

New records of lichenicolous fungi from the Gomel Region of Belarus

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Abstract: Three species of lichenicolous fungi, *Roselliniella cladoniae*, *Taeniolella beschiana* and *Trichonectria rubefaciens*, are reported for the first time for Belarus; two further species, *Illosporiopsis christiansenii* and *Marchandiomyces aurantiacus*, are new to Gomel Region, the south-eastern part of Belarus.

INTRODUCTION

Interest in lichenicolous fungi has been constantly rising during the last decades (Lawrey & Diederich, 2011), but the information about the distribution and habitat preferences of the species remains incomplete. In Belarus lichenicolous fungi are insufficiently known. The first generalizing summary was published in 2011 (Golubkov, 2011a). This paper lists 21 species of lichenicolous fungi [*Abrothallus caerulescens* Kotte, *A. peyrtschii* (Stein) Kotte, *Athelia arachnoidea* (Berk.) Jülich, *Biatoropsis usnearum* Räsänen, *Chaenothecopsis epithallina* Tibell, *Clypeococcum hypocenomycis* D. Hawksw., *Lichenodiplis lecanorae* (Vouaux) Dyko & D. Hawksw., *Libertiella* sp., *Lichenocodium xanthoriae* M. S. Christ., *Lichenoconium* sp., *Muellerella pygmaea* (Körb.) D. Hawksw. var. *pygmaea* Körb., *M. ventosicola* (Mudd) D. Hawksw., *Nectria lichenicola* (Ces.) Sacc., *Phaeosporobolus usneae* D. Hawksw. & Hafellner, *Phoma everniae* D. Hawksw., *Sphaerellothecium propinquellum* (Nyl.) Cl. Roux & Triebel., *Sphinctrina turbinata* (Pers.) De Not., *Stigmidium congestum* (Körb.) Triebel, *Tremella cladoniae* Diederich & M. S. Christ., *Tremella hypogymniae* Diederich & M. S. Christ, *Tremella* sp.], six of which (*Abrothallus peyrtschii*, *Muellerella pygmaea* var. *pygmaea*, *Nectria lichenicola*, *Phoma everniae*, *Sphaerellothecium propinquellum* and *Stigmidium congestum*) have been known only according to literature from the beginning of the 20th century (Bachmann & Bachmann, 1920; Oxner, 1924; Savicz, 1925).

So far four species of lichenicolous fungi (*Athelia arachnoidea*, *Biatoropsis usnearum*,

Chaenothecopsis epithallina and *Clypeococcum hypocenomycis*) have been identified in the Gomel region, south-eastern Belarus (Yurchenko & Golubkov, 2003; Golubkov, 2011a, 2011b; Tsurykau & Kramchankova, 2011). Herewith we report five new species for the area, three of which are also new to Belarus.

MATERIAL AND METHODS

The specimens were collected mainly by the first author during 2003–2012 (Fig. 1). Additionally, the first author examined all *Cladonia* specimens deposited in the Belarusian Pole-sye Scientific Herbarium of F. Skorina Gomel State University (GSU) to collect more detailed information on the distribution of *Taeniolella beschiana* and *Roselliniella cladoniae*. Most of these specimens were collected in “Pripjatskiy” National Park (PNP). The material was identified mostly by the second author. The specimens were examined using standard methods of microscopy with Nikon Eclipse 80i, Altami CM0745-T and Leica DM750 microscopes. Microscopic structures were studied from hand-cut sections mounted in water. Sizes in parentheses represent minimum and maximum observed values. The number of observations was at least 15. All the voucher specimens are deposited at GSU.

Species distribution in neighbouring countries is provided. As central part of European Russia has not been adequately searched for lichenicolous fungi (Zhurbenko & Gudovicheva, 2013), the data on species distribution in Russia is also provided for the north-western European

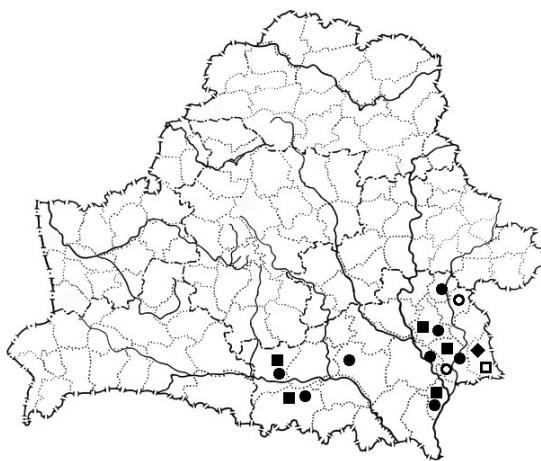


Fig. 1. Locations of finds of studied lichenicolous fungi in Belarus: □ – *Illosporiopsis christiansenii*; ■ – *Roselliniella cladoniae*; ● – *Taeniolella beschiana*; ○ – *Trichonectria rubefaciens*; ◆ – *Marchandiomyces aurantiacus*.

part of the country (see e.g. Zhurbenko, 2007; Stepanchikova et al., 2011). The nomenclature follows Nordin et al. (2011).

