Lichens from Ellef Ringnes Island, Canadian Arctic Archipelago

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Abstract. 119 lichen species in 62 genera are reported from Ellef Ringnes Island within the polar desert zone of the Canadian Arctic Archipelago. *Stereocaulon depressum* and *Solorina bispora* var. *subspongiosa* are reported from North America for the first time. *Cystocoleus ebeneus* and *Pertusaria atra* are new to the American Arctic. *Anaptychia bryorum, Caloplaca phaeocarpella, Cladonia scabriuscula, Cladonia squamosa, Cladonia stygia, Endocarpon pusillum, Lecanora leptacinella, Peltigera frippii, Rinodina terrestris, Schadonia fecunda, Stereocaulon groenlandicum, Dermatocarpon miniatum* var. *miniatum* are new to the Canadian Arctic Archipelago. Another 91 species are new to the island.

During 19–30 July 2005 N. V. Matveeva, D. A. Walker, F.J.A. Daniëls, C. Vonlanthen and M. K. Raynolds studied the vegetation in the vicinity of Isachsen Bay, Ellef Ringnes Island, Canadian Arctic Archipelago, Nunavut, 78°47' N, 103°32' W, alt. 30–100 (–220) m (Fig. 1). Information about the vascular plant flora, as well as climate, soils, landscapes and geology of Ellef Ringnes Island can be obtained from Savile (1961). The site is located at the northern end of the North American Arctic Transect in bioclimate subzone A of the Circumpolar Arctic Vegetation Map (CAVM Team, 2003).This site is a part of the North American Arctic Transect (NAAT) that is being used to study the biocomplexity of Arctic patterned-ground ecosystems (Walker et al., 2004). Most of the lichens present were collected at 30 relevés (using the Braun-Blanquet approach) representing zonal, dry, and snowbed habitats. Though occasional collections from stones in the mountains are also included, most species are terricolous lichens. It should be also noted that some types of intrazonal habitat were not sampled. All lichens were identified by M. P. Zhurbenko by means of standard microscopic techniques. Voucher specimens are preserved in herbaria of the Komarov Botanical Institute in St.-Petersburg, Russia (LE) and Institute of Arctic Biology of the University of Alaska Fairbanks (UAF).

Thomson (1990) summarized results of lichen investigations in the Canadian Arctic Archipelago in a list of 456 species, which still comprised less than half of the species number (968) known from the whole American Arctic by that time. Since then further information about the lichen flora of the archipelago was published by Brodo et al. (2001), Hansen (2000), Thomson (1997), Thomson & Scotter (1995), Thomson & Weber (1992), Zhurbenko & Daniëls (2003). According to Thomson (1990) the first lichens from Ellef Ringnes were collected by Alan Innes-Taylor, a member of a Canadian–United States weather station group during 1947 and 1948. These collections were identified by J. W. Thomson. Later in the late 1950s D. B. O. Savile also collected some lichens on the island. These collections are preserved in the CANL herbarium. By 1990 just 26 lichen species were known from Ellef Ringnes Island. Here we add 107 species and thus the known lichen flora of the island now includes 133 species.

