

To the study of the lichen biotas of Urup and Simushir islands (Kuril Islands, Sakhalin Region, Russian Far East)

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Abstract. The paper provides the list of 132 lichens and five lichenicolous fungi new for Urup and/or Simushir islands. For all species the substrates, biotopes, localities, and the nearest known localities are given. Among them, *Biatorrella conspurcans* is new for the Russian Far East, *Cladonia glauca*, *Epilichen scabrosus*, *Muellerella lichenicola*, and *Xanthomendoza borealis* — for the Sakhalin Region. Nine lichen species are reported for the first time for the Kuril Islands. *Bryocaulon pseudosatoanum*, *Cetreliaopsis asahinae*, *Lobaria pulmonaria*, *Ricasolia virens*, and *Sticta limbata* are listed in the Red Data Book of Russian Federation.

Keywords: lichens, new finds, distribution, ecology, Red Data Book of the Russian Federation.

К изучению лишенобиот островов Уруп и Симушир (Курильские острова, Сахалинская область, Российский Дальний Восток)

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Резюме. В статье приведен список из 132 видов лишайников и пяти видов лишенофильных грибов, новых для островов Уруп и (или) Симушир. Для всех видов указаны субстраты, биотопы, координаты и ближайшие известные местонахождения. Из них *Biatorrella conspurcans* приведен впервые для российского Дальнего Востока, *Cladonia glauca*, *Epilichen scabrosus*, *Muellerella lichenicola*, *Xanthomendoza borealis* — впервые для Сахалинской обл., еще девять видов приведены впервые для Курильских о-вов. *Bryocaulon pseudosatoanum*, *Cetreliaopsis asahinae*, *Lobaria pulmonaria*, *Ricasolia virens* и *Sticta limbata* включены в Красную Книгу РФ.

Ключевые слова: лишайники, новые находки, Красная книга РФ, распространение, экология.

The Kuril Archipelago is a chain of more than 56 volcanic islands, extending 1200 km between the Kamchatka Peninsula of Russia and Hokkaido I. of Japan (Fig. 1). Administratively, they belong to the Sakhalin Region. According to Barkalov (2009) Simushir I. belongs to the Middle Kurils, meanwhile Urup I. — to the Southern Kurils. The deep-water Bussol Strait passes between Simushir and Urup, separating the Middle and the Southern Kurils. Both Simushir and Urup are oceanic islands, long-isolated territories, that were not connected by bridges either with the continent or to each other during the last ice age and sea regressions (Atlas..., 2009; Razzhigaeva *et al.*, 2019).

Simushir is a volcanic island near the center of the Kuril Is. chain. It extends from northeast to southwest for 56 km with a width of up to 15 km and has an area of 344.9 km² (Razzhigaeva *et al.*, 2013). The island consists of a series of volcanoes fused at the base, which form four mountain ranges connected by low isthmuses. The highest points are Mil'na Volcano (1539 m a. s. l.) and Prevo Vulcano (1360 m). The island's streams are numerous but small. They often flow into the sea directly from the steep, rocky shores. The climate of the island can be described as oceanic, chilly and very wet with more or less mild winters. The island is characterized by strong

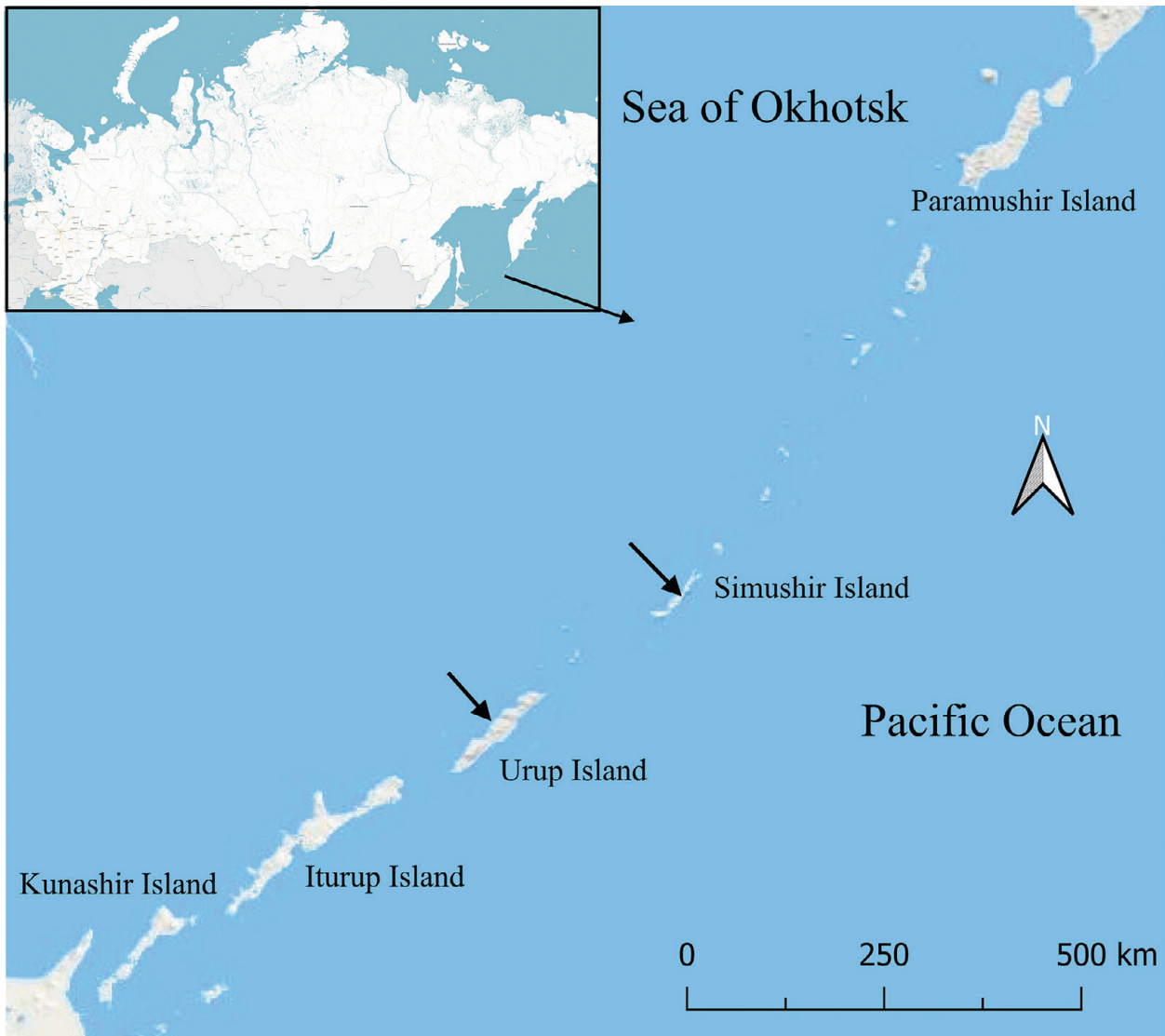


Fig. 1. Schematic map showing the location of Simushir and Urup islands.

winds (up to 185 days a year with wind speeds > 15 m/sec), in the cold season often reaching hurricane force of 43 m/sec. According to the weather station located on the Kostochko Isthmus, the average annual temperature is 2.5 °C, the average winter temperature is –5.8 °C, the summer temperature is +11 °C. The average amount of precipitation per year is 1610 mm (Spravochnik..., 1970; Polokhin, Sibirina, 2013; Razzhigaeva et al., 2013).

The island is dominated by low-growing thickets of alder (*Alnus maximowiczii* Callier) and dwarf stone pine [*Pinus pumila* (Pall.) Regel]. The latter are widespread in the north-eastern part of the island and are almost absent in the central and south-western parts, where alder thickets predominate. In the north of the island, in wind-sheltered places, sparse stone-birch forests (with *Betula ermanii* Cham.) grow, confined to the lower parts of the slopes. Shrub communities with *Salix*

nakamurana Koidz., *S. nakamurana* subsp. *kurilensis* (Koidz.) H. Ohashi, *S. reinii* Franch. et Sav., etc., as well as with *Rosa rugosa* Thunb. can also be found on the island. Heaths, or tundra-like dwarf shrub communities, dominated by *Empetrum nigrum* L. subsp. *sibiricum* (V. N. Vassil.) Kuvaev are developed on flat surfaces and hilltops and occupy significant areas on the island. Meadows of different floristic composition [reed grass communities with *Calamagrostis langsdoerffii* (Link) Trin., forb-grass and tall grass meadows, etc.] are widespread on the island, as well as different seaside and rock communities. Swamps are rare; small swampy areas are found on the coast behind coastal ramparts (Razzhigaeva et al., 2013).

Urup Island is the fourth largest island of the archipelago. It stretches from northeast to southwest for 116 km with a width of up to 20 km; the area is ca. 1428 km². The island is a chain of volcanic ridges, each of which consists of fused foothills

of volcanoes, one of which — the Berg volcano — is active. The relief of the island is mid-mountain (mountain heights from 800 to 1426 m a. s. l.), with gentle marine terraces (up to 300 m high), cut by a network of river valleys. The island is composed mainly of volcanic and tuffaceous-sedimentary rocks (Liksakova *et al.*, 2021). The island's rivers and streams are numerous; they often cascade down the steep cliffs. Urup has an oceanic climate, characterized by high humidity (the average annual precipitation is 1230 mm in the north and 1040 mm in the south), relatively cool summers and more or less mild winters. The average annual temperature in the north of the island is +2.2 °C, in the south — +2.7 °C, with the highest temperatures in August (+11–13 °C), the lowest — in February (–5–6 °C) (Spravochnik ..., 1970; Nauchno-prikladnoi ..., 1990; Atlas..., 2009; Razzhigaeva *et al.*, 2019). Strong winds and fogs have a great influence on the vegetation — the latter is observed up to 215 days yearly (Ganzei, 2008). The northern part of the island and the Pacific coast have a cooler climate, with later growing season and more frequent fog (Ganzei, 2015). The warmest part of the island is the southwestern part, where the mountain slopes are warmed by the remnants of the warm Soya current.