The position of the fungus on the lichen thallus is abbreviated as follows: p = podetia, t = lobes of foliose thallus or primary thallus of *Cladonia*, s = squamules and phyllocladia, a = apothecia.

THE SPECIES

ILLOSPORIOPSIS CHRISTIANSENII (B. L. Brady & D. Hawksw.) D. Hawksw. (Fig 2G & H)

New to Gomel Region. This species was previously known only in north-western Belarus (Yatsyna, 2011) and the locality in Dobrush district is the second finding in Belarus. Amongst neighbouring countries, the species is known in Latvia (Czarnota & Kukwa, 2010), Lithuania (Motiejūnaitė, 2002), Poland (Kukwa et al., 2002) and Russia (Leningrad region and Komi Republic) (Kuznetsova, Ahti & Himelbrant, 2007; Zhurbenko et al., 2012).

Hosts – free living algae, *Phaeophyscia orbicularis* (Neck.) Moberg (t), *Physcia adscendens* (Fr.) H. Olivier (t) and *Xanthoria polycarpa* (Hoffm.) Th. Fr. ex Rieber (t).

Specimens examined – Dobrush district: Korma village, 52°20'N, 31°30'E, a private small front garden, on *Sorbus aucuparia*, 19.11.2011, leg. E. Tsukanava.

MARCHANDIOMYCES AURANTIACUS (Lasch) Diederich & Etayo

New to Gomel Region, the second record for Belarus. The first locality is in north-western Belarus (Yatsyna, 2011). This species is known in Lithuania (Motiejūnaitė & Andersson, 2003) and Poland (Kukwa, 2004).

Hosts – *Physcia adscendens* (t), *P. stellaris* (Ach.) Nyl. (t, a) and *P. tenella* Bitter (t).

Specimens examined – Dobrush district: Korma village, 52°20'N, 31°30'E, a private small front garden, on *Sorbus aucuparia*, 19.11.2011, leg. E. Tsukanava.

ROSELLINIELLA CLADONIAE (Anzi) Matzer & Hafellner (Fig. 2C & D)

New to Belarus. This fungus, occurring sporadically throughout Europe, has been reported in Poland (Kukwa & Kowalewska, 2007), Lithuania (Motiejūnaitė et al., 2003), Murmansk region of Russia (Zhurbenko & Alstrup, 2004) and Ukraine (Bielczyk et al., 2005).

Our specimens of *R. cladoniae* are characterized by 25–35 × 10–14 µm non-septate ascospores, which are colourless and halonate when young, but brown and non-halonate when mature. Asci 2–4-spored.

The fungus was found on 21 lichen specimens. The lichens infected with *R. cladoniae* were represented by seven *Cladonia* species, especially by *C. arbuscula* ssp. *arbuscula* (Wallr.) Flot., *C. macilenta* var. *macilenta* Hoffm. and *C. rangiferina* (L.) Weber ex F.H. Wigg., which hosted 16 specimens. *R. cladoniae* is likely to prefer the position on the lichen thallus. The fungus was found twice as often on the podetia than on the primary thallus. The specimens were collected in habitats with varying degree of humidity – from humid *Ledum palustre*-type pine forest to dry *Cladonia*-type pine stands. All infected lichen specimens were additionally infected with *Taeniolella beschiana* (Fig. 2C).

Hosts – Various *Cladonia* species.

Specimens examined – Buda-Koshelevo district: close to Rudnja-Olhovka village, 52°32'N, 30°22'E, at the young pine forest margin, on *Cladonia cornuta* (L.) Hoffm. (p) growing on soil, 21.10.2003, leg. A. Tsurykau; same locality, on *C. cenotea* (Ach.) Schaer. (p) growing on the bark of pine, 21.10.2003, leg. A. Tsurykau; same locality, pine forest, on *C. macilenta* var. *bacillaris* (Ach.) Schaer. (t, p) growing on decaying stump, 15.06.2005, leg. T. Karlovskaja; Gomel district: close to Borets village, pine forest, 52°17'N, 30°57'E, on *C. rangiferina* (p) growing on soil, 14.07.1970, leg. A. Paulischava; 1.8 km NE of Asovina village, *Ledum*