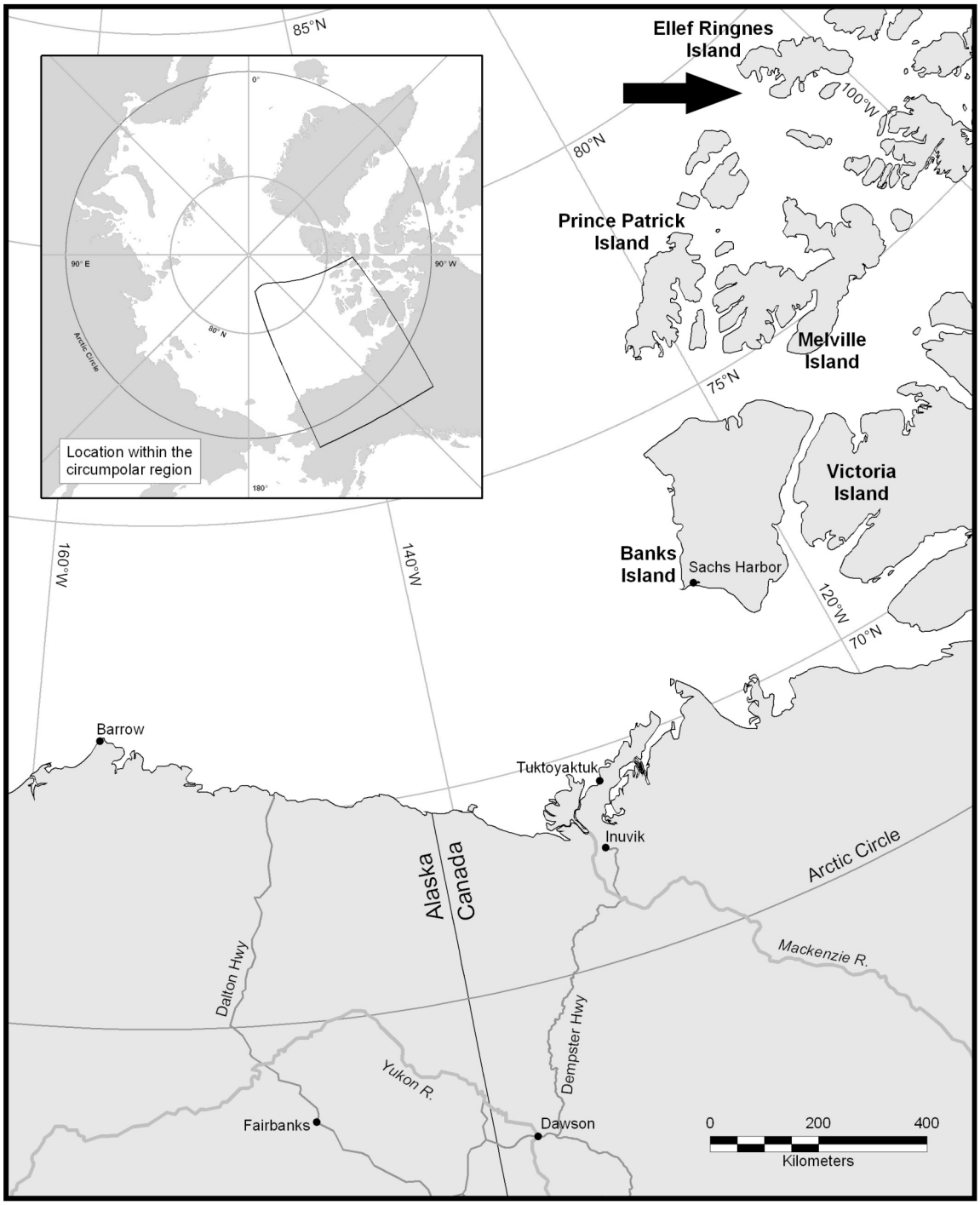

Figure 1. Location of Ellef Ringnes Island within the North American Arctic.

HABITAT TYPES

Bar – dry barrens with small nonsorted polygons 15–20 cm in diameter, almost bare with lichen crusts (*Rinodina terrestris, Fuscopannaria praetermissa, Lecidia wulfenii, Megaspora verrucosa*) and sparse herbs (*Poa abbreviata, Puccinellia andersonii, Papaver radicatum*) along polygon cracks, on dry wind-exposed snowless tops of shale outcrops and along a dry plain above the Isachsen River.

Pol – mesic portions of non-sorted polygons with net-like herb-moss (*Luzula nivalis, Alopecurus alpinus, Festuca brachyphylla, S. caespitosa, S. nivalis, S. flagillaris, Saxifraga spp., Draba subcapitata, D. oblongata, Aulacomnium turgidum, Racomitrium lanuginosum, R. panschii, Sanionia uncinata, Timmia austriaca, Polytrichum alpinum, Syntrichia ruralis, Ditrichum flexicaule, Parmelia omphalodes*) plant cover (30–40%) on gentle (1–5°) shale slopes.

