

Remarkable lichen diversity in the old manor park Osinovaya Roscha (St. Petersburg, Russia)

D. E. Himelbrant^{1,2}, I. S. Stepanchikova^{1,2}, L. V. Gagarina², A. G. Tsurykau^{3,4},
L. A. Konoreva^{2,5}

¹St. Petersburg State University, St. Petersburg, Russia

²Komarov Botanical Institute of the Russian Academy of Sciences, St. Petersburg, Russia

³Francisk Skorina Gomel State University, Gomel, Belarus

⁴Samara National Research University, Samara, Russia

⁵Polar-Alpine Botanical Garden-Institute of the Kola Science Centre of the Russian Academy of Sciences, Kirovsk, Russia

Corresponding author: D. E. Himelbrant, d_brant@mail.ru

Abstract. The revealed lichen diversity of the historical territory Osinovaya Roscha has a total of 230 species, including 206 lichenized, 17 lichenicolous, and seven non-lichenized saprobic fungi. *Epithamnolia xanthoriae* is new to North-Western European Russia; *Arthonia vinosa*, *Caloplaca ahtii*, *Cladonia merochlorophaea*, *Hawksworthiana peltigericola*, *Lecania erysibe*, *Rinodina pityrea*, *Roselliniella cladoniae*, *Taeniolina scripta*, and *Trichonectria rubefaciens* are new to St. Petersburg. In total, eight lichen species reported from Osinovaya Roscha are red-listed in St. Petersburg. In spite of small size of this area, the lichen diversity of Osinovaya Roscha is high compared to other territories in the city, and is worthy of protection.

Keywords: lichen biota, lichenicolous fungi, new records, protected species, North-West European Russia.

Примечательное разнообразие лишайников старого усадебного парка Осинová Роща (Санкт-Петербург, Россия)

Д. Е. Гимельбрант^{1,2}, И. С. Степанчикова^{1,2}, Л. В. Гагарина², А. Г. Цуриков^{3,4},
Л. А. Конорева^{2,5}

¹Санкт-Петербургский государственный университет, Санкт-Петербург, Россия

²Ботанический институт им. В. Л. Комарова РАН, Санкт-Петербург, Россия

³Гомельский государственный университет им. Ф. Скорины, Гомель, Беларусь

⁴Самарский национальный исследовательский университет, Самара, Россия

⁵Полярно-альпийский ботанический сад-институт КНЦ РАН, Кировск, Россия

Автор для переписки: Д. Е. Гимельбрант, d_brant@mail.ru

Резюме. Выявленное разнообразие лишайников исторической территории Осинová Роща насчитывает 230 видов, в том числе 206 лишайников, 17 лихенофильных и семь нелихенизированных сапротрофных грибов. *Epithamnolia xanthoriae* обнаружен впервые на Северо-Западе европейской части России; *Arthonia vinosa*, *Caloplaca ahtii*, *Cladonia merochlorophaea*, *Hawksworthiana peltigericola*, *Lecania erysibe*, *Rinodina pityrea*, *Roselliniella cladoniae*, *Taeniolina scripta* и *Trichonectria rubefaciens* являются новыми для Санкт-Петербурга. Восемь видов лишайников,

обнаруженных в Осиновой Роще, занесены в Красную книгу Санкт-Петербурга. Несмотря на небольшую площадь территории, лишенобиота Осиновой Рощи богата и разнообразна по сравнению с другими территориями города и заслуживает особой охраны.

Ключевые слова: лишенобиота, лишенофильные грибы, новые находки, охраняемые виды, Северо-Запад Европейской России.

Old parks are one of the most remarkable features of St. Petersburg. Long history and location close to the Baltic Sea predict its high biological diversity. It is noteworthy that old parks are areas where many groups of organisms, including lichens, can survive in an urban environment. St. Petersburg is a city with the most studied lichen diversity in Russia (Krasnaya..., 2018b; Stepanchikova et al., 2020). Nevertheless, lichens of many historical palaces and manor parks are still investigated insufficiently, and therefore their diversity is not properly estimated.

Osinovaya Roscha old manor park is one of the most prominent due to its long history, landscape, and diverse plant communities. Since 1710, the area of Osinovaya Roscha (Haapakangas in Finnish) has been several times changed. The manor was founded soon after 1777 when Ekaterina II presented this territory to count G. A. Potemkin. The park was established around the same period by English gardener William Gould (Aleksandrova, 2008). After the Oktober revolution the manor was used as agricultural school, sovkhoz, and sanatorium. During World War II, the palace was used as a rest house, and after the war it was occupied by military unit. In 1991 the manor was burnt.

Nowadays Osinovaya Roscha is a relatively small proposed protected area in the northernmost part of Vyborg District of St. Petersburg (Fig. 1). Osinovaya Roscha was proposed to be protected for its landscape, plant communities and biodiversity. According to the Law of St. Petersburg no. 421-83 dated 2 VII 2014, ecological inventory should be organized for this area in order to decide whether it should finally become a natural protected area. Our study was in frame of such inventory made by Komarov Botanical Institute RAS and organized by Directorate of Nature Protected Areas of St. Petersburg.

Moraine hills and lowlands between them, partly transformed by military constructions, form the relief. There are four big lakes and one little one within the study area. The territory includes the ruins of the palace (now in the process of reconstruction), the remaining part of the manor park, partly managed, partly evolved to a deciduous forest with young *Acer platanoides* L. trees and dense undergrowth formed by *Sorbus aucuparia* L. and *Prunus padus* L. Old trees in the park are represented mostly by *Tilia* spp. (*T. cordata* Mill. and *T. platyphyllos* Scop.), also *Acer platanoides*, *Fraxinus excelsior* L., *Quercus robur* L., *Ulmus* spp. (*U. glabra* Huds. and rarer *U. laevis* Pall.), *Larix* sp., and some *Picea abies* (L.) H. Karst. and *Pinus sylvestris* L. are present. The former manor park is surrounded by bogs with young open pine stands, and secondary spruce, pine, and mixed [with *Pinus sylvestris*, *Picea abies*, *Betula* spp. (*B. pendula* Roth and *B. pubescens* Ehrh.), *Alnus incana* (L.) Moench] forests. *Populus tremula* L., in spite of the name “Osinovaya Roscha”, is very rare in the study area. The territory

is partly occupied by horse riding club, former military buildings, and private gardens. The proposed protected territory Osinovaya Roscha is restricted by Vyborgskoe and Priozerskoe highways and the border of the Leningrad Region and has a total area of 1.9 km² (Fig. 2).



Fig. 1. The location of the study area in the limits of St. Petersburg.

Lichen investigations started in this territory at the end of the eighteenth century. Grigory F. Sobolewski reported 13 taxa under the generic names “*Lepra*” and “*Lichen*” from the locality “Osinovae Roschczae” (Sobolewski, 1799, 1802). Unfortunately, the fate and place of storage of the Sobolewski’s collections is still unclear, probably all specimens were lost (Kolchinsky *et al.*, 2004). Among the taxa reported by Sobolewski, two obviously refer to algae (*Lepra jolithus* and *L. rubens*), but other 11 represent nine lichen species in modern understanding. Fragmentary collections were also made in the manor park in August 1930 by N. M. Kartashova and M. A. Geyer, but only eight unidentified specimens and one identified voucher were found in lichen herbarium of the Komarov Botanical Institute of the Russian Academy of Sciences in St. Peters-

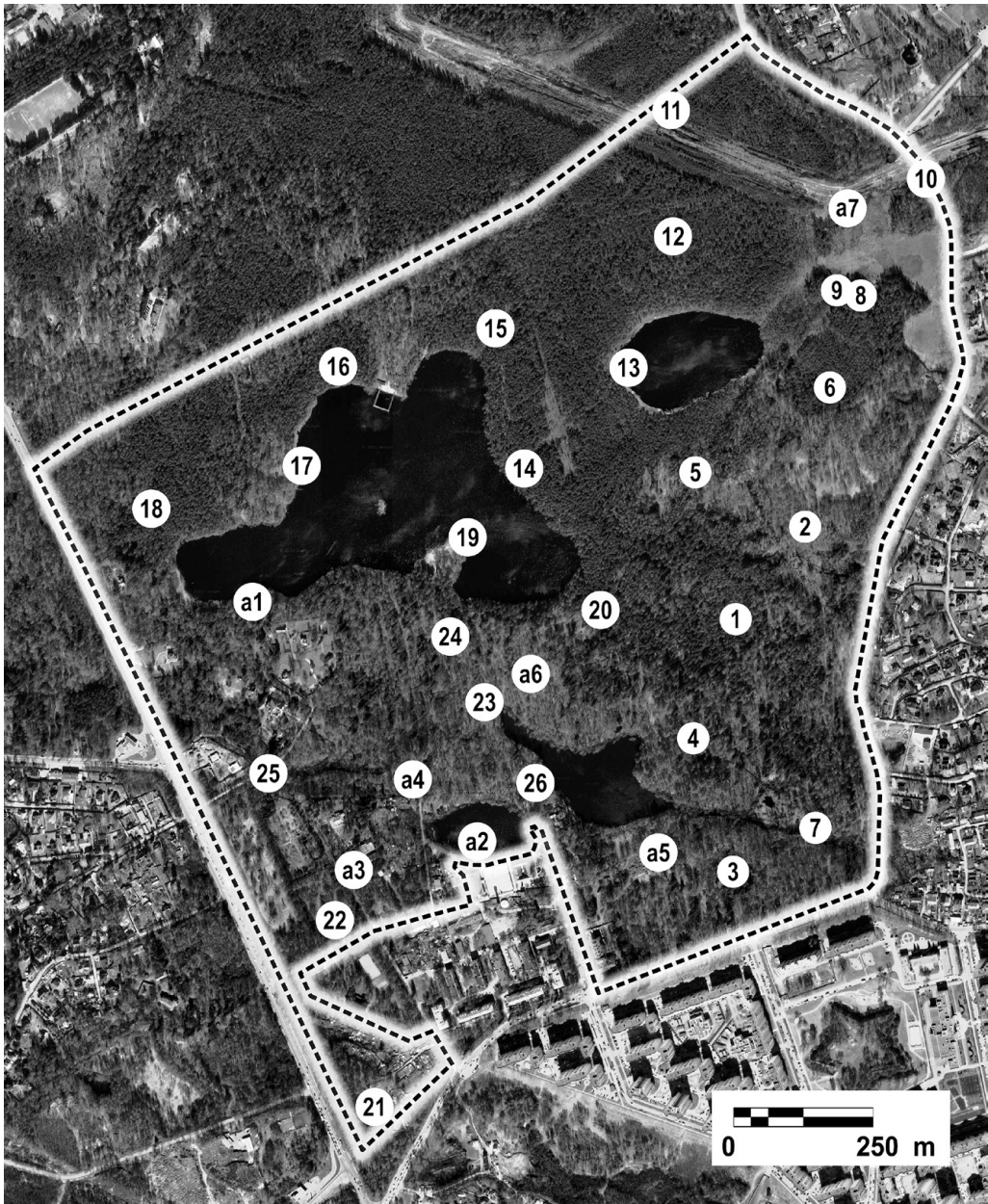


Fig. 2. Map of the study area, with the location of sampling areas (indicated numbers 1–26) and additional collection points (indicated with a1–a7).

burg, Russia (LE). The attempt of special investigation of Osinovaya Roscha manor park was made in 1995 by Natalia V. Malysheva, who reported 35 species (Malysheva, 2001, 2003). We tried to find any specimens from Osinovaya Roscha collected by Ma-

lysheva both in her personal herbarium and in LE but did not achieve any result. Altogether 43 species of lichens were published before our study, and only few specimens (mostly unpublished) were found in visited herbaria. Our investigation is devoted to comprehensive study of lichens and allied fungi of the Osinovaya Roscha manor park and its neighborhood as a proposed protected area.