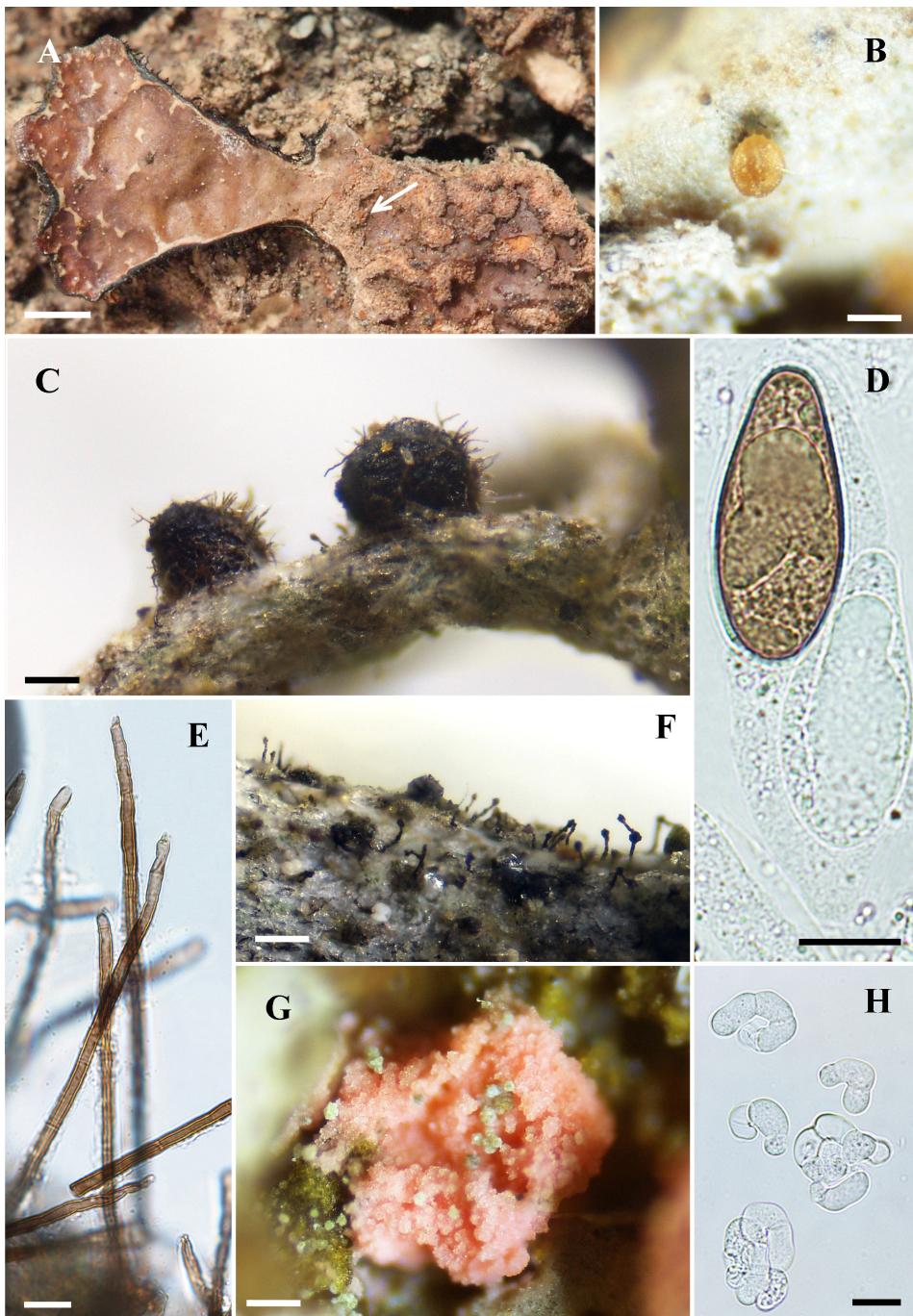


Fig. 2. Lichenicolous fungi. **A & B** *Trichonectria rubefaciens* (2011, Dubrovskaja): A – habitus; B – perithecioid. **C & D** *Roselliniella cladoniae* (2011, Tsurykau): C – perithecia, infected with *Taeniolella beschiana*; D – ascus. **E & F** *Taeniolella beschiana* (2011, Tsurykau): E – conidiophores; F – habitus. **G & H** *Illosporiopsis christiansenii* (2011, Tsukanava): G – sporodochia; H – conidia. Scales: A – 1 mm; B, C, F, G – 0.1 mm; D, E, H – 10 µm.

