The lichens of Bolshoy Tuters Island (Tytärsaari),
Leningrad Region, Russia

Irina S. Stepanchikova¹², Mikhail P. Andreev², Dmitry E. Himelbrant¹², Jurga Motiejūnaitė³, Ulf Schiefelbein⁴, Ludmila A. Konoreva²⁵, Teuvo Ahti⁶

¹St. Petersburg State University (SPbSU), Universitetskaya emb. 7–9, 199034 St. Petersburg, Russia. E-mails: stepe_ir@mail.ru, d_brant@mail.ru
²Laboratory of Lichenology and Bryology, Komarov Botanical Institute RAS, Professor Popov St. 2, 197376 St. Petersburg, Russia
³Laboratory of Mycology, Institute of Botany, Nature Research Centre, Žaliųjų Ežerų 49, LT–08406 Vilnius, Lithuania. E-mail: jurga.motiejunaite@botanika.lt
⁴Botanical Museum, Finnish Museum of Natural History, P. O. Box 7, FI-00014 University of Helsinki, Finland. E-mail: Teuvo.Ahti@helsinki.fi
⁵E-mails: stepa_ir@mail.ru, d_brant@mail.ru
⁶Blücherstrasse 71, D-18055 Rostock, Germany. E-mail: Ulf.Schiefelbein@gmx.de

Abstract: The updated checklist of Tuters Island (Leningrad Region, Russia) is presented. Of 331 species of recognized biota, 314 species of lichens, 16 lichenicolous fungi and one non-lichenized saprobic fungus are reported from Tuters Island. Of them, 202 species are new to the study area. Aspicilia epiglypta, Fuscidea praeruptorum, Micareabyssacea and Sarcogyne hypophaeoides are reported for the first time for Russia, Roselliniella stereocaulorum – for European Russia, Aspicilia polychroma, Carbonea vorticosa, Cercidospora stereocaulorum, Cladonia ciliata f. flavicans, C. rangeformis, Parmelia ernstiae, Plectocarpon cf. encausticum and Roselliniella cladoniae – for North-Western European Russia; Bachmanniomycies uncialicola, Bacidina sulphurella, Micarea botryoides, Miriquidica griseoatra and Stereocaulon nanodes are new to the Leningrad Region.

Keywords: Gulf of Finland; Aspicilia epiglypta; Fuscidea praeruptorum; Micarea abyssacea; Sarcogyne hypophaeoides

INTRODUCTION

Bolshoy Tuters (Tuters, Tytärsaari) is one of the westernmost Russian islands in the Gulf of Finland (Baltic Sea), belonging to Kingisepp District, Leningrad Region. Unlike the nearby Hogland Island (Gogland, Suursaari), lichens of Tuters remained almost unstudied until recently. Early lichenological exploration of Tuters is connected with Magnus Brenner who visited the area in 1868 and collected several specimens, which were afterwards identified by William Nylander. Brenner reported several species for Tuters in his monograph on the lichen flora of Hogland (Brenner, 1886): Cetraria odontella Ach., Peltigera malacea (Ach.) Fr., Peltigera polydactyla (Neck.) Hoffm. f. collina Ach., Ramalina cuspidata (Ach.) Nyl., and Stereocaulon tomentosum Fr. (all taxa are cited according Brenner’s publication). Critical revision of Brenner’s collection in the Botanical Museum, University of Helsinki (H) by Nadezhda M. Alexeeva, Teuvo Ahti and Dmitry E. Himelbrant allowed to re-identify some of them: the specimen previously identified as Cetraria odontella was C. muricata, Ramalina cuspidata was understood by Brenner as a synonym of R. siliquosa (and the specimen belongs to R. siliquosa), the specimen published as Stereocaulon tomentosum appeared to be S. alpinum var. gracilentum. Several more species collected by Brenner from Tuters remained unpublished; altogether 14 species are known from Tuters from Brenner’s collection.

After Brenner’s visit, nobody studied lichens on Tuters until 1990’s when the island was open for research for the first time after the World War II. In 1992–1993 few specimens were collected by botanists – Finnish (Pertti and Terho Uotila) and Russian (Natalia B. Balashova), some records were later published (Alexeeva, 2005). The first comprehensive inventory of the lichen flora of Tuters was started by Mikhail P. Andreev in 1994. As the result of these studies, a list of lichens of Tuters island comprising 120 species was presented (Andreev, 2002). In 2015, field studies of Tuters lichens were continued by Irina S. Stepanchikova in frame of the Complex Expedition “Gogland” of the Russian Geographii-
The present paper is the outcome of the expedition in 2015 and the revision of herbarium collections made since 1868 to 1994.

**STUDY AREA**

Bolshoy Tuters is a remote island in Gulf of Finland (Baltic Sea), 40 km distant from the nearest (Estonian) shore. Despite its small size (ca. 3 km diam., area of ca. 8.3 km²), landscapes of Tuters are diverse and vary from large siliceous rocks in the western and northern parts to dunes on the eastern shore. The island is covered mostly with pine forests; spruce, small-leaved forests and bogs are also represented, black alder stands can be found along the shore, and wastelands surround the abandoned, and destroyed, only village of the island. In the northern part of the island comparatively low disturbed spruce forest is present. The flora of vascular plants of Tuters includes 513 species (Glazkova, 2001).

Tuters and the neighbouring islands were inhabited mostly by Finnish people since the Middle Ages to 1939 (ca. 500 people in 100 houses in 1939). The island belonged, in different periods, to Sweden, Russia, Finland and the Soviet Union. During the World War II Tuters was occupied by the German army, the military base having up to 3000 soldiers in 1942–1944, and cannons, bombs etc. are still abundant on the island, some of them are already covered with lichens.

After the war and up to 1990’s the island was closed for visitors. Due to its position, landscape and history, Tuters is a unique island area in the Leningrad Region with a comparatively well-preserved and rich lichen flora. Tuters Island together with other islands and the adjacent marine area are partly included in the projected Federal Nature Reserve (Zapovednik) “Ingermanlandsky”, which hopefully will be organized in 2017.

**MATERIAL AND METHODS**

The material was collected on Tuters during field trips by: M. P. Andreev (1994), and I. Stepanchikova (2015). In the list of localities (Table 1) mostly Finnish names are given for capes, bays etc., because most of these geographical objects do not have Russian names; the location of studied sites is presented on Fig. 1.

| Locality | Description, geographical coordinates, biotope | Date       | Collector |
|----------|-------------------------------------------------|------------|-----------|
| m1       | NW shore, NE of cape Romppiniemi, rocky beach “Vanhanpiian uuni”, [59°51′42″N, 27°11′00″E], siliceous rocks and boulders | 19.08.1994 | MA        |
| m2       | N part, 0.5 km SW of Severny cape (Tiukinniemi), 59°51′40″N, 27°11′30″E, young spruce forest | 18.08.1994 | MA        |
| m3       | N shore, Severny cape (Tiukinniemi), [59°51′55″N, 27°11′45″E], siliceous rocks and boulders on the seashore | 17.08.1994 | MA        |
| m4       | N shore, 0.5 km E of Severny cape (Tiukinniemi), near bay Paskalahti, [59°51′48″N, 27°12′14″E], seashore with forest and shrubs | 17.08.1994 | MA        |
| m5       | W shore, S of Vaskiniemi, [59°51′11″N, 27°10′36″E], siliceous rocks and boulders on seashore | 13.08.1994 | MA        |
| m6       | Central part, near the lighthouse (Tytärsaaren majakka), [59°51′N, 27°11′E], siliceous rocks in pine forest | 16.08.1994, | MA        |
| m7       | Central part, road from the lighthouse (Tytärsaaren majakka), [59°51′N, 27°11′E], spruce forest | 20.08.1994 | MA        |
| m8       | E part, N part of the dunes (Lentokiekka), [59°51′00″N, 27°13′30″E], dunes with forest, graminoid-moss-lichen communities | 14.08.1994 | MA        |
| m9       | E part, N part of the dunes (Lentokiekka), close to cape Teilonniemi, [59°51′00″N, 27°13′33″E], mossy wasteland | 14.08.1994 | MA        |
| m10      | SW shore, bay Umplahti, [59°50′35″N, 27°10′40″E], siliceous boulders along the forest edge | 15.08.1994 | MA        |
| Locality | Description, geographical coordinates, biotope | Date | Collector |
|----------|------------------------------------------------|------|-----------|
| m11 | S shore, former village (Tytärsaaren kylä, Kolari), [59°50′10″N, 27°11′35″E], trees and shrubs on the territory of former village | 19.08.1994 | MA |
| m12 | S shore, E outskirts of former village (Tytärsaaren kylä, Kolari), [59°50′N, 27°12′E], road and outskirts of former village | 20.08.1994 | MA |
| m13 | SE seashore, S end of the dunes near Nuottakari cape, [59°51′N, 27°13′E], pine forest on dune slope | 16.08.1994 | MA | 20.08.1994 |
| m14 | S shore, former village (Tytärsaaren kylä, Kolari), [59°50′N, 27°12′E] | 18.06.1992 | Pertti & Terho Uotila |
| m15 | E part of the dunes (Lentokiekka), [59°51′00″N, 27°13′30″E], sand field between seashore and high dunes | 18.06.1992 | Pertti & Terho Uotila |
| 1 | SW shore, S of ponds Römenlammet, 59°50′09″N, 27°11′18″E, boulders of old quay | 28.05.2015 | IS |
| 2 | SW shore, N of ponds Römenlammet, 59°50′13″N, 27°11′17″E, young aspen stand on old concrete basement | 28.05.2015 | IS |
| 3 | SW shore, Umplahliti, near pond Kärmeenlampi, 59°50′26″N, 27°10′45″E, stony wasteland | 28.05.2015 | IS |
| 4 | SW shore, port area Vironsatama, 59°50′19″N, 27°10′59″E, pine forest with boulders | 28.05.2015 | IS |
| 5 | E part, N part of the dunes (Lentokiekka), 59°50′56″N, 27°13′11″E, old dunes covered with *Racomitrium* sp. | 29.05.2015 | IS |
| 6 | E part, N part of the dunes (Lentokiekka), 59°50′53″N, 27°13′13″E, vertical pine logs in dune (remnants of military constructions) | 29.05.2015 | IS |
| 7 | W part, S of cape Romppiniemi, 59°51′23″N, 27°10′41″E, sparse pine stand with mosses and lichens on granite ridge | 30.05.2015 | IS |
| 8 | W shore, S of cape Romppiniemi, 59°51′24″N, 27°10′35″E, rocky seashore | 30.05.2015 | IS |
| 9 | E part, N part of the dunes (Lentokiekka), 59°51′01″N, 27°13′20″E, sparse pine stand with mosses | 31.05.2015 | IS |
| 10 | E part, N part of the dunes (Lentokiekka), 59°51′01″N, 27°13′02″E, sparse pine stand with *Racomitrium* sp. | 31.05.2015 | IS |
| 11 | E part, 0.2 km N of the dune area, 59°51′10″N, 27°13′01″E, spruce-pine forest with single aspens, with *Oxalis acetosella* L., *Vaccinium myrtillus* L., *Maianthemum bifolium* (L.) F. W. Schmidt and patches of *Sphagnum* sp. | 31.05.2015 | IS |
| 12 | E shore opposite to the N part of the dunes (Lentokiekka), 59°51′03″N, 27°13′32″E, seashore pine forest with boulders, near fishermen camp | 31.05.2015 | IS |
| 13 | N shore, cape Kuokkaniemi, 59°51′54″N, 27°11′22″E, big boulders (1–3 m diam.) on the seashore | 01.06.2015 | IS |
| 14 | N part, 0.3 km SE of Severny cape (Tiukinniemi), 59°51′51″N, 27°11′53″E, spruce forest with single aspens, with *Vaccinium myrtillus*, *Maianthemum bifolium* and green mosses | 01.06.2015 | IS |
| 15 | N shore, bay Kuokkaniemenlahti, 59°51′55″N, 27°11′35″E, black alder stand with boulders, *Rubus idaeus* L. and graminoids | 01.06.2015 | IS |
| 16 | E part, lowland Tuomäensuo E of the dune area, 59°50′49″N, 27°12′52″E, spruce forest with *Vaccinium myrtillus* and green mosses | 02.06.2015 | IS |
| 17 | E part, 0.2 km N of the dunes, 59°51′17″N, 27°13′11″E, humid pine forest with *Eriophorum vaginatum* L., *Calluna vulgaris* (L.) Hull and *Sphagnum* spp. | 02.06.2015 | IS |
| 18 | W part, ca. 0.4 km NE of bay Vaskilahti, rock Luöppärkallio, 59°51′11″N, 27°10′58″E, sparse pine forest with spruce, lichens and mosses, on granite ridge | 03.06.2015 | IS |
| 19 | W part, bay Takirästelinlahti, 59°50′50″N, 27°10′35″E, aspen stand with pine and spruce on place of old house | 04.06.2015 | IS |
| Locality | Description, geographical coordinates, biotope | Date       | Collector |
|----------|-----------------------------------------------|------------|-----------|
| a1       | S part, N vicinities of the former village (Tytärsaaren kylä, Kolari), 59°50’30”N, 27°11’25”E, spruce forest with *Vaccinium myrtillus* and green mosses | 28.05.2015 | IS        |
| a2       | E part, S end of the dunes, 0.4 km W of cape Tuomäenniemi, 59°50’46”N, 27°13’16”E, lichen community on sandy soil near the dune on margin of pine forest | 29.05.2015 | IS        |
| a3       | E shore, S of dunes near Nuottakari cape, 59°50’41”N, 27°13’11”E, pine forest with lichens | 29.05.2015 | IS        |
| a4       | E shore, S of dunes near Nuottakari cape, 59°50’40”N, 27°13’07”E, pine forest with lichens | 29.05.2015 | IS        |
| a5       | S shore, cape Ruuhainniemi, 59°50’22”N, 27°12’26”E, small glade in pine forest with lichens | 29.05.2015 | IS        |
| a6       | S shore, E of cape Lommosniemi, 59°50’10”N, 27°11’56”E, old Finnish village, wasteland | 29.05.2015 | IS        |
| a7       | W part, 0.4 km NE of bay Vaskilahti, rock Luöppärkallio, 59°51’09”N, 27°11’02”E, small tall-moss swamp in lowland between rocks, with small rocky outcrops | 30.05.2015 | IS        |
| a8       | W part, 0.3 km NE of bay Vaskilahti, rock Luöppärkallio, 59°51’14”N, 27°10’53”E, pine forest with lichens and green mosses on granite ridge | 30.05.2015 | IS        |
| a9       | W part, SE of cape Romppiniemi, 59°51’21”N, 27°10’49”E, pine forest with lichens and green mosses on granite ridge | 30.05.2015 | IS        |
| a10      | W shore, S of cape Romppiniemi, 59°51’23”N, 27°10’36”E, driftwood | 30.05.2015 | IS        |
| a11      | NW shore, S of cape Romppiniemi, 59°51’33”N, 27°10’37”E, seashore rocks | 30.05.2015 | IS        |
| a12      | NW part, along rocky beach “Vanhanpiian uuni”, 59°51’36”N, 27°10’54”E, pine forest on granite ridge | 30.05.2015 | IS        |
| a13      | NW part, ca. 0.3 km SE of cape Romppiniemi, 59°51’31”N, 27°10’58”E, pine forest on granite ridge | 30.05.2015 | IS        |
| a14      | E shore opposite to the N part of the dune area, Teilonniemi cape, 59°50’57”N, 27°13’39”E, sandy seashore | 31.05.2015 | IS        |
| a15      | E shore opposite to the N part of the dune area, Teilonniemi cape, 59°50’54”N, 27°13’37”E, pine forest with lichens on sand | 31.05.2015 | IS        |
| a16      | E shore opposite to the N part of the dune area, N of cape Teilonniemi, 59°51’05”N, 27°13’32”E, pine forest with lichens on sand | 31.05.2015 | IS        |
| a17      | E part, lowland Tuomäensuo E of the dune area, 59°50’54”N, 27°13’01”E, pine forest with green mosses near the dune | 31.05.2015 | IS        |
| a18      | NW part, 0.5 km SW of Severny cape (Tiukinniemi), 59°51’40”N, 27°11’24”E, spruce forest with *Vaccinium myrtillus* and *Sphagnum* spp. | 01.06.2015 | IS        |
| a19      | N shore, cape Kuokkanhiemi 59°51’56”N, 27°11’26”E, driftwood and remnants of building | 01.06.2015 | IS        |
| a20      | N part, near cape Kuokkanhiemi, 59°51’54”N, 27°11’30”E, remnants of German cannon in spruce forest | 01.06.2015 | IS        |
| a21      | N shore, Severny cape (Tiukinniemi), 59°51’57”N, 27°11’44”E, remnants of German army machine in seashore forest | 01.06.2015 | IS        |
| a22      | NE shore, 0.5 km E to Severny cape (Tiukinniemi), near bay Paskalahti, 59°51’44”N, 27°12’29”E, black alder stand in a bay | 01.06.2015 | IS        |
| a23      | S part, old Finnish cemetery (Hautausmaa), 59°50’18”N, 27°11’58”E | 02.06.2015 | IS        |
| a24      | S part, ca. 0.5 km NE of the cemetery, 59°50’28”N, 27°12’23”E, remnants of barbed wire | 02.06.2015 | IS        |
| a25      | E part, Lentohiekka (N part of the dunes), 59°51’05”N, 27°13’16”E, top of sandy dune | 02.06.2015 | IS        |
| a26      | E part, N border of the dune area, near the seashore, 59°51’12”N, 27°13’19”E, group of black alder in spruce forest near the dune | 02.06.2015 | IS        |
| a27      | E part, 0.2 km N of the dune area, near the seashore, 59°51’17”N, 27°13’17”E, spruce forest with black alder near the seashore, with *Oxalis acetosella*, *Vaccinium myrtillus* and green mosses | 02.06.2015 | IS        |
| a28      | W part, 0.3 km NE of bay Vaskilahti, rock Luöppärkallio, 59°51’10”N, 27°10’54”E, shaded vertical rocky slope in spruce forest with *Sorbus aucuparia* L. | 03.06.2015 | IS        |
Table 1 (continued)