The vegetation cover of Urup is much richer and more diverse than on Simushir and other islands, located to the north. It is characterized by the predominance of stone-birch (with *Betula ermanii*) forests with Kuril bamboo [*Sasa kurilensis* (Rupr.) Makino et Shibata] on the slopes, often sparse and low-growing. On the tops of the ridges and in places with sparse bamboo, reed stone-birch forests (with *Calamagrostis langsdorffii*) are formed. In the lower parts of the slopes adjacent to the valleys, tallgrass stone-birch forests can be found. In the valleys on the slopes, alder (with *Alnus maximowiczii*) forests with bamboo or with tall grass are noted. Reed alder forests are found both in the lower parts of the slopes and on the sea terraces (Liksakova *et al.*, 2021, 2023). Willow thickets [with *Salix udensis* (Wimm.) Trautv. et C. A. Mey.] are common in river valleys. On Urup, some species characteristic of the southern temperate flora (e. g., *Aralia cordata* Thunb., *Hydrangea petiolaris* Siebold et Zucc., *Acer ukurunense* Trautv. et C. A. Mey., *Prunus nipponica* Matsum., *Viburnum wrightii* Miq.) appear as an admixture in deciduous forests in sheltered valleys. Thickets of the dwarf stone pine (with *Pinus pumila*) and Kuril bamboo are widespread and located on the plateau and in the upper parts of the slopes. On the

gentle areas of the marine terraces forb meadows and reed grass communities occur, in the river valleys and in the lower parts of the slopes of the marine terraces tallgrass meadows predominate. Coastal and rock communities are widespread on the island. Swamps are common in river valleys and on sea terraces. In the southern part of Urup, at the foot of the southern macroslope of Mt. Marina, there is a vast ridge-lake *Sphagnum* bog system (ca. 26 km²) occupying a gently sloping plateau (Glazkova, Liksakova, 2021; Volkova *et al.*, 2022; Romanov, Glazkova, 2024). The distribution of vegetation on Urup Island is asymmetrical: the forests of the western, Sea of Okhotsk side rise higher than the forests of the eastern, oceanic side (Grishin, 2008). This is due to sea currents, which have different effects on the climate of the western and eastern coasts of the island. At the same time, the flora of the northern and southern parts of Urup differs significantly. In the north of Urup (Kastricum Peninsula) tundra-like dwarf shrub communities (or heaths) are widespread, in which *Empetrum nigrum* subsp. *sibiricum*, *Vaccinium uliginosum* L., *Rubus chamaemorus* L., *Lonicera caerulea* L., mosses, and lichens predominate. They also occur higher up in the mountains, e. g. they were observed on the top of a hill in the southern part of the island, at an altitude of 215–220 m a. s. l. (Liksakova *et al.*, 2021). Tundra-like communities dominated by *Empetrum nigrum* subsp. *sibiricum* are also noted on the most wind-blown areas of slopes and on the edges of sea terraces.

According to modern schemes of biogeographic and floristic zoning (Pietsch *et al.*, 2003; Bogatov *et al.*, 2009), the most significant biogeographic and floristic boundary within the Kuril Archipelago, the boundary between the Circumboreal and East Asian regions runs along the deep-water Bussol Strait. Simushir together with Onkotan were allocated to the Onkotan-Simushir district, belonging to the Okhotsk-Kamchatka province of the Circumboreal region of the Palearctic. Meanwhile, Urup together with Broutona Island and Chernye Brat'ya subarchipelago, is singled out as an independent Urup district, belonging to the Sakhalin-Hokkaido province of the East Asian region of the Palearctic. This area is a transitional zone characterized by a sharp depletion of species diversity and the main overlap of the ranges of East Asian and boreal species (Bogatov *et al.*, 2009).

The islands of Urup and Simushir are among the most inaccessible islands of the Kuril and before our studies the data on lichen biotas of both islands was

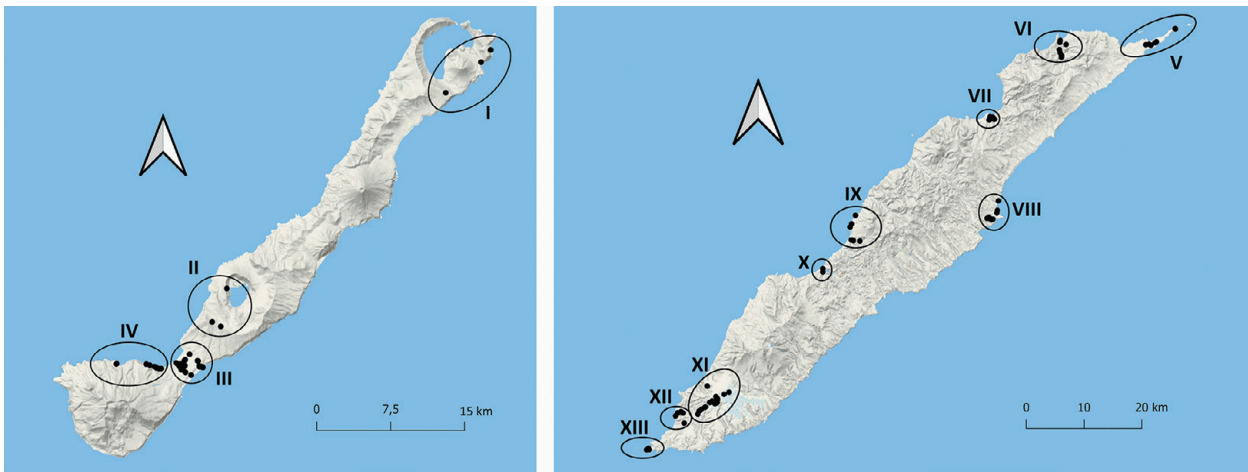


Fig. 2. Location of the study area on Simushir I. (left) and Urup I. (right).

I – North-east part of Simushir I., surroundings of Brouton Bay, II – Zavaritsky Volcano, III – Kostochko Isthmus, IV – Okhotsk Sea coast, Mil'na Bay and Kitoboinaya Bay, V – Kastrikum Peninsula, VI – North part of Urup I., Novokuril'skaya Bay, VII – Irina Bay, Obzhitaya River surroundings, VIII – Pacific coast, Aleutka Bay, Aleutka River and Negodnaya Bay, IX – Doroshenko Stream, X – Tokotan Lake surroundings, XI – vast sphagnum bog on the southern extremity of Urup I., XII – Shchukina Bay and surroundings of Vasina Cape, XIII – Van der Linda Peninsula.

very scarce. Previously, only *Ramalina almqvistii* Vain., *R. dilacerata* (Hoffm.) Hoffm., *R. roesleri* (Schaer.) Hue, *R. scoparia* Vain., and *Bryocaulon pseudosatoanum* (Asahina) Kurnefelt were known from Urup I. (Joneson et al., 2004; Aristarkhova et al., 2021) and 17 species [*Bryocaulon divergens* (Ach.) Kärnefelt, *Cetraria islandica* (L.) Ach. f. *angustifolia* Asahina ex M. Satô, *Cladonia pleurota* (Flörke) Schaer., *C. rangiferina* (L.) F. H. Wigg., *C. stellaris* (Opiz) Pouzar et Vězda, *Melanolia hepatizon* (Ach.) A. Thell, *M. stygia* (L.) Essl., *Melanohalea olivacea* (L.) O. Blanco et al., *Ophioparma ventosa* (L.) Norman, *Ramalina almqvistii*, *R. roesleri*, *R. scoparia*, *Stereocaulon tomentosum* Fr., *S. vesuvianum* Pers., *Umbilicaria proboscidea* (L.) Schrad., *Vulpicida juniperinus* (L.) J.-E. Mattsson et M. J. Lai] – from Simushir I. (Satô, 1936; Dombrovskaya, 1996; Joneson et al., 2004).

Material and Methods

Urup and Simushir islands were surveyed by E. A. Glazkova, E. A. Aristarkhova, and A. S. Kartashova in 2019, 2021–2023 in course of the expedition “Eastern Bastion – Kuril Ridge”, organized by the Russian Geographical Society and the Expedition Center of the Ministry of Defense of the Russian Federation. Samples of lichens were collected independently by researchers in different parts of the islands (Fig. 2): Urup – 29 VIII – 10 IX 2019, E. A. Aristarkhova, E. A. Glazkova; 18, 21–23 VIII and 26 VIII–2 IX 2021, A. S. Kartashova, E. A. Glazkova; 26–30 VIII 2022, E. A. Glazkova; 20–25 VII and 27–28 VII 2023, E. A. Glazkova, E. A. Aristarkhova; Simushir – 19 VII and 2–5 VIII 2023, E. A. Aristarkhova, E. A. Glazkova.

Several specimens were collected on Simushir by Ya. A. Red'kin (21 VII and 1 VIII 2023), S. F. Khokhlov (22 VII 2023), and S. V. Fomenko (3 VIII 2023). As a result, about 1000 specimens of lichens were collected. The samples were collected in order to cover as many different biotopes as possible [stone birch, dwarf stone pine and alder forests, willow thickets, meadows, bogs, heaths (dwarf-shrub communities), coastal and rocks communities, forb-grass meadow anthropogenic habitats]. According to the field collection methodology (Tarasova et al., 2012), the selected specimens were provided with field labels and packed in the craft paper bags for further transportation and identification. GPS coordinates, community type, substrate, date of collection, and the name of the collector were indicated for each specimen.

The study of collected material was carried out in the Laboratory of Lichenology and Bryology of the Komarov Botanical Institute RAS by L. A. Konoreva, S. V. Chesnokov, and A. S. Zueva. The lichen specimens were studied according to the standard technique (The lichens..., 2009; Stepanchikova, Gagarina, 2014) using a stereoscopic microscope Olympus SZ51, transmitted light microscopes Mikmed-6 and Zeiss Axio Scope.A1, and a standard set of chemical reagents for color spot reactions. Some groups of lichens (genus *Cetraria*, *Ochrolechia*, and *Ramalina*) were studied using high performance thin-layer chromatography in solvent system C (Orange et al., 2001). Lichen specimens are stored in the lichenological herbaria of the Komarov Botanical Institute of the Russian Academy of Sciences (LE) and the Botanical

Garden-Institute of the Far Eastern Branch of the Russian Academy of Sciences (VBGI).

Information on the distribution of lichen species in the Sakhalin Region is taken from the following published data (islands of the Kuril Ridge are given in the geographical order from north to south): **Sakhalin I.:** 1 (Tchabanenko, 2002), 2 (Ezhkin, Galanina, 2014), 36 (Konoreva *et al.*, 2018); **Shumshu I.:** 3 (Ahti, 1961), 4 (Satô, 1936); **Atlasova I.:** 4, 5 (Asahina, 1934); **Paramushir I.:** 1, 4, 5, 6 (Dombrovskaya, 1996), 7 (Ezhkin, Davydov, 2021), 8 (Zueva *et al.*, 2024a), 17 (Krasnaya..., 2019); **Onkotan I.:** 9 (Joneson *et al.*, 2004); **Kharimkotan I.:** 9; **Matua I.:** 9, 10 (Ezhkin *et al.*, 2023); **Ushishir I.:** 9; **Simushir I.:** 4; 9; **Broutona I.:** 11 (Zueva *et al.*, 2024b); **Chirpoi I.:** 9, 12 (Glazkova *et al.*, 2023); **Urup I.:** 9; **Iturup I.:** 9, 13 (Rasadinina, 1967), 14 (Dombrovskaya, 1987), 15 (Ezhkin *et al.*, 2015), 16 (Bogacheva *et al.*, 2018), 17, 18 (Ezhkin, 2019), 19 (Konoreva *et al.*, 2020), 20 (Chesnokov, Konoreva, 2021), 21 (Tolpysheva, Varlygina, 2021), 32 (Kuznetsova *et al.*, 2021); **Kunashir I.:** 1, 9, 16, 17, 18, 22 (Oxner, Blum, 1971), 23 (Bredkina *et al.*, 1992), 24 (Randlane *et al.*, 1995), 25 (Tchabanenko, 1999), 26 (Urbanavichus, Urbanavichene, 2004), 27 (Galanina, Ezhkin, 2019), 28 (Gagarina, Ezhkin, 2020), 29 (Ezhkin, 2020), 32; **Shikotan I.:** 1, 4, 9, 14, 17, 22, 30 (Ezhkin, Jorgenson, 2018), 31 (Konoreva *et al.*, 2019), 32, 33 (Chesnokov, Konoreva, 2022), 34 (Ezhkin, 2022), 35 (Ezhkin, 2023); **Yurii I.:** 9.