palustre-type pine forest 52°13'N, 31°02'E, on *C. macilenta* (t) growing on the bark of pines, 08.08.2011, leg. A. Tsurykau; 1.9 km E of Tereshkovichi village, *Vaccinium myrtillus*-type pine forest, 52°15'N, 30°59'E, on *C. macilenta* (t) growing on the bark of pines, 02.10.2012, leg. A. Tsurykau; ca. 1 km S of Pribor village, 52°23'N, 30°47'E, *Polytrichum*-type pine forest, on *C. chlorophaea* (Flörke ex Sommerf.) Spreng. (t) growing on pine, 10.10.2012, leg. A. Tsurykau; Leitchitsy district: PNP, Mlynok forestry, 60 q., 51°56'N, 27°56'E, on *C. arbuscula* ssp. *arbuscula* (p) growing on soil, 18.07.1971, leg. A. Dashuk; same forestry, 60 q., *Pleurozium*-type pine forest, on *C. arbuscula* ssp. *mitis* (Sandst.) Ruoss (p) growing on soil, 19.07.1971, leg. O. Shakhrai and H. Abramava; same forestry, meadow in pine forest with *Hieracium* and *Thymus*, on *C. arbuscula* ssp. *mitis* (p) growing on soil, 01.06.1974, leg. O. Shakhrai; same forestry, *Cladonia*-type pine forest, on *C. chlorophaea* (t, p) growing on brushwood, 01.06.1974, leg. O. Shakhrai; same forestry, *Cladonia*-type pine forest, on *C. macilenta* (t, p) growing on a stump, 02.07.1975, leg. O. Shakhrai; same forestry, *Cladonia*-type pine forest, on *C. macilenta* (t) growing on brushwood, 13.03.1977, leg. V. Prokopenko; same forestry, *Cladonia*-type pine forest, on *C. arbuscula* ssp. *mitis* (p) growing on soil, 24.07.1974, leg. O. Shakhrai; Loyew district: 1.3 km N of Kawpen village, 51°57'N, 30°39'E, *Cladonia*-type pine forest, on *C. arbuscula* ssp. *mitis* (p) growing on soil, 09.08.2011, leg. A. Tsurykau; Zhitkovichi district: close to Belev village, pine forest, 52°17'N, 28°02'E, on *C. fimbriata* (L.) Fr. (t, p) growing on a stump, 01.02.2006, leg. A. Teikin; PNP, *Cladonia*-type pine forest, on *C. rangiferina* (p) growing on soil, 10.06.1975, leg. O. Shakhrai; PNP, Ozerany forestry, 60 q., pine forest, 52°00'N, 27°53'E, on *C. rangiferina* (p) growing on soil, 25.05.1971, leg. O. Shakhrai; same forestry, 60 q., *Vaccinium myrtillus*-type pine forest, on *C. macilenta* (t) growing on soil, 23.07.1974, leg. H. Shvets; PNP, Ozerany-Mlynok forestry, 106 q., *Cladonia*-type pine forest, 51°59'N, 27°57'E, on *C. rangiferina* (p) growing on soil, 15.03.1977, leg. V. Prokopenko; same forestry, 106 q., *Cladonia*-type pine forest, on *C. arbuscula* ssp. *mitis* (p) growing on soil, 09.05.1977, leg. V. Prokopenko.

TAENIOLELLA BESCHIANA Diederich (Fig. 2E & F)
New to Belarus. This hyphomycetous species is the most common fungus inhabiting *Cladonia* species in Poland (Kukwa et al., 2010). It also known in Franz Josef Land, Russian Karelia and Murmansk region, (Zhurbenko & Santesson, 1996; Zhurbenko & Himelbrant, 2002; Zhurbenko & Alstrup, 2004), and Lithuania (Motiejünaitė & Andersson, 2003).

Our specimens of *T. beschiana* are characterized by brown erect conidiphores, which carry 9–13 × 5 µm brown 1-celled conidia.

The fungus was found on 82 lichen specimens.

The lichens infected with *Taeniorella beschiana* represent 18 species of the genus *Cladonia*. 55 specimens (66%) were growing on *C. arbuscula*, *C. chlorophaea* (Flörke ex Sommerf.) Spreng., *C. gracilis* (L.) Willd., *C. macilenta* and *C. rangiferina*. Based on our material, *T. beschiana* is non-selective to the position on the lichen thallus: the fungus affects both podetia and primary thallus with the same frequency. It was also found on apothecia of *C. gracilis* and *C. squamosa* (Scop.) Hoffm. The specimens were collected in habitats with varying degree of humidity – from humid *Ledum palustre*-type pine forest to dry *Cladonia*-type pine stands.

Hosts – Various *Cladonia* species.