| Locality | Description, geographical coordinates, biotope                                      | Date    | Collector |
|----------|----------------------------------------------------------------------------------|---------|-----------|
| a29      | Central part, bog Estersuo, 59°51'06"N, 27°11'08"E, group of trees and shrubs on  | 03.06.2015 | IS       |
|          | a small island in transitional swamp                                               |         |           |
| a30      | Central part, bog Estersuo, 59°51'02"N, 27°11'06"E, small rocky outcrops on the  | 03.06.2015 | IS       |
|          | margin of transitional swamp                                                        |         |           |
| a31      | Central part, bog Salasuo, 59°50'58"N, 27°11'18"E, transitional swamp             | 03.06.2015 | IS       |
| a32      | Central part, 0.3 km SE of bog Salasuo, 59°50'51"N, 27°11'41"E, remnants of German | 03.06.2015 | IS       |
|          | ammunition depot in young pine forest                                               |         |           |
| a33      | Central part, 0.2 km E of bog Salasuo, 59°50'55"N, 27°11'35"E, pine forest with   | 03.06.2015 | IS       |
|          | Vaccinium myrtillus, green mosses and Calluna vulgaris                              |         |           |
| a34      | Central part, 0.5 km SE of bog Salasuo, ca. 0.5 km N of the former village, 59°50'47"N, | 03.06.2015 | IS       |
|          | 27°11'50"E, pine forest with Vaccinium myrtillus and green mosses, with sparse snags |         |           |
| a35      | Central part, ca. 0.9 km N of the cemetery, 59°50'43"N, 27°12'02"E, spruce forest  | 03.06.2015 | IS       |
|          | with Vaccinium myrtillus and green mosses                                           |         |           |
| a36      | S part, ca. 0.5 km NE of the cemetery, 59°50'28"N, 27°12'17"E, aspen forest with    | 03.06.2015 | IS       |
|          | mixed herbs                                                                         |         |           |
| a37      | W part, E of cape Levtniemi, 59°50'42"N, 27°11'02"E, pine forest with lichens and | 04.06.2015 | IS       |
|          | green mosses on granite ridge                                                       |         |           |
| a38      | W part, E of cape Levtniemi, 59°50'43"N, 27°10'42"E, pine forest with lichens and | 04.06.2015 | IS       |
|          | green mosses on granite ridge                                                       |         |           |
| a39      | W shore, between capes Levtniemi and Takirästelinniemi, 59°50'45"N, 27°10'37"E,   | 04.06.2015 | IS       |
|          | spreaded boulders                                                                  |         |           |
| a40      | W part, between capes Levtniemi and Takirästelinniemi, 59°50'47"N, 27°10'35"E,    | 04.06.2015 | IS       |
|          | rocky outcrop                                                                       |         |           |
| a41      | W shore, bay Vaskilahti, 59°51'09"N, 27°10'33"E, internal surface of seashore rocks| 04.06.2015 | IS       |
| a42      | W shore, N of bay Vaskilahti, 59°51'14"N, 27°10'34"E, rocks                         | 04.06.2015 | IS       |
| a43      | W shore, N of bay Vaskilahti, 59°51'15"N, 27°10'34"E, rocks and old concrete       | 04.06.2015 | IS       |
| a44      | W shore N of bay Vaskilahti S of cape Romppiniemi, 59°51'20"N, 27°10'37"E, granite | 04.06.2015 | IS       |
|          | ridge, soil in crevices                                                             |         |           |
| a45      | W part, 70 m of the seashore, SE of cape Romppiniemi, 59°51'22"N, 27°10'40"E, granite | 04.06.2015 | IS       |
|          | ridge, deep crevice                                                                 |         |           |
| a46      | W part, 70 m of the seashore, SE of cape Romppiniemi, 59°51'24"N, 27°10'39"E, old   | 04.06.2015 | IS       |
|          | spruce between rocks                                                                 |         |           |
| a47      | W part, seashore S of cape Romppiniemi, 59°51'29"N, 27°10'39"E, granite ridge       | 04.06.2015 | IS       |
|          | surrounded by pine forest                                                           |         |           |
| a48      | NW shore, rocky beach "Vanhanpian uuni", 59°51'45"N, 27°11'05"E, rocks              | 04.06.2015 | IS       |
| a49      | NW part, SE of the rocky beach "Vanhanpian uuni", 59°51'35"N, 27°11'14"E, spruce    | 04.06.2015 | IS       |
|          | forest with Vaccinium myrtillus and green mosses                                    |         |           |
| a50      | NW part, SE of the rocky beach "Vanhanpian uuni", 59°51'31"N, 27°11'10"E, spruce    | 04.06.2015 | IS       |
|          | forest with Vaccinium myrtillus and green mosses                                    |         |           |
| a51      | NW part, SW from the lighthouse (Tytärsaaren majakka), 59°51'15"N, 27°11'08"E, old   | 02.06.2015 | IS       |
|          | spruce on the margin of a glade                                                     |         |           |
| a52      | S shore, port area (Satama), 50 m of the seashore, 59°50'08"N, 27°11'30"E, concrete | 06.06.2015 | IS       |
|          | constructions and oak trees                                                         |         |           |

Cited specimens are deposited in the herbaria of the Botanical Museum of University of Helsinki (H), Komarov Botanical Institute (LE), Department of Botany, St. Petersburg State University (LECB), Museum of Evolution of Uppsala University (UPS), Bergen University (BG) and Institute of Botany, Nature Research Centre in Vilnius (BILAS). Additionally we have investigated specimens of lichens and lichenicolous fungi collected earlier by Brenner (19th century) and other
researchers mentioned above (20th century). Lichen substances were analyzed by standard techniques of thin-layer chromatography with using solvent systems A, B, C and G (Orange et al., 2001) by the first and fifth authors. The nomenclature of taxa generally follows Nordin et al. (2011). For each species the substrate and locality numbers are presented; for selected taxa (either species new to Western Leningrad Region or species found in unusual habitats, or difficult for identification) diagnostic characters are added; for species new to Western Leningrad Region information about distribution in NW European Russia, Fennoscandia and Baltic countries is also given. Lichen substances are given for TLC-analyzed species. In the following list of species, lichenicolous fungi are marked with # and non-lichenized fungus with +, and the subsequent abbreviations are used: LR – Leningrad Region; SPb – St. Petersburg.

**Fig. 1.** The study area, Bolshoy Tuters Island (Tytärsaari), with location of collection sites.
THE SPECIES

**Abrothallus caerulescens** Kotte – on apothecia of *Xanthoparmelia stenophylla* on granite boulder; 12 (BILAS). The specimen contained only anamorphic *Vouauxiomyces* stage. Its conidia were longer than given by Ihlen & Wedin (2008), 10.0–14.5 × 4.0–5.0 μm [5–7 × 4.0–6.0 μm according to Ihlen & Wedin (2008)], but I+ blue reaction of vegetative hyphae and the host corresponded that of the characteristics of *A. caerulescens*.

**Absconditella lignicola** Věžda & Pišút – on lignon of *Picea abies* (L.) Karst.; 10, a23 (LE).

**Acarospora fuscata** (Schrad.) Th. Fr. – on siliceous rocks; m9, m12, 12, 18 (BG, LE, UPS L-116040; Andreev, 2002).

**Acrocoridia cavana** (Ach.) R. C. Harris – on bark of *Populus tremula* L.; 2, 19 (H). Specialized species of biologically valuable forests in the Southern Taiga of North-Western European Russia (Andersson et al., 2009).

**Alxyoria varia** (Pers.) Ertz & Tehler – on bark of *Populus tremula*; 2, 19 (H).

**Amandinea punctata** (Hoffm.) Coppins & Scheid. – on bark of *Alnus glutinosa* (L.) Gaertn., *Pinus sylvestris* L. and *Quercus robur* L.; m11, 1, 4, 15, a6 (BG, LE, UPS L-116089; Andreev, 2002).