Collection sites. Sakhalin Region, Yuzhno-Kurilsky District, Simushir I.: 1 – north-east part of the island (Fig. 2, I), Pacific coast, near Cape Kosyakova, 47°07'36.9"N, 152°16'20.8"E, bog with *Sphagnum* sp., 21 VII 2023; 2 – *ibid.*, surroundings of Brouton Bay, the ancient caldera ridge near Cape Palets, 47°05'57.2"N, 152°13'32.5"E, dwarf pine thickets, 22 VII 2023; 3 – *ibid.*, near Cape Otvesnyi, 47°08'16.5"N, 152°17'06.9"E, mouth of the stream, 1 VIII 2023; 4 – south part of the island, Kostochko Isthmus (Fig. 2, III), 46°51'12.8"N, 151°52'12.4"E, 26 m a. s. l., old logs near the ruins of the meteorite station, 2 VIII 2023; 5 – outer caldera of Zavaritsky Volcano (Fig. 2, II), 46°53'15.1"N, 151°55'39.1"E, 425 m a. s. l., inner slope, weathered volcanic bedrock, 3 VIII 2023; 6 – *ibid.*, 46°53'29.7"N, 151°54'58.2"E, 479 m a. s. l., weathered volcanic bedrock, 3 VIII 2023; 7 – *ibid.*, Zavaritsky Volcano, 46°55'19.5"N, 151°56'08.4"E, weathered volcanic bedrock, 3 VIII 2023; 8 – south part of the island, Kostochko Isthmus (Fig. 2, III), 46°51'12.3"N, 151°52'25.5"E, alder thickets, 3 VIII 2023; 9 – *ibid.*, 46°51'09.6"N, 151°52'40.2"E, 68 m a. s. l., low-grass meadow with mosses, lichens, and patches of alder bushes, 3 VIII 2023; 10 – *ibid.*, 46°51'05.8"N, 151°52'46.5"E, 73 m a. s. l., mossy meadow among the alder bushes, 3 VIII 2023; 11 – *ibid.*, 46°51'08.0"N, 151°52'47.7"E, 72 m a. s. l., alder thickets, 3 VIII 2023; 12 – *ibid.*, 46°51'23.0"N, 151°52'45.4"E, false-lupine-lingonberry meadow with green mosses and grasses, 3 VIII 2023;

13 – *ibid.*, 46°51'24.7"N, 151°52'47.5"E, 62 m a. s. l., mossy meadow among the alder bushes, 3 VIII 2023; 14 – *ibid.*, 46°51'26.1"N, 151°52'49.3"E, 63 m a. s. l., alder thickets with willows, 3 VIII 2023; 15 – *ibid.*, 46°51'44.2"N, 151°53'10.3"E, 48 m a. s. l., alder thickets, 3 VIII 2023; 16 – *ibid.*, 46°51'22.9"N, 151°53'48.2"E, 89 m a. s. l., tundra-like communities with crowberry, *Hedysarum nonnae* Roskov and false-lupine on the seaside terrace, 3 VIII 2023; 17 – *ibid.*, 46°51'22.2"N, 151°53'50.6"E, 90 m a. s. l., tundra-like communities with crowberry, *Hedysarum nonnae* and false-lupine on the sea terrace, 3 VIII 2023; 18 – *ibid.*, 46°51'06.3"N, 151°53'56.6"E, alder and willow thickets, 3 VIII 2023; 19 – *ibid.*, Pacific coast, Spaseniya Bay, 46°51'02.9"N, 151°53'57.8"E, wet alder thickets with tall herbs above the watercourse, 3 VIII 2023; *ibid.*, 20 – 46°51'03.1"N, 151°54'11.8"E, 18 m a. s. l., alder thickets, 3 VIII 2023; 21 – *ibid.*, 46°51'04.2"N, 151°54'07.1"E, 2 m a. s. l., ruins of the observation post, 4 VIII 2023; 22 – *ibid.*, 46°51'02.0"N, 151°54'12.7"E, 2 m a. s. l., coastal rocks, 4 VIII 2023; 23 – *ibid.*, 46°51'01.0"N, 151°54'12.7"E, a coastal rocks and an abandoned wooden building by the Gibelny stream, 4 VIII 2023; 24 – *ibid.*, 46°51'00.9"N, 151°54'14.2"E, 5 m a. s. l., coastal rocks, 4 VIII 2023; 25 – *ibid.*, 46°50'36.4"N, 151°53'17.8"E, 19 m a. s. l., coastal rocks, 4 VIII 2023; 26 – south part of the island, Kostochko (Fig. 2, III), 46°50'45.1"N, 151°52'50.9"E, 67 m a. s. l., forb-grass meadow on the terrace, 4 VIII 2023; 27 – *ibid.*, 46°50'53.1"N, 151°52'31.8"E, 82 m a. s. l., grasslands with lichens and alder bushes, 4 VIII 2023; 28 – *ibid.*, 46°51'15.6"N, 151°52'06.7"E, 3 m a. s. l., tall grass meadow on the stream side and forb-grass meadow on the stream edge, 4 VIII 2023; 29 – *ibid.*, 46°51'06.2"N, 151°52'20.9"E, ecotone between tall grass alder thickets and forb-grass meadow, 4 VIII 2023; 30 – *ibid.*, 46°50'57.3"N, 151°52'29.4"E, rotten log above a riverbed, 4 VIII 2023; 31 – *ibid.*, 46°50'55.6"N, 151°52'39.0"E, grassland with lingonberry and green mosses, 4 VII 2023; 32 – south part of the island, Okhotsk Sea coast, Mil'na Bay (Fig. 2, IV), 46°50'57.3"N, 151°50'55.0"E, 4 m a. s. l., cliffs of the sea terrace, 5 VIII 2023; 33 – *ibid.*, 46°50'57.1"N, 151°50'51.3"E, 10 m a. s. l., cliffs of the sea terrace, 5 VIII 2023; 34 – *ibid.*, 46°50'57.2"N, 151°50'44.4"E, 7 m a. s. l., cliffs of the sea terrace, 5 VIII 2023; 35 – *ibid.*, 46°50'59.2"N, 151°50'33.7"E, 7 m a. s. l., chunks of soil in the roots of driftwood, 5 VIII 2023; 36 – *ibid.*, 46°51'00.2"N, 151°50'31.5"E, 8 m a. s. l., chunks of soil in the roots of driftwood, 5 VIII 2023; 37 – *ibid.*, 46°51'00.5"N, 151°50'30.1"E, 4 m a. s. l., chunks of soil in the roots of driftwood, 5 VIII 2023; 38 – *ibid.*, 46°51'02.5"N, 151°50'25.9"E, 11 m a. s. l., stones on the seashore, 5 VIII 2023; 39 – *ibid.*, 46°51'04.0"N, 151°50'23.0"E, 10 m a. s. l., stones and driftwood on the seashore, 5 VIII 2023; 40 – *ibid.*, 46°51'08.6"N, 151°50'00.7"E, 7 m a. s. l., stones on the seashore, 5 VIII 2023; 41 – *ibid.*, 46°51'11.7"N, 151°49'43.7"E, 1 m a. s. l., stones near the waterfall, 5 VIII 2023; 42 – *ibid.*, Kitoboinaya Bay, 46°51'12.6"N, 151°47'21.1"E, 40 m a. s. l., meadows and ruderal communities in an abandoned whaling village, 5 VIII 2023; 43 – *ibid.*, 46°51'13.1"N, 151°47'22.8"E, 31 m a. s. l., slope of the hill, 5 VIII 2023.

Sakhalin Region, Yuzhno-Kurilsky District, Urup I.: 44 – Van der Linda Peninsula, Van der Linda Cape surroundings (Fig. 2, XIII), 45°34'50.7"N, 149°24'12.7"E, 75 m a. s. l., forb-grass meadow, 1 IX 2019, 20 and 25 VII 2023; 45 – south part of the island, Shchukina Bay, Vasinina Cape surroundings (Fig. 2, XII), 45°38'14.7"N,

149°28'31.8"E, 159 m a. s. l., alder-stone birch thickets with patches of dwarf stone pine, 1 and 5 IX 2019; 46 – north part of the island, Novokuril'skaya Bay, the valley of the Bystraya River (Fig. 2, VI), 46°12'36.9"N, 150°18'54.3"E, tallgrass willow thickets with alder, 2 IX 2019; 47 – *ibid.*, 46°12'25.3"N, 150°18'51.3"E, tallgrass willow thickets near the riverbed, 2 IX 2019; 48 – *ibid.*, 46°11'46.3"N, 150°18'47.5"E, tallgrass willow thickets, 2 IX 2019; 49 – *ibid.*, 46°11'29.1"N, 150°18'53.1"E, tallgrass willow thickets, 2 IX 2019; 50 – *ibid.*, 46°11'13.9"N, 150°19'04.1"E, former riverbed with dead willows, 2 IX 2019; 51 – *ibid.*, 46°11'09.8"N, 150°19'04.2"E, tallgrass willow thickets with alder and rowan, 2 IX 2019; 52 – *ibid.*, 46°11'03.8"N, 150°19'03.6"E, tallgrass rowan and willow thickets, 2 IX 2019; 53 – south part of the island, Shchukina Bay, Vasina Cape surroundings (Fig. 2, XII), 45°37'51.2"N, 149°27'48.1"E, rocky coast, 4 IX 2019; 54 – *ibid.*, 45°38'08.9"N, 149°28'05.9"E, alder-stone birch thickets with bamboo and other grasses, 4 IX 2019; 55 – *ibid.*, 45°38'07.3"N, 149°28'48.9"E, 88 m a. s. l., rowan and stone birch thickets with bamboo and other grasses, 5 IX 2019; 56 – north part of the island, Irina Bay, the Obzhitaya River surroundings (Fig. 2, VII), 46°12'14.5"N, 150°19'41.1"E, tallgrass alder-rowan-stone-birch thickets with bamboo, 8–10 IX 2019; 57 – Tokotan Lake surroundings (Fig. 2, X), 45°51'12.9"N, 149°47'22.1"E, upper part of slope, meadow, 18 VIII 2021; 58 – *ibid.*, 45°51'31.4"N, 149°47'22.0"E, floodplain alder thickets, 18 VIII 2021; 59 – Irina Bay, the Obzhitaya River surroundings (Fig. 2, VII), 46°05'31.6"N, 150°09'55.6"E, the edge of the alder-stone-birch forest, 21 VIII 2021; 60 – *ibid.*, 46°05'29.8"N, 150°09'56.8"E, alder-stone-birch forest, 21 VIII 2021; 61 – *ibid.*, 46°05'26.5"N, 150°09'56.3"E, stone-birch forest between the cliffs, 21 VIII 2021; 62 – *ibid.*, 46°05'27.2"N, 150°09'56.3"E, steep cliff covered with mosses and lichens, 21 VIII 2021; 63 – *ibid.*, 46°05'28.7"N, 150°09'57.3"E, by the stream in the ravine, 21 VIII 2021; 64 – *ibid.*, 46°05'24.5"N, 150°10'06.0"E, steep rocky cliffs, on the slope, 22 VIII 2021; 65 – *ibid.*, 46°05'20.7"N, 150°10'08.9"E, stone-birch forest, 22 VIII 2021; 66 – *ibid.*, Bezdonnyi stream, 46°05'34.3"N, 150°09'33.6"E, rocks, 23 VIII 2021; 67 – *ibid.*, 46°05'25.5"N, 150°09'32.9"E, alder thickets on the river banks, 23 VIII 2021; 68 – *ibid.*, 46°05'16.7"N, 150°09'28.0"E, rocks along the river, 23 VIII 2021; 69 – Peschanaya Bay, Rybnyi stream (Fig. 2, XI), 45°40'37.6"N, 149°32'01.2"E, rocks along the river, 28 VIII 2021; 70 – south part of the island, vast sphagnum bog (Fig. 2, XI), 45°39'38.9"N, 149°33'10.0"E, bog, 28 VIII 2021; 71 – Kastriku Peninsula, Cape Kastriku (Fig. 2, V), 46°12'13.1"N, 150°30'15.5"E, anthropogenic sites, 31 VIII 2021; 72 – *ibid.*, 46°12'10.9"N, 150°30'57.1"E, anthropogenic sites and tundra-like dwarf shrub communities, 31 VIII 2021; 73 – *ibid.*, 46°12'15.6"N, 150°30'41.2"E, anthropogenic sites and tundra-like dwarf shrub communities, 31 VIII 2021; 74 – *ibid.*, 46°12'24.1"N, 150°31'30.2"E, anthropogenic sites, 31 VIII 2021; 75 – *ibid.*, 46°12'29.7"N, 150°31'39.9"E, anthropogenic sites and tundra-like dwarf shrub communities, 31 VIII 2021; 76 – *ibid.*, 46°13'40.6"N, 150°34'12.1"E, fen, 31 VIII 2021; 77 – *ibid.*, 46°13'41.9"N, 150°34'10.2"E, tundra-like dwarf shrub communities with sedges and crowberry, 31 VIII 2021; 78 – Doroshenko Stream (Fig. 2, IX), 45°54'11.5"N, 149°51'07.9"E, 27 m a. s. l., alder thickets with bamboo near the stream, 26 VIII 2022; 79 – *ibid.*, 45°54'11.0"N, 149°51'14.5"E, 25 m a. s. l., alder thickets with bamboo near the stream,