Selected specimens examined – Buda-Koshelevo district: close to Rudnja-Olgovka village, 52°32'N, 30°22'E, on *C. fimbriata* (L.) Fr. (t) growing on decaying stump, 21.10.2003, leg. A. Tsurykau; same locality, a clearing in the pine forest, on *C. deformis* (L.) Hoffm. (t) growing on the bark of birch and on residues, 07.07.2005, leg. A. Tsurykau; same place, on *C. rangiferina* (p) and *C. uncialis* (L.) Weber ex F.H. Wigg. (p) growing on soil, 07.07.2005, leg. A. Tsurykau; same locality, near sand-picking pit in pine forest, on *C. chlorophaea* (t, p), *C. cornuta* (p), *C. gracilis* (p, s, a), *C. phyllophora* Ehrh. ex Hoffm. (p), *C. rangiferina* (p) and *C. subulata* (L.) Weber ex F.H. Wigg. (t) growing on sandy soil, 21.10.2003, leg. A. Tsurykau; same place, on *C. cenotea* (t, p) growing on the bark of pine, 21.10.2003, leg. A. Tsurykau; same locality, at the young pine forest marge, on *C. cornuta* (p) and *C. turgida* Ehrh. ex Hoffm. (p) growing on soil, 21.10.2003, leg. A. Tsurykau; same locality, in a bog among pine forest, on *C. chlorophaea* (p) growing on soil, 18.09.2005, leg. A. Tsurykau; same locality, pine forest, on *C. macilenta* var. *bacillaris* (t, p) growing on decaying stump, 15.06.2005, leg. T. Karlovskaja; same locality, at the marge of pine forest, on *C. arbuscula* ssp. *mitis* (p), *C. chlorophaea* (t, p), and *C. phyllophora* (p) growing on soil, 15.06.2005, leg. T. Karlovskaja; close to Klenovitsa village, edge of a mixed forest, 52°36'N, 30°19'E, on *C. cervicornis* ssp. *verticillata* (Hoffm.) Ahti (s) growing on soil, 03.07.2005, leg. A. Tsurykau and N. Timoshenkova; Gomel district: the city of Gomel, Volotova borough, birch grove, 52°28'N, 31°03'E, on *C. cenotea* (t) growing on deciduous tree bark, 27.03.2003, leg. I. Kavaliova and I. Hancharova; the city of Gomel, 17 borough, on *C. rei* Schaer. (t) growing on sandy soil, 29.06.2005, leg. U. Sobchanka; close to Borets village, pine forest, 52°17'N, 30°57'E, on *C. rangiferina* (p) growing on soil, 14.07.1970, leg. A. Paulischava; 3 km SW of Chenki village, close to the Gomel State University's field practice stationary camp, 52°19'N, 30°57'E, on *C. macilenta* var. *bacillaris* (t) growing on decaying lignum, 20.07.2003, leg. I. Kavaliova and I. Hancharova; same place, on *C. chlorophaea* (t, p) growing on lignum, 20.06.2004, leg. A.

Tsurykau; 1 km NE of Tereshkovichi village, *Pteridium aquilinum*-type pine forest, 52°15'N, 30°58'E, on *C. chlorophaea* (t) growing on the bark of pines, 03.03.2011, leg. A. Tsurykau; 1.5 km NE of Tereshkovichi village, *Polytrichum*-type pine forest, 52°15'N, 30°59'E, on *C. macilenta* (t) and *C. ochrochlora* Flörke (t) growing on the bark of pines, 03.03.2011, leg. A. Tsurykau; 1.9 km E of Tereshkovichi village, *Vaccinium myrtillus*-type pine forest, 52°15'N, 30°59'E, on *C. macilenta* (t) growing on the bark of pines, 02.10.2012, leg. A. Tsurykau; 1.8 km NE of Asovina village, *Ledum palustre*-type pine forest, 52°13'N, 31°02'E, on *C. chlorophaea* (t) and *C. macilenta* (t) growing on the bark of pines, 08.08.2011, leg. A. Tsurykau; 3.2 km NE of Asovina village, *Pteridium aquilinum*-type pine forest, 52°13'N, 31°03'E, on *C. macilenta* (t) and *C. ochrochlora* (t) growing on the bark of pines, 08.08.2011, leg. A. Tsurykau; ca. 1 km S of Pribor village, *Polytrichum*-type pine forest, 52°23'N, 30°47'E, on *C. chlorophaea* (t) and *C. coniocraea* (Flörke) Spreng. (t) growing on the bark of pines, 10.10.2012, leg. A. Tsurykau; Kalinkovichi district: close to Ozarichi Township, mixed forest, 52°27'N, 29°16'E, on *C. uncialis* (p) growing on soil, 16.08.2004, leg. J. Bachura; Korma district: close to Kljapin village, *Polytrichum*-type pine forest, near the road, 53°09'N, 31°03'E, on *Cladonia* sp. (p, a) growing on soil, 12.08.2005, leg. U. Liabedz'ka; Lelchitsy district: PNP, Mlynok forestry, 7 q., *Cladonia*-type pine forest with *Melampyrum nemorosum* and *Convallaria majalis*, 51°56'N, 27°56'E, on *C. phyllophora* (p) growing on soil, w/o date, leg. O. Shakhrai; same forestry, 60 q., on *C. arbuscula* ssp. *arbuscula* (p) growing on soil, 18.07.1971, leg. A. Dashuk; same forestry, 60 q., pine forest, on *C. rangiferina* (p) growing on soil, 1977, leg. H. Abramava; same forestry, 60 q., *Pleurozium*-type pine forest, on *C. arbuscula* ssp. *mitis* (p) growing on soil, 19.07.1971, leg. O. Shakhrai and H. Abramava; same forestry, 61 q., on *C. macilenta* var. *bacillaris* (t) and *C. cervicornis* ssp. *verticillata* (s) growing on soil, 19.07.1971, leg. J. Klets; same forestry, 72 q., *Cladonia*-type pine forest, on *C. chlorophaea* (t) growing on soil, 16.06.1972, leg. O. Shakhrai; same forestry, 106 q., *Cladonia*-type pine forest, on *C. gracilis* (p) growing on soil, w/o date, leg. O. Shakhrai; same forestry, 106 q., *Pleurozium*-type pine forest, on *C. arbuscula* ssp. *mitis* (p) growing on soil, w/o date, leg. O. Shakhrai; same forestry, *Cladonia*-type pine forest, on *C. arbuscula* ssp. *mitis* (p), *C. chlorophaea* (t) and *C. gracilis* (p) growing on soil, 24.07.1974, leg. O. Shakhrai; same forestry, *Cladonia*-type pine forest, on *C. macilenta* (t) growing on a stump, 02.07.1975, leg. O. Shakhrai; same forestry, *Cladonia*-type pine forest, on *C. macilenta* (t, p) growing on brushwood, 13.03.1977; leg. V. Prokopenko; same forestry, *Cytisus*-type pine forest, on *C. arbuscula* ssp. *mitis* (p) growing on soil, 14.07.1975, leg. A. Radionova; same forestry, *Cladonia*-type pine forest, on *C. rangiferina* (p) growing on soil, 06.06.1975, leg. O. Shakhrai; same forestry, pine forest with *Hieracium* and *Nardus*, on