**Anaptychia ciliaris** (L.) Körb. – on seashore siliceous rocks; a11 (LE).

**Anaptychia runcinata** (With.) J. R. Laundon – on seashore siliceous rock; a11 (LE). Known in LR from Hogland, where the species was collected in 1851–1939 (H; Hakulinen, 1962).

**Anisomeridium polypori** (Ellis & Everh.) M. E. Barr – on bark of *Populus tremula* and *Sorbus aucuparia* L.; 2, 11 (H, sub *Pseudoschizomatoma rufescens*).

**Arctoparmelia centrofiga** (L.) Hale – on siliceous rocks; a12, a37 (obs.). Red Data Book of LR (Tzvelev, 2000).

**Arctoparmelia incurva** (Pers.) Hale – on siliceous rocks; a37 (obs.). Red Data Book of LR (Tzvelev, 2000).

**Artoria punctiformis** Ach. – on bark of *Alnus glutinosa* and *Betula* sp.; 17, a22, a29, a33 (H, LECB).

**Artoria radiata** (Pers.) Ach. – on bark of *Alnus glutinosa*; 15 (H).

**Artoria rubana** A. Massal. – on bark of *Alnus glutinosa*; 15 (H).

**Artoria spadicea** Leight. – on bark of *Alnus glutinosa* and *Picea abies*; 11, 15, a21, a26 (H).

Indicator species of biologically valuable forests in the Southern Taiga of North-Western European Russia (Andersson et al., 2009).

**Aspicilia cinerea** (L.) Körb. – on siliceous rocks; 12, a6, a41, a48 (H).

**Aspicilia epiglypta** (Norrl. ex Nyl.) Hue – on siliceous rocks; a48 (H). New to Russia. Distribution in Fennoscandia: Norway, Sweden, Finland (Nordin et al., 2011); not recorded in Baltic countries. Coastal crustose lichen with yellowish-grey cracked-areolate thallus and black prothallus. *Aspicilia epiglypta* contains norstictic acid as well as *A. cinerea* (L.) Körb. and *A. intermutans* (Nyl.) Arnold, but differs from both species in the size of the ascospores and conidia as well as in the number of apothecia (2–5) per areole (Fletcher et al., 2009).

**Aspicilia polychroma** Anzi – on concrete; a6 (LE). New to the North-Western European Russia. In European Russia is known from Novaya Zemlya Island (Andreev et al., 1996). Distribution in Fennoscandia: Norway, Finland (LE; Nordin et al., 2011); not recorded in Baltic countries. Crustose lichen with grey or white-grey rather thin verruciform thallus with thin margin (R–). Apothecia 1–3 per areole, pruinose. Spores 13–18 × 8–10 μm. (Wirth et al., 2013). Mainly arctic-alpine, perhaps circumpolar, chemically and morphologically variable species with optimum on calciferous siliceous rocks in sites with weak eutrophication.

**Aspicilia verrucigera** Hue – on siliceous rocks; m9 (UPS L-116045). Collected from Tuters (no exact locality) by Brenner, 24.07.1868 (H 8004086: det. Adolf H. Magnusson, 1936).

**Athallia cerinella** (Nyl.) Arup et al. – on bark of *Acer platanoides* L.; m11 (LE; Andreev, 2002).

**Athallia cerinelloides** (Erichsen) Arup et al. – on iron; 3 (LE).

**Athallia holocarpa** (Hoffm.) Arup et al. – on siliceous rocks; 1, 13, a6 (LE; Andreev, 2002).

**Athallia pyracea** (Ach.) Arup et al. – on bark of *Populus tremula*; 2 (LE).

**Athallia scopularis** (Nyl.) Arup et al. – on siliceous rocks; m5 (UPS L-116021).

**#Athelia arachnoidea** (Berk.) Jülich – on algae on bark of *Picea abies*; a27 (LE).

**#Bachmanniomyces unciliacola** (Zopf) D. Hawksw. – on thallus of *Cladonia uncialis* subsp. *buncialis*; 18 (BILAS). New to LR. Distribution in North-Western European Russia outside
Biatora sphaeroidiza differs from other Biatora species by having grey or greenish (C+ red) apothecia (Printzen & Otte, 2005).

Brianaria sylvicola (Flot. ex Körb.) S. Ekman & M. Svensson – on iron and siliceous rocks; (18, a20, a32; H, LE).

Brodoa intestiniformis (Vill.) Goward – on siliceous rocks; 7, a37 (LE, BILAS). Red Data Book of LR (Tzvelev, 2000).

Bryoria capillaris (Ach.) Brodo & D. Hawksw. – on twigs of Picea abies and once on granite boulder; m2, 11, 12, 14 (LE; Andreev, 2002).

Bryoria fuscescens (Gyeln.) Brodo & D. Hawksw. [incl. Bryoria subcana (Nyl. ex Stizenb.) Brodo & D. Hawksw.] – on bark of Picea abies and lignum of Pinus sylvestris; m7, m14, a25 (BG, H 8004209, UPS L-116092; Andreev, 2002).

Bryoria impexa (Hoffm.) Brodo & D. Hawksw. – on siliceous rocks; 12 (H).

Bryoria simplicior (Vain.) Brodo & D. Hawksw. – on lignum of Pinus sylvestris; 6 (LE).

Buellia badia (Fr.) A. Massal. – on siliceous rocks; m9, 12 (H, UPS L-116054; Andreev, 2002).

Buellia disciformis (Fr.) Mudd – on bark of Alnus glutinosa and lignum of Pinus sylvestris; 2, 10, 11, 15–19, a10 (H, LE). Thalli contain atranorin, norstictic and connorstictic acids.

Calicum glaucellum Ach. – on snag of Pinus sylvestris; a34 (LE).

Calicum tigillare (Ach.) Pers. – on lignum of Pinus sylvestris; 6 (LE). Indicator species of biologically valuable forests in the Southern Taiga of North-Western European Russia (Andersson et al., 2009).

Calicum viride Pers. – on bark of Picea abies; a46, a51.

Caloplaca chlorina (Flot.) H. Olivier – on brick; a6 (LE).

Caloplaca diphyodes (Nyl.) Jatta – on siliceous rocks; m5 (UPS L-116021, L-116029; Andreev, 2002).

Caloplaca saxicola (Hoffm.) Nordin – on limestone in former village; m12 (BG, LE, UPS L-116093; Andreev, 2002).

Candelariella aurella (Hoffm.) Zahlbr. – on bones, brick, concrete, iron; m12, 3, a6, a14 (H, LE; Andreev, 2002).
Candelariella coralliza (Nyl.) H. Magn. – on siliceous rocks; 12 (H, sub Protoparmelia badia).

Candelariella efflorescens R. C. Harris & W. R. Buck – on bark of Populus tremula; 2 (H).

Candelariella lutella (Vain.) Räsänen – on bark of Populus tremula; 2 (H).

Candelariella reflexa (Nyl.) Lettau – on bark of Quercus robur; 1 (LE).

Candelariella vitellina (Hoffm.) Müll. Arg. – on iron and granite boulders; m3, m9, m10, 1, 2, 4, a6 (H, UPS L-116046; Andreev, 2002).

#Carbonea supersparsa (Nyl.) Hertel – on thallus of Lecanora polytopra on siliceous stone; 12 (H, sub Protoparmelia badia).

Carbonea vorticosa (Flörke) Hertel – on brick; a6 (LE). New to the North-Western European Russia. In European Russia is known from Murmansk Region (Urbanavichus et al., 2008). Distribution in Fennoscandia: Norway, Sweden, Finland (Nordin et al., 2011); not recorded in Baltic countries. Lichenized species of the genus Carbonea, characterized by thin olivaceous-brown thallus in irregular patches, numerous black apothecia with concave (crater-like) disc; asci 8-spored, Lecanora-type, spores simple, ellipsoid (Chambers et al., 2009).

Catillaria chalybeia (Borrer) A. Massal. – on siliceous rocks; 2, 13 (H).

Catillaria nigroclava (Nyl.) Schuler – on bark of Quercus robur; 1 (LE).

#Cercidospora stereocauleorum (Arnold) Hafellner – on thallus of Stereocaulon incrustatum on sandy soil; 9 (BILAS). New to the North-Western European Russia. In European Russia is known from Murmansk and Nenets regions (Zhurbenko, 2010). Distribution in Fennoscandia: Sweden, Norway (Nordin et al., 2011); not recorded in Baltic countries. The fungus differs from Cercidospora alpina Ihlen & Wedin (also growing on Stereocaulon) by (2–)4–(8)-spored asci (4-spored in our specimens), (1–)3–(6)-septate spores (2–3-septate in our specimens) lacking perispore (Zhurbenko, 2010).

Cetraria aculeata (Schreb.) Fr. – on sandy soil; 5, 6, 9, 12, a5, a16 (H, LE).

Cetraria islandica (L.) Ach. subsp. islandica – on soil; m8, m13, 12, a3, a4, a16, a25, a37 (Andreev, 2002).

Cetraria muricata (Ach.) Eckfeldt – on soil; a40 (H). Collected from Tuters (no exact locality) by Brenner, 24.07.1868 (H 8004371: det. I. Kärnefelt, 1982).

Cetraria sepincola (Ehrh.) Ach. – on bark of Betula sp. and Pinus sylvestris; 6, a29.

Cetrariella commixta (Nyl.) A. Thell & Kärnefelt – on siliceous rocks; 7 (LE). Red Data Book of LR (Tzvelev, 2000).

Chaeotheca chrysocephala (Turner ex Ach.) Th. Fr. – on bark of Picea abies and Pinus sylvestris, on lignum of Pinus sylvestris; 10, 14, a27, a31, a35, a46, a50.

Chaeotheca ferruginea (Turner ex Sm.) Mig. – on bark of Picea abies and Pinus sylvestris, on lignum; m6, 11, 14, 16, 17, a31, a35, a50 (Andreev, 2002).

Chaeotheca furfuracea (L.) Tibell – on siliceous rocks and upturned roots; a1, a28 (LE).

Chaeothecopsis subparoica (Nyl.) Tibell – on thallus of Haematomma ochroleucum on siliceous rock; a28 (LE).

Circinaria caesiocineraea (Nyl. ex Malbr.) A. Nordin, S. Savi & Tibell – on siliceous rocks; m1 (UPS L-116080; Andreev, 2002).

Circinaria contorta (Hoffm.) A. Nordin, S. Savi & Tibell – on soil; a6 (LE).

Circinaria gibbosa (Ach.) A. Nordin, S. Savi & Tibell – on siliceous rocks; 12 (H, sub Acraspora fuscata).

Cladonia amauropaca (Flörke) Schaeer. – on soil and lignum; m6, 7, 18, a2 (UPS L-116066; Andreev, 2002).

Cladonia arbuscula (Wallr.) Flot. subsp. Arbuscula – on soil; m6, m13, m14, 7, 9, 18, a2, a6 (H 8004420; Andreev, 2002); subsp. mitis (Sandst.) Ruoss– on soil; m8, 5, 10, 12, 18 (H; Andreev, 2002).

Cladonia bellidiflora (Ach.) Schaeer. – on soil and lignum; m8, 7, 18 (BG, H, LE; Andreev, 2002).

Cladonia borealis S. Stenroos – on soil; 7, 10, 18, a38 (H).

Cladonia botrytes (K. G. Hagen) Willd. – on soil; m8, 9 (LE; Andreev, 2002).

Cladonia carneola (Fr.) Fr. – on sand; 5 (LE).
**Cladonia cenothea** (Ach.) Schäer. – on bark and lignum of *Pinus sylvestris*, on sandy soil; m6, 16, a15, a31 (H; Andreev, 2002).

**Cladonia chlorophaea** (Flörke ex Sommerf.) Spreng. – on soil; 4, 6, a6 (LE; Andreev, 2002). Thalli contain fumarprotocetraric acid.

**Cladonia ciliata** Stirt. f. *flavicans* (Flörke) Ahti & DePriest – on soil; 10 (H). New to North-Western European Russia. In European Russia is known from Kaliningrad Region (Dedkov et al., 2007). Distribution in Fennoscandia and Baltic countries: Norway, Sweden, Finland (Nordin et al., 2011), Estonia (Randlane et al., 2016), Latvia (Motiejūnaitė & Piterāns, 1998), Lithuania (Motiejūnaitė, 1999). The species of *Cladina* section with slender regularly branched yellowish podetia, brown towards the apices, P+ red; pycnidia contain red slime (Ahti & Stenroos, 2013). It is an oceanic species widespread on coasts of Poland, Lithuania, Latvia, Estonia and SW Finland (and westwards); Tuters Island is the easternmost locality of this species in Europe.

**Cladonia coccifera** (L.) Willd. – on primary soil on rocks; m6, a40 (LE; Andreev, 2002).

**Cladonia coniocraea** (Flörke) Spreng. – on bark of *Picea abies* and *Pinus sylvestris*, on lignum; m8, 11, 14, 17–19 (Andreev, 2002).

**Cladonia cornuta** (L.) Hoffm. subsp. *cornuta* – on bark of *Pinus sylvestris*, on lignum, soil and sand; m6, m8, m9, 5, 9, 10, 17, a2, a3, a6 (UPS L-116058; Andreev, 2002).

