

New records of lichens and allied fungi from the Leningrad Region, Russia. X

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Abstract: Ten lichen species and three lichenicolous fungi are reported for the first time for St. Petersburg, the whole Leningrad Region or its western part. The lichens *Bacidina indigens* and *Lecidella asema* are new for European Russia, the lichens *Bryoria kuemmerleana*, *Caloplaca turkuensis*, *Scoliciosporum pruinosum*, and the lichenicolous fungus *Raesaenienia huuskonenii* are new for North-Western European Russia.

Keywords: St. Petersburg, *Bacidina indigens*, *Lecidella asema*

INTRODUCTION

This paper continues the series of publications focused on new and noteworthy findings of lichens and allied fungi from the Leningrad Region and St. Petersburg (see, e.g., Stepanchikova et al., 2010, 2018; Kuznetsova et al., 2012; Himelbrant et al., 2016, 2017). *Bacidina indigens* and *Lecidella asema* are reported for the first time for European Russia, *Bryoria kuemmerleana*, *Caloplaca turkuensis*, *Raesaenienia huuskonenii*, and *Scoliciosporum pruinosum* are new for North-Western European Russia. Five species (*Botryolepraria lesdainii*, *Lecidella anomaloides*, *Lichenopeltella peltigericola*, *Muellerella ventosicola*, and *Sclerococcum* cf. *attendendum*) are new for the whole Leningrad Region (including St. Petersburg); two species (*Bacidina neosquamulosa* and *Protoblastenia rupestris*) are new for the western part of the Leningrad Region.

This paper contains data on the groups of species that are difficult to identify. Most of the records originate from remote places in the Leningrad Region. Our findings include some additions to recently published lichen floras of the islands of Konevets (Himelbrant et al., 2018)

and Tuterts (Stepanchikova et al., 2017a). The species list of Konevets includes now 438 species, and Tuterts – 335 species. Ca 1130 species, including 970 lichens, 130 lichenicolous and 30 saprobic fungi, are currently recorded in the Leningrad Region and St. Petersburg.

MATERIAL AND METHODS

The paper is based mainly on specimens collected by Dmitry E. Himelbrant, Irina S. Stepanchikova, Ekaterina S. Kuznetsova, and Gulnara Tagirdzhanova in 2011–2018 in the Leningrad Region and St. Petersburg. The specimens are deposited in the lichen herbaria of St. Petersburg State University (LECB), University of Helsinki (H), and Institute of Botany, Nature Research Centre in Vilnius (BILAS). Additionally, some older collections of lichens and lichenicolous fungi have been revised in the herbaria of Komarov Botanical Institute RAS (LE) and H. The cited specimens were mainly identified by the authors of the paper, if otherwise, the identifier's name is indicated in the annotation of the species. Chromatography was performed by

Stepanchikova and Himelbrant according to the standard techniques of high performance thin-layer chromatography using solvent systems A and B (Orange et al., 2001). Micrographs of external characters for species were taken with Stemi-2000 CS microscope with an attached camera AxioCam MRC5.

The names of the main collectors in the species list are abbreviated as follows: DH – Dmitry E. Himelbrant, EK – Ekaterina S. Kuznetsova, GT – Gulnara Tagirdzhanova and IS – Irina S. Stepanchikova. The subdivision of the Leningrad Region (LR) was published in our previous paper (Stepanchikova et al., 2010). The following abbreviations are used here: ELR – Eastern Leningrad Region, SPb – St. Petersburg, WLR – Western Leningrad Region. The biogeographical provinces of Eastern Fennoscandia are abbreviated traditionally (Kotiranta et al., 1998): Ik – Isthmus karelicus, Ka – Karelia australis, Kl – Karelia ladogensis, Kol – Karelia olonetsensis. All geographical coordinates are given in the spatial reference system WGS 1984. Lichenicolous fungi are marked with #. The nomenclature of taxa generally follows Nordin et al. (2011), Diederich et al. (2018), and Lawrey & Diederich (2018). *Bacidina indigens* is listed following Gerasimova & Ekman (2017).