C. phyllophora (p) growing on soil, 01.06.1974, leg. O. Shakhrai; same forestry, meadow in pine forest with *Hieracium* and *Thymus*, on *C. arbuscula* ssp. *mitis* (p) growing on soil, 01.06.1974, leg. O. Shakhrai; same forestry, *Cladonia*-type pine forest, on *C. chlorophaea* (t, p) growing on brushwood, 01.06.1974, leg. O. Shakhrai; Loyew district: 1.3 km N of Kawpen village, *Cladonia*-type pine forest, 51°57'N, 30°39'E, on *C. arbuscula* ssp. *mitis* (p) and *C. gracilis* (p) growing on soil, 09.08.2011, leg. A. Tsurykau; same place, on *C. chlorophaea* (t) growing on decaying wood, 09.08.2011, leg. A. Tsurykau; same place, on *C. chlorophaea* (t) growing on the bark of pines, 09.08.2011, leg. A. Tsurykau; 5 km W of Kawpen village, *Calluna vulgaris*-type pine forest, 51°56'N, 30°35'E, on *C. gracilis* (p) and *C. squamosa* (p, a) growing on soil, 09.08.2011, leg. A. Tsurykau; same place, on *C. chlorophaea* (t, p) and *C. fimbriata* (t, p) growing on the bark of pines, 09.08.2011, leg. A. Tsurykau; Retchitsa district: ca. 1.5 km E of Borschewka village, pine forest, 52°21'N, 30°40'E, on *C. macilenta* (t) growing on a log, 30.09.2006, leg. A. Tsurykau; Zhitkovich district: close to Belev village, pine forest, 52°17'N, 28°02'E, on *C. fimbriata* (t, p) growing on a stump, 01.02.2006, leg. A. Teikin; PNP, *Cladonia*-type pine forest, on *C. rangiferina* (p) growing on soil, 10.06.1975, leg. O. Shakhrai; PNP, Ozerany forestry, 50 q., pine forest, 52°00'N, 27°53'E, on *C. gracilis* (p) growing on soil, 18.06.1971, leg. O. Shakhrai; same forestry, 59 q., *Cladonia*-type pine forest, on *C. gracilis* (p) growing on soil, 24.07.1975, leg. O. Shakhrai; same forestry, 60 q., pine forest, on *C. rangiferina* (p) growing on soil, 25.05.1971, leg. O. Shakhrai; same forestry, 60 q., *Vaccinium myrtillus*-type pine forest, on *C. macilenta* (t, p) growing on soil, 23.07.1974, leg. H. Shvets; same forestry, on *C. cervicornis* ssp. *verticillata* (s), *C. deformis* (t) and *C. macilenta* (t) growing on soil, 20.06.1975, leg. O. Shakhrai; same forestry, on *C. subulata* (t) growing on soil, leg. O. Shakhrai, w/o date; PNP, Ozerany-Mlynok forestry, 85 q., *Cladonia*-type pine forest, 51°59'N, 27°57'E, on *C. arbuscula* ssp. *arbuscula* (p) growing on soil, 19.03.1977, leg. V. Prokopenko; same forestry, 96 q., *Vaccinium vitis-idaea*-type pine forest, on *C. arbuscula* ssp. *mitis* (p) growing on soil, 10.03.1977, leg. V. Prokopenko; same forestry, 98 q., *Vaccinium vitis-idaea*-type pine forest, on *C. chlorophaea* (t) growing on brushwood, 15.03.1977, leg. V. Prokopenko; same forestry, 106 q., *Cladonia*-type pine forest, on *C. rangiferina* (p) growing on soil, 15.03.1977, leg. V. Prokopenko; same forestry, 106 q., *Cladonia*-type pine forest, on *C. arbuscula* ssp. *mitis* (p) growing on soil, 09.05.1977, leg. V. Prokopenko; PNP, Pererov forestry, 18 q., *Cladonia*-type pine forest, 52°02'N, 27°58'E, on *C. cervicornis* ssp. *verticillata* (t, p) growing on soil, 20.07.1974, leg. O. Shakhrai; same forestry, 23 q., *Polytrichum*-type pine forest, on *C. gracilis* (p) growing on soil, 05.07.1973, leg. L. Parukova; PNP, Rychev forestry, 64 q., *Cladonia*-type pine forest, 51°59'N, 27°42'E, on *C. arbuscula* ssp. *mitis* (p) growing on soil, 17.07.1972, leg. O. Shakhrai.