**Cladonia crispata** (Ach.) Flot. var. *crispata* – on lignum and soil; m8, 9, 10, 18, a2 (H, BG, H, UPS L-116058; Andreev, 2002).

**Cladonia cyanipes** (Sommerf.) Nyl. – on soil; 9 (LE).

**Cladonia deforsis** (L.) Hoffm. – on bark of *Pinus sylvestris*, on lignum and soil; m8, m15, 9, 10, 17 (H, UPS L-116031; Andreev, 2002).

**Cladonia digitata** (L.) Hoffm. – on bark of *Pinus sylvestris* and on lignum; 11, 16, 17, 19.

**Cladonia fimbriata** (Fr.) Hoffm. – on bark of *Picea abies* and *Pinus sylvestris*, on lignum and soil; m8, 9, 11, 12, 14, 16, 17, a6 (Andreev, 2002).

**Cladonia floerkeana** (Fr.) Flörke – on lignum and soil; m8, 7 (H; Andreev, 2002).

**Cladonia furcata** (Huds.) Schrad. – on soil; m6, m8, 10, 12, 18, a3, a6 (BG, H, LE, UPS L-116057; Andreev, 2002).

**Cladonia graciola** (L.) Wild. subsp. *graciola* – on soil; m6, 7, 10, 18, a18 (H, UPS L-116055; Andreev, 2002); subsp. *turbinate* (Ach.) Ahti – on soil and lignum; m6, m8, m15, 9, 10, 18, a2 (H, BG, LE UPS L-116032; Andreev, 2002).

**Cladonia grayi** G. Merr. ex Sandst. – on soil; m15 (H). Thallus UV+ blue.

**Cladonia macilenta** Hoffm. – on lignum and soil; m6, 7, 9, 10, 12 (UPS L-116034, L-116072; Andreev, 2002).

**Cladonia macrophylla** (Schäer.) Stenh. – on soil; 7 (H). Red Data Book of LR (Tzvelev, 2000).

**Cladonia merochlorphaea** Asahina – on soil; 9, 12 (LE). Thalli contain merochlorophaeic and 4’-O-methylchlorophaeic acids.

**Cladonia ochrochlorora** Flörke – on lignum; 11 (H).

**Cladonia phyllophora** Hoffm. – on soil; m6, m8, 5, 7, 10, 12, a5 (BG, H, LE, UPS L-116059; Andreev, 2002).

**Cladonia pleurota** (Flörke) Schäer. – on soil and lignum; m6, m15, 9, 10, 18, a2 (H; Andreev, 2002).

**Cladonia pyxidata** (L.) Hoffm. – on soil; 7, 10, 12, 18, a6, a8, a37. Collected from Tuters (no exact locality) by Balashova, 1993 (LECB; Alexeeva, 2005).

**Cladonia rangiferina** (L.) F. H. Wigg. – on soil; m6, m13, 7, 9, 10, 18, a2 (H; Andreev, 2002).

**Cladonia rangiformis** Hoffm. – on soil; a5, a6 (H, LE). New to North-Western European Russia. The nearest locality in European Russia is in Kaliningrad Region (Dedkov et al., 2007). Distribution in Fennoscandia and Baltic countries: Norway, Sweden, Finland (Nordin et al., 2011), Estonia (Randlane et al., 2016), Latvia (Piterāns, 2001), Lithuania (Motiejūnaitė, 1999). Podetia are irregularly dichotomously branched, form dense cushions, brownish toward the tops. Close to C. *furcata*, but distinguished by pale greyish colour and usually by the P- reaction (Ahti & Stenroos, 2013). Distributed mostly along the coasts of the Atlantic.

**Cladonia rei** Schäer. – on soil, on bark and lignum of *Pinus sylvestris*; 5–7, 9, 12, 17, a2 (LECB).

**Cladonia scabriuscula** (Delise) Nyl. – on soil; m14, 12, a4, a6, a16 (H). Collected from Tuters (no exact locality) by Balashova, 1993 (Alexeeva, 2005).
**Cladonia squamosa** Hoffm. – on lignum and soil; m6, 7, 10, 18, 19 (H; Andreev, 2002).
**Cladonia stellaris** (Opiz) Pouzar & Vězda – on soil; m6, m13, 18, a3, a37 (Andreev, 2002).
**Cladonia stygia** (Fr.) Ruoss – on soil; 18, a2 (LE).
**Cladonia subulata** (L.) F. H. Wigg. – on sandy soil; m8, m9, m15, 5, 7, 10, 12 (BG, H, LE; UPS L-116056; Andreev, 2002).
**Cladonia sulphurina** (Michx.) Fr. – on lignum; 18.
**Cladonia turgida** Hoffm. – on soil; m2, m6, 18, a2, a8, a17, a37 (BG, LE, UPS L-116076, L-116076; Andreev, 2002).
**Cladonia uncialis** (L.) F. H. Wigg. subsp. **biuncialis** (Hoffm.) M. Choisy – on soil; 7, 18, a2, a13, a37; subsp. **uncialis** on soil; m6, a3 (Andreev, 2002).
**Cladonia verticillata** (Hoffm.) Schäer. – on soil; m8, 12, 18, a2 (H; Andreev, 2002).
**Cliostrum griffithii** (Sm.) Coppins – on bark of *Alnus glutinosa* and *Picea abies*; 15, a21, a46 (H).
**Clypeococcum hypocenomyce** D. Hawksw. – on thallus of *Hypocenomyce scalaris* on lignum of *Pinus sylvestris*; 6 (H).
**Coenogonium pineti** (Ach.) Lücking & Lumbsch – on bark of *Alnus glutinosa*, *Picea abies, Pinus sylvestris* and *Salix caprea*; 11, 14–16, 18, a21, a26, a27 (H).
**Enterographe zonata** (Körb.) Källsten ex Torrente & Egea – on siliceous rock; a28 (LE). Thallus contains confluentic, 2′-0-methylmicrophyllinic and 2′-0-methylperlatolic acids.
**Evernia mesomorpha** Nyl. – on bark of *Picea abies*; a16.
**Evernia prunastri** (L.) Ach. – on bark of *Picea abies* and *Pinus sylvestris*; 4, 11.
**Felipes leucopellaeus** (Ach.) Frisch & G. Thor – on bark of *Picea abies*; 14, a35, a49 (LE). Specialized species of biologically valuable forests in the Southern Taiga of North-Western European Russia (Andersson et al., 2009).
**Fellhanera subtilis** (Vězda) Diederich & Sérus. – on bark of *Vaccinium myrtillus*; 18, a18 (H).
**Flavoplaca marina** (Wedd.) Arup et al. – on siliceous rocks; m3, 1, 8, 13 (H, LE; Andreev, 2002).
**Flavoplaca microthallina** (Wedd.) Arup et al. – on siliceous rocks; m1 (LE; Andreev, 2002).
**Fuscidea arboricola** Coppins & Tønsberg – on bark of *Alnus glutinosa*; 15 (fertile), 19 (H; LE). Thalli contain fumarprotocetraric acid.
**Fuscidea cyathoides** (Ach.) V. Wirth & Vězda – on siliceous rocks; a43, a48 (H).
**Fuscidea praeruptorum** (Du Rietz & H. Magn.) V. Wirth & Vězda – on siliceous rocks; 13, a28 (H, LE). New to Russia. Distribution in Fennoscandia and Baltic countries: Norway, Sweden, Finland (Nordin et al., 2011), Estonia (Randlade et al., 2016), Lithuania (Motiejūnaitė et al., 2015). The species has pale to brown areolate thallus with black prothallus and ochre- to cream-coloured punctiform soralia which react Pd+ yellow, KC+ red, UV+ faintly yellowish; apothecia are very rare (Gilbert et al., 2009). Thalli contain alectoriaic acid.
**Fuscidea pusilla** Tønsberg – on bark of *Betula sp.*, *Juniperus communis, Picea abies, Pinus sylvestris* and *Salix sp.*, on lignum of *Picea abies*; 10, 11, 14, 16–19, a23, a27, a29 (H, LE). Thalli contain divaricatic acid.
**Graphis scripta** (L.) Ach. s. l. – on bark of *Alnus glutinosa*; 15, a21 (H).
**Gyrolechia flavorubescens** (Huds.) Sochting et al. – on bark of *Populus tremula*; 2, a36 (H).
**Haematomma ochroleucum** (Neck.) J. R. Laundon var. **ochroleucum** – on siliceous rocks; a44, a48 (LE). Thalli contain usnic acid, zeorin, atranorin and porphyrilic acid; var. **porphyrium** (Pers.) J. R. Laundon – on siliceous rocks; a28 (LE). Thallus contains zeorin, atranorin, porphyrilic acid and unidentified fatty acid.
**Homostegia pogotii** (Berk. & Broome) P. Karst. – on thalli of *Parmelia omphalodes* on siliceous rock; a45 (H).
**Hydropunctaria maura** (Wahlenb.) Keller, Guedan & Thüs – on siliceous rocks (m1, m5, 1, 3, 8, 13 (BG, LE, UPS L-116078, L-116023, L-116071; Andreev, 2002). The thalli of the investigated specimens are rather thick and contain brown pigment in the pseudocortex. In contrast, the similar species *H. aractina* (Wahlenb.) Orange has thinner thallus and a green to green-brown pigment (Orange 2012).
**Hypocenomyce scalaris** (Ach.) M. Choisy – on bark and lignum of *Pinus sylvestris* (m6, 6, 16, 17, a10, a31 (BG, H, LE, UPS L-116071; Andreev, 2002).
**Hypogymnia physodes** (L.) Nyl. – on bark of *Alnus glutinosa*, *Betula sp.*, *Picea abies, Pinus sylvestris, Populus tremula, Salix sp.* and *Vaccinium uliginosum L.*, on lignum, siliceous rocks, sandy soil; m2, m4, m6–9, 5–7, 10–12, 14–19, a29, a31 (BG, H, LE,
lecAnorA cenisiA
lecAnorA carpineA
lecAnorA campestris
lecAnorA CaesiosorA
lecAnorA cadubriAe
lecAnorA ArgentAtA
lecAnorA AllophAnA
lecAnorA AlbellulA
lecAniA nAegelii
lecAniA erysibe
lecAniA cyrtellA
lecActis AbietinA
LasAlliA pustulAtA
ionAspis lAcustris
imshAugiA Aleurites
hypogymniA tubulosA
lus glutinosa
ity) by Brenner, 25.07.1868 (H 800508).
2002). Collected from Tuters (no exact local
aucuparia
Populus
tremula
Pinus
glutinosa
106
lus
glutinosa
13 (H).
25.07.1868 (H 8005048).
UPS L-116061; Andreev, 2002). Collected
from Tuters (no exact locality) by Brenner,
1868 (H 8005081, 8000440).
IMSHAUGIA ALEURITES (Ach.) S. L. F. Meyer – on
bark of Picea abies and Pinus sylvestris;
a10, a46 (LE).
IONASPI LACUSTRIS (With.) Lutzoni – on siliceous
rocks; a30, a48 (H).
Lasallia Pustulata (L.) Merat – on siliceous rock;
a40 (not collected).
LecAnactis Abietina (Ach.) KorB. – on bark of Picea
abies; 11, 14, a27, a35, a49, a50 (H). Special-
ized species of biologically valuable for-
est in the Southern Taiga of North-Western
European Russia (Andersson et al., 2009).
Lecania cyrtella (Ach.) Th. Fr. – on bark of Popu-
lus tremula; 2, a36 (H).
Lecania erysibe (Ach.) Mudd – on iron; 3 (LE).
Lecania NaegeIIi (Hepp) Diederich & van den
Boom – on bark of Populus tremula; 2 (H).
Lecania atema (Ach.) Hepp – on bark of Alnus
glutinosa and on lignum; 15, a10 (H).
Lecania albellula (Nyl.) Th. Fr. – on bark of
Pinus sylvestris; a29 (LE).
LecAnora allophana Nyl. – on bark of Populus
tremula; 2, 19 (LE).
LecAnora argentata (Ach.) Malme – on bark of Al-
nus glutinosa; m4, a21 (H; Andreev, 2002).
LecAnora Cadubriae (A. Massal.) Hedl. – on lig-
num of Pinus sylvestris; 6 (H).
LecAnora caesiosora Poelt – on siliceous rocks; 7,
a40 (LE). Thalli contain atranorin, chloratra-
norin, fatty acids and unknown substance.
LecAnora campestris (Schaer.) Hue – on siliceous
rocks; m6 (UPS L-116099; Andreev, 2002).
LecAnora carpinea (L.) Vain. – on bark of Acer
platanoides, Alnus glutinosa, Fraxinus exel-
sior L., Padus avium Mill., Pinus sylvestris,
Populus tremula, Quercus robur and Sorbus
aucuparia; m4, m11, 1, 2, 12, 15, 19 (BG,
H, LE, UPS L-116082, L-116082; Andreev,
2002). Collected from Tuters (no exact local-
ity) by Brenner, 25.07.1868 (H 8005168).
LecAnora cenisia Ach. – on siliceous rocks; 8,
a13 (H).
LecAnora chlarotera Nyl. – on bark of Alnus
glutinosa, Betula sp., Pinus sylvestris, Popu-
lus tremula and Quercus robur; m11, 1, 2,
5, 6, 12, 15, a21, a29 (H, UPS L-116087;
Andreev, 2002).
LecAnora circumborealis Brodo & Vitik. – on bark
of Salix sp. and lignum of Pinus sylvestris;
a29 (LE).
LecAnora compallens van Herk et Aptroot – on
bark of Alnus glutinosa and Pinus sylvestris;
4, 15 (LE). Thalli contain usnic acid and
zeorin.
LecAnora helicopis (Wahlenb.) Ach. – on seashore
granite boulders; m1, 1, 3, 13 (H; Andreev,
2002).
LecAnora hypoptella (Nyl.) Grumann – on bark
of Pinus sylvestris; 16, 17 (LE).
LecAnora intricata (Ach.) Ach. – on siliceous
rocks and on lignum; m9, a10, a41 (H, UPS
L-116040, sub Acarospora fuscata).
LecAnora marginata (Schaer.) Hertel & Rambold –
on siliceous rocks; m9 (LE, UPS L-116053;
Andreev, 2002).
LecAnora polytrpota (Ehrh. ex Hoffm.) Rabenh.
– on siliceous rocks, iron and rubber; m9,
m12, 8, 12, 18, a6, a21, a39, a41 (BG, H,
LE, UPS L-116039; Andreev, 2002).
LecAnora pulicaris (Pers.) Ach. – on bark of Al-
nus glutinosa, Betula sp., Picea abies, Pinus
sylvestris, Salix sp. and Sorbus aucuparia,
on lignum; m4, 6, 10, 11, 14, 16–19, a10,
a26, a29 (H; Andreev, 2002).
LecAnora rilocola H. Magn. – on siliceous rocks;
m10, 3, 13 (H; Andreev, 2002).
LecAnora rupicola (L.) Zahlbr. – on siliceous
rocks; m9, 12 (BG, H, LE, UPS L-116038;
Andreev, 2002).
LecAnora subintricata (Nyl.) Th. Fr. – on bark and
lignum of Pinus sylvestris; 6, 18 (H).
LecAnora symmicta (Ach.) Ach. – on bark of Alnus
glutinosa, Betula sp., Picea abies, Pinus syl-
vestris, Salix sp., lignum of Pinus sylvestris
and Populus tremula; m4, m11, 2, 6, 12, 15,
a29, a46 (Andreev, 2002).
LecAnora umbrina (Ach.) A. Massal. – on bark of
Quercus robur; m11 (UPS L-116089, sub
Amandinea punctata).
LecAnora variA (Hoffm.) Ach. – on bark of Betula
sp. and lignum; m8, 6, a29 (H; Andreev,
2002).
LecideA FuscoAtA (L.) Ach. – on siliceous rocks;
m9 (BG, LE, UPS L-116041; Andreev, 2002).
LecideA Lapicida (Ach.) Ach. var. Lapicida – on
siliceous rock; a41 (LE); var. Pantherina Ach.
– on siliceous rocks; m3, m9, m10, m12,
m12 (BG, H, LE, UPS L-116043, L-116044;
Andreev, 2002).
LECIDEA LITHOPHILA (Ach.) Ach. – on siliceous rocks; 7, a41 (LE).