Hum – mesic to moist small turf hummocks with herb-moss plant cover (*Luzula nivalis, Alopecurus alpinus, Festuca brachyphylla, S. caespitosa, S. nivalis, S. flagillaris, Saxifraga spp., Draba subcapitata, D. oblongata, Aulacomnium turgidum, Racomitrium lanuginosum, R. panschii, Timmia austriaca, Polytrichum alpinum, Syntrichia ruralis, Ditrichum flexicaule, Parmelia omphalodes*) on the lower part of shale slopes at the coastal plain.

Wet – wet sites along water tracks and small drainages with *Luzula nivalis, Saxifraga tenuis, S. nivalis, S. rivularis, Ranunuclus sabinei, Aulacomnium turgidum* .

Mos – dense moss (*Racomitrium lanuginosum*) mats with *Stereocaulon alpinum* on volcanic diabase outcrops.

Mtn – barren stony slope of volcanic diabase mountain 1.5 km of the coast, elevations 100–220 m.

Mir – bryophyte mire at base of large snowbed at the mountain base.

Sno – snowbeds at the foot of volcanic diabase mountain close to coast.

ANNOTATED LIST OF TAXA

Annotations for the list of taxa include substrate, habitat types, occurrence within 30 sample plots (figure in parentheses), selected voucher specimens, and accidental notes. Asterisks mark species which have been previously known from the Ellef Ringnes Island.

Agonimia gelatinosa (Ach.) M. Brand & Diederich – on mosses with mineral soil; Wet (1); 24 VII 2005, D. Walker (UAF).

**Alectoria nigricans* (Ach.) Nyl. (including glossy brown modification) – on/ among mosses; Pol, Hum, Mos, Sno (10); 23, 28 VII 2005, N. Matveeva (LE).

**A. ochroleuca* (Hoffm.) A. Massal. – on/ among mosses; Bar, Pol, Hum, Mos, Sno (10).

Anaptychia bryorum Poelt – on/ among mosses and vasculars; Pol, Mtn (3); 23 VII 2005, N. Matveeva (UAF, LE). Within the American Arctic the species has been reported only from Barrow, Alaska (Fryday, 2004). New to the Canadian Arctic Archipelago.

Arctocetraria nigricascens (Nyl.) Kärnefelt & A. Thell – on/ among mosses; Pol, Mos, Mtn, Mir (4); 23 VII 2005, D. Walker (UAF).

Arctomia delicatula Th. Fr. – on mosses; Bar, Pol, Hum, Mos (8); 20 VII 2005, N. Matveeva (LE).

Arthrorhaphis sp. – on mosses with mineral soil; Mos, Mtn (2).

Bacidia bagliettoana (A. Massal. & De Not.) Jatta – on mosses, sometimes with mineral soil; Bar, Mos (2); 28 VII 2005, N. Matveeva; 2005.

Biatora subduplex (Nyl.) Printzen – on mosses with mineral soil; Bar, Pol (3); 24 VII 2005, N. Matveeva (UAF).

Bryocaulon divergens (Ach.) Kärnefelt – on mosses, sometimes with mineral soil; Bar, Pol, Mos (10); 23 VII 2005, N. Matveeva (LE).

Bryodina rhypariza (Nyl.) Hafellner & Türk – on mosses with mineral soil; Pol (1). The species has been reported in the Arctic from few localites from Greenland (Qaanaaq, 77º29' N; Hansen, 1989), Siberia (Taimyr Peninsula, 74º30' N; Zhurbenko, 1996), Beringian Chukotka (Andreev et al., 1996), and Baffin Island (ca. 70ºN, Canadian Arctic Archipelago; Fryday, 2000).

Bryonora castanea (Hepp) Poelt – on mosses and old thallus of *Protopannaria pezizoides*; Pol, Hum, Wet, Sno (6); 23 VII 2005, N. Matveeva (LE).