TRICHONECTRIA RUEBEFACIENS (Ellis & Everh.) Diedrich & Schroers (Fig. 2A & B)

New to Belarus. This pathogenic fungus is known from Lithuania (Motiejūnaitė et al., 2012), Russia, Leningrad region (Kuznetsova et al., 2012), Poland (Kukwa et al., 2010) and Ukraine (Pirogov, 2011).

Our specimens are characterized by having 1-septate, 14–15 × 3 µm colourless ascospores. Perithecia orange, superficial, ca. 0.1 mm in diameter.

Host – *Parmelia sulcata* Taylor (t).

Specimens examined – Chechersk district: vicinity of Gajok village, 52°58'N, 31°08'E, at the edge of pine forest, on the bark of *Betula pendula*, 16.09.2011, leg. E. Dubrovskaja; Gomel district: 3 km SW of Chenki village, close to the fence at Gomel State University's field practice stationary camp, 52°19'N, 30°57'E, on bark of *B. pendula*, 25.06.2012, leg. A. Tsurykau.

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REFERENCES

- Bachmann, E. & Bachmann, F. 1920. Litauische Flechten. *Hedwigia* 61(6): 321–342.
- Bielczyk, U., Bylińska, E., Czarnota, P., Czyżewska, K., Guzow-Krzemińska, B., Hachutka, M., Kiszka, J., Kowalewska, A., Krzewicka, B., Kukwa, M., Leśniański, G., Śliwa L. & Zalewska A. 2005. Contribution to the knowledge of lichens and lichenicolous fungi of Western Ukraine. *Polish Botanical Journal* 50(1): 39–64.
- Czarnota, P. & Kukwa, M. 2010. New and noteworthy lichenized and lichenicolous fungi from Latvia. *Botanica Lithuanica* 16(1): 21–27.
- Etayo, J. 1998. Some hypocrealean lichenicolous fungi from Southwest Europe. *Nova Hedwigia* 67(3–4): 499–509.
- Golubkov, V. V. 2011a. Annotated checklist of lichenicolous fungi of Belarus. *Botany: Research* 40: 295–306. (In Russian).
- Golubkov V. V. 2011b. *Lichen biota of "Pripyatsky" National park* (in Russian). Minsk. 192 pp.
- Kukwa, M. 2004. New or interesting records of lichenicolous fungi from Poland II. Species mainly from northern Poland. *Herzogia* 17: 67–75.
- Kukwa, M., Czarnota, P. & Perz, P. 2010. New or interesting records of lichenicolous fungi from Poland VIII. *Herzogia* 23: 111–119.
- Kukwa, M. & Kowalewska, M. 2007. New or interesting records of lichenicolous fungi from Poland V. Species mainly on *Cladonia*. *Herzogia* 20: 199–207.
- Kukwa, M., Motiejūnaitė, J., Rutkowski, P. & Zalewska, A. 2002. New or interesting records of lichenicolous fungi from Poland I. *Herzogia* 15: 129–139.
- Kuznetsova, E., Ahti T. & Himelbrant, D. 2007. Lichens and allied fungi of the Eastern Leningrad Region. *Norrlinia* 16: 1–62.
- Kuznetsova, E. S., Motiejūnaitė, J., Stepanchikova, I. S., Himelbrant, D. E. & Czarnota, P. 2012. New records of lichens and allied fungi from the Leningrad Region, Russia. III. *Folia Cryptogamica Estonica* 49: 31–37.
- Lawrey, J. D. & Diederich, P. 2011. Lichenicolous fungi – worldwide checklist, including isolated cultures and sequences available. <http://www.lichenicolous.net>.
- Motiejūnaitė, J. 2002. Diversity of lichens and lichenicolous fungi in the transboundary region of Marijampolė district (southern Lithuania). *Botanica Lithuanica* 8(3): 277–294.
- Motiejūnaitė, J. & Andersson, L. 2003. Contribution to the Lithuanian flora of lichens and allied fungi. *Botanica Lithuanica* 9(1): 71–88.
