'ka Oblast' (Khodosovtsev 1999); Crimea (Kopachevskaya 1986; Khodosovtsev 1999).

Melanelixia fuliginosa (Fr. *ex* Duby) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch

On bark of *Carpinus betulus*. Collecting site: 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast', Ternopil's'ka Oblast' (Bielczyk & Kiszka 2000).

Micarea prasina Fr.

On mosses on calcareous ground. Collecting site: 1. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Crimea (Kopachevskaya 1986).

****Muellerella lichenicola*** (Sommerf.: Fr.)

D. Hawksw.

On the thalli of *Lecanora dispersa*, *L. albescens*, *Protoblastenia rupestris* and *Verrucaria* sp. growing on

calcareous rocks and on mortar. Collecting sites: 1, 2, 5. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Kherson's'ka Oblast', Crimea (Kondratyuk & Khodosovtsev 1997).

****Muellerella pygmaea*** (Körb.) D. Hawksw.

On the thalli of *Arthonia lapidicola*, *Acarospora cervina* and *Caloplaca variabilis* growing on calcareous rocks. Collecting sites: 1, 2, 5. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Ternopil's'ka Oblast' (Kondratyuk & Kolomyets 1997); Crimea (Khodosovtsev 1999).

Mycobilimbia epixanthoides (Nyl.) Vitik., Ahti, Kuusinen, Lommi & T. Ulvinen

On bark of *Acer platanoides*, *Carpinus betulus* and on wood. Collecting site: 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Coppins *et al.* 1998; Kondratyuk *et al.* 1998b).

Mycobilimbia tetramera (De Not.) Vitik., Ahti, Kuusinen, Lommi & T. Ulvinen

On mosses growing on calcareous ground. Collecting site: 1. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Chernivets'ka Oblast', Ternopil's'ka Oblast', Ivano-Frankivs'ka Oblast' (Bielczyk & Kiszka 2000); Crimea (Kopachevskaya 1986).

Naetrocymbe punctiformis (Pers.) R. C. Harris

On bark of *Populus* sp. Collecting sites: 1, 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopil's'ka Oblast' (Kondratyuk & Navrotskaya 1992); Kharkivs'ka Oblast' (Oksner 1956; see also Kondratyuk *et al.* 1998a); Kherson's'ka Oblast' (Khodosovtsev 1999); Crimea (Kopachevskaya 1986).

Naetrocymbe saxicola (A. Massal.) R. C. Harris

On limestone pebble. Collecting site: 5. Species new to Ukraine.

GENERAL DISTRIBUTION. South and Central Europe.

Opegrapha rufescens Pers.

On bark of *Carpinus betulus* and *Salix* sp. Collecting site: 2.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast' (Oksner 1956; Bielczyk & Kiszka 2000); Ternopils'ka Oblast' (Kondratyuk 1995); Khmel'nyts'ka Oblast' (Oksner 1956; see also Kondratyuk *et al.* 1998a).

****Opegrapha rupestris*** Pers.

On the thalli of *Verrucaria* sp. growing on calcareous rocks. Collecting site: 1.

DISTRIBUTION IN W UKRAINE. L'vivs'ka Oblast', Khmel'nyts'ka Oblast' (Oksner 1956; see also Kondratyuk *et al.* 1998a).

Opegrapha varia Pers.

On bark of *Acer campestre* and *Juglans regia*. Collecting sites: 1, 2.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast', Khmel'nyts'ka Oblast' (Oksner 1956; see also Kondratyuk *et al.* 1998a); Ternopils'ka Oblast' (Kondratyuk 1995).

Parmelina tiliacea (Hoffm.) Hale

On bark of *Carpinus betulus* and *Quercus* sp. Collecting sites: 2, 4.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast', Ternopils'ka Oblast', Khmel'nyts'ka Oblast' (Oksner 1993; see also Kondratyuk *et al.* 1998a).

Peltigera didactyla (With.) J. R. Laundon

On bryophytes on calcareous soil. Collecting site: 1.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast', Khmel'nyts'ka Oblast' (Oksner 1956; see also Kondratyuk *et al.* 1998a); Chernivets'ka Oblast' (Bielczyk & Kiszka 2000).

