

## NEW AND NOTEWORTHY LICHENS TO BELARUS

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### Abstract

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Records of 20 species of lichens from Belarus are presented. Of these, 12 species (*Bacidina egenula*, *Dimelena oreina*, *Jamesiella anastomosans*, *Psilolechia clavulifera*, *Rhizocarpon lecanorinum*, *Rinodina bischoffii*, *Steinia geophana*, *Thelidium zwackhii*, *Thelocarpon intermediellum*, *Trapeliopsis pseudogranulosa*, *Vezeadaa aestivalis* and *V. leprosa*) are new to Belarus. *Biatora ocelliformis* and *Dermatocarpon miniatum* were known only from literature data in the country. New localities for little known in Belarus species such as *Cliostomum corrugatum*, *Cyphelium tigillare*, *Fellhanera subtilis*, *Scytinium lichenoides*, *Schismatomma pericleum* and *Umbilicaria deusta* are provided. Two of these (*Scytinium lichenoides* and *Umbilicaria deusta*) are included in the Red Data Book of Belarus. The records are briefly discussed.

**Keywords:** biodiversity, distribution, lichenized ascomycetes.

## INTRODUCTION

The history of studies on lichens of Belarus is over 230 years long (YATSYNA & YURCHENKO, 2007), however, until 2011, there was no concise checklist of lichens and allied fungi. In 2011 and 2012, two checklists were published independently (YURCHENKO, 2011; YATSYNA & MERŽVINSKIJ, 2012). The checklists included 549 species each, however, in both checklists different species were absent. Uniting both lists, there were 607 species of lichens and allied fungi known in 2012. Then a series of publications appeared, contributing to the known lichen flora of the country (TSURYKAU & KHRAMCHANKOVA, 2011; YATSYNA, 2011a, b, 2012a, b, 2013a, b, c, 2014; BELY, 2012; TSURYKAU et al., 2012, 2014; KONDRATYUK et al., 2013; YATSYNA & YURCHENKO, 2013) and, therefore, at present it comprises ca. 660 species of lichens and allied fungi.

The present paper deals with the lichens that are new, rare or little known in Belarus.

## MATERIALS AND METHODS

The materials were collected by the first author mainly in various regions of Belarus in 2009–2014. The morphology was studied using a stereomicroscope Olympus SZ, whereas the anatomy was analysed by means of hand-sectioned preparations in water or 10% KOH (K) (measurements were taken in water) using a light microscope Olympus Bx51. For the identification, we performed spot-test reactions with the standard reagents sodium hypochlorite (C), paraphenylendiamine in ethanol (P) and K. Voucher specimens are deposited at the lichen herbaria of V.F. Kuprevich Institute of Experimental Botany, Nation-

al Academy of Sciences of Belarus (MSK-L) (numbers of the herbarium specimens are provided in the list). Some duplicates are kept at the Herbarium of Nature Research Centre, Institute of Botany, Vilnius (BILAS). The nomenclature of taxa mainly follows NORDIN et al. (2011).

### List of species

#### *Bacidina egenula* (Nyl.) Vězda

This lichen is more commonly found on shaded siliceous rocks (EKMAN, 1996), but sometimes on tree bark as well, as in the Belarusian specimen. The lichen is known from most of the countries neighbouring to Belarus: Lithuania (MOTIEJŪNAITĖ & FALTYNOWICZ, 2005), Poland (FALTYNOWICZ, 2003), the Ukraine (KONDRATYUK et al., 1996) and western Russia (URBANAVICHUS, 2010). New to the country.

**Specimen examined:** Vitebsk region, Braslavskij district, Braslav Lakes National Park near Bogino village. 55°26'26.2" N, 26°49'36.8" E. Mixed-herb black alder forest. On bark of *Alnus glutinosa* (L.) Gaertn. 3 June 2013 (MSK-L 12159).

#### *Biatora ocelliformis* (Nyl.) Arnold

This species was previously known from the literature data only (KREYER, 1913). *Biatora ocelliformis* grows mainly on young and middle-aged trees, or sometimes on older trees with smooth bark (PRINTZEN & PALICE, 1999). Known from all countries neighbouring to Belarus: Lithuania (MOTIEJŪNAITĖ, 1999a), Poland (FALTYNOWICZ, 2003), the Ukraine (KONDRATYUK et al., 1996) and western Russia (URBANAVICHUS, 2010).