THE SPECIES

BACIDINA INDIGENS (Vain.) S. Ekman & J. Gerasimova – SPb, Kronshtadt District, NW part of Kotlin Island, southern shore W to the fort Shanetz, 60°01'33.9"N, 29°39'43.3"E, alt. 1 m, black alder forest with willow and rowan undergrowth on sandy shore, on bark of *Salix pentandra* L., 20.09.2012, leg. DH & GT, det. S. Ekman (LECB). – New to European Russia, in Russia known from the Chukotka Autonomous Okrug (Gerasimova & Ekman, 2017). Distribution in Fennoscandia and Baltic countries: not reported. Distribution in Europe – for example, in Poland (Czarnota & Coppins, 2007), Germany (Scholz, 2011), and Great Britain (Smith et al., 2009). Our specimen was erroneously reported as *B. chlorotricula* (Nyl.) Vězda & Poelt (Stepanchikova et al., 2015). Similar to *B. egenula* (Nyl.) Vězda, from which it differs by coarsely warted to granular thallus (Fig. 1), and hypothecium which is colourless throughout and K– (Smith et al., 2009; Gerasimova & Ekman, 2017).

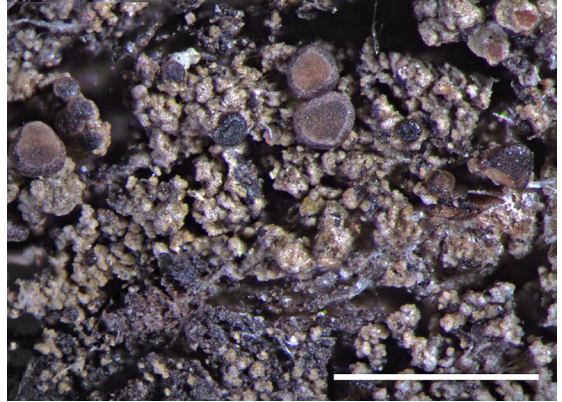


Fig. 1. Thallus and apothecia of *Bacidina indigens* (LECB). Scale bar = 1 mm.

BACIDINA NEOSQUAMULOSA (Aptroot & Herk) S. Ekman – WLR, Ka, Kingisepp District, N part of Bolshoy Tuters Island (former Tytärsaari), 59°51'55"N, 27°11'35"E, black alder stand on the seashore with granite boulders, on bark of *Alnus glutinosa* (L.) Gaertn., 01.06.2015, leg. IS, det. J. Gerasimova (LECB). – New to WLR, known from SPb (Himelbrant et al., 2017). Distribution in North-Western European Russia outside of LR: not reported. Distribution in Fennoscandia and Baltic countries: Sweden (Nordin et al., 2011).

BOTRYOLEPRARIA LESDAINII (Hue) Canals et al. – WLR, Luga District, proposed protected area 'Jaschera-Lemovzha', valley of the Bezhanka River, 58°58'19.4"N, 29°42'52.5"E, deep river valley, on red sandstone in dark and humid place, 03.10.2015, leg. DH (H s. n., LECB s. n.). Our three specimens contain lesdainin (6-acetoxypopan-22-ol) and zeorin. – New to LR. Distribution in North-Western European Russia outside of LR: Republic of Karelia (Fadeeva et al., 2007). Distribution in Fennoscandia and Baltic countries: Norway, Sweden, and Finland (Nordin et al., 2011). Characterized by the pale malachite green diffuse, byssoid, soft and spongy thallus, consisting of a hyphal network with photobiont cell clusters. The photobiont cells are connected to the tips of hyphae but not enclosed by them. The species is restricted to very shadowy sites, such as rocky walls of caves free of dripping water (Canals et al., 1997; Smith et al., 2009).