26 VIII 2022; 80 – *ibid.*, 45°54'07.8"N, 149°51'25.3"E, 36 m a. s. l., stones in the stream, 26–28 VIII 2022; 81 – *ibid.*, 45°54'05.2"N, 149°52'16.9"E, 110 m a. s. l., alder-stone birch thickets with bamboo near the stream, 27 VIII 2022; 82 – surroundings of Kluchevoi Cape (Fig. 2, IX), 45°55'23.5"N, 149°50'60.0"E, moss communities near a thermal spring, 29 VIII 2022; 83 – *ibid.*, 45°55'40.7"N, 149°51'10.9"E, 4 m a. s. l., the lower part of the slope near the waterfall, 30 VIII 2022; 84 – *ibid.*, 45°56'28.3"N, 149°51'42.1"E, 61 m a. s. l., stone-birch thickets with bamboo on the high plateau, 30 VIII 2022; 85 – south part of the island (Fig. 2, XI), surroundings of "Kurilgeo" gold mining company's camp, 45°37'10.8"N, 149°28'57.4"E, 67 m a. s. l., forb-grass meadow, 20 VII 2023; 86 – *ibid.*, along a dirt road, 45°38'00.4"N, 149°30'45.3"E, 200 m a. s. l., thickets of dwarf stone pine with bamboo, 21 VII 2023; 87 – *ibid.*, 45°38'17.8"N, 149°30'56.0"E, 217 m a. s. l., thickets of dwarf stone pine with bamboo, 21 VII 2023; 88 – *ibid.*, 45°38'23.2"N, 149°31'06.2"E, 223 m a. s. l., thickets of dwarf stone pine with bamboo, 21 VII 2023; 89 – *ibid.*, 45°38'28.5"N, 149°31'13.8"E, 226 m a. s. l., thickets of dwarf stone pine with bamboo, 21 VII 2023; 90 – *ibid.*, 45°38'38.6"N, 149°31'40.6"E, 218 m a. s. l., thickets of dwarf stone pine with bamboo, 21 VII 2023; 91 – *ibid.*, 45°38'41.2"N, 149°31'47.4"E, 221 m a. s. l., thickets of dwarf stone pine with bamboo, 21 VII 2023; 92 – *ibid.*, 45°39'06.1"N, 149°32'21.1"E, 232 m a. s. l., thickets of dwarf stone pine with bamboo, 21 VII 2023; 93 – *ibid.*, vast sphagnum bog, 45°39'14.6"N, 149°32'39.5"E, 254 m a. s. l., sedge-cotton grass community, on tussocks, 21 VII 2023; 94 – *ibid.*, 45°39'12.5"N, 149°32'44.9"E, 255 m a. s. l., sedge-sphagnum-lousewort community, on tussocks, 21 VII 2023; 95 – *ibid.*, 45°39'07.6"N, 149°32'45.9"E, 253 m a. s. l., sedge-sphagnum community, on tussocks, 22 VII 2023; 96 – *ibid.*, 45°39'03.6"N, 149°32'56.3"E, 256 m a. s. l., small grass-sedge community with mosses and lichens, 22 VII 2023; 97 – *ibid.*, 45°38'59.5"N, 149°33'02.2"E, 257 m a. s. l., small grass-sedge community with mosses, 28 VIII 2021, 22 VII 2023; 98 – *ibid.*, 45°39'06.2"N, 149°33'09.5"E, 257 m a. s. l., sedge-sphagnum bog with dwarf stone pine, 22 VII 2023; 99 – *ibid.*, 45°39'17.9"N, 149°33'21.3"E, 263 m a. s. l., sedge, cotton grass and sphagnum community with dwarf stone pine, 22 VII 2023; 100 – *ibid.*, 45°39'26.5"N, 149°33'23.1"E, 269 m a. s. l., cotton grass-sedge-sphagnum community, 22 VII 2023; 101 – *ibid.*, 45°39'03.8"N, 149°33'16.5"E, 253 m a. s. l., sedge-sphagnum community, 23 VII 2023; 102 – *ibid.*, 45°39'06.5"N, 149°33'20.0"E, 262 m a. s. l., dwarf stone pine thickets with mosses, lichens, and bamboo, 23 VII 2023; 103 – *ibid.*, 45°39'51.9"N, 149°34'15.1"E, 290 m a. s. l., small-grass-sedge-sphagnum-lichen community on the edge of dwarf stone pine thickets, 23 VII 2023; 104 – *ibid.*, 45°40'03.5"N, 149°34'54.5"E, 321 m a. s. l., cotton grass-sedge-sphagnum community, 23 VII 2023; 105 – Van der Linda Peninsula, Van der Linda Cape, near the lighthouse (Fig. 2, XIII), 45°34'41.8"N, 149°23'58.0"E, 56 m a. s. l., ruins of the buildings near the lighthouse, 25 VII 2023; 106 – *ibid.*, 45°34'43.4"N, 149°24'05.0"E, 61 m a. s. l., ruins of the buildings near the lighthouse, 25 VII 2023; 107 – *ibid.*, 45°34'43.8"N, 149°24'10.3"E, 68 m a. s. l., stones and ruins of the buildings near the lighthouse, 25 VII 2023; 108 – *ibid.*, 45°34'42.6"N, 149°24'18.9"E, 96 m a. s. l., slopes of the hill with the lighthouse, 25 VII 2023; 109 – Pacific coast, Aleutka Bay and Aleutka River (Fig. 2, VIII), 45°56'07.0"N, 150°09'56.1"E,

20 m a. s. l., ruins of red brick buildings in the bay, 27 VII 2023; 110 – *ibid.*, 45°56'03.9"N, 150°09'47.7"E, 10 m a. s. l., alder thickets with bamboo, 27 VII 2023; 111 – *ibid.*, 45°56'07.0"N, 150°09'40.9"E, 14 m a. s. l., alder thickets with bamboo, 27 VII 2023; 112 – *ibid.*, 45°56'08.6"N, 150°09'36.5"E, 16 m a. s. l., alder thickets with bamboo, 27 VII 2023; 113 – *ibid.*, 45°56'15.5"N, 150°09'26.2"E, 10 m a. s. l., alder thickets with bamboo, 27 VII 2023; 114 – *ibid.*, 45°56'15.2"N, 150°09'22.7"E, 9 m a. s. l., alder thickets with stone birch, 27 VII 2023; 115 – *ibid.*, 45°56'13.5"N, 150°09'19.0"E, 9 m a. s. l., alder thickets with bamboo by the river, 27 VII 2023; 116 – *ibid.*, 45°56'11.4"N, 150°09'09.9"E, 90 m a. s. l., stone birch thickets with bamboo on the slope to the river, 27 VII 2023; 117 – *ibid.*, 45°56'11.0"N, 150°09'27.7"E, 8 m a. s. l., alder thickets with bamboo on the river bank, 27 VII 2023; 118 – Pacific coast, Negodnaya Bay (Fig. 2, VIII), 45°56'41.5"N, 150°10'29"E, 2 m a. s. l., fallen tree on the sandy coast, 28 VII 2023; 119 – *ibid.*, 45°56'55.6"N, 150°10'33"E, 8 m a. s. l., rocky coastal cliff, 28 VII 2023; 120 – *ibid.*, 45°57'48.3"N, 150°10'41.6"E, 9 m a. s. l., stone birches and rowans near the coastal lake, 28 VII 2023; Urup, unknown locality – specimens without precise georeferencing, dwarf stone pine thickets, 26 VIII–2 IX 2021.

Results and Discussion

An annotated checklist of the species of lichens and lichenicolous fungi, revealed for the first time (except *Bryocaulon pseudosatoanum*) on Urup and/or Simushir is given below with references on the distribution of the species in the Sakhalin Region. For species, new for the Sakhalin Region, the nearest localities are given.

The species, reported for the first time for the Kuril Is. are marked with *, species new for the Sakhalin Region – with †, species, new for Russian Far East – with ††, lichenicolous fungi are marked with #, and species from the Red Data Book of Russian Federation and/or the Red Data Book of the Sakhalin Region are marked with ^R. Islands of the Sakhalin Region are abbreviated as (Kuril Is. are listed according to geographical principle from north to south): Sakhalin – Sakh, Shumshu – Shum, Atlasova – Atl, Paramushir – Par, Onkotan – Onok, Kharimkotan – Khar, Matua – Mat, Ushishir – Ush, Simushir – Sim, Broutona – Br, Chirpoi – Chir, Urup – Ur, Iturup – Itu, Kunashir – Kun, Shikotan – Shik, Yurii – Yur. References are given after each abbreviation (in brackets), numbers correspond to those in the list of publications (see Material and Methods).

Collector names are abbreviated as follows: E. A. Aristarkhova – EA; E. A. Glazkova – EG; A. S. Kartashova – AK. For each species in the list, the sample collection site numbers, substrates, and the known localities in the Sakhalin Region are indicated. For species new for the Sakhalin Region the nearest known localities are given. The

nomenclature of lichens mainly follows Kurokawa (1994), Joneson *et al.* (2004), Lumbsch *et al.* (2011), Tønsberg *et al.* (2016), Cornejo *et al.* (2017), Ohmura (2018), Kuznetsova *et al.* (2021), Westberg *et al.* (2021), Randlane, Saag (2022), Zhdanov (2023), and Spribille *et al.* (2023). The names of vascular plants are given mostly according to the International Plant Names Index (IPNI) and World Checklist of Vascular Plants (WCVP) database (Govaerts, 2024; IPNI..., 2025).

#**Abrothallus bertianus** De Not. – Sim: 4; Ur: 120, on thallus of *Melanohalea olivacea* on wood; EG 298, EA U-4, LE L-28839, L-29168, VBG1 168140. – Shik (33).