LECIDEA NYLANDERI (Anzi) Th. Fr. – on bark of Betula sp., Juniperus communis, Picea abies and Pinus sylvestris, on lignum of P. sylvestris; 7, 11, 16–18, a31, a46 (H).

LECIDEA TURGIDULA Fr. – on bark and lignum of Pinus sylvestris; 16, 18, a31 (H).

LECIDELLA CARPATHICA Körb. – on siliceous rocks; m6 (LE; Andreev, 2002).

LECIDELLA ELAECHROMA (Ach.) M. Choisy [incl. L. ahrisototera (Nyl.) Hertel & Leuckert] – on bark of Acer platanoides, Alnus glutinosa, Betula sp., Fraxinus excelsior, Padus avium, Populus tremula, Quercus robur and Sorbus aucuparia; m11, 1, 2, 15, 19, a36 (H, LE, UPS L-116083, L-116086; Andreev, 2002).

LECIDELLA FLAVOSOREDIATA (Vézda) Hertel et Leuckert – on bark of Alnus glutinosa; 15, a21 (LE). Thalli contain arthothelin.

LECIDELLA STIGMATEA (Ach.) Hertel & Leuckert – on concrete and siliceous rock; a6, a41 (LE).

LEPARRIA BOREALIS Loht. et Tonsberg – on siliceous rocks; 7, a39 (LE). Thalli contain atranorin and roccellic/angardhianic acid.

LEPARRIA ELOBATA Tonsberg – on bark of Alnus glutinosa, Picea abies, Pinus sylvestris and Sorbus aucuparia, on lignum of Salix caprea; 11, 14, 15, 17–19, a26, a49 (H, LE). Thalli contain atranorin, zeorin and stictic acid complex.

LEPARRIA INCANA (L.) Ach. – on bark of Picea abies and Pinus sylvestris, on lignum of Salix caprea and on upturned roots; 11, 14, a27, a48 (H, LE). Thalli contain atranorin, zeorin and divaricatic acid.

LEPARRIA JACKII Tonsberg – on bark of Picea abies, Pinus sylvestris and Juniperus communis, on upturned roots; m2, 11, 16, 17, 19, a34, a49 (LE). Thalli contain atranorin, roccellic/angardhianic, jackinonic/rangifioric and norjackinonic/norrangifioric acids.

LEPARRIA LOBIFICANS Nyl. – on bark of Picea abies; 11, 14, a50 (LE).

LEPARRIA MEMBRANACEA (Dicks.) Vain. – on siliceous rocks; 7, a28, a37 (LE). Thalli contain pannaric acid and fatty acids.

LEPARRIA NEGLECTA (Nyl.) Lettau – on siliceous rocks and saxicolous mosses; 7, 18 (H, LE). Thalli contain alectorialic and roccellic/angardhianic acids.

LEPTORHAPHIS ATOMARIA (Ach.) Szatala – on bark of Populus tremula; a36 (LE).

LEPTORHAPHIS EPIDERMIDIS (Ach.) Th. Fr. – on bark of Betula sp.; a29, a33 (LE).

# LICHENOCONIUM ERODENS M. S. Christ. & D. Hawksw. – on thalli of Parmelia amphalodes subsp. discordan, Hypogymnia physodes and Imshaugia aleurites; 5, a37, a46 (BLAS).

# LICHENOIDIULIS LECANORAE (Vouaux) Dyko & D. Hawksw. – on apothecia and thallus of Athalia holocarpa; 1, 13 (H).

LICHENOMPHALIA UMBELLIFERA (L.: Fr.) Redhead et al. – on lignum, soil; 18, a44 (H).

MELANELIA HEPATIZON (Ach.) A. Thell – on siliceous rocks; m9, 12 (LE; Andreev, 2002). Red Data Book of LR (Tzvelev, 2000).

MELANELIA STYGIA (L.) Essl. – on siliceous rocks; m9, 7, 12, a9 (LE; Andreev, 2002). Red Data Book of LR (Tzvelev, 2000).

MELANELIXA FULGINOSA (Fr. ex Duby) O. Blanco et al. – on siliceous rocks; 3, 7, 8, 15, a43, a47 (H).

MELANELIXA GLABRATULA (Lamy) Sandler & Arup – on bark of Alnus glutinosa and Picea abies; 15, a46 (H).

MELANELIXA SUBAURIFERA (Nyl.) O. Blanco et al. – on bark of Quercus robur; 1 (LE).

MELANOHALEA EXASPERRATULA (Nyl.) O. Blanco et al. – on bark of Alnus sp., Salix sp. and Pinus sylvestris; m4, 5, 6, 10, 12, a29 (UPS L-116075; Andreev, 2002).

MELANOHALEA OLIVACEA (L.) O. Blanco et al. – on bark of Pinus sylvestris and Sorbus aucuparia; m4, 12 (BG, LE; Andreev, 2002).

MICAREA BOTRYOIDES (Nyl.) Coppins – on bark of Pinus sylvestris; 11 (LE). New to LR. Distribution in North-Western European Russia outside LR and SPb: Republic of Karelia (Fadeeva et al., 2007). In Russia also known from Kaliningrad region (Czarnota, 2007). Distribution in Fennoscandia and Baltic countries: Norway, Sweden, Finland (Nordin et al., 2011), Lithuania (Motiejūnaitė, 1999). Differs from other species by black stalked pycnidia with walls dull greenish to olive-brown in squash preparation, K- or K+ green intensifying (Coppins, 1983; Czarnota, 2007).

MICAREA BYSSACEA (Th. Fr.) Czarnota et al. – on bark of Picea abies and Pinus sylvestris, on lignum of Picea abies; 11, 16, a23 (LE). New to Russia. Distribution in Fennoscandia and Baltic countries: Sweden, Finland (Nordin et al., 2011), Estonia, Lithuania (Czarnota,
Guzow-Krzemińska, 2010). Thalli contain methoxymicaric acid. Differs from *Micarea micrococca* by darker apothecia containing “sedifolia grey” pigment (K+ violet) in ephymenum and thallus formed by gonioocytes. Sometimes *M. byssacea* develops pale apothecia, but unlike *M. micrococca* they are usually adnate (Czarnota, Guzow-Krzemińska, 2010).

**Micarea denigrata** (Fr.) Hedl. – on lignum; a10 (H).

**Micarea melaina** (Nyl.) Hedl. – on bark of *Pinus sylvestris*; 11.

**Micarea micrococca** (Körb.) Gams ex Coppens – on bark of *Picea abies* and *Pinus sylvestris*, on lignum; 11, 14, 16, 18, 19, a18 (H, LE).

**Micarea nitschkeana** (J. Lahm ex Rabenh.) Harm. – on bark of *Betula* sp.; a29 (H).

**Micarea peliocarpa** (Anzi) Coppens & R. Sant. – on soil; a44 (H).

**Miriquidica deusta** (Stenh.) Hertel & Rambold – on siliceous rocks; 7 (LE).

**Miriquidica griseoatra** (Flot.) Hertel & Rambold – on siliceous rocks; a41 (LE). New to LR. Distribution in North-Western European Russia outside LR and SPb: Republic of Karelia (Fadeeva et al., 2007). Distribution in Fennoscandia: Norway, Sweden, Finland (Nordin et al., 2011); not recorded in Baltic countries. Thallus consists of grey-brown to dark bluish grey, rounded convex areoles; apothecia black, sessile, with constricted base; ascospores simple, 9–13(–14) × (4–)5–7 μm. Similar to *Miriquidica leucoapha* (Flörke ex Rabenh.) Hertel & Rambold, from which differs in the darker coloured matt and more frequently lobate areoles (Giavarini et al., 2009).

**Montanellia disjuncta** (Erichsen) Divakar et al. – on siliceous rocks; m5, m10, 8, 12, a41 (H, LE; Andreev, 2002).

**Myriolecis dispersa** (Pers.) Śliwa et al. – on brick, calcareous stone and concrete; m12, a6 (LE; Andreev, 2002).

**Myriolecis hagenii** (Ach.) Śliwa et al. – on bark of on bark of *Alnus* sp., *Populus tremula*, *Quercus robur* and *Sorbus aucuparia*, on bones; m4, 1, 2, 19, a14 (H, LE).

**Myriolecis salina** (H. Magn.) Śliwa et al. – on siliceous rocks; m3, m5, m10 (UPS L-116028; Andreev, 2002).

**Myriolecis semipallida** (H. Magn.) Śliwa et al. – on bones and concrete; a6, a14 (H).

**Myriospora smaragdula** (Wahlenb. ex Ach.) Nägeli ex Uloth – on siliceous rocks; 4 (H).

**Naetrocymbium punctiformis** (Pers.) R. C. Harris – on bark of *Alnus glutinosa*, *Betula* sp., *Populus tremula* and *Sorbus aucuparia*; m4, m11, 2, 15, 19, a22 (H; Andreev, 2002). Collected from Tuters (no exact locality) by Brenner, 25.07.1868 (H 8005168).

**Ochrolechia androgyna** (Hoffm.) Arnold – on bark of *Picea abies* and on dead mosses over rock; 14, a45 (LE). Thalli contain lecanoric acid, gyrophoric acid and “androgyona B-unknowns” 1, 2, 3 (see Kukwa, 2011).

**Ochrolechia arborea** (Kreyer) Almb. – on bark of *Pinus sylvestris*; 17 (LE). Thallus contains lecanoric, gyrophoric acids and lichexanthone.

**Ochrolechia microstictoides** Rāsānen – on bark of *Betula* sp., *Picea abies* and *Pinus sylvestris*, on lignum of *Pinus sylvestris*; 6, 11, 17, 18 (H, LE). Thalli contain variolaric acid, lichesterinic acid and “microstictoides-unknowns” (see Kukwa, 2011).