Peltigera praetextata (Flörke ex Sommerf.) Zopf

On mosses growing on calcareous ground. Collecting site: 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Crimea (Kopachevskaya 1986).

Peltigera rufescens (Weiss) Humb.

On humus and calcareous ground. Collecting sites: 1, 2, 3.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopils'ka Oblast' (Kondratyuk 1995); Chernivets'ka Oblast', Ivano-Frankivs'ka Oblast', Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000); Crimea (Kopachevskaya 1986).

Phaeophyscia nigricans (Flörke) Moberg

On limestone, calcareous sandstone and also on bark of *Salix* sp. Collecting sites: 1, 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast', Chernivets'ka Oblast', Ivano-Frankivs'ka Oblast' (Bielczyk & Kiszka 2000); Ternopils'ka Oblast' (Kondratyuk 1995; Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Zelenko 2004); Khersons'ka Oblast', Mykolaivs'ka Oblast', Crimea (Khosovtsev 1999).

Phaeophyscia orbicularis (Neck.) Moberg

On bark of *Quercus* sp., *Salix* sp. *Ulmus* sp., on twigs of *Rosa* sp. and on calcareous rocks. Collecting sites: 1, 2, 4.

DISTRIBUTION IN UKRAINE. Widespread.

***Phaeophyscia sciastra* (Ach.) Moberg**

On limestone and on mortar. Collecting sites: 1, 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Donets'ka Oblast', Kharkivska Oblast', Crimea (Kondratyuk & Navrotskaya 1992; see also Kondratyuk *et al.* 1998a); Khersons'ka Oblast' (Khodosovtsev 1999).

***Phlyctis agelaea* (Ach.) Flot.**

On bark of *Carpinus betulus* and *Quercus* sp. Collecting site: 2.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast', Khmel'nyts'ka Oblast' (Oksner 1993).

***Phlyctis argena* (Spreng.) Flot.**

On bark of *Carpinus betulus*. Collecting site: 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast' (Oksner 1993; Bielczyk & Kiszka 2000); Chernivets'ka Oblast' (Oksner 1993); Ternopils'ka Oblast' (Kondratyuk 1995; Bielczyk & Kiszka 2000).

***Physcia adscendens* (Fr.) H. Olivier**

On bark of *Salix* sp., twigs of *Pinus sylvestris* and on limestone. Collecting sites: 1, 2, 4.

DISTRIBUTION IN UKRAINE. Widespread.

***Physcia aipolia* (Ehrh. *ex* Humb.) Fűrnr.**

On bark of *Populus alba* and *Carpinus betulus*. Collecting sites: 2, 4. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopils'ka Oblast' (Kondratyuk 1995); Khersons'ka Oblast' (Khodosovtsev 1999); Crimea (Kopachevskaya 1986).

***Physcia caesia* (Hoffm.) Fűrnr.**

On limestone. Collecting site: 1.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopils'ka Oblast', Ivano-Frankivs'ka Oblast', Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000).

***Physcia dimidiata* (Arnold) Nyl.**

On limestone. Collecting site: 1. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Donets'ka Oblast' (Kondratyuk & Navrotskaya 1992); Crimea (Kopachevskaya 1986).

***Physcia dubia* (Hoffm.) Lettau**

On bark of *Rosa* sp. in sunny situation. Collecting site: 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Mykolaivs'ka Oblast' (see Kondratyuk *et al.* 1998a); Khersons'ka Oblast', Odes'ka Oblast', Zaporiz'ka Oblast', Crimea (Khodosovtsev 1999).

***Physcia stellaris* (L.) Nyl.**

On bark of *Quercus* sp., *Salix* sp. and *Rosa* sp. Collecting sites: 1, 2, 4. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopils'ka Oblast' (Kondratyuk 1995; Bielczyk & Kiszka 2000); Ivano-Frankivs'ka Oblast' (Bielczyk & Kiszka 2000).

***Physcia tenella* (Scop.) DC.**

On bark of *Malus domestica* and *Salix* sp. Collecting sites: 1, 2.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopils'ka Oblast' (Kondratyuk 1995; Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000).

***Physconia distorta* (With.) J. R. Laundon**

On bark of *Quercus* sp. and *Salix* sp. Collecting site: 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Maka-

revich *et al.* 1982); Ternopil's'ka Oblast' (Bielczyk & Kiszka 2000); Kherson's'ka Oblast' (Khodosovtsev 1999); Crimea (Kopachevskaya 1986).