*#**A. parmeliarum** (Sommerf.) Arnold – Ur: 114, 115, on thallus of *Parmelia fertilis* on bark of *Salix udensis*; EG 194, 197, LE L-29237, L-29245 (sub *Ramalina dilacerata*). – Sakh (36).

***Alectoria ochroleuca** (Schrank) Nyl. – Ur: 108, on soil; EG 163, LE L-29211. – Sakh (1).

Amandinea punctata (Hoffm.) Coppins et Scheid. – Ur: 58, on bark of *Alnus maximowiczii*; AK U-2a, LE L-29113. – Par (8), Shik (33).

Athallia holocarpa (Hoffm.) Arup et al. – Ur: 44, 108, on stones; EG 165, 169, LE L-29223 (sub *Flavoplaca flavocitrina*). – Par (8), Shik (33).

***Baeomyces placophyllus** Ach. – Ur: 71, on soil; AK U-61v, LE L-29157 (sub *Epilichen scabrosus*). – Sakh (1).

B. rufus (Huds.) Rebert. – Ur: 71, on soil; AK U-61v, LE L-29157 (sub *Epilichen scabrosus*). – Par (8), Shik (33).

Biatora albohyalina (Nyl.) Bagl. et Carestia – Ur: 88, on bark of *Betula ermanii*; EG 24, LE L-28982 (sub *Cladonia coccifera*). – Par (8), Itu (20), Shik (33).

!!**Biatorella conspurcans** Norman – Ur: 56, on bark of *Salix udensis*; EA Urup-21, LE L-29104. – Known from the Trans-Baikal Territory (Chesnokov, Konoreva, 2015).

Bryobilimbia hypnorum (Lib.) Fryday et al. – Ur: 71, on soil; AK U-61a, LE L-29155. – Shik (35).

Bryocaulon divergens (Ach.) Kärnefelt – Ur: 108, on soil; EG 163, LE L-29212. – Par (8), Sim (4), Br (11), Shik (33).

^R**B. pseudosatoanum** (Asahina) Kärnefelt – Ur: 62, 87, 115, on bark of *Betula ermanii*; EG 20, 200, 259, 3026, LE L-28977, L-29027, L-29028, L-29029, L-29055, L-29081, L-29082, L-29083, L-29084, L-29085, L-29169, L-29248, L-29285. – Previously reported only from the south of Urup I. (Aristarkhova *et al.*, 2021).

Bryoria nitidula (Th. Fr.) Brodo et D. Hawksw. – Ur: 108, on soil; EG 163, LE L-29212 (sub *Bryocaulon divergens*). – Shik (33).

B. trichodes (Michx.) Brodo et D. Hawksw. – Ur: 44, 45, 54, 55, 62, 118, 120, on bark of *Betula ermanii*, *Pinus pumila*, *Sorbus commixta* Hedl., *Taxus cuspidata*; EG 3026, EA U-01, Urup-2, Urup-5, U-06, U-7, U-8, Urup-9, U-10, Urup-13, Urup-14, Urup-17, LE L-29030, L-29031, L-29056, L-29057, L-29058, L-29059, L-29060, L-29061, L-29062, L-29087, L-29088,

L-29089, L-29090, L-29171, L-29286. — Itu (21), Kun (25, 29).

Buellia disciformis (Fr.) Mudd — Ur: 56, 63, on bark of *Betula ermanii* and *Sorbus commixta*; EA Urup-33, AK U-33, LE L-29135. — Mat (10), Itu (15, 16), Kun (1, 23), Shik (33).

B. erubescens Arnold — Ur: 58, on bark of *Alnus maximowiczii*; AK U-3, LE L-29114. — Itu (15), Kun (1), Shik (33).

Caloplaca stillicidiorum (Vahl) Lynge — Ur: 44, 108, on soil and stones; EG 163, 165, 169, LE L-29213, L-29222. — Par (8), Itu (19), Shik (33).

Cetraria islandica (L.) Ach. — Ur: 72, 75, 95, 101, on soil; EG 104, AK U-64, U-68, LE L-28948, L-29158, L-29162 (sub *Cladonia pyxidata*), L-29194, VBGI 168207. — Atl (4), Par (1, 4, 8), Sim (4), Bro (11), Itu (14).

C. laevigata Rasm. — Ur: 95, 108, on soil; EG 163, LE L-29195, L-29212 (sub *Bryocaulon divergens*), L-29214. — Par (1, 8), Kun (1).

C. sepincola (Ehrh.) Ach. — Sim: 19, 27; Ur: 56, on bark of *Alnus maximowiczii*, *Betula ermanii*, *Sorbus commixta*; EG 341, EA S-11, Urup-40, LE L-28841, L-28842. — Par (8), Kun (25).

Cetrelia cetrarioides (Del.) C. Culb. et W. Culb. — Ur: 48, on bark of *Salix udensis*; EA U-812, LE L-29041, contains perlatolic (major) and imbricatic acids. — Kun (23).

^R**Cetreliaopsis asahinae** (M. Satô) Randlane et A. Thell — Ur: 55, on bark of *Betula ermanii*, *Sorbus commixta*; EA U-7, Urup-9, LE L-29091, L-29092, L-29093, L-29094. — Itu (17), Kun (17, 24), Shik (17, 33).

***Cladonia amaurocraea** (Flörke) Schaer. — Ur: 101, 108, on plant debris and mossy soil; EG 104, 162, LE L-29203, VBGI 168217. — Sakh (1).

C. arbuscula (Wallr.) Flot. — Ur: 77, 88, 93, 97, 98, 108, on soil; EG 24, 42, 43, 63, 72, 162, AK U-69n, LE L-28981, L-28988, L-29003, L-29005, L-29163, L-29204, VBGI 168185, 168192, 168204, 168216. — Shum (4), Par (4, 8), Shik (33).

C. cenotea (Ach.) Schaer. — Sim: 8, 10, on rotten wood, EA SM-3, SO-4, LE L-28849, L-28854. — Par (8), Itu (18), Kun (1), Shik (34).

C. chlorophaea (Flörke ex Sommerf.) Spreng. s. str. — Sim: 36, 38, on mossy soil, rotten wood, driftwood; S. F. Khokhlov s. n., EG 348, 351, LE L-28845 (sub *Cladonia coniocraea*), L-28853 (sub *C. pyxidata*), L-29189, L-29190, VBGI 168164, 168165 (sub *Protopannaria pezizoides*). — Par (1, 8), Br (11), Itu (18), Kun (1, 25).

C. coccifera (L.) Willd. — Sim: 5, 10; Ur: 58, 72, 88, on bark of *Betula ermanii*, mossy or volcanic soil; S. V. Fomenko s. n., EG 24, 308, AK U-1, U-65a, LE L-28847, L-28855, L-28982, L-29115, L-29159. — Par (4, 5, 8), Br (11), Chir (12), Shik (33, 34).

C. coniocraea (Flörke) Spreng. — Sim: 2, 4, 8, 20, 38, 39, 42; Ur: 58–60, 63, 78, 79, 81, 88, 91, 99, 109, 115, 116, 120, on bark of *Alnus maximowiczii*, *Betula ermanii*, *Pinus pumila*, on mossy soil and on driftwood; S. F. Khokhlov s. n., EG 24, 31, 76, 173, 196, 203, 209, 329, 351, 352, 374, 3927, 3929, EA S-1, S-3, U-04, U-06, AK U-3, U-25, U-27, U-33a, LE L-28845, L-28846, L-28850, L-28865, L-29006, L-29116, L-29129, L-29132,

L-29136, L-29172, L-29225, L-29243, L-29250, L-29252, L-29257, L-29268. — Par (1, 8), Br (11), Chir (12), Itu (20), Kun (1, 16), Shik (33).

C. cornuta (L.) Hoffm. subsp. **cornuta** — Sim: 1, 3, 27, 30, 36; Ur: 89, 90, 95, on bark of *Alnus maximowiczii*, mossy soil or rotten wood; Ya. A. Red'kin s. n., EG 25, 27, 341, 348, EA SM-3, LE L-28843, L-28873, L-28880, L-28881, L-28886, L-28888, L-28984, L-28986. — Br (11), Kun (26), Shik (34).

C. crispata (Ach.) Flot. var. **crispata** — Sim: 31; Ur: 54, 92, 93, 95, 97, 101, 103, on soil; EG s. n., 43, 46, 104, 132, Urup-E, EA SM-4, LE L-28949, L-28955, L-28991, L-28996, L-29063, L-29196, L-29287. — Par (1), Chir (12), Itu (21).

C. cyanipes (Sommerf.) Nyl. — Sim: 1, 10, 16, on mossy soil or plant debris; Ya. A. Red'kin s. n., EG 308, 320, LE L-28844, L-28856, L-28864, VBGI 168142, 168147. — Par (8).

***C. deformis** (L.) Hoffm. — Sim: 9, on rotten wood; EA SM-3, LE L-28852. — Sakh (1).

C. digitata (L.) Hoffm. — Ur: 86, 95, on bark of *Betula ermanii*, on mossy soil; EG s. n., 19, LE L-28843, L-28974, L-29197. — Itu (20), Shik (33).

C. fimbriata (L.) Fr. — Sim: 27, 35, 37; Ur: 79, 81, 115, on bark of *Alnus maximowiczii*, *Betula ermanii*, *Salix udensis*, on mossy soil and rotten wood; EG s. n., 196, 203, 341, 347, 349, 3929, LE L-28878, L-28883, L-29243 (sub *Cladonia coniocraea*), L-29250 (sub *C. coniocraea*), L-29258, L-29269. — Par (8), Kun (1, 25).

C. furcata (Huds.) Baumg. — Sim: 27; Ur: 57, on soil; EG 341, 2998, LE L-28869, L-29288. — Itu (21), Kun (1, 23, 25).

!**C. glauca** Flörke — Sim: 35, 42, on mossy soil; EG 347, 374, LE L-28879, L-28889. — Known from Primorye Territory and Amur Region (Tchabanenko, 2002).

C. gracilis (L.) Willd. subsp. **gracilis** — Ur: 97, on mossy soil; EG 63; L-29003 (sub *C. arbuscula*). — Par (8), Itu (16, 21), Kun (1, 23, 25), Shik (33).

C. kanewskii Oxner — Ur: 93, 95–97, 101, 103, 104, on mossy soil; EG s. n., 42, 57, 58, 104, 130, 140, LE L-28950, L-28958 (sub *C. subfurcata*), L-28989, L-29000, L-29001, L-29198, L-29289, VBGI 168194, 168202, 168210. — Par (8).

C. mitis Sandst. — Sim: 1, 10, 12, 13; Ur: 93, 95, 96, 98, 100, 103, on mossy soil; Ya. A. Red'kin s. n., EG 42, 58, 71, 81, 130, 308, 311, EA S-4, S-6, LE L-28856 (sub *C. cyanipes*), L-28857, L-28862, L-28863, L-28990, L-29002, L-29004, L-29199, L-29200. — Shum (3), Itu (14), Shik (33).