**Specimen examined:** Mogilev region, Osipovičskij district, 150 m S of Pogorelovoe village. Aspen forest with hornbeams. On bark of *Carpinus betulus* L. 30 Oct. 2009 (MSK-L 13491).

#### *Cliostomum corrugatum* (Ach.:Fr.) Fr.

In Belarus, the lichen was previously known from three localities: Pripjatskij National Park (YATSYNA, 2013b) and two manor parks in Minsk region (YATSYNA, 2014). It was collected mainly from old hardwood trunks 90–150 cm in diam.: *Fraxinus excelsior* L., *Tilia cordata* L. and *Quercus robur* L. *Cliostomum corrugatum* is known from all countries neighbouring Belarus: Poland (FALTYNOWICZ, 2003), western Russia

(URBANAVICHUS, 2010) and the Ukraine (KONDRATYUK et al., 1996). It is considered to be an old forest indicator species in Sweden (NITARE, 2000), Lithuania and NE Poland (MOTIEJŪNAITĖ et al., 2004).

**Specimens examined:** Grodno region, Grodnenskij district, 2.3 km E of Rynkovcy village, by the bridge over the River Černaja Ganča. 53°51'46.5" N, 23°37'24.3" E. On the trunk of *Fraxinus excelsior* on the river bank. 6 Sept. 2012 (MSK-L 10706); Minsk region, Nesvižskij district, near Alba village. The monument of national importance Alba Park. 53°12'15.2" N, 26°39'41.7" E. On bark of *Tilia cordata* in the park alley. 22 Aug. 2014 (MSK-L 13345).

#### *Cyphelium tigillare* (Ach.) Ach.

The lichen was previously recorded from Gomel region (VYSOTSKIJ et al., 1925), Gluskij and Braslavskij districts (YATSYNA, 2011a). In Belarus, it is usually collected on old weathered timber. In some villages, the lichen covers areas up to 2 m<sup>2</sup> on wooden buildings (YATSYNA, 2011a, 2012a). Distribution of the lichen is expected to increase in Belarus, especially in the Černobyl disaster zone, where abandoned wooden houses are losing their paint and exposing timber surface, a substrate suitable for many rare lichens (SVENSSON et al., 2005). *Cyphelium tigillare* is rare and decreasing in most of neighbouring to Belarus countries and is red-listed in Poland (CIEŚLIŃSKI et al., 2003) and in Lithuania (MOTIEJŪNAITĖ, 2007).

**Specimens examined:** Gomel region, Žitkovičskij district, Paseka village. 52°07'45.9" N, 27°55'48.9" E. On old wooden fence. 22 Aug. 2013 (MSK-L 12560); Lel'čyckij district, Srednie Peči village. On old wooden barn. 22 Aug. 2013 (MSK-L 12562); Borovoe village. On an old wooden fence. 22 Aug. 2013 (MSK-L 12564); Miloševiči village. On timber wall of an abandoned house. 22 Aug. 2013 (MSK-L 12563); Gluškoviči village. 51°32'56.3" N, 27°47'12.8" E. On an old wooden fence. 23 Aug. 2013 (MSK-L 12561); Mogilev region, Xotimskij district, Dubrovka village. 53°16'53.5" N, 32°27'04.3" E. On old wooden barn. 23 Aug. 2012 (MSK-L 10507); Ol'ov 1 village. 53°25'32.8" N, 32°37'05.7" E. On a wooden post. 23 Aug. 2012 (MSK-L 10509).

#### *Dermatocarpon miniatum* (L.) W.Mann

The species is rarely found in lowlands, mainly in damp situations, especially in limestone areas (OR-

ANGE & COPPINS, 2009). The lichen is very rare in lowlands of neighbouring to Belarus countries, too (MOTIEJŪNAITĖ, 2002; FALTYNOWICZ, 2003). In Belarus, *D. miniatum* was previously known only from the literature data: TOMIN (1936) mentioned it without indication of exact locality.

**Specimen examined:** Grodno region, Grodnenskij district, Grodno fortress. Fort № 5. On concrete at the top of the fragment of the fort at a height of 3.5 m, inside a pine forest. 12 Sept. 2014 (MSK-L 13508).