Material and Methods

The main part of specimens were collected by Dmitry E. Himelbrant (DH), Irina S. Stepanchikova (IS), and Ludmila V. Gagarina (LG) in September 2013, September and October 2021. Andrei G. Tsurukau (AT), DH, and IS additionally collected specimens of lichenicolous fungi within some most interesting sample plots in November 2021. Altogether 32 localities were investigated (Fig. 1): 26 standard sample areas (SA) (20 × 20 m, otherwise in natural boundaries of the community), where the lichen diversity on each substrate was described as detailed as possible, and six additional plots, where only most interesting substrates and species were recorded. Geographical coordinates are given in the coordinate system WGS 1984.

Chromatography was performed by IS according to the standard techniques of high performance thin-layer chromatography using solvent systems A, B, and C (Orange *et al.*, 2001). The nomenclature of taxa generally follows recently published checklist for Scandinavia (Westberg *et al.*, 2021) and for lichenicolous fungi (Diederich *et al.*, 2018; Lawrey, Diederich, 2018). The lichen specimens were mainly identified by DH, IS, LG, and Liudmila A. Konoreva (LK) (*Micarea* spp.), most specimens of lichenicolous fungi were identified or confirmed by AT, if otherwise, the names of identifiers are indicated in the species list. The specimens of regionally rare species, including new species to St. Petersburg, are deposited mainly in the herbarium of the Department of Botany, St. Petersburg State University (LECB). Few specimens (indicated in the list of species) are kept in the herbaria of Francisk Skorina Gomel State University (GSU), University of Helsinki (H), and Komarov Botanical Institute (LE).

Sampling locations (Fig. 2)

Standard sample areas. Saint Petersburg, Vyborgsky District, proposed protected area Osinovaya Roscha: 1 – between Priozerskoe Highway and Lake Bolshoe, 60°06'56.7"N, 30°15'31.0"E, young spruce-pine forest with mosses, *Vaccinium myrtillus* L., and ferns in depression, 9 IX 2021, *Himelbrant, Gagarina Osin-1*; 2 – *ibid.*, 60°07'02.2"N, 30°15'39.2"E, young linden forest, 9 IX 2021, *Himelbrant, Gagarina Osin-2*; 3 – between Priozerskoe Highway and Lake Srednee, 60°06'41.7"N, 30°15'30.8"E, old broadleaved and coniferous trees with maple undergrowth (remnants of the old park), 10 IX 2021, *Himelbrant, Gagarina Osin-3*; 4 – *ibid.*, 60°06'49.6"N, 30°15'26.0"E, young aspen stand with dense *Spiraea salicifolia* L. thickets in depression, 10 IX 2021, *Himelbrant, Gagarina Osin-4*; 5 – E to Lake Bolshoe and S to Lake Glukhoe, 60°07'05.4"N, 30°15'26.1"E, open middle-aged birch forest with graminoid glade, 10 IX 2021, *Himelbrant, Gagarina Osin-5*; 6 – between Priozerskoe Highway and Lake Glukhoe, 60°07'10.5"N, 30°15'42.1"E, young boggy birch-pine forest with *Calla palustris* L. and *Vaccinium myrtillus-Sphagnum* sp. on bumps, 10 IX 2021, *Himelbrant, Gagarina Osin-6*; 7 – between Priozerskoe Highway and Lake Srednee, 60°06'44.3"N, 30°15'40.6"E, old broadleaved and coniferous trees with maple undergrowth (remnants of the old park), 10 IX 2021, *Himelbrant, Gagarina Osin-7*; 8 – WNW to Lake

Glukhoe, 60°07'16.2"N, 30°15'45.1"E, young shadowy spruce-pine forest with birch on local elevation, destroyed by recreation, trenches and dugouts, 19 IX 2021, *Himelbrant, Stepanchikova Osin-8*; 9 – WNW to Lake Glukhoe, 60°07'16.3"N, 30°15'43.2"E, road and roadside heaps with *Deschampsia flexuosa* (L.) Trin. and *Pleurozium schreberi* (Brid.) Mitt, 19 IX 2021, *Himelbrant, Stepanchikova Osin-9*; 10 – NW to Lake Glukhoe, 60°07'22.9"N, 30°15'52.7"E, young gray alder-birch forest with graminoids and grasses near the road, 19 IX 2021, *Himelbrant, Stepanchikova Osin-10*; 11 – N to Lake Glukhoe, pipeline cut, 60°07'26.9"N, 30°15'22.4"E, waterlogged pipeline cut with road and old timbers, stumps, with burnt peat heaps, with *Carex* sp. and *Juncus* sp., 19 IX 2021, *Himelbrant, Stepanchikova Osin-11*; 12 – *ibid.*, 60°07'19.4"N, 30°15'22.6"E, young swampy pine forest with mosses and *Vaccinium myrtillus*, 19 IX 2021, *Himelbrant, Stepanchikova Osin-12*; 13 – NE shore of Lake Glukhoe, 60°07'11.6"N, 30°15'17.4"E, young swampy pine forest with *Sphagnum* spp., *Eriophorum vaginatum* L., and *Chamaedaphne calyculata* (L.) Moench, 19 IX 2021, *Himelbrant, Stepanchikova Osin-13*; 14 – E shore of Lake Glukhoe, 60°07'05.6"N, 30°15'05.0"E, young birch-pine forest with vegetation disturbed by recreation, 19 IX 2021, *Himelbrant, Stepanchikova Osin-14*; 15 – NE shore of Lake Bolshoe, 60°07'13.9"N, 30°15'01.5"E, young birch-spruce forest with vegetation disturbed by recreation, with barbed wire, 22 IX 2021, *Himelbrant, Stepanchikova Osin-15*; 16 – N shore of Lake Bolshoe, 60°07'11.6"N, 30°14'42.8"E, young pine forest with birch and with spruce undergrowth, with *Sphagnum* spp. and *Vaccinium myrtillus* near the lake, 22 IX 2021, *Himelbrant, Stepanchikova Osin-16*; 17 – *ibid.*, 60°07'05.7"N, 30°14'38.5"E, grassy glade with apple trees, young aspens, and goat willow on the lake shore (recreation place), 22 IX 2021, *Himelbrant, Stepanchikova Osin-17*; 18 – E to Lake Bolshoe, 60°07'03.1"N, 30°14'20.6"E, young spruce-pine forest with mosses and *Vaccinium myrtillus*, with *Sphagnum* spp. in depression, 22 IX 2021, *Himelbrant, Stepanchikova Osin-18*; 19 – peninsula in the S part of Lake Bolshoe, 60°07'01.5"N, 30°14'58.3"E, group of old lindens in recreation place near the lake shore, 22 IX 2021, 7 XI 2021, *Tsurykau, Himelbrant, Stepanchikova Osin-19*; 20 – between lakes Bolshoe and Srednee, 60°06'57.2"N, 30°15'14.2"E, young maple-aspens stand with rowan undergrowth on slope, 22 IX 2021, *Himelbrant, Stepanchikova Osin-20*; 21 – N to the fork of the Vyborgskoe and Priozerskoe highways, 60°06'27.6"N, 30°14'47.5"E, young linden stand with *Aegopodium podagraria* L. on local elevation, 7 X 2021, *Himelbrant, Stepanchikova Osin-21*; 22 – between Lake Maloe and Vyborgskoe Highway, 60°06'38.7"N, 30°14'42.7"E, old linden alley with ashes, 7 X 2021, *Himelbrant, Stepanchikova Osin-22*; 23 – N to Lake Maloe and E to Lake Srednee, 60°06'51.7"N, 30°15'00.4"E, old mixed (linden, oak, elm, maple, larch) stand (remnants of the old park), 7 X 2021, *Himelbrant, Stepanchikova Osin-23*; 24 – S to Lake Bolshoe, 60°06'55.6"N, 30°14'56.3"E, old linden and larch alley, 7 X 2021, *Himelbrant, Stepanchikova Osin-24*; 25 – E to Vyborgskoe Highway in vicinity of Mezhozernaya str., 60°06'47.4"N, 30°14'34.7"E, old linden and maple alley, 31 X 2021, *Himelbrant, Stepanchikova Osin-25*; 26 – between lakes Maloe and Srednee, 60°06'46.9"N, 30°15'06.5"E, old broadleaved alleys and stands, 31 X 2021, 7 XI 2021, *Tsurykau, Himelbrant, Stepanchikova Osin-26*.

Additional collection points. Saint Petersburg, Vyborgsky District, proposed protected area Osinovaya Roscha: a1 – SW shore of Lake Bolshoe, 60°06'57.6"N, 30°14'32.7"E, mossy concrete, rusty iron, and granite stone near the path and lake shore, 22 IX 2021, *Himelbrant, Stepanchikova Osin-ad1*; a2 – S shore of Lake Maloe, 60°06'43.4"N, 30°14'59.6"E, fen posts near the path, 7 X 2021, *Himelbrant, Stepanchikova Osin-ad2*; a3 – E to Vyborgskoe Highway, 60°06'41.7"N, 30°14'44.9"E, broadleaved stand, 31 X 2021, *Himelbrant, Stepanchikova Osin-ad3*; a4 – NW to Lake Maloe, 60°06'47.1"N, 30°14'51.9"E, old broadleaved alley, 31 X 2021, *Himelbrant, Stepanchikova Osin-ad4*; a5 – old manor park, 60°06'42.8"N, 30°15'21.2"E, concrete foundation of Lopukhina manor, 22 X 2013, *Himelbrant, Stepanchikova Osin-941*; a6 – between lakes Bolshoe and Srednee, 60°06'53.4"N, 30°15'05.9"E, old ash near the alley, 22 X 2013, *Himelbrant, Stepanchikova Osin-942*; a7 – NE to Lake Glukhoe, pipeline cut SW to Priozerskoe Highway, 60°07'22.4"N, 30°15'44.8"E, pipeline cut with clayey road, 16 IX 2021, *L. E. Kurbatova T-215*.

Historical locality Osinovaya Roscha (formerly Haapakangas): old historical manor park, [60°07'N, 30°15'E], 1799, *Sobolewski*; VIII 1930, *Kartashova*, *Geyer*, 1995, *Malysheva*.

Results

In the annotated species list presented below the following symbols and abbreviations are used: # — lichenicolous and algicolous fungi, + — non-lichenized saprobic fungi, * — species new to St. Petersburg, ^R — species protected by the Red Data Book of St. Petersburg (*Krasnaya...*, 2018b), ^s — habitat specialist and ⁱ — indicator species (*Vyavlenie...*, 2009), † — species known from historical data only (1799–1995), LR — Leningrad Region, ELR — Eastern Leningrad Region, WLR — Western Leningrad Region, SPb — St. Petersburg. The frequency of occurrence for the species collected in 2013 and 2021 and is indicated in square brackets: [R1] “rare — single record” — the species was found once, [R] “rare” — recorded in 2–5 standard sample plots or more than in one additional plot, [O] “occasionally” — 6–10 standard sample plots, [F] “frequent” — 11–15, [C] “common” — 16–20, and [VC] “very common” — 21–26. Lichen substances are given for HPTLC-analyzed specimens. For the species already reported from the Osinovaya Roscha (*Sobolewski*, 1799, 1802; *Malysheva*, 2001, 2003), the references are given. For the species not known before from the SPb and LR information on presence in Baltic and Scandinavian countries, as well as in North-West European Russia is provided.