***C. nipponica** Asahina — Ur: 97, on mossy soil; EG s. n., LE L-29290. — Sakh (1).

C. ochrochlora Flörke — Sim: 10, on wood; EA SO-4, LE L-28858. — Chir (12).

C. pleurota (Flörke) Schaer. — Ur: 62, on soil; EG 3026, LE L-29291 — Par (4, 5, 8), Sim (4), Kun (1, 25).

C. pocillum (Ach.) O. J. Rich. — Ur: 105, on soil; EG 155, LE L-28960. — Kun (23).

C. pyxidata (L.) Hoffm. — Sim: 6, 8–11, 24, 28, 31, 36, 39–41; Ur: 68, 71, 75, on bark of *Alnus maximowiczii*, *Betula ermanii*, on driftwood and soil; S. V. Fomenko s. n., EG 24, 155, 307, 308, 309, 333, 340, 352, 358, 360, EA S-1, SM-2, SM-4, AK U-50, U-53, U-61, U-68,

LE L-28848, L-28851, L-28853, L-28860, L-28861, L-28866, L-28867, L-28868, L-28870, L-28872, L-28875, L-28887, L-28961, L-29151, L-29156, L-29162. — Par (8), Br (11), Chir (12), Kun (1, 23, 25).

C. rangiferina (L.) F. H. Wigg. — Sim: 10; Ur: 70, 85, 87, 88, 93, 95, 102, 103, 108, on mossy soil and plant debris; *EG* 16, 20, 24, 43, 105, 130, 162, 163, 308, *AK B-2*, LE L-26410, L-28859, L-28953, L-28954 (sub *C. uncialis*), L-28978, L-28983, L-28992, L-29199 (sub *C. mitis*), L-29205. — Par (8), Sim (4), Itu (14), Shik (33). Specimen of *C. rangiferina* LE L-26410 was erroneously published for Broutona I. (Zueva *et al.*, 2024b). This specimen was collected in Urup I. (Ur: 70).

C. scabriuscula (Delise) Nyl. — Sim: 10, 27, 34; Ur: 78, 105, on bark of *Salix udensis*, on rotten wood; *EG* 157, 341, 344, *EA SM-4*, LE L-28871, L-28877, L-28964, L-29281. — Br (11), Kun (1, 25).

C. squamosa Hoffm. — Sim: 11, 26, 33, 37; Ur: 95, on bark of *Alnus maximowiczii*, driftwood, rotten wood, mossy soil; *EG* 46, 309, 340, 343, 349, LE L-28868 (sub *Cladonia pyxidata*), L-28876, L-28884, L-28997. — Par (1, 8), Itu (18), Kun (18), Shik (34).

C. stellaris (Opiz) Pouzar et Vězda — Ur: 54, 56, 92, 93, 95, 97, 101, on soil, bark of *Alnus maximowiczii*; *EG s. n.*, 43, 44, 46, 104, *Urup-E*, *EA Urup-42*, LE L-28951, L-28993, L-28994, L-28998, L-29064 (sub *Cladonia uncialis*), L-29106, L-29201, L-29292, VBG I 168197, 168199, 168208. — Shum (4), Par (4, 8), Sim (4), Shik (34).

C. stygia (Fr.) Ruoss — Ur: 70, 95, 101, 104, on mossy soil; *EG* 46, 104, 140, *AK B-1*, LE L-26412, L-28951 (sub *C. stellaris*), L-28957, L-28999, VBG I 168200. — Shik (33). Specimen of *C. stygia* LE L-26412 was erroneously published for Broutona I. (Zueva *et al.*, 2024b). This specimen was collected in Urup I. (Ur: 70).

C. subfurcata (Nyl.) Arnold — Ur: 94, 104, on mossy soil; *EG* 45, 140, LE L-28958, L-28995, VBG I 168198, 168212. — Par (8), Chir (12).

***C. subulata** (L.) Weber ex F. H. Wigg. — Sim: 37, on rotten wood; *EG* 349, LE L-28882, L-28885, L-29206, L-29215. — Sakh (1).

C. uncialis (L.) Weber ex F. H. Wigg. s. lat. — Ur: 54, 92, 93, 101, 103, 108, on soil and plant debris; *EG* 44, 104, 130, 162, 163, *Urup-E*, LE L-28952, L-28954, L-28994 (sub *C. stellaris*), L-29064, VBG I 168214. — Par (4, 5, 8), Kun (1), Shik (33).

Cliostomum griffithii (Sm.) Coppins — Ur: 54, Urup unknown locality, on bark of *Betula ermanii* and *Pinus pumila*; *EA s. l.*, *Urup-14*, LE L-29062. — Itu (20), Kun (29), Shik (33).

Collema subflaccidum Degel. — Ur: 114, on bark of *Salix udensis*; *EG* 194, LE L-29238. — Itu (16), Kun (1, 18), Shik (33).

Dibaeis baeomyces (L. f.) Rambold et Hertel — Sim: 7; Ur: 86, on soil; *S. V. Fomenko s. n.*, *EG* 18, LE L-28973. — Par (8).

!#**Epilichen scabrosus** (Ach.) Clem. — Ur: 71, on *Baeomyces rufus* and *B. placophyllus* on soil; *AK U-61v*, LE L-29157. — Known from Kamchatka Territory (Himmelbrant *et al.*, 2021).

Flavoplaca flavocitrina (Nyl.) Arup *et al.* — Ur: 44, 108, on stones; *EG* 165, 169, LE L-29223. — Shik (33).

Graphis scripta (L.) Ach. — Ur: Urup unknown locality, on *Pinus pumila*; *EA s. n.*, LE L-29185. — Itu (15, 16), Kun (1).

Hypogymnia bullata Rasm. — Ur: 120, on bark of *Betula ermanii*; *EA U-06*, LE L-29173. — Par (8), Itu (1, 13).

H. physodes (L.) Nyl. — Ur: 120, on bark of *Betula ermanii*; *EA U-06*, LE L-28970. — Itu (15), Shik (34).

H. pseudophysodes (Asahina) Rasm. — Ur: 45, 86–88, 99, on bark of *Betula ermanii* and *Pinus pumila*; *EG* 19, 20, 24, 76, *EA Urup-4*, *Urup-18*, LE L-28975, L-28979, L-28982 (sub *Cladonia coccifera*), L-29007, L-29028 (sub *Bryocaulon pseudosatoanum*), L-29032. — Itu (1, 20), Kun (1, 23), Shik (33).

H. submundata (Oxner) Rasm. — Ur: 117, on bark of *Salix udensis*; *EG* 217, LE L-29255. — Par (8), Itu (20), Kun (25).

H. tubulosa (Schaer.) Hav. — Ur: 79, on bark of *Alnus maximowiczii*; *EG* 329, LE L-29270. — Par (1).

Lecanora gangaleoides Nyl. — Ur: 64, on seaside rocks; *AK U-37*, LE L-29145. — Shik (33).

L. orae-frigidae R. Sant. — Sim: 4, 20, on wood and driftwood; *EG* 329, *EA SM-1*, LE L-28898 (sub *Lecidella euphorea*), L-28905 (sub *Parmelia sulcata*). — Par (8).

L. polytropa (Ehrh. ex Hoffm.) Rabenh. — Ur: 44, on seaside rocks and stones; *EA Urup-1*, LE L-29026 (sub *Xanthoparmelia stenophylla*). — Par (8), Shik (33).

L. pulcaris (Pers.) Ach. — Ur: 45, 58, 78, 120, on bark of *Betula ermanii*, *Salix udensis*, *Pinus pumila*; *AK U-3*, *Urup-04*, *U-06*, LE L-29028 (sub *Bryocaulon pseudosatoanum*), L-29114 (sub *Buellia erubescens*). — Par (8), Itu (20), Kun (1, 23), Shik (33).

L. strobilina (Spreng.) Kieff. — Sim: 27; Ur: 45, 48, 52, 54, 56, 63, 78, 99, 117, on bark of *Alnus maximowiczii*, *Betula ermanii*, *Salix udensis*, *Sorbus commixta*, *Pinus pumila*; *EG* 76, 217, 341, *EA Urup-2*, *Urup-4*, *U-8*, *Urup-13*, *Urup-14*, *Urup-17*, *Urup-18*, *U-26*, *Urup-33*, *Urup-810*, *Urup-812*, *AK U-33*, LE L-28891, L-29008, L-29028 (sub *Bryocaulon pseudosatoanum*), L-29033, L-29042, L-29051, L-29058 (sub *Bryoria trichodes*), L-29066, L-29067, L-29094 (sub *Cetreliaopsis ashinae*), L-29256. — Par (8).

L. symmicta (Ach.) Ach. — Ur: 45, 50, 52, 56, 114, 120, on bark of *Betula ermanii*, *Salix udensis*, *Sorbus commixta*, *Pinus pumila*; *EG* 194, *EA U-04*, *U-06*, *U-17*, *Urup-26*, *U-808*, *U-810*, LE L-29028 (sub *Bryocaulon pseudosatoanum*), L-29052, L-29068, L-29168 (sub *Abrothallus bertianus*), L-29239, VBG I 168226 (sub *Ramalina roesleri*). — Par (8), Itu (15, 16), Kun (1), Shik (33).

Lecidella euphorea (Flörke) Hertel — Sim: 4, on wood; *EA SM-1*, LE L-28898. — Par (8), Kun (1).

Lendemeriella borealis (Vain.) S. Y. Kondr. — Sim: 11, 27, on bark of *Alnus maximowiczii*; *EG* 309, 341, LE L-28992, L-28993, L-28994, VBG I 168158. — Itu (20).

Leptogium cyanescens (Rabenh.) Körb. — Ur: 64, 80, 114, 115, on bark of *Salix udensis*, on mossy rock; *EG s. n.*, 194, 198, LE L-29246, L-29265. — Itu (20), Kun (1, 16, 23), Shik (33).

^R**Lobaria pulmonaria** (L.) Hoffm. — Ur: 79–81, 114, on bark of *Salix udensis* and *Alnus maximowiczii*; *EG s.*

n., 192, 193, 194, 3930, LE L-29235, L-29240, L-29259, L-29267, L-29271, VBG 168224, 168227. — Par (17), Itu (16, 21), Kun (4, 16, 18).

Lobaria scrobiculata (Scop.) DC. — Ur: 114, on bark of *Salix udensis*; EG 192, 193, 194, LE L-29236, L-29241, VBG 168223. — Itu (16), Kun (16, 18), Shik (33).

Lopadium disciforme (Flot.) Kullh. — Ur: 54, on bark of *Betula ermanii*; EA Urup-014, LE L-29301. — Itu (16), Kun (23), Shik (33, 34).

Melanohalea exasperata (De Not.) O. Blanco et al. — Sim: 27; Ur: 120, on bark of *Alnus maximowiczii*, *Betula ermanii*, and *Sorbus* sp.; EG 341, EA U-06, U-14, LE L-29069, L-29070, L-29095. — Par (8), Itu (19).

M. olivacea (L.) O. Blanco et al. — Sim: 4, 27; Ur: 45, 48, 54–56, 86, 99, 110, 112, 118, 120, on bark of *Alnus maximowiczii*, *Betula ermanii*, and *Salix udensis*, on rotten wood and wood of *Pinus pumila*; EG 19, 76, 179, 180, 185, 194, 298, 341, EA U-01, Urup-2, U-04, U-06, Urup-7, Urup-9, Urup-13, Urup-14, Urup-014, Urup-17, Urup-26, U-28, Urup-29, U-33v, Urup-812, AK U-2, U-25, U-33v, LE L-28896, L-28976, L-29009, L-29058 (sub *Bryoria trichodes*), L-29061 (sub *B. trichodes*), L-29071, L-29091 (sub *Cetrellopsis ashinae*), L-29094 (sub *C. ashinae*), L-29096, L-29107, L-29117, L-29130, L-29137, L-29169 (sub *Bryocaulon pseudosatanum*), L-29228, L-29231. — Par (8), Sim (4), Br (11), Itu (15, 21), Kun (1), Shik (33, 34).