***Dimelaena oreina*** (Ach.) Norman

This lichen is very rare species in temperate lowlands, except arid regions (WIRTH, 1995), such as the Ukrainian steppes (KONDRATYUK et al., 1998). It is sometimes reported from worked granite in anthropogenic localities (MOTIEJŪNAITĖ, 1999b; SCHOLZ, 1995) that are more or less distanced from natural localities of the lichen. Present locality is on the border with the Ukraine, close to the areas of open granite shields in this country. In the Belarusian quarry Gluškoviči, granite mining remains make an excellent substrate for saxicolous lichens. New to Belarus.

**Specimen examined:** Gomel region, Lel'čickij district, near Gluškoviči village. On granite in abandoned, overgrowing granite quarry. 51°32'18.3" N, 27°48'07.8" E. 23 Aug. 2013 (MSK-L 12558).

***Fellhanera subtilis*** (Vězda) Diederich & Sérus.

The lichen was previously recorded from Vitebskij district dolomite quarry Gralevo, on dry twigs of bilberries (YATSUNA, 2011b). In Belarus, *F. subtilis* is found only on twigs of bilberries or blueberries. It is probably much overlooked.

**Specimens examined:** Brest region, Berezovskij district, near Rečica village. Cranberry and blueberry plantations. On twigs of blueberry. 10 Aug. 2011 (MSK-L 9497); Vitebsk region, Braslavskij district, Braslav Lakes National Park, 1.5 km E of Počta-Ababja village. On twigs of billberry in myrtillus-type pine forest. 26 Apr. 2010 (MSK-L 12746); Minsk region, Dzeržinskij district, 4 km NE of Koloosovo village, Mezinovka railway station. On twigs of billberry in myrtillus-type pine forest. 28 June 2014 (MSK-L 13329).

***Jamesiella anastomosans*** (P. James & Vězda) Lücking, Sérus. & Vězda

This inconspicuous lichen is known from most of the countries neighbouring to Belarus, though infrequently recorded: Lithuania (MOTIEJŪNAITĖ, 1999a) and Poland (ŁUBEK, 2009). *Jamesiella anastomosans* prefers moist, well-decayed wood and it is sometimes difficult to notice this species among other lignicolous lichens and algal crusts. New to Belarus.

**Specimen examined:** Mogilev region, Gluskij district, near Borovoe village. On wood in peat bog at the edge of Lake Borovoe. 7 July 2009 (MSK-L 12728).

***Psilolechia clavulifera*** (Nyl.) Coppins

It is known from all countries neighbouring to Belarus, though not common, probably overlooked: Lithuania (MOTIEJŪNAITĖ, 1999a), Poland (FALTYNOWICZ, 2003), the Ukraine (VONDRÁK et al., 2010) and western Russia (URBANAVICHUS, 2010). The species is most frequently found on dry roots of upended trees (CZARNOTA & KUKWA, 2008). New to Belarus.

**Specimen examined:** Minsk region, Logoiskij district, 1 km S of Mixedi village. 54°15'05.8" N, 28°08'52.6" E. On roots of upended *Picea abies* in myrtillus type pine forest. 19 June 2013 (MSK-L 12747).

***Rhizocarpon lecanorinum*** Anders

So far, the genus *Rhizocarpon* was represented by 12 species in Belarus, of these only two with yellow thallus: *R. eupetraeoides* and *R. geographicum* (MATWIEJUK & GOLUBKOV, 2012). Our specimen had typical crescent-shaped areoles, pale brownish epihymenium and P+ yellow to orange medulla characteristic of *R. lecanorinum*. New to Belarus.

**Specimen examined:** Grodno region, Grodnenskij district, Grodno fortress, fort № 2. 53°42'36.7" N, 23°40'08.1" E. On the stones in the wall fragments in a meadow, overgrown with shrubs. 15 Aug. 2014 (MSK-L 13460).

***Rinodina bischoffii*** (Hepp) A. Massal.

This saxicolous lichen inhabits calcareous stony substrata, including anthropogenous. It is widespread, though mostly local and uncommon (MAYRHOFER & MOBERG, 2002). New to Belarus.