BRYORIA KUEMMERLEANA (Gyeln.) Brodo & D. Hawksw. – WLR, Ik, Priozersk District, central part of Konevets Island (in Lake Ladoga), S of

Zmeinaya Hill, 60°51'52.9"N, 30°36'35.2"E, old-growth spruce forest with *Sphagnum* spp. and *Vaccinium myrtillus* L., on bark (branches) of *Picea abies* (L.) H. Karst., 29.07.2017, leg. EK, IS & DH, conf. L. Myllys (H s. n.). Specimen contains norstictic and connorstictic acids; infected by *Lichenostigma maureri* Hafellner. – New to North-Western European Russia, the nearest locality in Russia is in the Perm Territory (Velmala et al., 2014). Distribution in Fennoscandia and Baltic countries: Norway, Sweden, and Finland (Nordin et al., 2011). Characterized by pruinose brown thallus with elongate fusiform pseudocyphellae, and presence of norstictic acid (Velmala et al., 2014). Although the species is distinct morphologically and chemically, it is treated as synonymous to *Bryoria fuscescens* (Gyeln.) Brodo & D. Hawksw. based on molecular data (Boluda et al., 2019).

CALOPLACA TURKUENSIS (Vain.) Zahlbr. – WLR, Gatchina District, N of Zapolie village, 59°30'42.2"N, 29°44'02.0"E, on bark of old *Acer platanoides* L. on the edge of field, 14.09.2016, leg. DH & IS, det. I. Frolov (LECB s. n.). Specimens contain no lichen substances. – New to North-Western European Russia, known from the European part of the Orenburg Region (Šoun et al., 2011) and Southern Siberia (Vondrák et al., 2019). Distribution in Fennoscandia and Baltic countries: Norway, Sweden, and Finland (Nordin et al., 2011, Šoun et al., 2011). Characterized by the apothecia similar to those of *Caloplaca cerina* (Hedw.) Th. Fr., slightly convex, punctiform to confluent blue-grey soralia, minute or often absent areoles (Fig. 2) (Šoun et al., 2011).

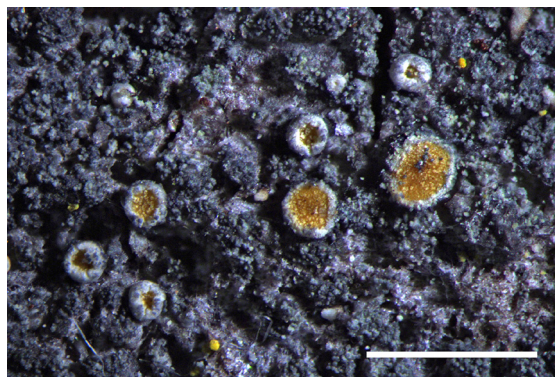


Fig. 2. Thallus, soralia and apothecia of *Caloplaca turkuensis* (LECB). Scale bar = 1 mm.

LECIDELLA ANOMALOIDES (A. Massal.) Hertel & H. Kiliyas – WLR, Kl, Priozersk District, ca 5 km NW of Sevastyanovo (former Kaukola), the locality formerly named as Laukkaan mäki, [61°05'N, 29°43'E], on granite boulder in forest, 20.07.1935, leg. M. Laurila (H 8003260); Priozersk District, ca. 5 km W of Kuznechnoe (former Kaarlahti), vicinity of Bogatyri (former Koverila), formerly called Jyrkkälä, [61°06'N, 29°47'E], on wet granite boulder, 28.07.1935, leg. M. Laurila (H s. n.). – New to LR. Distribution in North-Western European Russia outside of LR: Republic of Karelia (Fadeeva et al., 2007), Pskov Region (Istomina & Likhacheva, 2010). Distribution in Fennoscandia and Baltic countries: Norway, Sweden, and Finland (Nordin et al., 2011). Differs from the other saxicolous *Lecidella* species by having thin and scattered esorediate gray thallus and entirely dark brown exciple, opaque in section, and preferring siliceous rocks (Smith et al., 2009).

LECIDELLA ASEMA (Nyl.) Knoph & Hertel – WLR, Ka, Vyborg District, Gulf of Vyborg, Berezovye Islands archipelago (former Koivistonsaaret), Berezovye Ostrova Protected Area, W shore of Bol'shoy Solnechny Island (former Suursaari), 60°25'19"N, 28°30'16"E, on granite seashore boulder, 05.06.2014, leg. IS, DH & GT (LECB). – New to European Russia. The only record of this species from Russia (Irkutsk Region) by P. L. Nimis & M. Tretiach is listed in the database of the lichen herbarium of the University of Trieste (TSB 29116) (Nimis & Martellos, 2017). Distribution in Fennoscandia and Baltic countries: Finland (Nordin et al., 2011). Characterized by granular to verrucose and rimose thick yellow-brown to yellow-green thallus, exciple gray-green to gray-blue at outer edge and pale brown within the section, presence of thiophanic acid in cortex (C+ orange), and coastal habitat (Smith et al., 2009).