M. septentrionalis (Lynge) O. Blanco et al. — Ur: 45, 56, 63, on bark of *Betula ermani* and *Sorbus commixta*; EA Urup-5, Urup-33, AK U-33, LE L-29138. — Itu (20), Shik (33).

Micarea incrassata Hedl. — Sim: 9, on soil; EA S-3, LE L-28897. — Par (8).

M. lignaria (Ach.) Hedl. — Ur: 44, on mossy soil; EG 15, LE L-28959. — Shik (33).

!#**Muellerella lichenicola** (Sommerf.) D. Hawksw. — Ur: 58, on apothecia of *Rinodina freyi* on bark of *Betula ermanii*; AK U-3, LE L-29118. — Known from Kamchatka Territoty (Zhurbenko et al., 2012).

Mycobilimbia tetramera (De Not.) Vitik. et al. ex Hafellner et Türk — Ur: 108, on soil; EG 165, LE L-29224. — Par (8), Itu (20), Shik (33).

Mycoblastus affinis (Schaer.) T. Schauer — Ur: 88, on bark of *Betula ermanii*; EG 24, LE L-28982 (sub *Cladonia coccifera*). — Itu (19).

Myriolecis dispersa (Pers.) Śliwa et al. — Ur: 108, on stones; EG 165, LE L-29223 (sub *Flavoplaca flavocitrina*). — Par (8), Shik (33).

***Nephroma arcticum** (L.) Torss. — Ur: 92, on mossy soil; EG 38, LE L-28987, VBG 168191. — Sakh (1).

Ochrolechia frigida (Sw.) Lynge — Sim: 23; Ur: 44, 105, 108, on plant debris, soil, rotten wood; EG 15, 157, 162, 163, EA Simushir grot, LE L-28965, L-29207, L-29216. — Par (8), Shik (33).

O. pallescens (L.) A. Massal. — Ur: 54, on bark of *Betula ermanii*; EA U-14, LE L-29072, contains gyrophoric and variolaric acids. — Itu (15, 16), Kun (25, 29), Shik (34).

O. trochophora (Vain.) Oshio — Ur: 55, on bark of *Betula ermanii*; EA U-7, LE L-29101 (sub *Sagediopsis campestriana*), contains gyrophoric acid. — Kun (25), Shik (33).

O. yasudae Vain. — Ur: Urup unknown locality, on soil; EA s. n., LE L-29186. — Itu (16), Kun (1, 23), Shik (33).

Parmelia asiatica A. Crespo et Divakar — Ur: 114, on bark of *Salix udensis*; EG 194, LE L-29242. — Itu (20).

P. fertilis Müll. Arg. — Sim: 4, 43; Ur: 45, 48, 50, 52, 54–56, 58, 59, 63, 78, 81, 84, 89, 99, 110, 114–116, 118–120, on bark of *Alnus maximowiczii*, *Betula ermanii*, *Salix udensis*, *Sorbus* sp., *Pinus pumila*, on rotten wood; EG 25, 76, 179, 192, 193, 194, 197, 198, 203, 209, 298, 376, 3927, 3985, EA U-01, Urup-2, U-02, Urup-3, U-03, Urup-4, U-04, Urup-5, U-05, U-06, Urup-7, U-7, Urup-9, Urup-13, Urup-14, Urup-014, U-18, Urup-21, Urup-22, Urup-28, Urup-29, Urup-33, Urup-803, Urup-808, Urup-810, AK U-2, U-2a, U-3, U-25, U-33, U-33a, U-48, LE L-28899, L-28900, L-28911, L-29010, L-29043, L-29047, L-29053, L-29097, L-29108, L-29109, L-29110, L-29119, L-29120, L-29121, L-29122, L-29131, L-29133, L-29139, L-29140, L-29141, L-29166, L-29174, L-29175, L-29229, L-29247, L-29251, L-29253, L-29260, L-29282. — Br (11), Itu (15, 16), Kun (1, 23), Shik (33, 34).

P. omphalodes (L.) Ach. — Sim: 4, 10, 21–24; Ur: 62, 63, 77, 108, on soil; EG s. n., 162, 163, 331, 332, 333, 3026, EA SM-1, SM-4, Simushir grot, AK U-69n, LE L-28901, L-28906, L-28907, L-28909, L-28971, L-29164, L-29208, L-29217, L-29293. — Par (8), Br (11), Kun (1, 23), Shik (14, 33).

***P. praesquarrosa** Kurok. — Ur: 45, 50, 52, 54–56, 63, 118, 120, on bark of *Betula ermanii*, *Salix udensis*, *Sorbus* sp., on bark and wood of *Pinus pumila*; EA U-01, Urup-2, Urup-4, Urup-5, U-06, U-7, Urup-13, Urup-14, Urup-17, Urup-24, U-27, Urup-28, Urup-29, U-33, U-808, U-810, LE L-29091 (sub *Cetrellopsis ashinae*), L-29098, L-29232. — Sakh (2).

P. saxatilis (L.) Ach. — Sim: 18, 20, 21, 24; Ur: 53, 54, 78, 92, 105, on seaside rocks, stones, concrete, rotten wood, on bark of *Alnus maximowiczii* and *Salix udensis*; EG 155, 157, 329, 331, 333, EA S-10, Urup-007, Urup-E, LE L-28902, L-28904, L-28910, L-28962, L-28966, L-29073, L-29283. — Par (1, 4, 8), Itu (15, 21), Kun (1, 23), Shik (14, 33).

P. squarrosa Hale — Ur: 45, 48, 54, 81, 113, 115, 120, on bark of *Alnus maximowiczii*, *Betula ermanii*, *Salix udensis*; EG s. n., 191, 200, EA U-06, Urup-13, Urup-014, Urup-29, U-803, AK U-27, U-33, U-33v, LE L-29074, L-29058 (sub *Bryoria trichodes*), L-29132 (sub *Cladonia coniocraea*), L-29171 (sub *Bryoria trichodes*), L-29176, L-29249. — Itu (15, 16, 21), Kun (1), Shik (33, 34).

P. sulcata Taylor — Sim: 18, 20, 23; Ur: 45, on bark of *Alnus maximowiczii*, *Betula ermanii*, *Sorbus sambucifolia* (Cham. et Schltdl.) M. Roem., on stones and on rock; EG 329, EA S-10, Simushir grot, U-04, Urup-5, LE L-28903, L-28905, L-28908, L-29034, L-29177, L-29227. — Par (8), Itu (21), Kun (1).

Parmeliopsis hyperopta (Ach.) Arnold — Ur: 45, on bark and wood of *Pinus pumila*; EA Urup-18, LE L-29035. — Par (8), Itu (16), Kun (18), Shik (33, 34).

Peltigera apthosa (L.) Willd. — Ur: 112, on mossy soil; EG 185, LE L-29234. — Itu (21), Kun (1), Shik (22, 33).