***Physconia enteroxantha* (Nyl.) Poelt**

On bark of *Tilia cordata*. Collecting site: 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopil's'ka Oblast' (Kondratyuk & Navrotskaya 1992).

***Physconia grisea* (Lam.) Poelt**

On shaded limestone and on bark of *Quercus* sp. Collecting sites: 3, 4.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Ivano-Frankiv's'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Zelenko 2004); Kherson's'ka Oblast', Mykolaiv's'ka Oblast', Odes'ka Oblast' (Khodosovtsev 1999); Crimea (Kopachevskaya 1986; Khodosovtsev 1999).

***Placidium squamulosum* (Ach.) Breuss**

On soil on calcareous ground. Collecting sites: 2, 5. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); L'viv's'ka Oblast', Chernivets'ka Oblast', Ternopil's'ka Oblast', Ivano-Frankiv's'ka Oblast' (Bielczyk & Kiszka 2000); Donets'ka Oblast', Lukans'ka Oblast' (see Kondratyuk *et al.* 1998a); Kherson's'ka Oblast', Mykolaiv's'ka Oblast', Odes'ka Oblast' (Khodosovtsev 1999); Crimea (Kopachevskaya 1986; Khodosovtsev 1999).

***Placocarpus schaeereri* (Fr.) Breuss**

On limestone. Collecting sites: 1, 2, 3, 4.

DISTRIBUTION IN UKRAINE. Ternopil's'ka Oblast' (Oksner 1956; Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Oksner 1956; Bielczyk & Kiszka 2000; Zelenko 2004); Donets'ka Oblast' (Oksner 1956; see also Kondratyuk *et al.* 1998a); Kherson's'ka Oblast' (Khodosovtsev 1999); Crimea (Kopachevskaya 1986; Khodosovtsev 1999).

***Placynthium nigrum* (Huds.) Gray**

On limestone and calcareous sandstone. Collecting sites: 1, 2, 5.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); L'viv's'ka Oblast' (see Kondratyuk *et al.* 1998a); Chernivets'ka Oblast', Ternopil's'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Oksner 1956; Bielczyk & Kiszka 2000).

***Polyblastia albida* Arnold**

On limestone. Collecting site: 4. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982).

***Polyblastia sepulta* A. Massal.**

On limestone. Collecting site: 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982).

***Protoblastenia rupestris* (Scop.) J. Steiner**

On limestone and calcareous sandstone. Collecting sites: 1, 2, 4, 5. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Chernivets'ka Oblast', Ivano-Frankiv's'ka Oblast' (Bielczyk & Kiszka 2000); Lukans'ka Oblast' (Oksner 1993; see also Kondratyuk *et al.* 1998a); Crimea (Kopachevskaya 1986).

***Protoblastenia terricola* (Anzi) Lynge**

On calcareous soil. Collecting site: 1. Species new to Ukraine.

GENERAL DISTRIBUTION. Widespread in northern Europe and mountain regions of Central and South Europe.

***Protoparmeliopsis muralis* (Schleb.) M. Choisy**

On limestone. Collecting sites: 1, 2, 3, 5.

DISTRIBUTION IN UKRAINE. Widespread.

Psorotichia schaeereri (A. Massal.) Arnold

On limestone. Collecting sites: 2, 3. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Crimea (Kopachevskaya 1986).

Ramalina intermedia (Delise ex Nyl.) Nyl.

On limestone. Collecting site: 3. Species new to Ukraine.

GENERAL DISTRIBUTION. Widespread in northern Hemisphere; reported from North and Central Europe, Eastern Asia (Mongolia, China, Japan) and North America.

Rinodina bischoffii (Hepp) A. Massal.

On limestone. Collecting sites: 1, 2, 3, 4, 5.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Ternopil's'ka Oblast', Chernivets'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000; Zelenko 2004); Khersons'ka Oblast', Mykolaivs'ka Oblast', Odes'ka Oblast' (Khodosovtsev 1999); Crimea (Kopachevskaya 1986; Khodosovtsev 1999).

Rinodina calcarea (Arnold) Arnold

On limestone. Collecting sites: 1, 2.