**Opographa vulgata** (Ach.) Ach. – on bark of *Picea abies*; 11, 14 (H).

**Pachyphiale fagicola** (Hepp) Zwackh – on bark of *Acer platanoides*, *Populus tremula*, *Quercus robur* and *Sorbus aucuparia*; m11, 1, 19, a36 (H; Andreev, 2002).

**Palicella filamentosa** (Stirt.) Rodr. Flakus & Printzen – on lignum; 6, a10 (H).

**Paremelia ernstiae** Feuerer & A. Thell – on bark of *Alnus glutinosa* and *Quercus robur*, 1, 15 (H, LE). New to the North-Western European Russia. In European Russia is known from Caucasus (Urbanavichus & Urbanavichene, 2008). Distribution in Fennoscandia and Baltic countries: Sweden, Finland (Nordin et al., 2011), Estonia (Randlane et al., 2016), Lithuania (Motiejūnaitė et al., 2008). Corticolous species close to *P. saxatilis* and *P. serrana*, from which differs by partly pruinose lobes and pruinose isidia typically spread over the surface in the central parts of a thallus (Thell et al., 2011).

**Paremelia omphalodes** (L.) Ach. subsp. *discordans* (Nyl.) Skult – on siliceous rocks; m12, 7, a37, a41, a43, a45 (H; Andreev, 2002). Collected from Tuters (no exact locality) by Brenner, 28.07.1868, det. H. Skult, 1983 (H 8000439, 8000440).

**Paremelia saxatilis** (L.) Ach. – siliceous rocks, also on bark and lignum of *Picea abies* and
*Pinus sylvestris* along the seashore; m4–6, m9, m12, 2, 4, 7, 8, 11, 12, 15, 18, a10, a11, a41, a45 (BG, H, LE, UPS L-116049, L-116074; Andreev, 2002).

**Parnellia sulcata** Taylor – on bark of *Alnus glutinosa*, *Picea abies*, *Pinus sylvestris*, *Quercus robur*, *Salix* sp. and *Sorbus aucuparia*, on lignum of *Populus tremula* and on siliceous rocks; m4, m11, 1, 2, 10–12, 14, 15, 17, a29, a46 (H; Andreev, 2002).

**Parnellia hyperopta** (L.) Willd. – on mosses and soil; m1, m12, a6, a23 (BG, H, LE; Andreev, 2002).

**Parnellia didactyla** (L.) R. Laundon – on bark of *Alnus glutinosa*, soil; a26. Collected from Tuters (no exact locality) by Balashova, 1993 (LECB; Alexeeva, 2005).

**Parnellia extenuata** (Nylander ex Vain.) Lojka – on soil; a6 (LE).

**Parnellia malacea** (Ach.) Funck – on soil and mosses; a6. Collected from Tuters (no exact locality) by Brenner, 24.07.1868 (H 8000595; Brenner, 1886) and Balashova, 1993 (LECB; Alexeeva, 2005).

**Parnellia polydactylon** (Neck.) Hoffm. – on soil and mosses over rock; a47 (LE). Reported from Tuters (no exact locality) by Brenner (1886), as *P. polydactyla* (Neck.) Hoffm. *f. collina* Ach. This combination could be a synonym of *P. collina* (Ach.) Schrad., but this species is extremely rare in the Leningrad Region, and any material from Tuters is absent in herbaria. At the same time, the only specimen collected by Brenner from the Baltic islands and determined as *P. polydactyla f. collina* (H-NYL 33132, Hogland) refer to *P. polydactylon* – and we suppose Brenner’s record from Tuters to be similar.

**Parnellia praetextata** (Flörke ex Sommerf.) Zopf – on soil; m2 (BG, LE; Andreev, 2002).

**Parnellia rufescens** (Weiss) Humb. – on soil; a6. Collected from Tuters (no exact locality) by Balashova, 1993 (LECB; Alexeeva, 2005).

**Parnellia amara** (Ach.) Nylander – on bark of *Alnus glutinosa*; a26 (H).

**Parnellia pertusa** (Weigel) Tuck. – on bark of *Alnus glutinosa*; a26 (H). Specialized species of biologically valuable forests in the Southern Taiga of North-Western European Russia (Andersson et al., 2009).

**Pertusaria pupillaris** (Nylander) Th. Fr. – on bark of *Alnus glutinosa* and *Sorbus aucuparia*; 14, 15, 19 (H, LE). Thalli contain fumaroprotoctracic acid.

**Phaeophyscia orbicularis** (Neck.) Moberg – on bark of *Populus tremula*; 2.

**Phaeophyscia sciastra** (Ach.) Moberg – on concrete and on granite boulders; m1, m12, 1, a52 (Andreev, 2002).

**Phlyctis argena** (Spreng.) Flot. – on bark of *Alnus glutinosa*, *Picea abies*, *Populus tremula*, *Salix caprea* and *Sorbus aucuparia*; m4, 2, 11, 15, 19, a21, a26 (BG, LE; Andreev, 2002).

**Physcia adscendens** (Fr.) O. Lil. – on bark of *Populus tremula* and on siliceous rocks; 2. Collected from Tuters (no exact locality) by Balashova, 1993 (LECB; Alexeeva, 2005).

**Physcia aipolia** (Ehrh. ex Humb.) Fürn. – on bark of *Pinus sylvestris* and *Populus tremula*; 2, 12.

**Physcia caesia** (Hoffm.) Fürn. – on concrete and on siliceous rocks; 1, 3, 8, a52 (LE).

**Physcia dubia** (Hoffm.) Lettau – on bark of *Pinus sylvestris* and *Quercus robur*, on siliceous rocks; m3, m5, m9, m11, 2–4, 13 (BG, LE; UPS L-116052; Andreev, 2002).

**Physcia stellaris** (L.) Nylander – on bark of *Fraxinus excelsior* and *Quercus robur*; m4, m11 (UPS L-116085; Andreev, 2002).

**Physcia tenella** (Scop.) DC. – on bark of *Alnus glutinosa*, *Populus tremula* and *Quercus robur*, on siliceous rocks; m5, m11, 1, 2, 4, 8, 15 (BG, LE; UPS L-116088, L-116027; Andreev, 2002).

**Physconia enteroxantha** (Nylander ex Humb.) Poelt – on bark of *Populus tremula*; a36.

**Placynthiella dasaea** (Stirt.) Tønsberg – on lignum, plant debris and soil; 6, 7, 16, 18, a7, a23 (LE).

**Placynthiella icmalea** (Ach.) Coppins & James – on bark and lignum of *Pinus sylvestris*, on plant debris, soil and upturned roots; 6, 7, 10, 11, 16–18, a7, a37 (H).

**Placynthiella oligotropha** (J. R. Laundon) Coppins & James – on plant debris, soil and upturned roots; 5–7, 10, 12, a16, a25 (H, LE).

**Placynthiella uliginosa** (Schrad.) Coppins & James – on plant debris, soil and upturned roots; 7, 11, 12 (H).

**Platismatia glauca** (L.) W. L. Culb. & C. F. Culb. – on bark and lignum of *Picea abies* and
"Pinus sylvestris"; m2, m7, m8, 6, 7, 11, 14 (BG, LE; Andreev, 2002).

#Plectocarpus cf. encausticum (Nyl.) R. Sant. – on thallus of Brodoa intestiniformis on siliceous rock; a37 (BILAS). New to the North-Western European Russia. In Russia the species is known from Ural (Ertz et al., 2005). Distribution in Fennoscandia: Norway, Sweden (Nordin et al., 2011); not recorded in Baltic countries. This would be first record of the species for North-Western European Russia, however the specimen was not fully developed so we present it here with some doubt. The fungus induced basally constricted galls (to 0.8 mm diam.) with thalline pseudo-margin. Stromatic tissue brown, K+ olivaceous, Na+ reddish, no K+ bright orange reaction noted, as described by Ertz et al. (2005). Fertile loculi few, spores not developed, conidia not seen.

Polycaulion canadaria (L.) Frödén et al. – on lignum of Pinus sylvestris and on siliceous rocks; m9, 1, 6, a11 (H; Andreev, 2002).

Polycaulion polycarpum (Hoffm.) Frödén et al. – on bark of Alnus glutinosa, Alnus sp., Betula sp., Pinus sylvestris, Quercus robur and Salix sp., on lignum (m4, m8, m11, 4–6, 12, 15, a29 (UPS L-116036; Andreev, 2002).

#Polycoccum pulvinatum (Eitner) R. Sant. – on thallus of Physcia caesia on granite boulder; 1 (H).

Porpidia cinereoatra (Ach.) Hertel & Knoph – on siliceous rocks and brick; 18, a6, 39 (LE).

Porpidia crustulata (Ach.) Hertel & Knoph – on concrete and siliceous rocks; m9, a6, a30, a39 (UPS L-116042; Andreev, 2002).

Porpidia flavicunda (Ach.) Gowan – on siliceous rocks; m2 (Andreev, 2002).

Porpidia soredizodes (Lamy ex Nyl.) J. R. Laundon – on siliceous rocks; 4 (H).

Porpidia tuberculosa (Sm.) Hertel & Knoph – on siliceous rocks; 15 (H).

Prototarmelia badia (Hoffm.) Hafellner – on siliceous rocks; m9, 12 (H, UPS L-116040; Andreev, 2002).

Prototaramella phinctrinoidella (Nyl.) H. Mayrhofer & Poelt – on dead mosses and cyanobacterial films; a38 (H).

Pseudovernia furfuracea (L.) Zopf – on bark of Picea abies, Pinus sylvestris and Salix sp., on lignum and siliceous rocks; m6–9, 5–8, 10–12, 14, 17, 18, a29, a46 (BG, LE, UPS L-116035; Andreev, 2002).

Pseudosagedia aenea (Wallr.) Hafellner & Kalb – on bark of Picea abies, Salix caprea, Sorbus aucuparia; 11, 14, a23 (H).

Pseudosagedia chlorotica (Ach.) Hafellner & Kalb – on siliceous rocks; 4, a23 (H).

Pseudoschismatooma rufescens (Pers.) Ertz & Tehler – on bark of Alnus glutinosa, Populus tremula; 2, 19, a26 (H).

Psilocechia lucida (Ach.) M. Choisy – on siliceous rocks; a37 (LE).

Pycnora praestabilis (Nyl.) Hafellner – on lignum of Pinus sylvestris; a31 (H).

Pycnora sorophora (Vain.) Hafellner – on bark of Juniperus communis, Picea abies and Pinus sylvestris, on lignum of Pinus sylvestris; 6, 7, 11, 17, 18, a31, a46 (H, LE). Thalli contain alectorialic acid.

Ramalina farinacea (L.) Ach. – on bark of Alnus glutinosa, Populus tremula and Quercus robur; m4, 1, 2, 15 (H; Andreev, 2002).

Ramalina fraxinea (L.) Ach. – on bark of Quercus robur; m11 (LE, sub Ramalina pollinaria – det. O. A. Kataeva).

Ramalina pollinaria (Westr.) Ach. – on bark of Alnus glutinosa and Quercus robur; m4, m11 (BG, LE; Andreev, 2002).

Ramalina silicoquosa (Huds.) A. L. Sm. – not found in 1994–2015. Collected from Tuters (siliceous rocks, no exact locality) by Brenner, 24.07.1968 [H 8003430, 8003431; Brenner, 1886, as Ramalina cuspidata (Ach.) Nyl., R. scopulorum auct. p. p.].

Ramalina subfarinacea (Nyl. ex Cromb.) Nyl. – on siliceous rocks; 8, a41, a42, a48 (H).

Rhizocarpus cinereovires (Müll. Arg.) Vain. – on siliceous rocks; a48 (H).

Rhizocarpus distinctum Th. Fr. – on siliceous rocks; m12 (UPS L-116095; Andreev, 2002).

Rhizocarpus eupetraeum (Nyl.) Arnold – on siliceous rocks; a12 (BILAS, sub Arctoparmelia centrifuga).

Rhizocarpus geographicum (L.) DC. – on siliceous rocks; m3, m6, 7, 12, a41, a43 (BG, H, LE, UPS L-116070; Andreev, 2002).

Rhizocarpus hochstetteri (Körb.) Vain. – on siliceous rocks; a30 (H).

Rhizocarpus lecanorinum Anders – on siliceous rocks; m6, m9, m11, 7, a9, a12, a41 (BG, LE, UPS L-116068; Andreev, 2002).

Rhizocarpus petraeum (Wulfen) A. Massal. – on brick; a6 (LE).

Rhizocarpus polycarpum (Hepp) Th. Fr. – on brick; a6 (LE).

Folia Cryptog. Estonica
RHIZOCARPON REDUCTUM Th. Fr. – on siliceous rocks; a39 (LE).

RHIZOCARPON RICHARDII (Lamy ex Nyl.) Zahlbr. – on siliceous rocks; m1, m5, m10, 3, 8, 13, a48 (BG, H, LE, UPS L-116024, L-116063; Andreev, 2002).

RIMULARIA FURVELLA (Nyl. ex Mudd) Hertl. & Rambold – on siliceous rocks and saxicolous lichens; 12 (H).

RINODINA GENNARII Bagl. – on brick, concrete and siliceous rocks, once on lignum of Pinus sylvestris; m12, 3, 6, 13, a6 (H, UPS L-116094; Andreev, 2002).