LICHENOPELTELLA PELTIGERICOLA (D. Hawksw.) R. Sant. – ELR, Boksitogorsk District, ca. 12 km E of Svyatozero Lake and ca. 4 km of Kolp' River, 59°57'35.7"N, 35°24'35.6"E, mixed forest with birch, aspen, pine and spruce, on upper side of thallus of *Peltigera praetextata* (Flörke ex Sommerf.) Zopf growing on mosses, 11.05.2018, leg. DH & IS (BILAS). – New to LR. Distribution in North-Western European Russia outside of LR: Republic of Karelia (Fadeeva et al., 2007). Distribution in Fennoscandia and Baltic coun-

tries: Norway, Sweden, and Finland (Nordin et al., 2011), Estonia (Randlane et al., 2018). Our specimen was in concurrence with the description in the protologue (Hawksworth, 1982): thyriothecoid acomata 50–60 µm in diam., bearing 3–6 non-septate setae around the ostioles and 1-septate colourless ascospores 15–16 × 4 µm (only few mature ascospores were present). The fungus was growing on the upper and lower sides of the host thallus and on rhizines (Fig. 3).



Fig. 3. Ascomata of *Lichenopeltella peltigericola* on rhizines of *Peltigera praetextata* (BILAS). Scale bar = 0.5 mm.

MUELLERELLA VENTOSICOLA (Mudd) D. Hawksw. – WLR, Ik, Priozersk District, W part of Kon-evets Island (in Lake Ladoga), huge glacial boulder Kon'-Kamen' with chapel of St. Arseniy, 60°51'26.1"N, 30°35'47.1"E, old-growth spruce forest, on thallus of *Rhizocarpon* sp. growing on granite boulder, 26.07.2017, leg. EK, IS & DH (BILAS). – New to LR. Distribution in North-Western European Russia outside of LR: Republic of Karelia (Zhurbenko & Himmelbrant, 2002). Distribution in Fennoscandia and Baltic countries: Norway, Sweden (Nordin et al., 2011), and Lithuania (Motiejūnaitė, 2017). Our speci-

men was in concurrence with the description provided in Triebel (1989): perithecia 200–350 µm diam., medium- to dark brown, 6.5–7.5 × 4–5 µm ascospores and occurrence on *Rhizocarpon*.

PROTOBLASTENIA RUPESTRIS (Scop.) J. Steiner – WLR, Ka, Kingisepp District, S shore of Bolshoy Tuters Island, E to Lommosniemi, 59°50'10"N, 27°11'56"E, wasteland on the site of former Finnish village, on concrete of ruins, 29.05.2015, leg. IS, det. U. Schiefelbein (H). – New to WLR, known from ELR (Kuznetsova et al., 2016) and SPb (Stepanchikova et al., 2017b). Distribution in North-Western European Russia outside of LR: Republic of Karelia (Fadeeva et al., 2007) and Pskov Region (Istomina et al., 2018). Distribution in Fennoscandia and Baltic countries: Norway, Sweden, Finland (Nordin et al., 2011), Estonia (Randlane et al., 2018), Latvia (Āboliņa et al., 2015) and Lithuania (Motiejūnaitė, 2017).