DISTRIBUTION IN UKRAINE. Khmel'nyts'ka Oblast' (Zelenko 2004); Khersons'ka Oblast', Mykolaivs'ka Oblast', Crimea (Khodosovtsev 1999; see also Kondratyuk *et al.* 1998a).

Rinodina colobina (Ach.) Th. Fr.

On wood of *Populus* sp. Collecting site: 1. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Crimea (see Kondratyuk *et al.* 1998a).

Rinodina exigua (Ach.) Gray

On bark of *Carpinus betulus*. Collecting site: 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Maka-

revich *et al.* 1982); Khersons'ka Oblast' (Khodosovtsev 1999); Crimea (Kopachevskaya 1986).

Rinodina immersa (Körb.) Zahlbr.

On limestone. Collecting sites: 3, 5. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Crimea (Kopachevskaya 1986; Khodosovtsev 1999).

Rinodina pyrina (Ach.) Arnold

On smooth bark and twigs of deciduous trees. Collecting sites: 1, 2, 4, 5.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Chernivets'ka Oblast', Ivano-Frankivs'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Zelenko 2004); Khersons'ka Oblast', Mykolaivs'ka Oblast', Crimea (Khodosovtsev 1999; see also Kondratyuk *et al.* 1998a).

****Roselliniella cladoniae*** (Anzi) Matzer & Hafellner

On the squamules and podetia of *Cladonia pocillum* growing on calcareous soil. Collecting site: 1. Species new to Ukraine.

GENERAL DISTRIBUTION. Scattered in Europe, known from Canary Islands, Greenland and Australia.

Sarcogyne regularis Körb.

On limestone rocks and pebbles. Collecting sites: 2, 3, 4, 5.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast', Chernivets'ka Oblast', Ivano-Frankivs'ka Oblast', Ternopil's'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000; see also Kondratyuk *et al.* 1998a).

Scoliciosporum chlorococcum (Graeve ex Stenh.) Vězda

On bark of *Prunus* sp. and *Populus* sp. Collecting sites: 4, 5.

DISTRIBUTION IN UKRAINE. Widespread.

***Scoliosporum sarothamni* (Vain.) Vězda**

On branches of *Pinus sylvestris*, *Acer* sp. and *Quercus* sp. Collecting sites: 2, 5. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982). The species was also collected by the authors in L'vivs'ka Oblast' [L'viv city, near Grand Hotel, 49°47'29"N/23°54'25"E; on branches of tree; 28 June 2003 and Holohory area, Zolochiv Rayon: Hora near Pluhiv village, 10 km SE of Zolochiv, 49°44'55"N/25°01'32"E, alt. 291 m; overgrazed xerothermic vegetation; 23 June 2003 (KRAM)].

***Staurothele ambrosiana* (A. Massal.) Zschacke**

On limestone. Collecting site: 1. Species new to Ukraine.

GENERAL DISTRIBUTION. Known from mountains and uplands in central Europe.

***Staurothele frustulenta* Vain.**

On calcareous sandstone, limestone and on asbestic tile. Collecting sites: 1, 2, 5. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Chernivets'ka Oblast' (Bielczyk & Kiszka 2000).

***Staurothele hymenogonia* (Nyl.) Th. Fr.**

On limestone. Collecting sites: 1, 2, 5. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Khersons'ka Oblast', Mykolajivs'ka Oblast' (Khodosovtsev 1999; see also Kondratyuk *et al.* 1998a); Crimea (Coppins *et al.* 2001).

***Staurothele rufa* (A. Massal.) Zschacke**

On limestone. Collecting site: 5. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Ivano-Frankivs'ka Oblast' (Bielczyk & Kiszka 2000); Crimea (Kopachevskaya 1986).

****Stigmatidium rouxianum* Calatayud & Triebel**

On the thalli of *Acarospora cervina* growing on limestone. Collecting site: 4. Species new to Ukraine.

GENERAL DISTRIBUTION. Scattered in Europe.

****Stigmatidium tabacinae* (Arnold) Triebel**

On the thalli of *Toninia sedifolia* growing on calcareous ground. Collecting site: 1. Species new to Ukraine.

GENERAL DISTRIBUTION. Europe and North America.