**Specimen examined:** Grodno region, Grodnenskij district, Grodno fortress, fort № 3. 53°41'49.8" N, 23°39'01.6" E. On concrete in a meadow, overgrown with shrubs. 15 Aug. 2014 (MSK-L 13461).

***Schismatomma pericleum*** (Ach.) Branth & Rostr.

First record of this species in Belarus was made by SAVICZ & SAVICZ (1924), later it was also found in Belovežskaja Pušča National Park (MAKAREVIČ, 1960). In this region, *Schismatomma pericleum* is confined to natural, often old-growth forests and is considered to be an indicator of such woodlands in Lithuania and NE Poland (MOTIEJŪNAITĖ et al., 2004).

**Specimen examined:** Gomel region, Žitkovičskij district, 1.5 km S of Novye Zaljutiči village. Valley of the River Sloučy. 52°25'13.2" N, 27°34'12.9" E. On bark of *Quercus robur* in floodplain oak forest. 21 Aug. 2013 (MSK-L 13489).

***Scytinium lichenoides*** (L.) Otálora, P.M.Jørg. & Wedin

In the territory of Belarus, it was found so far only on concrete, in fortifications of the World War I (Grodno fortress). *S. lichenoides* (as *Leptogium lichenoides*) is included in the third edition of the Red Data Book of Belarus – 2nd category (EN) (KHORUŽIK, 2005).

**Specimens examined:** Grodno region, Grodnen-skij district, fort № 1. On moss-covered concrete in a meadow. 15 Aug. 2014 (MSK-L 10690); fort № 2. On moss-covered concrete in a meadow overgrowing with shrubs. 15 Aug. 2014 (MSK-L 13412); fort № 3. On moss-covered concrete in a meadow overgrowing with shrubs. 15 Aug. 2014 (MSK-L 13400); fort № 4. On the moss-covered concrete at the edge of a forest. 11 Sept. 2014 (MSK-L 13458); fort № 5. On moss-covered concrete in thin forest. 11 Sept. 2014 (MSK-L 13460); fort № 6. On moss-covered concrete in a meadow. 6 Sept. 2012 (MSK-L 10678); fort № 7. On moss-covered concrete at the edge of a pine forest. 6 Sept. 2012 (MSK-L 10698); fort № 8. On mossy wall of the fort in oxalis type pine forest. 6 Sept. 2012 (MSK-L 10683); fort № 9. On mossy wall of the fort in oxalis type pine forest. 6 Sept. 2012 (MSK-L 10682); fort № 13. On the moss-covered concrete at the edge of a forest. 6 Sept. 2012 (MSK-L 13478).

***Steinia geophana*** (Nyl.) Stein

This is one of the “neglected” species, especially in Eastern Europe (MOTIEJŪNAITĖ, 2006), often found in anthropogenic habitats (FLETCHER et al., 2009). New to Belarus.

**Specimens examined:** Brest region, Berezovskij district, near Rečica village. On thallus of *Peltigera didactyla* in cladonia type pine forest, 10 Aug. 2011 (MSK-L 7942); Vitebsk region, Braslavskij district, Braslav Lakes National Park, 3.5 km to the W of Zamo ‘e village. On dead mosses by the roadside, on pile of sand and gravel. 5 Oct. 2010 (MSK-L 7555).

***Thelidium zwackhii*** (Hepp) A.Massal.

This terrestrial and amphibious species is presumably widespread, but rarely recorded (THÜS & SCHULTZ, 2009), especially in Eastern Europe (MOTIEJŪNAITĖ, 2006). New to Belarus.

**Specimen examined:** Vitebsk region, Braslavskij district, Braslav Lakes National Park near Strusto village. Okmenica stream. 55°42'35.3" N, 26°59'30.8" E. On wet wood and roots of *Alnus glutinosa* on the banks of the stream. 1 Aug. 2012 (MSK-L 12744, 12746).

***Thelocarpon intermediellum*** Nyl.

*Thelocarpon* species are notoriously easy to overlook and are underrepresented in most of regional lichen floras. In Belarus, so far three species of the genus were known: *T. impressellum* Nyl., *T. laureri* (Flot.) Nyl. (YURCHENKO, 2011; YATSYNA & MERŽVINSKIJ, 2012) and *T. lichenicola* (Fuckel) Poelt & Hafellner (YATSYNA, 2013a). New to Belarus.