Absconditella lignicola Vězda et Pišút — on wood of conifers; 8, 13, 15 [R].

Acarospora glaucocarpa (Ach.) Körb. — on concrete; a5 [R1]; H.

A. moenium (Vain.) Räsänen — on concrete; 15 [R1].

^{R, s}***Acrocordia cavata*** (Ach.) R. C. Harris — on bark of *Populus tremula*; 4, 20 [R].

Alyxoria varia (Pers.) Ertz et Tehler — on bark of *Fraxinus excelsior*, *Tilia* sp., *Ulmus* sp.; 23, 26 [R].

Amandinea punctata (Hoffm.) Coppins et Scheid. — on bark of *Acer platanoides*, *Fraxinus excelsior*, *Malus domestica* Borkh., *Quercus robur*, *Tilia* sp., *Ulmus* sp., wood; 3, 11, 17, 19, 23, 25, 26 [O]. On bark of *Fraxinus excelsior* and *Betula* sp., *Kartashova*, LE (sub *Lepra amara*).

Anisomeridium polypori (Ellis et Everh.) M. E. Barr — on bark of *Acer platanoides*, *Fraxinus excelsior*, *Populus tremula*, *Salix caprea* L., *Tilia cordata*, *Ulmus* sp.; 2, 3, 17, 20, 22, 23, 25 [O].

Arthonia apatetica (A. Massal.) Th. Fr. — on bark of *Acer platanoides*, *Fraxinus excelsior*, *Quercus robur*, *Tilia* sp.; 2, 3, 10, 23, 26 [R].

#*A. biatoricola* Ihlen et Owe-Larss. — on thallus of *Biatora efflorescens* on bark of *Acer platanoides*; 20 [R1].

^{R, i}***A. helvola*** (Nyl.) Nyl. — on bark of old *Quercus robur*; 23 [R1].

A. mediella Nyl. — on bark of *Tilia* sp.; 26 [R1].

A. punctiformis Ach. — on bark of *Betula* sp., *Quercus robur*, *Tilia* sp.; 8, 10, 15, 21, 23 [R].

A. ruana A. Massal. — on bark of *Acer platanoides*; 3 [R1].

^{*i}***A. vinosa*** Leight. — on bark of old *Quercus robur*; 23 [R1]. Previously known from ELR and WLR (*Stepanchikova et al.*, 2010; *Himmelbrant et al.*, 2018).

Athallia pyracea (Ach.) Arup et al. — on bark of *Betula* sp., *Fraxinus excelsior*, *Populus tremula*; 3, 14, 17, 26 [R].

#**Athelia arachnoidea** (Berk.) Jülich — on thalli of *Melanelixia glabratula* and *Physcia* spp. on bark of *Acer platanoides* and *Tilia* sp., on colonies of *Trentepohlia* sp. on bark of *Picea abies* and on epiphytic mosses; 4, 7, 16, 20, 25, 26 [O].

Bacidia arceutina (Ach.) Arnold — on bark of *Sorbus aucuparia*; 20 [R1].

Bacidina chlorotricula (Nyl.) Vězda et Poelt — on bark of *Acer platanoides*, *Tilia* sp., on granite and plastic; 3, 15, 19, 21, 22, a1 [R].

B. modesta (Zwackh ex Vain.) S. Ekman — on bark of *Tilia* sp.; 25 [R1].

B. neosquamulosa (Aptroot et Herk) S. Ekman — on bark of *Acer platanoides*, *Salix caprea*; 10, 17, 25 [R].

Baeomyces carneus Flörke — on sandy soil; 9 [R1].

B. rufus (Huds.) Rebert. — on sandy soil; 8, 9 [R].

Biatora efflorescens (Hedl.) Räsänen — on bark of *Acer platanoides*, *Betula* sp., *Populus tremula*, *Quercus robur*, *Salix caprea*, *Sorbus aucuparia*, *Tilia* sp.; 2, 3, 7, 15–17, 19, 20, 23–26 [F]. On bark of *Alnus incana* and *Sorbus aucuparia*, VIII 1930, *Kartashova*, LE (sub *Buellia griseovirens* and *Lepora amara*). Thalli contain argopsin and norargopsin.

B. globulosa (Flörke) Fr. — on bark of *Acer platanoides*, *Fraxinus excelsior*, *Tilia* sp.; 3, 20, 23, 25, 26 [R].

B. helvola Körb. ex Hellb. — on bark of *Acer platanoides*, *Fraxinus excelsior*; 20, 26 [R].

B. ocelliformis (Nyl.) Arnold — on bark of *Acer platanoides*, *Quercus robur*, *Salix caprea*, *Tilia* sp.; 2, 17, 20, 23 [R].

Bryoria fuscescens (Gyeln.) Brodo et D. Hawksw. — on bark of *Tilia* sp. and on wood; 11, 19 [R]. On bark and stones in shady forest (Sobolewski, 1799, as *Lichen jubatus* and *L. chalybeiformis*).

Buellia griseovirens (Turner et Borrer ex Sm.) Almb. — on bark of *Acer platanoides*, *Betula* sp., *Malus domestica*, *Populus tremula*, *Quercus robur*, *Sorbus aucuparia*, *Tilia* sp.; 2, 4–6, 13–17, 19, 20, 22, 23, 26 [F]. On bark of *Alnus incana*, VIII 1930, *Kartashova*, LE. Thalli contain atranorin and norstictic acid.

B. schaereri De Not. — on bark of *Betula* sp.; 14 [R1].

Calicium glaucellum Ach. — on wood of conifers; 12, 13 [R].

C. trabinellum (Ach.) Ach. — on wood; 11–13 [R].

^R**C. viride** Pers. — on bark of old *Larix* sp., *Quercus robur*, *Tilia* sp., *Ulmus* sp.; 19, 23, 24, a5 [R].

***Caloplaca ahtii** Söchting — on bark of *Populus tremula*; 4 [R1]. Previously known from ELR (Kuznetsova et al., 2007).

C. cerina (Hedw.) Th. Fr. — on bark of *Fraxinus excelsior*, *Populus tremula*; 17, 22 [R].

C. obscurella (J. Lahm ex Körb.) Th. Fr. — on bark of old *Tilia* sp.; 26 [R1].

Candelariella aurella (Hoffm.) Zahlbr. — on bark of *Populus tremula*, on concrete; 15, 17 [R].

C. efflorescens R. C. Harris et W. R. Buck — on bark of *Acer platanoides*, *Alnus incana*, *Fraxinus excelsior*, *Populus tremula*, *Sorbus aucuparia*, *Tilia* sp., on iron; 4, 10, 15, 19, 20, 22, 25, 26, a4 [O]. On bark of old *Betula* sp., 9 VIII 1930, *Kartashova*, *Geyer*, LE (sub *Xanthoria parietina*).

C. lutella (Vain.) Räsänen — on bark of *Malus domestica*, *Populus tremula*; 17 [R1].

C. vitellina (Hoffm.) Müll. Arg. — on bark of *Malus domestica*, *Populus tremula*, *Tilia* sp.; 15, 17, 21 [R]. On bark of *Acer platanoides* (Malysheva, 2001, 2003).

C. xanthostigma (Ach.) Lettau — on bark of *Fraxinus excelsior*, *Populus tremula*, *Salix caprea*, *Tilia* sp.; 4, 17, 25, 26 [R].

Catillaria nigroclavata (Nyl.) Schuler — on bark of *Acer platanoides*, *Malus domestica*, *Populus tremula*, *Sorbus aucuparia*, *Tilia* sp., and on iron; 10, 15, 17, 19, 23, a4 [R].

Catinaria atropurpurea (Schaer.) Vězda et Poelt — on bark of *Acer platanoides*, *Salix caprea*; 17, 20 [R].

Cetraria islandica (L.) Ach. subsp. **islandica** — on wood and on sandy soil; 9, 11 [R]. On soil (Sobolewski, 1799, 1802, as *Lichen islandicus*).

C. sepincola (Ehrh.) Ach. — on bark of *Betula* sp., *Larix* sp., *Pinus sylvestris*, *Tilia* sp., on wood; 5, 10–12, 14, 23, 25, 26 [O]. On bark of *Quercus robur* and on wooden fence (Malysheva, 2001, 2003).

^{R,i}**Chaenotheca brachypoda** (Ach.) Tibell — on bark of *Fraxinus excelsior* (in deep crevices), on wood of *Betula* sp. and conifers; 6, a6 [R].

C. chrysocephala (Turner ex Ach.) Th. Fr. — on bark of *Picea abies*; 3 [R1].

C. ferruginea (Turner ex Sm.) Mig. — on bark of *Betula* sp., *Larix* sp., *Picea abies*, *Pinus sylvestris*, *Quercus robur*, *Tilia* sp., on wood of conifers; 3, 6, 7, 12, 15, 16, 23–26 [O]. On bark of *Picea abies* (Malysheva, 2001).

C. furfuracea (L.) Tibell — on bark of old *Quercus robur* (in deep crevices), and on upturned roots; 8, 26 [R].

^{R,i}**C. hispidula** (Ach.) Zahlbr. — on bark of old *Quercus robur* (in deep crevices); 23 [R1].

C. trichialis (Ach.) Th. Fr. — on bark of *Larix* sp., *Picea abies*, *Quercus robur*, *Tilia* sp., on wood and mosses; 3, 6, 7, 9, 12, 16, 17, 23–26 [F].

+**Chaenothecopsis pusilla** (Ach.) A. F. W. Schmidt — on dead *Polytrichum* sp. under upturned roots; 9 [R1].

#ⁱ**C. pusiola** (Ach.) Vain. — on thalli of *Chaenotheca trichialis* on standing deadwood of *Betula* sp. and on stump of *Pinus sylvestris*; 6, 12 [R].

Cladonia arbuscula (Wallr.) Flot. subsp. **arbuscula** — on wood and peat; 9, 11 [R].

C. bacilliformis (Nyl.) Sarnth. — on bark and wood of *Pinus sylvestris*; 11–13 [R].

C. botrytes (K. G. Hagen) Willd. — on wood of conifers; 11 [R1].

C. caespiticia (Pers.) Flörke — on bark of *Betula* sp.; 13 [R1].

C. cariosa (Ach.) Spreng. — on disturbed soil; 11 [R1].

C. cenotea (Ach.) Schaer. — on bark of *Betula* sp., *Picea abies*, *Pinus sylvestris*, *Quercus robur*, on wood and soil; 1, 2, 5–7, 11–13 [O].

C. chlorophaea (Flörke ex Sommerf.) Spreng. s. str. — on bark of *Betula* sp., *Pinus sylvestris*, *Tilia* sp.; 8, 26 [R]. Thalli contain fumarprotocetraric acid.