****Taeniolella punctata* M. S. Christ. & D. Hawksw.**

On the thalli of *Graphis scripta* growing on old *Carpinus betulus*. Collecting site: 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Kondratyuk *et al.* 2003).

***Thrombium epigaeum* (Pers.) Wallr.**

On clayey soil. Collecting site: 5. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982).

***Thyrea confusa* Henssen**

On limestone. Collecting sites: 2, 5.

DISTRIBUTION IN UKRAINE. Khmel'nyts'ka Oblast' (Zelenko 2004; see also Kondratyuk *et al.* 1998a); Crimea (Khodosovtsev 1999; see also Kondratyuk *et al.* 1998a).

***Toninia sedifolia* (Scop.) Timdal**

Saxicolous and muscicolous on calcareous ground. Collecting sites: 1, 2, 4, 5.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast', Ivano-Frankivs'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Oksner 1968; see also Kondratyuk *et al.* 1998a).

Verrucaria aethiobola Wahlenb.

On calcareous rocks. Collecting sites: 1, 2, 3, 4.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); L'vivs'ka Oblast', Chernivets'ka Oblast', Ivano-Frankivs'ka Oblast', Ternopils'ka Oblast', Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000); Crimea (Kopachevskaya 1986; Khodosovtsev 1999).

Verrucaria bryoctona (Th. Fr.) Orange

On clayey soil. Collecting site: 1. Species new to Ukraine.

GENERAL DISTRIBUTION. Widespread in North and Central Europe, reported also from North America.

Verrucaria caerulea DC.

On limestone. Collecting sites: 1, 3.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); Khmel'nyts'ka Oblast' (Oksner 1956; see also Kondratyuk *et al.* 1998a).

Verrucaria calciseda auct. non DC.

On calcareous rocks. Collecting sites: 1, 2, 3, 4, 5.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); Chernivets'ka Oblast', Ivano-Frankivs'ka Oblast', Ternopils'ka Oblast' (Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000; Zelenko 2004; see also Kondratyuk *et al.* 1998a).

Verrucaria cyanea A. Massal.

On limestone. Collecting site: 1. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Crimea (Khodosovtsev 2003).

Verrucaria dolosa Hepp

On limestone and sandstone rocks. Collecting sites: 1, 3, 5. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Ma-

karevich *et al.* 1982); Ivano-Frankivs'ka Oblast' (Bielczyk & Kiszka 2000); Crimea (Coppins *et al.* 2001).

Verrucaria foveolata (Flörke) A. Massal.

On limestone. Collecting site: 3. Species new to Ukraine.

GENERAL DISTRIBUTION. Widespread in Europe from arctic to temperate zones, known also from the Mediterranean mountains.

Verrucaria fusca Pers. *ex* Ach.

On sandstone. Collecting site: 5. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Crimea (Kopachevskaya 1986; Khodosovtsev 1999).

Verrucaria fuscella (Turner) Winch

On calcareous rocks. Collecting sites: 1, 3, 4. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Crimea (Kopachevskaya 1986; Khodosovtsev 1999).

Verrucaria fuscoatroides Servit

On limestone. Collecting site: 1. Species new to Ukraine.

GENERAL DISTRIBUTION. Reported from Central Europe.

Verrucaria fuscula Nyl.

On limestone. Collecting site: 1. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Crimea (Kopachevskaya 1986).

Verrucaria lecideoides Trevis.

On calcareous rocks. Collecting sites: 1, 2, 3, 5.

DISTRIBUTION IN UKRAINE. Khmel'nyts'ka Oblast' (Oksner 1956; see also Kondratyuk *et al.* 1998a); Khersons'ka Oblast', Mykolaivs'ka Oblast', Odes'ka Oblast' (Khodosovtsev 1999);

Crimea (Kopachevskaya 1986; Khodosovtsev 1999).

Verrucaria muralis Ach.

On calcareous rocks. Collecting sites: 1, 2, 5.

DISTRIBUTION IN UKRAINE. Widespread.

Verrucaria nigrescens Pers.

On calcareous rocks. Collecting sites: 1, 2, 3, 4, 5.

DISTRIBUTION IN UKRAINE. Widespread.

Verrucaria obfuscans Nyl.

On calcareous rocks. Collecting site: 2. Species new to Ukraine.