RINODINA PYRINA (Ach.) Arnold – on bark of Quercus robur and on iron; m11, 3 (LE; Andreev, 2002).

RINODINA SOPHODES (Ach.) A. Massal. – on bark of Sorbus aucuparia; m4 (LE; Andreev, 2002).

ROPALOSPOR A VIRIDIS (Tønsberg) Tønsberg – on bark of Alnus glutinosa and Sorbus aucuparia; 11, 15, 19, a26 (H).

#ROSELLINIELLA CLADONIAE (Anzi) Matzer & Hafellner – on thallus of Cladonia arbuscula subsp. mitis on soil; 18 (BILAS). New to North-Western European Russia. The nearest locality in European Russia is in Murmansk region (Zhurbenko & Alstrup, 2004). Distribution in Fennoscandia and Baltic countries: Sweden (Nordin et al., 2011), Estonia (Randlane et al., 2016), Lithuania (Motiejūnaitė et al., 2003). Of all perithecioid fungi occurring on Cladonia, Rosselliniella cladoniae is distinguished by dark brown (at maturity) simple to 1–4-septate (0–1-septate in our specimens) ascospores of varying shape, 2–8-spored asci and immersed to sessile ovoid perithecia with rough wall and free hyphae when mature (Zhurbenko & Alstrup, 2004).

#ROSELLINIELLA STEREOCAULORUM Zhurb., Kukwa & Oset – on thallus of Stereocaulon cf. glareosum on soil; 5. New to European Russia. The species is known in Europe from Poland, in Russia from Baikal Siberia and Yakutia (Oset, 2014; Zhurbenko, 2010), but is not recorded in Fennoscandia and Baltic countries. The fungus is characterised by consistently 4-spored asci (when mature), simple ascospores with distinct apical nodules and the host choice – genus Stereocaulon (Zhurbenko et al., 2009; Zhurbenko, 2010).

SARCOCYNE HYPOPHAEOIDES Vain. ex H. Magn. – on siliceous rocks; 7 (H). New to Russia. Distribution in Fennoscandia: Norway, Sweden, Finland (Westberg et al., 2015); not recorded in Baltic countries. Crustose saxicolous lichen with immersed thallus, apothecia 0.5–1.2 mm wide, with reddish-brown to black disc, sometimes carbonized in central part. Can be distinguished from similar species – S. clavus (DC.) Kremp. and S. hypophaea (Nyl.) Arnold – by dark, brownish black to black hypothecium. S. hypophaeoides grows exclusively on siliceous rocks (Westberg et al., 2015).

+ SAREA RESINAEE (Fr.: Fr.) Kuntze – on resin of Picea abies; 14 (H).

SCHAEERERIA FUSCOCCINerea (Nyl.) Clauzade & Cl. Roux – on siliceous rocks; m5, m6, m10, 7, a48 (BG, H, LE, UPS L-116022, L-116065; Andreev, 2002).

SCOLICIOSPOR A CHLOROCOCCUM (Graewe ex Stenh.) Vèzda – on bark of Alnus glutinosa, Betula sp., Picea abies, Pinus sylvestris, Populus tremula and Quercus robur, on lignon of Pinus sylvestris; m4, 1, 2, 4–7, 11, 12, 15, a29 (H; Andreev, 2002).

SCOLICIOSPOR A SAROOTHAMNI (Vain.) Vèzda – on bark of Betula sp., Juniperus communis, Picea abies, Pinus sylvestris, Quercus robur, Salix sp. and Sorbus aucuparia, on lignon of Pinus sylvestris; 1, 5–7, 10–12, 17, 18, a29 (LE).

SCOLICIOSPOR A UMBRINUM (Ach.) Arnold – on iron and siliceous rocks; m3, m5, m10, 4, 13, 18 (BG, H, LE, UPS L-116046, L-116064; Andreev, 2002).

#SPHERELLOTHECIUM PROPINQUELLUM (Nyl.) Cl. Roux & Triebel – on apothecia of Lecanora carpinea on bark of Populus tremula; 1, 2 (BILAS).

SPHAEROPHORUS FRAGILIS (L.) Pers. – on soil; 10 (LE).

SPHAEROPHORUS GLOBOSUS (Huds.) Vain. – not found in 1994–2015. Collected from Tuters (soil, no exact locality) by Brenner, 24.07.1968 (H 8003523).

STEREOCAULON ALPINUM Laurer – on soil; m15, 5, 9, 12, a3 (H). Collected from Tuters (no exact locality) by Brenner, 25.07.1868 (H s. n., as S. alpinum Laurer var. gracilentum Th. Fr.; H 8003531).

STEREOCAULON GLAREOSUM (L. I. Savicz) H. Magn. – on sand; 5, 6, 10, 12, a16 (H).

STEREOCAULON INCrustatum Flörke – on sand; m8, 5, 9 (H, UPS L-116060; Andreev, 2002).
STEREOCAULON NANODES Tuck. – on iron; a32 (H). New to LR. Distribution in North-Western European Russia outside LR and SPb: Republic of Karelia (Fadeeva et al., 2007). Distribution in Fennoscandia: Norway, Sweden, Finland (Nordin et al., 2011); not recorded in Baltic countries. Can be recognized due to the persistent, ascending to erect fan-shaped phyllocladia with soredia on lower surface. Pseudopodetia are to 1 cm tall, sparingly branched, the branches flattened, sorediate below (Oset, 2014).

STEREOCAULON RIVULORUM H. Magn. – on sand; m8 (UPS L-116030; Andreev, 2002).

STEREOCAULON SAXATILE H. Magn. – on iron, siliceous rocks and sand; m9, a32, a37 (BG, H, LE; Andreev, 2002).

STEREOCAULON TOMETOSUM Fr. – on sand; m9 (UPS L-116037; Andreev, 2002). Reported from Tuters (no exact locality) by Brenner (1886).

STRANGOSPORÆ MORMORFORMIS (Ach.) Stein – on thallus of Physcia sp. on granite boulder; 4 (BILAS).

TEPHROMELA ATRÀ (Huds.) Hafellner – on siliceous rocks, brick and lignum; m1, m5, m9, m10, 8, 13, a6, a10, a43, a48 (BG, H, LE, UPS L-116062; Andreev, 2002).

TRAPELIOSIS FLEXUOSA (Fr.) Coppins & P. James – on bark and lignum of Pinus sylvestris; 6, 7, 16–18, a31 (H).

TRAPELIOSIS GRANULOSA (Hoffm.) Lumbsch – on soil; 7, 10.

#SYZYGOSPORÆ PHYSCIÆCÆRUM Diederich – on thallus of Physcia sp. on granite boulder; 4 (BILAS).

UMBILICARIA DEUSTA (L.) Baumg. – on siliceous rocks; m9, 7, 8, 12, 15, a38, a41 (H; Andreev, 2002).

UMBILICARIA HYPERBorea (Ach.) Hoffm. – on siliceous rocks; m2, a37, a38 (BG, H, LE; Andreev, 2002). Red Data Book of LR (Tzvelev, 2000).

UMBILICARIA POLYRHIZA (L.) Fr. – on siliceous rocks; a38, a40 (H). Red Data Book of LR (Tzvelev, 2000).

UMBILICARIA TORREFACTA (Lightf.) Schrad. – on siliceous rocks; m9, 7, 12, a41, a43, a48 (BG, H, LE; UPS L-116051; Andreev, 2002).

USNEA HIRTA (L.) F. H. Wigg. – on lignon of Pinus sylvestris; 6 (H).

VERRUCARIA MURALIS Ach. – on concrete; a6 (LE).

VIOELLA FUCATA (Stirt.) T. Sprib. – on bark and lignum of Pinus sylvestris; 11, 17 (LE). Thalli contain atranorin and fumarprotocetraric acid.

VULPICIDA PINASTRI (Scop.) J.-E. Mattsson & M. J. Lai – on bark of Picea abies, Pinus sylvestris and Vaccinium myrtillus; 7, 11, 18, a29.

XANTHOMENDOZA FULVA (Hoffm.) Sechting et al. – on lignon of Pinus sylvestris; 6 (LE).

XANTHOPARMELIA CONSPERSA (Ehrh. ex Ach.) Hale – on siliceous rocks, soil and sand; m9, 4, 7, 8, 12, 15, a41 (BG, H, LE; UPS L-116048; Andreev, 2002).

XANTHOPARMELIA PULLA (Ach.) O. Blanco et al. – on siliceous rocks; m3, m5, m6, m9, 3, 8, 12, 13 (H; Andreev, 2002). Red Data Book of LR (Tzvelev, 2000).

XANTHOPARMELIA STENOPHYLLA (Ach.) Ahti & D. Hawksw. – on siliceous rocks, soil; m9, 12 (H, UPS L-116047; Andreev, 2002).

XANTHOPARMELIA VERRUCULIFERA (Nyl.) O. Blanco et al. – on siliceous rocks; m5 (Andreev, 2002).

XANTHORIA AUREOLA (Ach.) Erichsen – on siliceous rocks; m5 (UPS L-116020; Andreev, 2002).

XANTHORIA PARIETINA (L.) Th. Fr. – on bark of Padus avium, Populus tremula and Quercus robur, on brick, concrete, iron, siliceous rocks and once on soil; m11, 1–3, 13, 19, a6, a52 (BG, LE; Andreev, 2002).

XYLOGRAPHÆA OPEGRÆHELLA Nyl. ex Rothr. – on lignon; a10, a19 (H).

XYLOPSORA CARADOCENSIS (Nyl.) Bendiksys & Timdal – on lignon of Pinus sylvestris; 6, a31 (H).

XYLOPSORA FRIESSI (Ach.) Bendiksys & Timdal – on bark of Pinus sylvestris; 16 (LE).

Excluded taxa

CLADONIA PORTENTOSA (Dufour) Coem. (Andreev, 2002; Alexeeva, 2005). The specimen belongs to C. arbuscula subsp. mitis.
Cetraria odongiella (Ach.) Ach. (Brenner, 1886). The specimen belongs to C. muricata.

Lecanora persimilis (Th. Fr.) Nyl. (Andreev, 2002; Alexeeva, 2005). The specimen belongs to M. hagenii.

Lepraria caesiola (B. de Lesd.) J. R. Laundon (Andreev, 2002). The specimen belongs to L. jackii.

Physcia leptalea (Ach.) DC. (Andreev, 2002; Alexeeva, 2005). The specimen is too small for the convinced identification, similar to P. stellaris.

DISCUSSION

The currently known lichen biota of Tuters Island comprises altogether 331 species, including 314 lichenized, 16 lichenicolous and one non-lichenized saprobic fungi. Of them, Aspicilia epiglypta, Fuscidea praeruptorum, Micarea byssacea and Sarcogyne hypophaeoides are reported for the first time for Russia, Roselliniella stereocaulorum – for European Russia, Aspicilia polychroma, Carbonea vorticosa, Cercidospora stereocaulorum, Cladonia ciliata f. flavicans, C. rangiformis, Parmelia ernstiae, Plectocarpon cf. encausticum and Roselliniella cladoniae – for North-Western European Russia; Bachmanniomyces uncialiola, Bacidina sulphurella, Micarea botryoides, Miriquidica griseoatra and Stereocaulon nanodes are new to the Leningrad Region. Altogether 202 species are new for the Tuters Island.

Almost all the listed species are present on Tuters Island nowadays (recorded since 1992), two species were collected by Brenner only: Ramalina siliquosa and Sphaerophorus globosus. Both are known in Leningrad Region also from Hogland Island (Brenner, 1886), but all records are from 19th century. The species might have disappeared during the war: the strongest artillery batteries were situated along the shoreline, so the surface of the rocks could be damaged.

The majority of 329 species recorded nowadays on Tuters Island inhabit bark of trees and shrubs (133 species, 40% of lichen biota) and siliceous rocks (113 species, 34%); rather diverse are lichens also on lignum (74 species, 23%) and soil (71 species, 22%). Among phorophytes, the richest in species are pine (57 lichen species), spruce (47 species), black alder (41 species) and aspen (29 species). Lignicolous lichens were found both on natural wood (51 species) and on transformed substrata – timber of old war constructions (36 species) and driftwood (11 species, including some normally saxicolous lichens, such as Parmelia saxatilis and Tephromela atra).

Most diverse are lichens in rocky landscapes: 158 species (48% of lichen biota) were recorded on rocky seashores and granite ridges in the western and northwestern parts of the island. Many species distributed along Tuters seashores are rare or not recorded in other parts of the Leningrad Region. For example, coastal foliose lichen Anaptychia runcinata was earlier known in LR only from Hogland Island (H, collected up to 1939); saxicolous crustose lichens Aspicilia epiglypta, Fuscidea praeruptorum and Sarcogyne hypophaeoides are recorded for the first time for Russia. Lichens of the dune area (eastern part of the island) are represented by 124 species (38% of lichen biota). Cladonia ciliata f. flavicans finding on Tuters is the easternmost locality of this species in Europe. Calicum tigillare was found on old timber fence on dune; this species became rare in NW European Russia and now deserves protection. Lichens in abandoned village and other anthropogenic landscapes are also diverse (105 species, 32%), as well as seashores with big boulders (105 species, 32%). Of special interest are lichens of spruce forests situated in the northern part of Tuters. Altogether 72 species (22%) of lichens and allied fungi were found in relatively old-growth spruce stands; among them, Arthonia spadicea, Chaenotheca stemonea, Felipes leucopellaeus, Lecanactis abietina are indicator or specialized species of biologically valuable forests in Southern Taiga of North-Western European Russia (Andersson et al., 2009). The lichens in other natural communities of Tuters Island (pine forests outside rocks and dunes, black alder stands, bogs etc.) are in general not so diverse and specific.