C. coniocraea (Flörke) Spreng. — on bark of *Betula* sp., *Larix* sp., *Picea abies*, *Pinus sylvestris*, *Populus tremula*, *Quercus robur*, *Sorbus aucuparia*, *Tilia* sp., on wood of conifers and on soil; 1, 2, 4–10, 12–16, 18, 19, 24 [C]. On bark of *Betula* sp. and on stump (Malysheva, 2001, 2003).

C. cornuta (L.) Hoffm. subsp. **cornuta** — on wood of conifers, on soil; 9, 11, 12, 14 [R].

C. crispata (Ach.) Flot. var. **crispata** — on wood of conifers; 12 [R1].

†**C. deformis** (L.) Hoffm. — on soil “in ericetis” (Sobolewski, 1799, as *Lichen deformis*).

C. digitata (L.) Hoffm. — on bark of *Betula* sp., *Picea abies*, *Pinus sylvestris*, on wood of conifers; 1, 5, 6, 12, 13, 16, 18 [O].

C. fimbriata (L.) Fr. — on bark of *Betula* sp., *Pinus sylvestris*, *Populus tremula*, *Quercus robur*, on wood and soil; 1, 4–7, 9, 11–14 [O]. On bark of *Betula* sp. (Malysheva, 2001, 2003).

C. furcata (Huds.) Schrad. — on sandy soil; 9 [R1].

C. gracilis (L.) Willd. subsp. **turbinata** (Ach.) Ahti — on bark of *Betula* sp. and on peat; 5, 11 [R]. On soil “in ericetis” (Sobolewski, 1799, as *Lichen gracilis*).

Cladonia grayi G. Merr. ex Sandst. — on bark of *Picea abies*, *Pinus sylvestris*, on wood of conifers, on peat; 1, 11–13 [R]. Thalli contain grayanic and fumarprotocetraric acids.

C. macilenta Hoffm. — on bark of *Betula* sp., *Pinus sylvestris*, on wood; 11–13, 16 [R]. On bark of *Betula* sp. (Malysheva, 2001, 2003).

***C. merochlorophaea** Asahina — on bark of *Betula* sp.; 15 [R1]. Thallus contains merochlorophaeic and fumarprotocetraric acids. Previously known from ELR and WLR (Kuznetsova et al., 2007; Himelbrant et al., 2018).

C. mitis Sandst. — on peat; 11 [R1].

C. ochrochlora Flörke — on bark of *Betula* sp. and on wood of conifers; 1, 5, 12 [R].

C. phyllophora Hoffm. — on peat; 11 [R1].

C. pleurota (Flörke) Schaer. — on wood of conifers; 11, 13 [R].

C. pyxidata (L.) Hoffm. — on sandy soil; 9 [R1].

C. rangiferina (L.) F. H. Wigg. — on wood and sandy soil; 9, 11 [R].

C. rei Schaer. — on wood and peat; 11 [R1].

C. subulata (L.) F. H. Wigg. — on soil and peat; 9, 11 [R].

C. sulphurina (Michx.) Fr. — on sandy soil; 9 [R1].

C. verticillata (Hoffm.) Schaer. — on wood and peat; 9, 11 [R].

#**Clypeococcum hypocenomycis** D. Hawksw. — on thalli of *Hypocenomyce scalaris* on bark of *Betula* sp. and on bark and wood of *Pinus sylvestris*; 5, 6, 12, 13 [R].

Coenogonium pineti (Ach.) Lücking et Lumbsch — on bark of *Betula* sp., *Larix* sp., *Picea abies*, *Pinus sylvestris*, *Populus tremula*, *Quercus robur*, *Tilia* sp., *Vaccinium myrtillus*, and on wood of conifers; 1–3, 5, 6, 8, 15, 16, 18, 22–26 [F].

Cryptodiscus gloeocapsa (Arnold) Baloh et al. — on mossy sand; 9 [R1].

^R**Dictyocatenuata alba** Finley et E. F. Morris — on bark of *Acer platanoides*, *Tilia* sp., *Ulmus* sp.; 22, 25, a3 [R].

*#**Epithamnolia xanthoriae** (Brackel) Diederich et Suija — on thallus of *Hypogymnia physodes* on bark of *Picea abies*; 6 [R1]; GSU. — New to North-Western European Russia. In European Russia, the species is known only from Nenets Autonomous Area (Zhurbenko, 2020). Distribution in Fennoscandia and Baltic countries: not reported. The species in a wide sense is known to occur on different host lichens. It is characterized by superficial, brown, cupuliform conidiomata up to 250 µm in diam., and hyaline, elongate fusiform, distinctly attenuated towards both ends, 0–5(8)-septate, conidia, measuring 40–90 × 2–3 µm (Suija et al., 2018).

#**Erythricium aurantiacum** (Lasch) D. Hawksw. et A. Henrici — on thalli of *Physcia* spp. and *Parmelia sulcata* on bark of *Tilia* sp.; 22, 23, 25, 26 [R]; GSU.

Evernia prunastri (L.) Ach. — on bark of *Malus domestica*, *Tilia* sp.; 2, 17, 26 [R]. On bark of *Quercus robur* and *Populus tremula*, VIII 1930, Kartashova, LE (sub *Lepra amara*).

Fuscidea pusilla Tønsberg — on bark of *Alnus incana*, *Betula* sp., *Ledum palustre* L., *Malus domestica*, *Picea abies*, *Pinus sylvestris*, *Sorbus aucuparia*, *Tilia* sp., on wood; 1, 3, 5, 6, 8, 10–19, 23, 24 [C].

Gyalolechia flavorubescens (Huds.) Sochting et al. — on bark of *Populus tremula*; 17 [R1].

*#**Hawksworthiana peltigericola** (D. Hawksw.) U. Braun — on thallus of *Peltigera* sp. on turf; 11, conf. *P. Diederich* [R1]; GSU. Previously known from ELR and WLR (Kuznetsova et al., 2012; Himelbrant et al., 2018).

#**Heterocephalacria physciacearum** (Diederich et M. S. Christ.) Millanes et Wedin — on thallus of *Physcia tenella* on bark of *Malus domestica* and *Quercus robur*; 17, 26 [R]; GSU.

Hypocomyce scalaris (Ach.) M. Choisy — on bark of *Betula* sp., *Larix* sp., *Picea abies*, *Pinus sylvestris*, *Tilia* sp., on wood; 1–3, 5–7, 11–16, 18, 19, 23–26, a2 [C]. On bark of *Betula* sp., *Larix* sp., and *Quercus robur* (Malysheva, 2001, 2003).

Hypogymnia physodes (L.) Nyl. — on bark of coniferous and deciduous trees, on wood; 1–8, 10–20, 22–26, a2 [VC]. On bark of *Sorbus aucuparia*, *Quercus robur*, and *Populus tremula*, VIII 1930, *Kartashova*, LE (sub *Lepra amara*); on bark of *Acer platanoides*, *Betula* sp., *Malus domestica*, *Quercus robur*, and *Tilia* sp., also on wooden fence (Malysheva, 2001, 2003).

H. tubulosa (Schaer.) Hav. — on bark of coniferous and deciduous trees and on wood; 1–3, 5–7, 10–12, 14, 15, 17–21, 23, 25, 26 [C]. On bark of *Quercus robur* and on wooden fence (Malysheva, 2001, 2003).

#Illosporopsis christiansenii (B. L. Brady et D. Hawksw.) D. Hawksw. — on thalli of *Physcia* spp. on bark of deciduous trees; 3, 15, 17, 26 [R].

Imshaugia aleurites (Ach.) S. L. F. Meyer — on bark of *Pinus sylvestris*; 12, 13 [R].

Japewia subaurifera Muhr et Tønsberg — on bark of *Picea abies*; 1 [R1].

Lecania cyrtella (Ach.) Th. Fr. — on bark of *Acer platanoides*, *Betula* sp., *Fraxinus excelsior*, *Populus tremula*, *Quercus robur*, *Salix caprea*, *Sorbus aucuparia*, *Tilia* sp., and on iron; 2, 7, 10, 14, 17, 20, 22, 23, 25, a4 [O].

L. cyrtellina (Nyl.) Sandst. — on bark of *Acer platanoides*, *Ulmus* sp.; 20, 23 [R].

***L. erysibe** (Ach.) Mudd — on iron; a4 [R1]. Previously known from WLR (Stepanchikova et al., 2017).

L. naegelii (Hepp) Diederich et van den Boom — on bark of *Acer platanoides*, *Betula* sp., *Fraxinus excelsior*, *Malus domestica*, *Populus tremula*, *Salix caprea*, *Sorbus aucuparia*, *Tilia* sp., and on iron; 3, 4, 10, 14, 15, 17, 20–23, 25, 26, a4 [F].

L. sylvestris (Arnold) Arnold — on concrete; 15 [R1].

Lecanora aitema (Ach.) Hepp — on bark of *Betula* sp., *Larix* sp., *Pinus sylvestris*, *Tilia* sp., on wood of conifers; 2, 12, 13, 16, 21, 23, a2 [O].

L. albellula (Nyl.) Th. Fr. var. **albellula** — on bark of *Acer platanoides*, *Betula* sp., *Salix caprea*, *Tilia* sp., on wood; 11, 14, 17, 19, 25, 26, a2 [O]. On bark of old *Betula* sp., 9 VIII 1930, *Kartashova*, *Geyer*, LE (sub *Xanthoria parietina*).

L. allophana Nyl. — on bark of *Populus tremula*; 4, 17 [R].

L. carpinea (L.) Vain. — on bark of *Acer platanoides*, *Fraxinus excelsior*, *Larix* sp., *Malus domestica*, *Populus tremula*, *Quercus robur*, *Sorbus aucuparia*, *Tilia* sp., on wood of conifers; 3, 7, 10, 15, 17, 20–23, 25, 26, a2 [F]. On bark of *Fraxinus excelsior*, 9 VII 1930, *Kartashova*, LE (sub *Lepra amara*).

L. chlarotera Nyl. — on bark of *Acer platanoides*, *Fraxinus excelsior*, *Malus domestica*, *Populus tremula*, *Prunus padus*, *Quercus robur*, *Salix caprea*, *Sorbus aucuparia*, *Tilia* sp.; 2, 3, 7, 10, 15, 17, 19, 20, 22–24, 26 [F].

L. hypoptella (Nyl.) Grummann — on bark of *Betula* sp., *Pinus sylvestris*; 12, 14 [R].

L. polytropa (Ehrh. ex Hoffm.) Rabenh. — on wood lying on sandy road; 11 [R1].

L. pulicaris (Pers.) Ach. — on bark of *Acer platanoides*, *Alnus incana*, *Betula* sp., *Larix* sp., *Picea abies*, *Pinus sylvestris*, *Quercus robur*, *Sorbus aucuparia*, *Tilia* sp., on wood of conifers; 1–3, 5–8, 10, 12–16, 18–21, 23–26, a2 [VC]. On bark of *Sorbus aucuparia*, VII 1930, *Kartashova* LE s. n. (sub *Lepra amara*).

L. saligna (Schrad.) Zahlbr. — on wooden fence post; a2 [R1].

L. symmicta (Ach.) Ach. — on bark of coniferous and deciduous trees, on wood; 2, 4, 6, 8, 10–15, 17, 19, 20, 22–25, a2 [C].