GENERAL DISTRIBUTION. Known from upland areas of Central Europe.

Verrucaria polysticta Borrer

[including *Verrucaria subfuscella* Nyl.]

On limestone. Collecting sites: 1, 3.

DISTRIBUTION IN UKRAINE. Chernivets'ka Oblast', Ivano-Frankivs'ka Oblast', Ternopils'ka Oblast', Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000).

Verrucaria procopii Servit

On limestone. Collecting sites: 1, 2, 3, 4, 5.

DISTRIBUTION IN UKRAINE. Chernivets'ka Oblast', Ivano-Frankivs'ka Oblast', Ternopils'ka Oblast', Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000).

Verrucaria subdolosa Servit

On limestone. Collecting site: 1. Species new to Ukraine.

GENERAL DISTRIBUTION. Noted mainly from central part of Europe.

Verrucaria sylvatica (Arnold) Zschacke

On limestone. Collecting site: 1.

DISTRIBUTION IN UKRAINE. Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000).

Verrucaria velana (A. Massal.) Zahlbr.

On limestone and on mortar. Collecting sites: 1, 2, 3, 5. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Ivano-Frankivs'ka Oblast' (Bielczyk & Kiszka 2000).

Verrucaria xyloxena Norman

On calcareous soil. Collecting site: 1. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. L'vivs'ka Oblast' (Bielczyk & Kiszka 2000; see also Kondratyuk *et al.* 1998a).

Xanthoria calcicola Oksner

On limestone. Collecting site: 3. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Carpathians (Makarevich *et al.* 1982); Khersons'ka Oblast', Odes'ka Oblast' (Khodosovtsev 1999; see also Kondratyuk *et al.* 1998a); Mykolaivs'ka Oblast', Donetsk'ka Oblast' (see Kondratyuk *et al.* 1998a); Crimea (Kopachevskaya 1986; Khodosovtsev 1999).

Xanthoria elegans (Link) Th. Fr.

On limestone. Collecting sites: 1, 2, 3.

DISTRIBUTION IN W UKRAINE. Carpathians (Makarevich *et al.* 1982); Ivano-Frankivs'ka Oblast' (Bielczyk & Kiszka 2000; see also Kondratyuk *et al.* 1998a); Ternopils'ka Oblast' (Kondratyuk 1995; Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Oksner 1993; see also Kondratyuk *et al.* 1998a).

Xanthoria papillifera (Vain.) Poelt

On limestone. Collecting sites: 1, 2, 3, 4, 5.

DISTRIBUTION IN UKRAINE. Ternopils'ka Oblast' (Kondratyuk 1995; Bielczyk & Kiszka 2000); Khmel'nyts'ka Oblast' (Bielczyk & Kiszka 2000); Khersons'ka Oblast', Mykolaivs'ka Oblast' (Kho-

dosovtsev 1999; see also Kondratyuk *et al.* 1998a); Crimea (Kopachevskaya 1986; Khodosovtsev 1999).

***Xanthoria parietina* (L.) Th. Fr.**

On bark of *Salix* sp., *Populus* sp. and *Carpinus betulus* and on limestone. Collecting sites: 1, 2, 4.

DISTRIBUTION IN UKRAINE. Widespread.

***Xanthoria polycarpa* (Hoffm.) Th. Fr. ex Rieber**

On branches of *Pinus sylvestris*. Collecting sites: 1, 2.

DISTRIBUTION IN UKRAINE. Widespread.

***Xanthoria soredata* (Vain.) Poelt**

On limestone. Collecting site: 3. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Crimea (Oksner 1993).

****Xanthoriicola physciae* (Kalchbr.) D. Hawksw.**

On the apothecia of *Xanthoria parietina* growing on *Populus* sp. Collecting sites: 1, 2. Species new to Khmel'nyts'ka Oblast'.

DISTRIBUTION IN UKRAINE. Ternopils'ka Oblast' (Kondratyuk & Kolomyets 1997).

****Zwackhiomyces lecanorae* (Stein) Nik. Hoffman & Hafellner**

On the apothecia of *Lecanora xanthostoma* growing on limestone. Collecting sites: 1, 2. Species new to Ukraine.

GENERAL DISTRIBUTION. Scattered in Europe and known from New Zealand.

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