**Specimen examined:** Vitebsk region, Braslavskij district, Braslav Lakes National Park, 0.5 km W of Zamoš’e village. On wood of *Pinus sylvestris* L. in peat bog. 14 June 2011 (MSK-L 12742).

***Trapeliopsis pseudogranulosa*** Coppins & P.James

This lichen is probably much overlooked in Belarus, not being distinguished from a very common *T. granulosa* (Hoffm.) Lumbsch, from which it differs mainly by patchy orange K+ purple antraquinone coloration (COPPINS & JAMES, 1984). New to Belarus.

**Specimen examined:** Vitebsk region, Lepel’skij district, the Berezina Biosphere Reserve, near Kracy village, 54°36'08.2" N, 28°26'27.8" E. On wood of *Pinus sylvestris* in green moss-type pine forest. 3 July 2013 (MSK-L 12731).

***Umbilicaria deusta*** (L.) Baumg.

The lichen was previously known only from two localities: Vitebsk region, Glubokskij district (GOL-

UBKOV, 1993) and from Minsk region, Logoiskij district (YATSINA, 2010). The species is listed in the Red Data Book of Belarus as critically endangered (KHORUŽIK, 2005).

**Specimen examined:** Minsk region, Stolbcovskij district, environs of Ole kovo village, 53°36'31.9" N, 26°51'53.6" E. On stones at the edge of green moss-type pine forest. 16 July 2013 (MSK-L 12177).

*Vezdaea aestivalis* (Ohlert) Tscherm.-Woess & Poelt

This is the largest and most conspicuous species of *Vezdaea* genus and, therefore, most frequently recorded (COPPINS, 1987). It is known from all neighbouring countries: Lithuania (MOTIEJŪNAITĖ, 1999a), Poland (FALTYNOWICZ, 2003), the Ukraine (COPPINS et al., 2005) and western Russia (URBANAVICHUS, 2010). New to Belarus.

**Specimen examined:** Vitebsk region, Braslavskij district, Braslav Lakes National Park, near Luskovščina village. 55°25'46.8" N, 26°52'08.2" E. Peat bog. On humus and plant remains. 5 June 2013 (MSK-L 12743).

*Vezdaea leprosa* (P. James) Vězda

This lichen is less frequently recorded than *V. aestivalis*, being more common in sites enriched in heavy metals (BIELCZYK et al., 2009; CHAMBERS & PURVIS, 2009). New to Belarus.

**Specimen examined:** Vitebskij region, Braslavskij district, Braslav Lakes National Park, Axremovcy village. Belmont Park. 55°34'54.6" N, 27°06'18.4" E. On base of trunk of *Acer platanoides* by a roadside. 6 June 2013 (MSK-L 12729).

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## NAUJOS IR ĮDOMIOS BALTARUSIJAI KERPIŲ RŪŠYS

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### Santrauka

Straipsnyje pateikiami duomenys apie dvidešimt kerpių rūšių iš Baltarusijos. Dvylika iš jų – *Bacidina egenula*, *Dimelaena oreina*, *Jamesiella anastomosans*, *Psilolechia clavulifera*, *Rhizocarpon lecanorinum*, *Rinodina bischoffii*, *Steinia geophana*, *Thelidium zwackhii*, *Thelocarpon intermediellum*, *Trapeliopsis pseudogranulosa*, *Vezdaea aestivalis* ir *V. leprosa* aptiktos pirmą kartą šalyje. *Biatora ocelliformis* ir *Dermatocarpon miniatum* buvo žinomos

tik iš istorinių literatūros šaltinių. Nustatytos naujos radimvietės retoms ir mažai žinomoms Baltarusijoje kerpėms – *Cliostomum corrugatum*, *Cyphelium tigillare*, *Fellhanera subtilis*, *Scytinium lichenoides*, *Schismatomma pericleum* ir *Umbilicaria deusta*, iš kurių dvi – *Scytinium lichenoides* ir *Umbilicaria deusta* yra įtrauktos į Baltarusijos raudonąją knygą. Pateikiami pastebėjimai apie rūšių ekologiją ir paplitimą Baltarusijoje ir aplinkinėse šalyse.