Lecanora umbrina (Ach.) A. Massal. — on bark of *Acer platanoides*, *Betula* sp., *Fraxinus excelsior*, *Larix* sp., *Malus domestica*, *Populus tremula*, *Quercus robur*, *Salix caprea*, *Sorbus aucuparia*, *Tilia* sp., and on iron; 3, 7, 10, 14, 15, 17, 21–26, a4 [F].

L. varia (Hoffm.) Ach. — on bark of *Acer platanoides*, *Betula* sp., *Picea abies*, *Pinus sylvestris*, *Tilia* sp.; 8, 16, 25, 26 [R].

Lecidea erythrophaea Flörke ex Sommerf. — on bark of *Populus tremula*; 20 [R1].

L. nylanderi (Anzi) Th. Fr. — on bark of *Betula* sp., *Picea abies*, *Pinus sylvestris*; 5, 6, 12, 13, 16 [R].

L. turgidula Fr. — on bark of *Pinus sylvestris*; 12 [R1].

Lecidella elaeochroma (Ach.) M. Choisy — on bark of *Acer platanoides*, *Fraxinus excelsior*, *Populus tremula*, *Salix caprea*, *Sorbus aucuparia*; 3, 4, 7, 17, 20, 23 [O].

L. euphorea (Flörke) Hertel — on bark of *Populus tremula*, on wood; 11, 17 [R].

L. flavosorediata (Vězda) Hertel et Leuckert — on bark of *Sorbus aucuparia*; 15 [R1]. Thallus contains arthothelin and granulysin.

L. stigmathea (Ach.) Hertel et Leuckert — on granite; a1 [R1].

Lepra albescens (Huds.) Hafellner var. **albescens** — on bark of *Tilia* sp.; 19, 24 [R]. On bark of *Tilia* sp. [Malysheva, 2001, 2003, as *Pertusaria albescens* (Huds.) M. Choisy et Werner].

L. amara (Ach.) Hafellner — on bark of *Tilia* sp. and *Ulmus* sp.; 23, 24, 26 [R]. On bark of *Acer platanoides*, *Betula* sp., *Fraxinus excelsior*, *Populus tremula*, *Quercus robur*, and *Sorbus aucuparia*, VIII 1930, *Kartashova*, LE s. n.; on bark of *Acer platanoides* [Malysheva, 2001, 2003, as *Pertusaria amara* (Ach.) Nyl.].

Lepraria elobata Tønsberg — on bark of *Acer platanoides*, *Alnus incana*, *Betula* sp., *Picea abies*, *Pinus sylvestris*, *Populus tremula*, *Quercus robur*, *Salix caprea*, *Sorbus aucuparia*, *Tilia* sp., on wood of conifers, sandy soil, and upturned roots; 1–4, 6, 8–10, 12–22, 26 [C]. On bark of *Sorbus aucuparia*, VIII 1930, *Kartashova*, LE (sub *Lepra amara*).

L. finkii (B. de Lesd.) R. C. Harris — on bark of *Betula* sp., *Fraxinus excelsior*, *Picea abies*, *Pinus sylvestris*, *Sorbus aucuparia*, *Tilia* sp., on wood of conifers and on soil; 1, 5, 6, 8, 15, 16, 18, 20, 22, 25, 26 [F].

L. incana (L.) Ach. — on bark of *Alnus incana*, *Betula* sp., *Fraxinus excelsior*, *Larix* sp., *Picea abies*, *Pinus sylvestris*, *Quercus robur*, *Salix caprea*, *Sorbus aucuparia*, *Tilia* sp., *Ulmus* sp., on wood of conifers; 1–3, 5–8, 10, 12, 14–19, 21–26 [VC]. On bark of *Acer platanoides* (Malysheva, 2001, 2003).

L. jackii Tønsberg — on bark of *Betula* sp., *Picea abies*, *Pinus sylvestris*, and on sandy soil; 1, 9, 16, 18 [R]. Thalli contain atranorin, roccellic/angardianic, jackinic/rangiformic, and norjackinic/norrangiformic acids.

Leptorhaphis atomaria (Ach.) Szatala — on bark of *Populus tremula*; 4, 15, 17, 20 [R].

+**L. epidermidis** (Ach.) Th. Fr. — on bark of *Betula* sp.; 5, 12–16 [O].

#**Licea parasitica** (Zukal) G. W. Martin — on thallus of *Micarea* sp. on bark of *Picea abies* and on thalli of crustose lichens on bark of *Acer platanoides*; 15, 25 [R].

#**Lichenocodium erodens** M. S. Christ. et D. Hawksw. — on thalli of *Hypogymnia physodes*, *H. tubulosa*, and *Parmelia sulcata*, also on apothecia of *Lecanora pulicaris* on bark of deciduous and coniferous trees; 6, 19, 26 [R]; GSU.

#**Lichenocodium lecanorae** (Jaap) D. Hawksw. — on thallus of *Cladonia coniocraea* on bark of *Betula* sp. and on thallus of *Melanohalea exasperata* on branch of *Fraxinus excelsior*; 19, 26 [R]; GSU.

Lichenomphalia umbellifera (L.) Redhead et al. — on peat; 11 [R1].

Melanelixia glabrata (Lamy) Sandler et Arup — on bark of *Acer platanoides*, *Alnus incana*, *Fraxinus excelsior*, *Populus tremula*, *Quercus robur*, *Sorbus aucuparia*, *Tilia* sp.; 3, 4, 10, 20, 23, 26 [O].

M. subaurifera (Nyl.) O. Blanco et al. — on bark of *Acer platanoides*, *Alnus incana*, *Betula* sp., *Larix* sp., *Malus domestica*, *Picea abies*, *Quercus robur*, *Sorbus aucuparia*, *Tilia* sp., on wood of conifers; 2, 5, 6, 8, 10, 15, 17, 19–21, 23, 24, a2 [F]. On bark of *Sorbus aucuparia*, VIII 1930, *Kartashova*, LE (sub *Lepra amara*); on bark of *Acer platanoides* [Malysheva, 2001, 2003, as *Melanelia subaurifera* (Nyl.) Essl.].

Melanohalea exasperata (De Not.) O. Blanco et al. — on bark of *Fraxinus excelsior*, *Larix* sp., *Tilia* sp.; 3, 7, 21, 22, 26 [R].

M. exasperatula (Nyl.) O. Blanco et al. — on bark of *Acer platanoides*, *Fraxinus excelsior*, *Larix* sp., *Malus domestica*, *Picea abies*, *Quercus robur*, *Salix caprea*, *Tilia* sp.; 2, 3, 6, 7, 15, 17, 19, 22, 23, 25, 26 [F]. On bark of *Sorbus aucuparia*, VIII 1930, *Kartashova*, LE (sub *Lepra amara*); on bark of *Acer platanoides*, *Tilia* sp., and on wooden fence [Malysheva, 2001, 2003, as *Melanelia exasperatula* (Nyl.) Essl.].

M. olivacea (L.) O. Blanco et al. — on bark of *Acer platanoides*, *Alnus incana*, *Betula* sp., *Malus domestica*, *Picea abies*, *Sorbus aucuparia*, *Tilia* sp.; 5, 8, 10, 15, 17, 20–22, 25, 26 [O].

M. septentrionalis (Lynge) O. Blanco et al. — on branches of *Tilia* sp.; 2, 26 [R].

Micarea byssacea (Th. Fr.) Czarnota et al. — on bark of *Betula* sp., *Picea abies*, on wood of conifers; 1, 15 [R].

M. denigrata (Fr.) Hedl. — on bark of *Pinus sylvestris* and on wood of conifers; 16, a2 [R].

M. melaena (Nyl.) Hedl. — on bark of *Pinus sylvestris* and on wood of conifers; 1, 7, 13 [R].

M. microareolata Launis et al. — on bark of *Picea abies*, *Pinus sylvestris*, *Tilia* sp., on wood of conifers; 1, 2, 8, 18 [R].

M. micrococca (Körb.) Gams ex Coppins — on bark of *Pinus sylvestris*; 8 [R1]. Thallus contains methoxymicareic acid.

M. misella (Nyl.) Hedl. — on wood of *Pinus sylvestris* (branches); 12 [R1].

M. nitschkeana (J. Lahm ex Rabenh.) Harm. — on bark and wood (branches) of *Pinus sylvestris*; 6, 12 [R].

M. pusilla Launis et al. — on bark of *Betula* sp., *Picea abies*, *Pinus sylvestris*; 6, 15, 16 [R].

M. turfosa (A. Massal.) Du Rietz — on dead *Sphagnum* sp.; 13 [R1].

Mycobilimbia epixanthoides (Nyl.) Vitik. et al. — on mosses on bark of *Malus domestica*; 17 [R1].

+**Mycocalicium subtile** (Pers.) Szatala — on wood of *Pinus sylvestris* and rarely *Populus tremula*; 6, 13, 16, 17, a2 [R].

†**Myriolecis crenulata** (Hook.) Śliwa et al. — on concrete (Malysheva, 2001, 2003, as *Lecanora crenulata* Hook).

M. dispersa (Pers.) Śliwa et al. — on concrete; 15 [R1]. On concrete [Malysheva, 2001, 2003, as *Lecanora dispersa* (Pers.) Sommerf.].

M. hagenii (Ach.) Śliwa et al. — on bark of *Fraxinus excelsior*, *Populus tremula*, *Tilia* sp.; 3, 17, 21, 26 [R]. On bark of *Quercus robur* and on stump [Malysheva, 2001, 2003, as *Lecanora hagenii* (Ach.) Ach.].

M. semipallida (H. Magn.) Śliwa et al. — on concrete; 15 [R1].

Naetrocymbe punctiformis (Pers.) R. C. Harris — on bark of *Fraxinus excelsior*, *Quercus robur*; 23, 26 [R].

†**Ochrolechia pallescens** (L.) A. Massal. — on bark (Sobolewski, 1799, 1802, as *Lichen pallescens*).

Pachyphiale fagicola (Hepp) Zwackh — on bark of *Acer platanoides*, *Salix caprea*; 17, 25 [R]. On bark of *Betula* sp., VIII 1930, *Kartashova*, LE (sub *Lepra amara*).

Palicella filamentosa (Stirt.) Rodr. Flakus et Printzen — on wood of *Pinus sylvestris* (branches); 12 [R1].

Parmelia sulcata Taylor — on bark of coniferous and deciduous trees, on wood of conifers; 2–8, 10, 12–17, 19–26, a2 [VC]. On bark of *Populus tremula* and *Quercus robur*, VIII 1930, *Kartashova*, LE (sub *Lepra amara*); on bark of *Acer platanoides*, *Betula* sp., *Malus doestica*, *Tilia* sp., and on stump (Malysheva, 2001, 2003).

Parmeliopsis ambigua (Wulfen) Nyl. — on bark of *Betula* sp., *Larix* sp., *Ledum palustre*, *Pinus sylvestris*, *Populus tremula*, *Quercus robur*, *Tilia* sp., on wood; 1, 2, 4–8, 10–14, 16, 18, 19, 24, a2 [C]. On bark of *Sorbus aucuparia* and *Quercus robur*, VIII 1930, *Kartashova*, LE (sub *Lepra amara*); on bark of *Betula* sp. and *Tilia* sp. (Malysheva, 2001, 2003).