RAESAENENIA HUUSKONENII (Räsänen) D. Hawksw., C. Boluda & H. Lindgr. – WLR, Tosno District, vicinity of Trubnikovo railway station, right bank of Tverezna River, [59°17'N, 31°23'E], pine forest with birch and spruce, on thallus of *Bryoria fuscescens* on bark (branches) of *Pinus sylvestris* L., 12.09.1999, leg. O. A. Kataeva (LE, sub *B. fuscescens*); ELR, Volkhov District, basin of Syas' River, 3.3 km E of L'zi village, [59°59'N, 32°47'E], swampy birch stand with spruce, on thallus of *B. fuscescens* on bark (branches) of *Betula* sp., 02.2018, leg. B. K. Gannibal (LECB). – New to North-Western European Russia. In European Russia known from Murmansk Region (Urbanavichus et al., 2008). Distribution in Fennoscandia and Baltic countries: Norway, Sweden, and Finland (Nordin et al., 2011). A lichenicolous ascomycete causing extensive black and shiny geniculate deformations on *Bryoria* spp. (Hawksworth, 1978).

SCLEROCOCCUM cf. ATTENDENDUM (Nyl.) Ertz & Diederich – ELR, Kol, Podporozhje District, NW to Soginitsy village, right bank of Svyatukha River, 61°13'17.4"N, 33°55'30.7"E, old-growth spruce forest with *Sphagnum* spp., on thallus of *Mycobilimbia* sp., growing on spruce log, 21.05.2016, leg. DH & IS (BILAS). – New to LR. Distribution in North-Western European Russia outside of LR: Republic of Karelia (Fadeeva et al., 2007). Distribution in Fennoscandia and Baltic countries: Norway, Sweden, and Finland (Nordin et al., 2011). According to Lawrey &

Diederich (2018) and Triebel (1989), *Sclerococcum deminutum* (Th. Fr.) Ertz & Diederich inhabits *Mycobilimbia* spp. and other muscicolous fungi. It is characterized by shiny apothecia and slightly bent, 3–7 septate to submuriform, ascospores. The ascospore size is $13\text{--}22 \times 5\text{--}7.5 \mu\text{m}$; the spore cells are unequal in size. Hypothecium contains dark violet-blue granules which dissolve in K and resulting in greenish blue reaction; the same granules are occasionally found also in the excipulum and the lower part of hymenium. However, our specimen (Fig. 4) possesses characteristics largely consistent with *S. attendendum*: dull apothecia, straight ascospores that are (2–)3-septate, $15\text{--}17 \times 4.5\text{--}6 \mu\text{m}$ [$10\text{--}17 \times 4\text{--}6.5 \mu\text{m}$ in Triebel (1989)] with more or less equal-sized cells and apothecial tissues lacking granules and are K–.

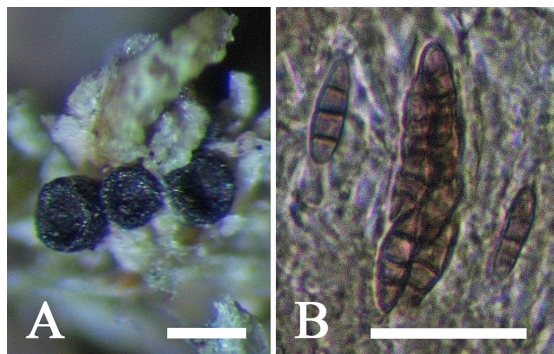


Fig. 4. *Sclerococcum* cf. *attendendum* on thallus of *Mycobilimbia* sp. (BILAS): A – apothecia; B – ascus and spores. Scale bars: A = 0.5 mm; B = 25 μm .

SCOLICIOSPORUM PRUINOSUM (P. James) Vězda – WLR, Ik, Priozersk District, N part of Kon-evets Island, $60^{\circ}52'24.8''\text{N}$, $30^{\circ}37'11.4''\text{E}$, old-growth spruce forest with birch, aspen, maple, and black alder, on bark of *Alnus glutinosa*, 31.07.2017, leg. EK, IS & DH (H s. n.). – New to North-Western European Russia, the nearest locality in Russia belongs to Kaliningrad Region (Dedkov et al., 2007). Distribution in Fennoscandia and Baltic countries: Sweden, Finland (Nordin et al., 2011) and Estonia (Randlane et al., 2018). Characterized by slightly white-pruinose, white, pale pinkish to yellow- or brown-white apothecia without true exciple, pale epithecium with numerous K+ dissolving

crystals, asci *Biatora*-type, and 3–5 septate sigmoid-curved ascospores, spirally twisted in asci (Smith et al., 2009).

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