- Motiejūnaitė, J., Berglund, T., Czarnota, P., Himelbrant, D., Högnabba, F., Konoreva, L. A., Korchikov, E. S., Kubiak, D., Kukwa, M., Kuznetsova, E., Leppik, E., Lõhmus, P., Prigodina Lukošienė, I., Pykälä, J., Stončius, D., Stepanchikova, I., Suija, A., Thell, A., Tsurykau, A. & Westberg, M. 2012. Lichens, lichenicolous and allied fungi found in Asveja Regional park (Lithuania). *Botanica Lithuanica* 18(2): 85–100.
- Motiejūnaitė, J. & Czyżewska, K. 2008. Additions to the biota of lichens and lichenicolous fungi of Poland, with a note on *Lecania prasinoides* in Eastern and Central Europe. *Polish Botanical Journal* 53(2): 155–162.
- Motiejūnaitė, J., Kukwa, M., Czarnota, P., Prigodina-Lukošienė, I., Himelbrant, D., Kuznetsova, E. & Kowalewska, A. 2003. Lichens and allied fungi collected during the 15th Symposium of Baltic Mycologists and Lichenologists in Birštonas, Lithuania. *Botanica Lithuanica* 9(2): 109–119.
- Nordin, A., Moberg, R., Tønsberg, T., Vitikainen, O., Dalsätt, Å., Myrdal, M., Snitting, D. & Ekman, S. 2011. *Santesson's Checklist of Fennoscandian Lichen-forming and Lichenicolous Fungi*. Ver. April 29, 2011 – <http://130.238.83.220/santesson/home.php>
- Oxner, A. N. 1924. Beiträge zur Flechtenflora Wissrusslands. *Bulletin du Jardin Botanique de Kieff* 1: 27–36. (in Russian).
- Pirogov, M. V. 2011. *Nectriopsis rubefaciens* (Ellis & Everh.) M. S. Cole & D. Hawksw. (*Bionectriaceae*) – a new species of lichenicolous fungus for Ukraine. *Ukrainian Botanical Journal* 68(1): 127–128.

- Savicz, V. P. 1925. Die Resultate lichenologischer Untersuchungen in Weissrussland im Jahre 1923. *Mémoires de l'institut agronomique et forestier d'état de la Bélarussie* 4: 1–33 (in Russian).
- Stepanchikova, I. S., Himelbrant, D. E., Kukwa, M. & Kuznetsova, E. S. 2011. New records of lichens and allied fungi from the Leningrad Region, Russia. II. *Folia Cryptogamica Estonica* 48: 85–94.
- Tsurykau, A. & Khramchankova, V. 2011. Lichens from Gomel region: a provisional checklist. *Botanica Lithuanica* 17(4): 157–163.
- Yatsyna, A. 2011. The first contribution to lichens, lichenicolous and allied fungi from Braslav Lakes National Park (NW Belarus). *Botanica Lithuanica* 17(4): 177–184.
- Yurchenko, E. O. & Golubkov, V. V. 2003. The morphology, biology, and geography of a necrotrophic basidiomycete *Athelia arachnoidea* in Belarus. *Mycological Progress* 2(4): 275–284.
- Zhurbenko, M. P. 2007. The lichenicolous fungi of Russia: geographical overview and a first checklist. *Mycologia Balcanica* 4: 105–124.
- Zhurbenko, M. P. & Alstrup, V. 2004. Lichenicolous fungi on *Cladonia* mainly from the Arctic. *Symbolae Botanicae Upsalienses* 34(1): 477–499.
- Zhurbenko, M. P. & Gudovicheva A. V. 2013. *Zwackhiomyces echinulatus* and other lichenicolous fungi from Tula Region of Russia. *Mycology and phytopathology* 47(1): 19–20. (in Russian).
- Zhurbenko, M. P., Hermansson J. & Pystina T. N. 2012. Lichenicolous fungi from the Komi Republic of Russia. II. *Folia Cryptogamica Estonica* 49: 89–91.
- Zhurbenko, M. P. & Himelbrant, D. E. 2002. Lichenicolous fungi from the Kandalaksha Gulf, Karelia Keretina, Russia. *Folia Cryptogamica Estonica* 39: 51–59.
- Zhurbenko, M. P. & Santesson, R. 1996. Lichenicolous fungi from the Russian Arctic. *Herzogia* 12: 147–161.