P. hyperopta (Ach.) Arnold — on bark of *Betula* sp., *Pinus sylvestris*; 5, 8, 12, 13 [R].

Peltigera canina (L.) Willd. — on wood (log); 11 [R1].

P. didactyla (With.) J. R. Laundon — on peat; 11 [R1].

P. praetextata (Flörke ex Sommerf.) Zopf — on bark of *Tilia* sp., on soil and mosses; 4, 14, 23 [R].

P. rufescens (Weiss) Humb. — on clay soil; a7 [R1].

^{R, i} †**Pertusaria coccodes** (Ach.) Nyl. — on bark of *Sorbus aucuparia* and *Quercus robur*, VIII 1930, *Kartashova*, LE (sub *Lepra amara*).

+**Phaeocalicium polyporaеum** (Nyl.) Tibell — on fruit bodies of *Trichaptum bifforme* (Fr.) Ryvarden, growing on *Betula* sp.; 13 [R1].

Phaeophyscia ciliata (Hoffm.) Moberg — on bark of *Populus tremula*; 17 [R1].

P. nigricans (Flörke) Moberg — on bark of *Acer platanoides*, *Alnus incana*, *Fraxinus excelsior*, *Populus tremula*, *Sorbus aucuparia*, and on concrete; 3, 7, 10, 15, 17, 22, 25 [O].

P. orbicularis (Neck.) Moberg — on bark of *Acer platanoides*, *Fraxinus excelsior*, *Malus domestica*, *Populus tremula*, *Salix caprea*, *Sorbus aucuparia*, *Tilia* sp., *Ulmus* sp., and on iron; 3, 10, 15, 17, 19, 21–23, 25, 26, a4 [O]. On bark of old *Betula* sp., 9 VIII 1930, *Kartashova*, Geyer, LE (sub *Xanthoria parietina*); on bark of *Fraxinus excelsior* and on concrete (Malysheva, 2001, 2003).

Phlyctis argena (Spreng.) Flot. — on bark of *Acer platanoides*, *Alnus incana*, *Fraxinus excelsior*, *Malus domestica*, *Populus tremula*, *Quercus robur*, *Sorbus aucuparia*, *Tilia* sp., *Ulmus* sp.; 2–4, 10, 15, 17, 19, 20, 22–26 [F]. On bark of *Betula* sp., *Fraxinus excelsior*, and *Sorbus aucuparia*, VIII 1930, *Kartashova*, LE (sub *Lepra amara*); on bark of *Tilia* sp. (Malysheva, 2001, 2003).

Physcia adscendens H. Olivier — on bark of *Acer platanoides*, *Fraxinus excelsior*, *Malus domestica*, *Populus tremula*, *Prunus padus*, *Salix caprea*, *Sorbus aucuparia*, *Tilia* sp., and on iron; 3, 10, 15, 17, 20–22, 25, 26, a4 [O].

P. aipolia (Ehrh. ex Humb.) Fűrnr. — on bark of *Acer platanoides*, *Fraxinus excelsior*, *Larix* sp., *Malus domestica*, *Populus tremula*, *Quercus robur*, *Tilia* sp.; 2, 3, 7, 17, 21–23, 25, 26 [O].

P. alnophila (Vain.) Loht. et al. — on bark of *Fraxinus excelsior*, *Malus domestica*, *Tilia* sp.; 3, 17, 25, 26 [R].

P. dubia (Hoffm.) Lettau — on bark of *Acer platanoides*, *Betula* sp., *Fraxinus excelsior*, *Larix* sp., *Picea abies*, *Quercus robur*, *Tilia* sp.; 3, 15, 19, 25, 26 [R]. On bark of *Fraxinus excelsior* and *Populus tremula*, VIII 1930, *Kartashova*, LE (sub *Lepra amara*); on bark of *Acer platanoides* and *Fraxinus excelsior* (Malysheva, 2001, 2003).

P. stellaris (L.) Nyl. — on bark of *Fraxinus excelsior*, *Larix* sp., *Populus tremula*, *Quercus robur*, *Tilia* sp.; 3, 17, 21–23 [R].

P. tenella (Scop.) DC. — on bark of *Acer platanoides*, *Alnus incana*, *Fraxinus excelsior*, *Larix* sp., *Malus domestica*, *Picea abies*, *Populus tremula*, *Prunus padus*, *Quercus robur*, *Salix caprea*, *Sorbus aucuparia*, *Tilia* sp., and on iron; 2, 3, 7, 8, 10, 15, 17, 19–26, a4 [F]. On bark of old *Betula* sp., 9 VIII 1930, *Kartashova*, *Geyer*, LE (sub *Xanthoria parietina*); on bark of *Acer platanoides* and *Fraxinus excelsior* (Malysheva, 2001, 2003).

Physconia detersa (Nyl.) Poelt — on bark of *Fraxinus excelsior*, *Tilia* sp.; 23, 26 [R].

P. distorta (With.) J. R. Laundon — on bark of *Populus tremula*, *Tilia* sp.; 17, 23 [R]. On bark of *Betula* sp. and *Quercus robur*, VIII 1930, *Kartashova*, LE (sub *Lepra amara*).

P. enteroxantha (Nyl.) Poelt — on bark of *Fraxinus excelsior*, *Quercus robur*, *Tilia* sp.; 19, 23, 26 [R].

Piccolia ochrophora (Nyl.) Hafellner — on bark of *Acer platanoides* (branch); 25 [R1].

Placynthiella dasaea (Stirt.) Tønsberg — on bark of *Betula* sp., on wood of conifers and on soil; 1, 5, 6, 8, 12, 14–16, a2 [O].

P. icmalea (Ach.) Coppins et P. James — on bark of *Acer platanoides*, *Betula* sp., on wood and soil; 5, 8, 9, 11, 12, 14, 15, 20 [O].

P. oligotropha (J. R. Laundon) Coppins et P. James — on peat; 11 [R1].

P. uliginosa (Schrad.) Coppins et P. James — on wood and soil; 9, 11, 12, 14 [R].

Platismatia glauca (L.) W. L. Culb. et C. F. Culb. — on bark of *Betula* sp., *Malus domestica*, *Picea abies*, *Tilia* sp., on wood of conifers; 1, 2, 6, 10, 12, 17, 19 [O].

Polycauliona candelaria (L.) Frödén et al. — on bark of *Fraxinus excelsior*, *Quercus robur*, *Tilia* sp.; 25, 26 [R].

P. polycarpa (Hoffm.) Frödén et al. — on bark of *Acer platanoides*, *Betula* sp., *Fraxinus excelsior*, *Larix* sp., *Malus domestica*, *Picea abies*, *Populus tremula*, *Prunus padus*, *Quercus robur*, *Salix caprea*, *Sorbus aucuparia*, *Tilia* sp., on wood of conifers and on iron; 2, 3, 7, 10, 14, 15, 17, 19, 21–26, a2, a4 [F]. On bark of *Fraxinus excelsior*, VIII 1930, *Kartashova*, LE (sub *Lepra amara*); on bark of *Quercus robur* [Malysheva, 2001, 2003, as *Xanthoria polycarpa* (Hoffm.) Th. Fr. ex Rieber].

Pseudevernia furfuracea (L.) Zopf — on bark of *Pinus sylvestris*, *Tilia* sp.; 12, 26 [R]. On bark of *Sorbus aucuparia* and *Quercus robur*, VIII 1930, *Kartashova*, LE (sub *Lepra amara*).

Pseudosagedia aenea (Wallr.) Hafellner et Kalb. — on bark of *Acer platanoides*; 10 [R1].

Pseudoschismatomma rufescens (Pers.) Ertz et Tehler — on bark of *Fraxinus excelsior*, *Populus tremula*, *Ulmus* sp.; 4, 22, 23, 26 [R].

Psilolechia clavulifera (Nyl.) Coppins — on bark of *Pinus sylvestris*; 8 [R1].

P. lucida (Ach.) M. Choisy — on bark of *Larix* sp., *Picea abies*; 3, 7 [R].

Pycnora sorophora (Vain.) Hafellner — on bark of *Betula* sp., *Pinus sylvestris*; 12–14, 16 [R].

Ramalina farinacea (L.) Ach. — on bark of *Acer platanoides*, *Malus domestica*, *Quercus robur*, *Salix caprea*, *Sorbus aucuparia*, *Tilia* sp.; 2, 10, 15, 17, 20, 23, 25, 26 [O].

†**R. fraxinea** (L.) Ach. — on bark of trees (Sobolewski, 1799, as *Lichen fraxineus*); on bark of *Acer platanoides* (Malysheva, 2001, 2003).

***Rinodina pityrea** Ropin et H. Mayrhofer — on bark of *Populus tremula*; 4 [R1]. No lichen substances detected by HPTLC. Soralia contain *Sedifolia*-gray. Previously known from ELR (Kuznetsova et al., 2007).

R. pyrina (Ach.) Arnold — on bark of *Fraxinus excelsior*, *Tilia* sp.; 3, 21, 23, 26 [R].

R. septentrionalis Malme — on bark of *Betula* sp., *Larix* sp., *Populus tremula*, *Salix caprea*, *Tilia* sp.; 2, 17, 21–23 [R].

R. subparieta (Nyl.) Zahlbr. — on bark of old *Quercus robur* and *Tilia* sp.; 23, 26 [R].

Ropalospora viridis (Tønsberg) Tønsberg — on bark of *Acer platanoides*, *Alnus incana*, *Fraxinus excelsior*, *Populus tremula*, *Quercus robur*, *Salix caprea*, *Sorbus aucuparia*, *Tilia* sp.; 4, 8, 10, 15, 17, 19, 20, 22–24 [O].

*#**Roselliniella cladoniae** (Anzi) Matzer et Hafellner — on thallus of *Cladonia fimbriata* on soil; 13 [R1]; GSU. Previously known from WLR (Stepanchikova et al., 2017).

+**Sarea difformis** (Fr.) Fr. — on resin of *Picea abies* and *Pinus sylvestris*; 8, 14–16, 24 [R].

+**Sarea resiniae** (Fr.) Kuntze — on resin of *Picea abies*; 1, 8, 18 [R].

Scoliciosporum chlorococcum (Graewe ex Stenh.) Vězda — on bark of *Betula* sp., *Fraxinus excelsior*, *Pinus sylvestris*, on wood of conifers; 3, 5, 13, 16, 22 [R]. On bark of *Sorbus aucuparia*, VIII 1930, *Kartashova*, LE (sub *Lepra amara*); on bark of *Betula* sp., *Fraxinus excelsior*, *Malus domestica*, *Quercus robur*, and *Tilia* sp. (Malysheva, 2001, 2003).

S. sarothamni (Vain.) Vězda — on bark of coniferous and deciduous trees, on wood of conifers; 1–3, 5–8, 10, 12–19, 21–26 [VC].

S. umbrinum (Ach.) Arnold — on iron; a4 [R1].

^R**Scytinium subtile** (Schrad.) Otálora et al. — on concrete and primary soil on old manor basement; a5 [R1]; H (Krasnaya..., 2018b).

+**Stenocybe pullatula** (Ach.) Stein — on bark of *Alnus incana*; 10 [R1].

Strangospora deplanata (Almq.) Clauzade et Cl. Roux — on bark of *Pinus sylvestris*; 16 [R1].