Altogether eleven species known from Tuters Island are included in the Red Data Book of Nature of the Leningrad Region (Tsvelev, 2000): Arctoparmelia centrifuga, A. incurva, Brodoa intestiniformis, Cetrariella commixta, Cladonia macrophysilla, Melanelia hepatizon, M. stygia, Ramalina fraxinea, Umbilicaria hyperborea, U. polyyrhis, Xanthoparmelia pulla, most of them are saxicolous and confined to the rocky outcrops. Additionally, 9 species are recommended to be included into the new edition of the Red Data Book of Leningrad Region: Acrocordia cavata,
Arthonia spadicea, Calicium tigillare, Cladonia scabriuscula, Felipes leucopellaeus, Lasallia pus-tulata, Lecanactis abietina, Pertusaria pertusa, Sphaerophorus fragilis.

To sum up, on Tuters Island rich and diverse lichen biota is relatively well-preserved, and it is worthy to be protected.

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REFERENCES

Ahti, T. & Stenoos, S. 2013. Cladonia. In: T. Ahti, S. Stenoos & R. Moberg (eds). Nordic Lichen Flora. Volume 5. Cladoniaceae. Uddevalla, pp. 8–86.

Alexeeva, N. M. 2005. Lichens from islands in the Russian part of the Gulf of Finland. Folia Cryptogamica Estonica 41: 5–12.

Andersson, L., Alexeeva, N. & Kuznetsova, E. (eds). 2009. Survey of biologically valuable forests in North-Western European Russia. Vol. 2. Identification manual of species to be used during survey at stand level. St. Petersburg. 258 pp. (in Russian).

Andreev, M. P. 2002. Lichens of Bolshoi Tuyuters island in Gulf of Finland, Leningrad Region. Novitates Systematicae Plantarum Non Vascularum 36: 73–79. (in Russian, English summary).

Andreev, M., Kotlov, Yu. & Makarova, I. 1996. Checklist of Lichens and Lichenicolous Fungi of the Russian Arctic. Bryologist 99(2): 137–169. https://doi.org/10.2307/3244545

Brand, M., Coppins, B. J., van den Boom, P. P. G. & Sérusiaux, E. 2009. Further data on the lichen genus Bacidia s. 1. in the Canary Islands and Western Europe, with descriptions of two new species. Bibliotheca Lichenologica 99: 81–92.

Brenner, M. 1886. Bidrag till kannedom af Finska vikens ovetation. IV. Hoglands lafvar. Meddelanden af Societas pro Fauna et Flora Fennica 13: 1–144.

Chambers, S. P., Galloway, D. J. & James, P. W. 2009. Carbonera (Hertel) Hertel (1983). In: Smith, C. W., Aptroot, A., Coppins, B. J., Fletcher, A., Gilbert, O. L., James, P. W. & Wolseley, P. A. (eds). The lichens of Great Britain and Ireland. London, pp. 278–280.

Coppins, B. J. 1983. A taxonomic study of the lichen genus Micarea in Europe. Bulletin of the British Museum (Natural History), Botany series 11: 17–214.

Czarnota, P. & Guzow-Krzemińska, B. 2010. A phylogenetic study of the Micarea prasina group shows that Micarea micrococca includes three distinct lineages. Lichenologist 42(1): 7–21. https://doi.org/10.1017/S0024282909990211

Czarnota, P. 2007. The lichen genus Micarea (Lecanorales, Ascomycota) in Poland. Polish Botanical Studies 23: 1–199.

Dedkov, V. P., Andreev, M. P. & Petrenko, D. E. 2007. Annotated list of lichens of Kaliningrad Region. Biodiversity of Kaliningrad Region. Part 1. Fungi, lichens, club-mosses, horsetails and ferns of Kaliningrad Region. Kaliningrad, pp. 79–178. (In Russian)

Ertz, D., Christnach, C., Wedin, M. & Diederich, P. 2005. A world monograph of the genus Plectcarpon (Roccellaceae, Arthoniales). Bibliotheca Lichenologica 91: 1–155.

Fadeeva, M. A., Golubkova, N. S., Vitikainen, O. & Ahti, T. 2007. Conspicuus of lichens and lichenicolous fungi of the Republic of Karelia. Petrozavodsk. 194 pp. (In Russian, English summary).

Fletcher, A., Purvis, O. W. & Coppins, B. J. 2009. Aspicilia A. Massal. (1852). In: Smith, C. W., Aptroot, A., Coppins, B. J., Fletcher, A., Gilbert, O. L., James, P. W. & Wolseley, P. A. (eds). The lichens of Great Britain and Ireland. London, pp. 181–188.

Giavarini, V., Coppins, B. J. & Purvis, O. W. 2009. Miriquidica Hertel & Rambold (1987). In: Smith, C. W., Aptroot, A., Coppins, B. J., Fletcher, A., Gilbert, O. L., James, P. W. & Wolseley, P. A. (eds). The lichens of Great Britain and Ireland. London, pp. 607–611.

Gilbert, O. L., Purvis, O. W., Skjoldahl, L. H. & Tønsberg, T. 2009. Fuscidea V. Wirth & Vézda (1972). In: Smith, C. W., Aptroot, A., Coppins, B. J., Fletcher, A., Gilbert, O. L., James, P. W. &
Wolseley, P. A. (eds). *The lichens of Great Britain and Ireland*. London, pp. 407–411.

Glazkova E. A. 2001. Vascular flora of the islands of the eastern Gulf of Finland: structure and analysis. St. Petersburg, 348 pp. [In Russian].

Hakulinen, R. 1962. Die Flechtengattung *Anaptychia* Körb. in Ostfennoskandien. *Archivum Societatis Zoologicae Botanicae Fennicae Vanamo* 17 (Not. 3): 121–133.

Hawksworth, D. L. 1981. The lichenicolous Coelomycetes. *Bulletin of the British Mycological Society*, Botany series 9: 1–98.

Himelbrant, D. E., Stepanchikova, I. S., Motiejūnaitė, J., Gerasimova, Ju. V., Kuznetsova, E. S., Dyomina, A. V. & Tsurykau, A. G. 2017. New records of lichens and allied fungi from the Leningrad Region, Russia. VIII. *Folia Cryptogamica Estonica* 54: 63–70. https://doi.org/10.12697/fce.2017.54.11

Ihlen, P. G. & Wedin, M. 2008. An annotated key to the lichenicolous Ascomycota (including mitosporic morphs) of Sweden. *Nova Hedwigia* 86: 275–365. https://doi.org/10.1127/0029-5035/2008/0086-0275

Motiejūnaitė, J. 1999. Checklist of lichens and allied fungi of Lithuania. *Botanica Lithuanica* 5(3): 251–269.

Motiejūnaitė, J. 2015. Lichens And Allied Fungi From The Čepkeliai State Nature Reserve (Southern Lithuania). *Botanica Lithuanica* 21(1): 3–12. https://doi.org/10.1515/botlit-2015-0001

Motiejūnaitė, J., Alstrup, V., Randlane, T., Himelbrant, D., Stončius, D., Hermansson, J., Urbanavichus, G., Suija, A., Fritz, Ō., Prigodina Lukošienė, I. & Johansson, P. 2008. New or noteworthy lichens, lichenicolous and allied fungi from Biržai District, Lithuania. *Botanica Lithuanica* 14: 29–42.

Motiejūnaitė, J., Berglund, T., Czarnota, P., Himelbrant, D., Hógnabba, F., Konoreva, L. A., Korkichov, E. S., Kubiak, D., Kukwa, M., Kuznetsova, E., Leppik, E., Löhmus, 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. https://doi.org/10.2478/v10279-012-0011-9

Motiejūnaitė, J., Brackel, W. v., Stončius, D. & Preikša, Ž. 2011. Contribution to the Lithuanian flora of lichens and allied fungi. III. *Botanica Lithuanica* 17(1): 39–46.

Motiejūnaitė, J., Kukwa, M., Czarnota, P., Prigodina-Lukošienė, I., Himelbrant, D., Kuznetsova, E. & Kowalewska, A. 2003. Lichens and allied fungi collected during the XV Symposium of Baltic Mycologists and Lichenologists in Birštonas, Lithuania. *Botanica Lithuanica* 9(2): 109–119.

Motiejūnaitė, J. & Piterāns, A. 1998. Materials on lichens and allied fungi of Kemerī National Park (Latvia). *Botanica Lithuanica* 4(2): 187–196.

Nordin, A., Moberg, R., Tonsberg, T., Vitikainen, O., Dalsått, Å., Myrdal, M., Snitting, D. & Ekman, S. 2011. Santesson’s Check-list of Fennoscandian Lichen-forming and Lichenicolous Fungi. Ver. April 29, 2011 http://130.238.83.220/santesson/home.php (25 March 2017).

Orange, A. 2012. Semi-cryptic marine species of *Hydropunctaria* (Verrucariaceae, lichenized Ascomycota) from north-west Europe. *Lichenologist* 44(3): 299–320. https://doi.org/10.1017/S0024282911000867

Orange, A., James, P. W. & White, F. J. 2001. Microchemical methods for the identification of lichens. London. 101 pp.

Oset, M. 2014. The lichen genus *Streptoscyllium* (Schreb.) Hoffm. in Poland – a taxonomic and ecological study. *Monographiae Botanicae* 104: 1–81. https://doi.org/10.5586/mb.2014.001

Piterāns, A. 2001. Latvijas ķerju konspekts. *Latvijas vegetācija* 3: 5–46. [In Latvian].

Printzen, C. & Otte, V. 2005. *Biotara longispora*, new to Europe, and a revised key to European and Macaronesian Biotara-species. *Graphis scripta* 17: 56–61.

Randlane, T., Saag, A. & Suija, A. 2016. *Lichenized, lichenicolous and allied fungi of Estonia*. Ver. December 31, 2016 – http://esamba.bo.bg.ut.ee/checklist/est/home.php (25 March 2017).

Stepanchikova, I. S., Himelbrant, D. E., Dyomina, A. V. & Tagirdzhanova, G. M. 2015. The lichens and allied fungi of the Zapadny Kotlin protected area and its vicinities (Saint Petersburg). *Novitates Systematicae Plantarum* 49: 265–281.

Stepanchikova, I. S., Himelbrant, D. E., Kukwa, M. & Kuznetsova, E. S. 2011. New records of lichens and allied fungi from the Leningrad Region, Russia. *Folia Cryptogamica Estonica* 48: 85–94.

Thell, A., Thor, G. & Ahti, T. 2011. *Parmelia*. In: A. Thell & R. Moberg (eds). *Nordic Lichen Flora. Volume 4. Parmeliaceae*. Uddevalla, pp. 83–90.

Tvzelev, N. N. (ed.). 2000. *Red Data Book of Nature of the Leningrad Region. Vol. 2. Plants and Fungi*. St. Petersburg. 672 pp. [In Russian].

Urbanavichus, G., Ahti, T. & Urbanavichene, I. 2008. Catalogue of lichens and allied fungi of Murmansk Region, Russia. *Norlinia* 17: 1–80.

Urbanavichus, G. P. & Urbanavichene, I. N. 2008. Parmelioid, cetarioid and hypogymnioid lichens (Parmeliaceae) of Russia: first check-list and distribution data. *Novitates Systematicae Plantarum Non Vascularum* 42: 198–218. [In Russian].

Westberg, M., Timdal, E., Asplund, J., Bendiksby, M., Haugan, R., Jonsson, F., Larsson, P., Odelvik, G., Wedin, M. & Millanes, A. 2015. New records of lichenized and lichenicolous fungi in Scandinavia. *MycoKeys* 11: 13–61. https://doi.org/10.3897/mycokeys.11.6670

Wirth, V., Hauck, M. & Schultz, M. 2013. *Die Flechten Deutschlands*. Band 1. 672 pp.
Zhurbenko, M. P, Kukwa, M & Oset, M. 2009. Roselliniella stereocaulorum (Sordariales, Ascomycota), a new lichenicolous fungus from the Holarctic. Mycotaxon 109(1): 323–328. https://doi.org/10.5248/109.323

Zhurbenko, M. P. & Alstrup, V. 2004. Lichenicolous fungi on Cladonia mainly from the Arctic. Sympbolae Botanicae Upsalienses 34(1): 477–499.

Zhurbenko, M. P. 2010. Lichenicolous fungi and lichens growing on Stereocaulon from the Holarctic, with a key to the known species. Opuscula Philolichenum 8: 9–39.