- P. canina** (L.) Willd. — Sim: 9; Ur: 109, on soil; *EG* 173, 307, LE L-28914, L-29226. — Atl (4), Par (4, 5, 8), Br (11), Itu (1, 16), Kun (22, 23, 33), Shik (22, 33).
- P. didactyla** (With.) J. R. Laundon — Ur: 60, on soil; *AK U-27*, LE L-29134. — Par (8).
- P. elisabethae** Gyeln. — Sim: 11; Ur: 66, 81, on soil; *EG s. n.*, *EA S-5*, *AK U-46*, LE L-28917, L-28918, L-29099, L-29148, L-29261. — Kun (1).
- P. leucophlebia** (Nyl.) Gyeln. — Sim: 9, 10, 31; Ur: 61, 64, 68, 80, 112, 119, on mossy soil; *EG* 185, 3936, *EA SM-3*, *SM-4*, *U-02*, *AK U-53*, LE L-28915, L-28916, L-29152, L-29167, L-29275, L-29294, L-29295. — Par (8), Br (11), Itu (16), Kun (1, 23), Shik (4).
- P. neckeri** Hepp ex Müll. Arg. — Ur: 84, on soil; *EG* 3985, LE L-29280. — Kun (1), Shik (1, 22, 33).
- P. neopolydactyla** (Gyeln.) Gyeln. — Sim: 8; Ur: 56, 65, 81, on soil; *EG s. n.*, 3951, *EA SM-2*, *Urup-38*, *AK U-38*, LE L-28913, L-29147, L-29262, L-29276. — Shik (33).
- P. polydactylon** (Neck.) Hoffm. — Ur: 79, 89, on soil; *EG* 25, 3931, LE L-28985, L-29272, *VBGI* 168188. — Itu (20), Kun (1, 22, 23), Shik (1, 4, 22, 33).
- P. praetextata** (Flörke ex Sommerf.) Zopf — Sim: 4, 31; Ur: 63, 79, 120, on soil; *EG* 3931, *EA SO-1*, *SM-4*, *U-06*, *U-30*, LE L-28912, L-28919, L-28920, L-29142, L-29178, L-29273. — Par (8), Br (12), Itu (20), Kun (18), Shik (22, 33).
- P. rufescens** (Weiss) Humb. — Ur: 73, on soil; *AK U-66*, LE L-29161. — Kun (1).
- Physcia aipolia** (Ehrh. ex Humb.) Fűrnr. — Ur: 45, 58, on bark of *Betula ermanii*; *EA Urup-3*, *AK U-3*, LE L-29123. — Kun (29).
- P. alnophila** (Vain.) Loht. et al. — Ur: 50, 56, 58, 63, on bark of *Salix udensis* and *Sorbus commixta*; *EA Urup-24*, *Urup-33*, *Urup-808*, *AK U-2*, *U-33*, LE L-29048, L-29214, L-29143, L-29193. — Kun (18).
- P. caesia** (Hoffm.) Fűrnr. — Ur: 82, on stones; *EG* 3965, LE L-29277. — Par (8), Mat (10), Itu (19), Shik (33).
- Platismatia interrupta** W. L. Culb. et C. F. Culb. — Ur: 116, on bark of *Betula ermanii*; *EG* 209, LE L-29254. — Itu (15, 21, 32), Kun (1, 16, 32), Shik (32, 33, 34).
- Polycauliona candelaria** (L.) Frödén et al. — Ur: 44, on seaside rocks and stones; *EA Urup-1*, *Urup-2*; L-29026 (sub *Xanthoparmelia stenophylla*). — Par (8), Br (11), Itu (20), Shik (33).
- Protopannaria pezizoides** (Weber) P. M. Jørg. et S. Ekman — Sim: 33, on soil; *EG* 343, LE L-28921, *VBGI* 168165. — Par (8), Shik (30, 33).
- Ramalina almquistii** Vain. — Sim: 8, 10, 23, 28, 31; Ur: 45–50, 52, 54–56, 62, 66, 82, 92, on coastal rocks; *EG* 155, 157, 162, 298, 332, 3026, 3965, *EA SM-1*, *SO-2*, *SM-4*, *Simushir grot*, *U-806*, *Urup-E*, *AK U-45*, LE L-28922, L-28923, L-28924, L-28925, L-28927, L-28928, L-28930, L-28931, L-28963, L-28967, L-29075, L-29149, L-29209, L-29278. — Atl (4), Par (1, 4, 8), Onek (9), Khar (9), Ush (9), Br (11), Chir (9), Kun (1), Shik (14, 33).
- R. roesleri** (Hochst. ex Schaer.) Hue — Sim: 20, 21, 23; Ur: *Urup* unknown locality, 45, 47–52, 54–56, 58, 63, 67, 81, 89, 105, 110, 112, 114, 115, 118, 120, on bark of *Alnus maximowiczii*, *Betula ermanii*, *Salix udensis*, *Sorbus sambucifolia*, on bark and wood of *Pinus pumila*; *EG s. n.*, 25, 157, 179, 183, 184, 194, 197, 203, 329, 331, *EA s. l.*, *Simushir grot*, *U-01*, *Urup-2*, *Urup-3*, *Urup-4*, *U-04*, *Urup-5*, *U-05*, *U-06*, *Urup-7*, *U-8*, *Urup-13*, *Urup-14*, *Urup-014*, *Urup-17*, *U-18*, *Urup-21*, *Urup-24*, *Urup-28*, *Urup-29*, *Urup-36*, *Urup-789*, *Urup-801*, *Urup-803*, *Urup-805*, *Urup-808*, *Urup-809*, *Urup-810*, *Urup-812*, *AK U-33a*, *U-33v*, *U-48*, *U-69n*, LE L-28926, L-28929, L-28968, L-29036, L-29037, L-29040, L-29044, L-29045, L-29046, L-29049, L-29076, L-29077, L-29100, L-29111, L-29125, L-29150, L-29181, L-29182, L-29183, L-29187, L-29233, L-29263, L-29284. — Par (8), Br (11), Ur (9), Itu (9, 15, 16, 21), Kun (1, 16, 23), Shik (9, 14, 33, 34).
- R. scoparia** Vain. — Ur: 53, 64, on stone; *EA Urup-007*, *AK U-37*, LE L-29054, L-29146. — Par (8), Onek (9), Mat (9), Sim (9).
- Rhizoplaca melanophthalma** (DC.) Leuckert et Poelt — Ur: 44, on rocks, stones; *EA Urup-1*, LE L-29026 (sub *Xanthoparmelia stenophylla*). — Itu (19).
- Ricasolia japonica** (Asahina) Cornejo — Ur: 80, on bark of *Salix udensis*; *EG s. n.*, LE L-29266. — Kun (1), Shik (33).
- ^R**R. virens** (With.) H. H. Blom et Tønsberg — Ur: 61, on moss; *EG s. n.*, LE L-29296. — Kun (1).
- Rinodina freyi** H. Magn. — Ur: 54, 56, 58, on bark of *Betula ermanii*, *Sorbus* sp.; *EA Urup-2*, *Urup-26*, *AK U-3*, LE L-29078, L-29126. — Par (8), Br (11), Kun (27).
- R. subpariata** (Nyl.) Zahlbr. — Ur: 56, 63, 81, 120, on bark of *Alnus maximowiczii*, *Sorbus* sp., and thallus of *Parmelia fertilis*; *EG s. n.*, *EA U-06*, *Urup-33*, *AK U-33*, LE L-29144, L-29184. — Itu (20), Kun (27), Shik (33).
- R. turfacea** (Wahlenb.) Körb. — Ur: 61, on soil; *EG s. n.*, LE L-29297. — Par (8), Mat (10).
- Rusavskia elegans** (Link) S. Y. Kondr. et Kärnefelt — Ur: 44, 58, 106, 107, on stones, bricks, concrete; *EG* 159, 160, *EA U-2*, *AK U-1*, LE L-28972, L-29025, L-29127, L-29202. — Par (8), Kun (1, 23), Shik (4, 14, 33).
- #Sagediopsis campsteriana** (Linds.) D. Hawksw. et R. Sant. — Ur: 55, on thallus and apothecia of *Ochrolechia trochophora* on bark of *Betula ermanii*; *EA U-7*, LE L-29101, L-29210, L-29221. — Par (8).
- Sphaerophorus fragilis** (L.) Pers. — Ur: 54, 62, 79, 105, 108, 115, on stones, rocks, rotten wood, and bark of *Betula ermanii*; *EG* 157, 163, 200, 3026, 3931, *EA U-10*, *Urup-14*, LE L-28969, L-29072, L-29102, L-29218, L-29274, L-29298. — Par (8), Br (11).
- S. globosus** (Huds.) Vain. — Ur: 108, on soil; *EG* 163, LE L-29219. — Par (8).
- Stereocaulon alpinum** Laurer — Sim: 9, 10, 14, 16, 17, 26, 31, 42; Ur: 56, 69, on soil, plant debris, driftwood; *EG* 307, 308, 313, 320, 321, 340, 374, *EA SM-4*, *S-9*, *Urup-A*, *AK VDL-1*, LE L-28933, L-28934, L-28935, L-28937, L-28938, L-28939, L-28940, L-28943, L-28945, L-29112, L-29153. — Br (11).
- S. glareosum** (Savicz) H. Magn. — Sim: 30, on rotten wood; *EA SM-3*, LE L-28942. — Par (1, 6, 8), Itu (14).
- * ^R**Sticta limbata** (Sm.) Ach. — Ur: 81, on bark of *Alnus maximowiczii*; *EG s. n.*, LE L-29264. — Sakh (1).

Thamnomia vermicularis (Sw.) Schaer. s. lat. — Ur: 72, 76, 77, 85, 108, on soil, plant debris; *EG* 14, 162, 163, 3323, *AK U-65*, *U-69n*, LE L-28956, L-29160, L-29163 (sub *Cladonia arbuscula*), L-29165, L-29204 (sub *C. arbuscula*), L-29212 (sub *Bryocaulon divergens*), L-29299, VBG 168178. — Shum (4), Par (4, 8), Itu (1), Kun (1).

Umbilicaria torrefacta (Lightf.) Schrad. — Sim: 10, 31, on stone; *EA S-4*, *SM-4*, LE L-28946, VBG 168130. — Atl (4, 5), Par (7), Br (11).

Usnea glabrescens (Nyl. ex Vain.) Vain. — Ur: 51, on bark of *Salix udensis*; *EA Urup-811*, LE L-29050. — Kun (1).

U. subfloridana Stirt. — Ur: 45, 58, on bark of *Betula ermanii*; *EA U-3*, *Urup-5*, *AK VDL-2*, LE L-29038, L-29128. — Kun (28).

Vulpicida juniperinus (L.) J.-E. Mattsson et M. J. Lai — Ur: 55, 69, 87, on bark of *Pinus pumila*; *EG* 20, *EA Urup-7*, *VDL-2*, LE L-28980, L-29103, L-29154. — Shum (4), Par (4, 8), Sim (4), Kun (1).

V. pinastri (Scop.) J.-E. Mattsson et M. J. Lai — Sim: 11, 27; Ur: Urup unknown locality, 45, 54, 91, 99, 115, 117, on bark of *Alnus maximowiczii*, *Betula ermanii*, *Salix udensis*, on wood and bark of *Pinus pumila*; *EG* 31, 76, 196, 217, 309, 341, *EA s. l.*, *Urup-4*, *U-7*, *Urup-17*, *Urup-18*, LE L-29026 (sub *Xanthoparmelia stenophylla*), L-29039, L-29080, L-29188, L-29244. — Par (4, 5, 8), Itu (15, 16, 21), Kun (1, 18), Shik (34).

Xanthomendoza borealis (R. Sant. et Poelt) Søchting et al. — Ur: 83, 108, on stones; *EG* 163, 3971, LE L-29220, L-29279. — Known from Chukotka Autonomous Area, Wrangel I. (Lindblom, Søchting, 2008).

Xanthoparmelia stenophylla (Ach.) Ahti et D. Hawksw. — Ur: 44, on rocks and stone; *EA Urup-1*, LE L-29026. — Shik (14, 33).

Xylographa opegraphella Nyl. ex Rothr. — Sim: 10, on driftwood; *EA SO-4*, LE L-28947. — Shik (34).

In total, 137 species (132 lichen species and five species of lichenicolous fungi) for both islands were identified. All of them are new for one or both of the islands. Overall, 119 species are new for Urup I. and 46 — for Simushir I. *Biatorrella conspurcans* is new for Far East (Far East sensu: Flora..., 2014). Four species (*Cladonia glauca*, *Epilichen scabrosus*, *Muellerella lichenicola*, *Xanthomendoza borealis*) are new for the Sakhalin Region, and nine (*Abrothallus parmeliarum*, *Alectoria ochroleuca*, *Baeomyces placophyllus*, *Cladonia amaurocraea*, *C. deformis*, *C. nipponica*, *C. subulata*, *Nephroma arcticum*, *Parmelia praesquarrosa*, *Sticta limbata*) — new for the Kuril Is.

Bryocaulon pseudosatoanum, *Cetrellopsis asahinae*, *Lobaria pulmonaria*, and *Sticta limbata* are protected in the Russian Federation and the Sakhalin Region (Krasnaya..., 2019, 2024). *Ricasolia virens* is listed in the Red Data Book of Russian Federation only (Krasnaya..., 2024). *Lobaria pulmonaria* was already known from South and North

Kuril Is., *Cetrellopsis asahinae* — from Shikotan, Kunashir, and Iturup islands (Krasnaya..., 2019), *Ricasolia virens* — from Kunashir I. only (Tchabanenko, 2002). *Sticta limbata* was known from Sakhalin I. (Tchabanenko, 2002) but was not mentioned for the Kuril Is. before. *Bryocaulon pseudosatoanum* was previously known from the south of Urup (Aristarkhova et al., 2021); here we report it for the first time for the northwestern part of the island.

According to the data from this paper and scant literature data, 63 and 124 species are currently known from Simushir and Urup, respectively. From Simushir, which belongs to Middle Kuril Is. and Circumboreal Floristic Region, known one species (*Parmelia fertilis*) from the Eastern Asian Floristic Region only, and three species (*Cladonia cyanipes*, *Micarea incrassata*, *Ophioparma ventosa*), known only from the Circumboreal Floristic Region. While on Urup (South Kuril Is., Eastern Asian Floristic Region) there are nine East-Asian species (*Bryocaulon pseudosatoanum*, *Cetrellopsis asahinae*, *Ricasolia japonica*, *Ochrolechia yasudae*, *Parmelia asiatica*, *P. fertilis*, *P. praesquarrosa*, *P. squarrosa*, *Platismatia interrupta*) and seven circumboreal species (*Biatorrella conspurcans*, *Epilichen scabrosus*, *Hypogymnia tubulosa*, *Muellerella lichenicola*, *Rinodina turfacea*, *Sphaerophorus globosus*, *Xanthomendoza borealis*). All other species on the islands (59 and 108 species, respectively) are known from both Eastern Asian and Circumboreal floristic regions (Hale, 1990; Kurokawa, 1994; Dombrovskaya, 1996; Nordic..., 2002, 2007, 2011, 2013; Joneson et al., 2004; Czarnota, 2007; The lichens..., 2009; Kukwa, 2011; Chesnokov, Konoreva, 2015; Ren, 2017; Sheard et al., 2017; Kuznetsova et al., 2021; Zhdanov, 2023; Krasnaya..., 2024). This confirms that lichen species mostly have broader ranges than vascular plants, and such clear distinction of the regions is not observed, though the distribution patterns coincide to some extent.

Significant parts of Simushir and Urup islands have not been explored. Taking into account much higher lichen diversity in the studied Kuril Is. (Shikotan, Kunashir, Iturup, and Paramushir), we presume that real species diversity is several times greater than known. Consequently, further detailed study is necessary.

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