S. moriformis (Ach.) Stein — on bark of *Betula* sp. and *Pinus sylvestris*; 5, 12, 13 [R].

S. pinicola (A. Massal.) Körb. — on wood of fence post; a2 [R1].

*#**Taeniolina scripta** (P. Karst.) P. M. Kirk — on thallus of *Lepraria incana* on bark of old *Tilia* sp.; 26 [R1]; GSU. Previously known from LR as saprobic on decaying wood of *Alnus incana* and on bark of *Betula pubescens* Ehrh. (Melnik, 2000).

Thelenella pertusariella (Nyl.) Vain. — on bark of *Acer platanoides*, *Salix caprea*, *Ulmus* sp., and on iron; 17, 25, a3, a4 [R].

Toniniopsis separabilis (Nyl.) Gerasimova et A. Beck — on bark of *Acer platanoides*, *Fraxinus excelsior*, *Populus tremula*, *Sorbus aucuparia*, *Tilia* sp., *Ulmus* sp.; 4, 17, 20, 23, 25, 26 [O].

Trapelia placodioides Coppins et P. James — on granite stone; a1 [R1].

Trapeliopsis flexuosa (Fr.) Coppins et P. James — on bark of *Betula* sp., *Pinus sylvestris*, on wood; 6, 8, 11–16, 18, a2 [O].

T. granulosa (Hoffm.) Lumbsch — on decaying wood and peat; 9, 11, 13, a2 [R].

#**Tremella cladoniae** Diederich et M. S. Christ. — on thalli of *Cladonia coniocraea* on bark of *Betula* sp. and *Pinus sylvestris*, on thallus of *C. cornuta* subsp. *cornuta* on wood of *Pinus sylvestris*; 1, 5, 6, 12 [R].

#**T. lichenicola** Diederich — on thalli of *Violella fucata* on bark of *Betula* sp., *Picea abies*, *Pinus sylvestris*, and *Populus tremula*; 1, 4, 6, 13, 15, 16 [O].

*#**Trichonectria rubefaciens** (Ellis et Everh.) Diederich et Schroers — on thallus of *Parmelia sulcata* on bark of *Fraxinus excelsior*; 26 [R1]; GSU. Previously known from ELR (Kuznetsova et al., 2012).

Tuckermannopsis chlorophylla (Willd. ex Humb.) Hale — on bark of *Larix* sp., *Malus domestica*, *Salix caprea*, *Tilia* sp.; 17, 19, 23 [R]. On bark of *Betula* sp., *Fraxinus excelsior*, and *Tilia* sp., also on wooden fence (Malysheva, 2001, 2003).

Usnea hirta (L.) F. H. Wigg. — on bark of *Pinus sylvestris*; 12 [R1]. On bark of *Quercus robur* (Malysheva, 2001, 2003).

U. subfloridana Stirt. — on bark of *Malus domestica*; 17 [R1].

Verrucaria boblensis Servit — on concrete; a5 [R1]; det. J. Pykälä, 2013.

V. dolosa Hepp — on granite; a1 [R1].

Vezeadaea aestivalis (Ohlert) Tscherm.-Woess et Poelt — on thallus of *Parmelia sulcata* on branch of *Fraxinus excelsior*; 26, det. P. Diederich [R1]; GSU.

Violella fucata (Stirt.) T. Sprib. — on bark of *Acer platanoides*, *Alnus incana*, *Betula* sp., *Larix* sp., *Picea abies*, *Pinus sylvestris*, *Populus tremula*, *Quercus robur*, *Sorbus aucuparia*, *Tilia* sp.; 1–7, 10, 12–16, 18, 23, 24 [C].

Vulpicida pinastri (Scop.) J.-E. Mattsson et M. J. Lai — on bark of *Betula* sp., *Ledum palustre*, *Picea abies*, *Pinus sylvestris*, on wood; 1, 2, 5, 6, 8, 10–16, 18 [F]. On bark of *Betula* sp. and on wooden fence (Malysheva, 2001, 2003).

Xanthoria parietina (L.) Th. Fr. — on bark of *Acer platanoides*, *Betula* sp., *Fraxinus excelsior*, *Malus domestica*, *Populus tremula*, *Salix caprea*, *Sorbus aucuparia*, *Tilia* sp., and on concrete; 3, 4, 10, 14, 15, 17, 21–23, 25, 26 [F]. On bark of old *Betula* sp., 9 VIII 1930, *Kartashova*, LE; on bark of *Acer platanoides* and on concrete (Malysheva, 2001, 2003).

Taxa excluded from lichen flora of Osinovaya Roscha

Bryoria implexa (Hoffm.) Brodo et D. Hawksw. — on bark of *Betula* sp. (Malysheva, 2001, 2003). Dubious record, revision of specimens is needed, especially due to changing species concept in the genus (see e. g., Velmala *et al.*, 2014). Moreover, the author of the record made quite a lot of erroneous *Bryoria* records (see Krasnaya..., 2018b). No specimens found.

B. nadvornikiana (Gyeln.) Brodo et D. Hawksw. — on bark of *Tilia* sp. (Malysheva, 2001; Krasnaya..., 2004). Dubious record, revision of specimens is needed (see above). No specimens found; the species was not cited from this locality in later publication by the same author (Malysheva, 2003).

^R*B. simplicior* (Vain.) Brodo et D. Hawksw. — on bark of *Quercus robur* (Malysheva, 2001, 2003). Dubious record, revision of specimens is needed (see above). No specimens found.

^{R,1}*Phlyctis agelaea* (Ach.) Flot. — on bark of *Acer platanoides* and *Quercus robur* (Malysheva, 2001, 2003). Regionally extinct species, reliable records from SPb are known from Duderhof Heights only, where the species was collected in the beginning of XX century (see Krasnaya..., 2018b). No specimens found.

Sphaerophorus fragilis (L.) Pers. — on granite stones in forest (Sobolewski, 1799, as *Lichen fragilis*). Obvious misidentification (most probably *Stereocaulon* sp.); no specimens found. *Sphaerophorus fragilis* is a species confined to more northern and mountain territories, in LR it is known only from rocky islands in Baltic Sea (Krasnaya..., 2018a).

Usnea barbata (L.) F. H. Wigg. — on the bark of tree in old forest (Sobolewski, 1799, as *Lichen barbatus* and *L. plicatus*). Dubious record, revision of specimens is needed due to changing species concept in the genus (see Clerc, Naciri, 2021). No specimens found.

U. florida (L.) F. H. Wigg. — on bark of old tree (Sobolewski, 1799, 1802, as *Lichen floridus*). No specimens found. The only reliable record of the species in the region refers to Luga District (Stepanchikova *et al.*, 2018). All historical records from SPb and LR refer to other *Usnea* spp.

Xanthomendoza fallax (Hepp) Söchting *et al.* — on bark of *Acer platanoides* [Malysheva, 2001, 2003, as *Xanthoria fallax* (Hepp) Arnold]. Dubious record, revision of specimens is needed due to changing species concept in the genus (see Arup *et al.*, 2013). No specimens found.

Discussion

The revealed lichen diversity of the historical territory Osinovaya Roscha has a total of 230 species, including 206 lichenized, 17 lichenicolous, and seven non-lichenized saprobic fungi. The lichen biota of Osinovaya Roscha is rich, in spite of the small size of the study area, and is much richer than in the most territories within the city limits (Khramtsov *et al.*, 2016; Stepanchikova *et al.*, 2020). The only exceptions are three territories in the westernmost part of Kurortny District. They are characterized by larger size, relatively low disturbance, remote position from the city center, and consequently high lichen diversity: the list of lichens and allied fungi of Gladyshevsky protected area (7.65 km²) counts 310 species, Beregovoy Ustup Serovo proposed protected area (4.77 km²) – 258 species, and recently studied Pukhtolova Gora proposed protected area (4 km²) – 252 species (Stepanchikova *et al.*, 2014, 2020, 2021).

We accepted the reports of 48 lichen species out of 56 which were published (Sobolewski, 1799, 1802; Malysheva, 2001, 2003) or collected before our study. In 2021, we did not find only five species, which had occurred in Osinovaya Roscha in the past. Of these, *Cladonia deformis*, *Myriolecis crenulata*, and *Ramalina fraxinea* still can occur in the study area for the presence of suitable substrates and habitats. *Ochrolechia pallescens* is known from St. Petersburg from historical data only and has probably disappeared. *Pertusaria coccodes* is an indicator species of biologically valuable forests (Vyyavlenie..., 2009) and has probably disappeared due to increase of air pollution and loss of suitable habitats. Unfortunately, the absence of comprehensive historical data limited our opportunities to evaluate changes in the lichen diversity of Osinovaya Roscha for the last 220 years.

The contemporary lichen biota of Osinovaya Roscha comprises 225 species. The majority of the species in the study area (168 species, 74.7%) were rare [R]. Of these, 73 were recorded only once [R₁]. Only 28 species (12.4% of the lichen biota) were occasional [O], 16 species (7.1%) – frequent [F], eight species (3.6%) – common [C], and five species (2.2%), namely *Hypogymnia physodes*, *Lecanora pulicaris*, *Lepraria incana*, *Parmelia sulcata*, and *Scoliciosporum sarothamni*, were very common [VC]. Despite the regional lichen biota is well studied, we found ten species new to St. Petersburg, half of which were lichenicolous fungi. *Epithamnolia xanthoriae* is new to North-Western European Russia; *Arthonia vinosa*, *Caloplaca ahtii*, *Cladonia merochlorophaea*, *Hawksworthiana peltigericola*, *Lecania erysibe*, *Rinodina pityrea*, *Roselliniella cladoniae*, *Tae-niolina scripta*, and *Trichonectria rubefaciens* are new to St. Petersburg.

An average amount of species per SA was 38.9±2.6, with minimum 19 (young shadowy spruce-pine forest, SA 18), and maximum 69 (old broadleaved alley, SA 26). This average number is slightly higher than in territories along the northern shore of Gulf of Finland within St. Petersburg, where an average is 33.3±1.3 (Stepanchikova *et al.*, 2020). Most interesting and diverse lichens grow in the remaining parts of the historical park Osinovaya Roscha with open broadleaved stands and old alleys. The majority of lichen species (130 species, 57.8% of the contemporary lichen biota) were found in the historical part of the park (old trees, alleys etc.) and adjacent broadleaved forest

areas. Mixed (pine, spruce, birch, grey alder) forests on mineral soil in the study area are young, with relatively small average amount of lichen species per sample plot. In total, almost a half of the recorded lichen species were found in such communities (106 species, 47% of the lichen biota). Only 77 species (34.2%) were recorded in communities dominated by aspen, which are quite rare in the study area. The lichens of swampy pine forests comprised 72 species, or 32% of the lichen biota of the study area. The lichens of anthropogenic habitats (wastelands, sand roads, buildings, etc.) were represented by 67 species (29.8%), so far, such habitats were the poorest in Osinovaya Roscha.

The majority of lichens in Osinovaya Roscha were epiphytic (154 species, 68.4% of the contemporary lichen biota), which is typical for North-Western European Russia. The richest phorophyte was linden, *Tilia* spp. (82 species). Other phorophytes are arranged below in descending order of the number of species: *Betula* spp. (58 species), *Acer platanoides* (53 species), *Populus tremula* (52 species), *Fraxinus excelsior* (48 species), *Pinus sylvestris* (47 species), *Quercus robur* (45 species), *Sorbus aucuparia* (36 species), *Picea abies* (35 species), *Malus domestica* (31 species), *Larix* sp. and *Salix caprea* (30 species each), *Alnus incana* (18 species), *Ulmus* spp. (13 species), *Prunus padus* and dwarf shrubs (5 species each). Relatively few species were found on wood (65 species, 28.9% of the contemporary lichen biota), soil (32 species, 14.2%), stones (14 species, 6.2%), and iron (12 species, 5.3%). Lichenicolous fungi were represented by 17 species, additionally the lichen *Veizdaea aestivalis* was found on thallus of *Parmelia sulcata*. Several species were collected also from other substrates: mosses (six species), resin and upturned roots (two species each), old plastic bottle, fruit bodies of *Trichaptum bifforme* and epiphytic algae (one species each).

In total, eight red-listed lichen species were found in the study area, seven of them were recorded recently: *Acrocordia cavata*, *Arthonia helvola*, *Calicium viride*, *Chaenotheca brachypoda*, *C. hispidula*, *Dictyocatenuolata alba*, and *Scytinium subtile*. One species, *Pertusaria coccodes*, was found only in herbarium collected by Kartashova in 1930. *Arthonia helvola*, *A. vinosa*, *Chaenotheca brachypoda*, *C. hispidula*, *Chaenothecopsis pusiola*, *Pertusaria coccodes*, and *Scytinium subtile* are indicator species, and *Acrocordia cavata* is a habitat specialist of biologically valuable forests in North-Western European Russia (Vyyavlenie..., 2009). Almost all the red-listed and indicator species were found in the historical part of the park and were confined to bark of old broadleaved trees. Moreover, several regionally rare species (known from not more than five localities in St. Petersburg and Leningrad Region) were also found in Osinovaya Roscha, namely *Caloplaca ahtii*, *Cryptodiscus gloeocapsa*, *Lecania erysibe*, *Micarea turfosa*, *Rinodina pityrea*.

The lichen biota of the historical park Osinovaya Roscha turned out to be unexpectedly rich, including several red-listed and indicator, as well as regionally rare species. This makes the territory valuable for the conservation of lichen diversity on the regional level. From this point of view, remaining parts of the old manor park are the most important.

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References / Литература

- Aleksandrova E. L. 2008. *Severnye okrestnosti Peterburga. Istoricheskoe proshloe* [Northern environs of Petersburg. Historical background]. St. Petersburg: 640 p. [Александрова Е. Л. *Северные окрестности Петербурга. Историческое прошлое*. 2008. СПб.: 640 с.].
- Arup U., Sochting U., Frödén P. 2013. A new taxonomy of the family Teloschistaceae. *Nordic Journal of Botany* 31(1): 16–83. <https://doi.org/10.1111/j.1756-1051.2013.00062.x>
- Clerc P., Naciri Y. 2021. *Usnea dasopoga* (Ach.) Nyl. and *U. barbata* (L.) F. H. Wigg. (Ascomycetes, Parmeliaceae) are two different species: a plea for reliable identifications in molecular studies. *The Lichenologist* 53(3): 221–230. <https://doi.org/10.1017/s0024282921000128>
- Diederich P., Lawrey J. D., Ertz D. 2018. The 2018 classification and checklist of lichenicolous fungi, with 2000 non-lichenized, obligately lichenicolous taxa. *PLoS ONE* 121: 340–426. <https://doi.org/10.1639/0007-2745-121.3.340>
- Himelbrant D. E., Stepanchikova I. S., Kuznetsova E. S., Motiejūnaitė J., Konoreva L. A. 2018. Konevets Island (Leningrad Region, Russia) – a historical refuge of lichen diversity in Lake Ladoga. *Folia Cryptogamica Estonica* 55: 51–78. <https://doi.org/10.12697/fce.2018.55.07>
- Khramtsov V. N., Kovaleva T. V., Natsvaladze N. Yu. (eds) 2016. *Atlas osobo okhranyaemykh prirodnykh territorii Sankt-Peterburga* [Atlas of protected areas of St. Petersburg (II edition)]. St. Petersburg: 176 p. [Храмцов В. Н., Ковалева Т. В., Нацваладзе Н. Ю. (ред.) *Атлас особо охраняемых природных территорий Санкт-Петербурга*. 2е издание. 2016. СПб.: 176 с.].
- Kolchinsky E. I., Sytin A. K., Smagin G. I. 2004. *Estestvennaya istoriya v Rossii (Ocherki razvitiya estestvoznaniya v Rossii v XVIII veke)* [Natural History in Russia (Papers on development of Natural History in Russia in XVIII)]. St. Petersburg: 242 p. [Колчинский Е. И., Сытин А. К., Смагин Г. И. *Естественная история России (Очерки развития естествознания в России в XVIII веке)*. 2004. СПб.: 242 с.].
- Krasnaya kniga Leningradskoi oblasti* [Red Data Book of the Leningrad Region]. 2018a. St. Petersburg: 848 p. [*Красная книга Ленинградской области*. 2018а. СПб.: 848 с.].
- Krasnaya kniga prirody Sankt-Peterburga* [Red Data Book of nature of St. Petersburg]. 2004. St. Petersburg: 416 p. [*Красная книга природы Санкт-Петербурга*. 2004. СПб.: 416 с.].
- Krasnaya kniga Sankt-Peterburga* [Red Data Book of St. Petersburg]. 2018b. St. Petersburg: 568 p. [*Красная книга Санкт-Петербурга*. 2018b. СПб.: 568 с.].

- Kuznetsova E., Ahti T., Himelbrant D. 2007. Lichens and allied fungi of the Eastern Leningrad Region. *Norrinia* 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. 2018. *Lichenicolous fungi — worldwide checklist, including isolated cultures and sequences available*. <http://www.lichenicolous.net> (Date of access: 25 XI 2021).
- Malysheva N. V. 2001. The lichens in vicinities of St. Petersburg. 5. Changes in the species composition of lichens in the “Osinovaya Roscha” park for 200 years. *Novosti sistematiki nizshikh rastenii* 34: 162–166. [Мальшева Н. В. 2001. Лишайники окрестностей Санкт-Петербурга. 5. Изменение видового состава лишайников парка «Осиновая Роща» за 200 лет. *Новости систематики низших растений* 34: 162–166.].
- Malysheva N. V. 2003. The lichens of the St. Petersburg. *Trudy Sankt-Petersburgskogo obshchestva estestvoispytatelei. Series 3* 79: 1–100. [Мальшева Н. В. 2003. Лишайники Санкт-Петербурга. *Труды Санкт-Петербургского общества естествоиспытателей. Сер. 3*. 79: 1–100].
- Melnik V. A. 2000. *Opredelitel' gribov Rossii. Klass Hyphomycetes. Vyp. 1. Sem. Dematiaceae* [Handbook of fungi of Russia. Class Hyphomycetes. Issue 1. Family Dematiaceae]. St. Petersburg: 371 p. [Мельник В. А. *Определитель грибов России. Класс Hyphomycetes. Вып. 1. Сем. Dematiaceae*. 2000. СПб.: 371 с.].
- Orange A., James P. W., White F. J. 2001. *Microchemical methods for the identification of lichens*. London: 101 p.
- Sobolewski G. 1799. *Flora Petropolitana*. Petropoli: 354 p.
- Sobolewski G. 1802. *Sanktpeterburgskaya flora. Chast' II* [Flora of St. Petersburg. Part II]. St. Petersburg: 424 p. [Соболевский Г. 1802. *Санктпетербургская флора. Часть 2*. СПб.: 424 с.].
- Stepanchikova I. S., Andreev M. P., Himelbrant D. E., Motiejūnaitė J., Schiefelbein U., Konoreva L. A., Ahti T. 2017. The lichens of Bolshoy Tuters Island (Tytärsaari), Leningrad Region, Russia. *Folia Cryptogamica Estonica* 54: 95–116. <http://doi.org/10.12697/fce.2017.54.14>
- Stepanchikova I. S., Himelbrant D. E., Konoreva L. A. 2014. The lichens and allied fungi of the Gladyshevsky protected area (Saint Petersburg). *Novosti sistematiki nizshikh rastenii* 48: 291–314. <https://doi.org/10.31111/nsnr/2014.48.291>
- Stepanchikova I. S., Himelbrant D. E., Kuznetsova E. S., Chesnokov S. V., Konoreva L. A., Panikova V. V. 2021. The lichens of Pukhtolova Gora (St. Petersburg, Russia). *Folia Cryptogamica Estonica* 58: 73–86. <https://doi.org/10.12697/fce.2021.58.10>
- Stepanchikova I. S., Himelbrant D. E., Kuznetsova E. S., Motiejūnaitė J., Chesnokov S. V., Konoreva L. A., Gagarina L. V. 2020. The lichens of the northern shore of the Gulf of Finland in the limits of St. Petersburg, Russia — diversity on the edge of megapolis. *Folia Cryptogamica Estonica* 57: 101–132. <https://doi.org/10.12697/fce.2020.57.11>
- Stepanchikova I. S., Himelbrant D. E., Motiejūnaitė J., Ahti T., Suja A., Kuznetsova E. S., Dyomina A. V. 2018. New records of lichens and allied fungi from the Leningrad Region, Russia. IX. *Folia Cryptogamica Estonica* 55: 117–124. <https://doi.org/10.12697/fce.2018.55.12>
- Stepanchikova I. S., Kukwa M., Kuznetsova E. S., Motiejūnaitė J., Himelbrant D. E. 2010. New records of lichens and allied fungi from the Leningrad Region, Russia. *Folia Cryptogamica Estonica* 47: 77–84.
- Suija A., van den Boom P., Zimmermann E., Zhurbenko M. P., Diederich P. 2018. Lichenicolous species of *Hainesia* belong to Phacidiales (Leotiomyces) and are included in an extended concept of *Epithamnia*. *Mycologia* 109(6): 882–899. <https://doi.org/10.1080/00275514.2017.1413891>
- Velmalä S., Myllys L., Goward T., Holien H., Halonen P. 2014. Taxonomy of *Bryoria* section *Implexae* (Parmeliaceae, Lecanoromycetes) in North America and Europe, based on chemical, morphological and molecular data. *Annales Botanici Fennici* 51(6): 345–371. <https://doi.org/10.5735/085.051.0601>

- Vyyavlenie i obsledovanie biologicheski tsennykh lesov na Severo-Zapade Evropeiskoi chasti Rossii. T. 2. Posobie po opredeleniyu vidov, ispol'zuemykh pri obsledovanii na urovne vydelov* [Survey of biologically valuable forests in North-Western European Russia. Vol. 2. Identification manual of species to be used during survey at stand level]. 2009. St. Petersburg: 258 p. [*Выявление и обследование биологически ценных лесов на Северо-Западе Европейской части России. Т. 2. Пособие по определению видов, используемых при обследовании на уровне выделов.* 2009. СПб.: 258 с.].
- Westberg M., Moberg R., Myrdal M., Nordin A., Ekman S. 2021. *Santesson's Checklist of Fennoscandian Lichen-forming and Lichenicolous Fungi*. Uppsala: 933 p.
- Zhurbenko M. P. 2020. Lichenicolous fungi from the Holarctic. Part III: New reports and a key to species on *Hypogymnia*. *Opuscula Philolichenum* 19: 180–189.