Bryoria nitidula (Th. Fr.) Brodo & D. Hawksw. – on mosses; Mos, Sno (2); 20 VII 2005, N. Matveeva (LE).

Caloplaca ammiospila (Wahlenb.) H. Olivier – on mosses, sometimes with mineral soil, lichens (*Fuscopannaria praetermissa, Peltigera leucophlebia, Rinodina terrestris*), and vasculars; Bar, Pol, Hum, Mos (18); 23 VII 2005, N. Matveeva (LE).

C. cerina (Hedw.) Th. Fr. – on mosses, vasculars (*Saxifraga caespitosa*), and lichens (*Peltigera* sp., *Rinodina terrestris*); Bar, Pol (16).

C. jungermanniae (Vahl) Th. Fr. – on mosses; Bar (1).

C. phaeocarpella (Nyl.) Zahlbr. – on mosses and vasculars (*Saxifraga caespitosa*); Bar (2). New to the Canadian Arctic Archipelago.

C. tetraspora (Nyl.) H. Olivier – on mosses; Bar, Pol (7); 26 VII 2005, N. Matveeva (LE).

C. tiroliensis Zahlbr. – on mosses, sometimes with mineral soil, lichens (*Sticta arctica, Rinodina terrestris, Fuscopannaria praetermissa*), and vasculars; Bar, Pol, Hum, Mos (20); 23 VII 2005, N. Matveeva (LE).

C. tornoënsis H. Magn. – on mosses growing on stones; Mtn (2); 25 VII 2005, N. Matveeva (UAF). This infrequently reported bipolar species has been previously known in the Canadian Arctic Archipelago only from the Baffin Land (Thomson, 1990)

Candelariella placodizans (Nyl.) Lynge – on mosses, sometimes with mineral soil; Pol, Hum, Mos, Sno (7); 23 VII 2005, N. Matveeva (LE).

C. terrigena Räsänen – on mineral soil (forming crusts), mosses, vasculars and lichens (*Fuscopannaria praetermissa, Megaspora verrucosa, Rinodina terrestris*); Bar, Pol (12).

Catapyrenium cinereum (Pers.) Körb. – on mineral soil with mosses; Bar, Pol (3); 22, 24 VII 2005, N. Matveeva (UAF, LE).

Cetraria aculeata (Schreb.) Fr. – on/ among mosses with mineral soil; Bar (3); 22 VII 2005, N. Matveeva (UAF).

C. islandica (L.) Ach. – on/ among mosses, sometimes with mineral soil; Bar, Pol, Hum, Wet, Mos, Sno (18); 24 VII 2005, D. Walker (LE).

**Cetrariella delisei* (Schaer.) Kärnefelt & A. Thell – on/ among mosses; Wet, Mtn, Mir, Sno (4).

**C. fastigiata* (Nyl.) Kärnefelt & A. Thell – on/ among mosses; Hum, Mos, Mtn, Sno (6); 23 VII 2005, D. Walker; 2005 (LE).

Cladonia amaurocraea (Flörke) Schaer. – on/ among mosses; Mos, Mtn, Sno (4).

C. arbuscula (Wallr.) Flot. em. Ruoss ssp. *arbuscula* – on/ among mosses; Mos (1); 25 VII 2005, N. Matveeva (UAF).

C. arbuscula (Wallr.) Flot. em. Ruoss ssp. *mitis* (Sandst.) Ruoss – on/ among mosses; Mtn (1).

Cladonia chlorophaea (Sommerf.) Spreng. – on/ among mosses, sometimes with mineral soil; Pol, Mos (4).

C. coccifera (L.) Willd. s. l. – on mosses and mineral soil; Pol, Hum, Mos, Sno (11).

C. gracilis (L.) Willd. – on/ among mosses; Pol, Mos, Sno (3).

C. macroceras (Delise) Hav. – on/ among mosses, sometimes with mineral soil; Mos, Mtn (2).

C. pocillum (Ach.) Grognot – on mosses and mineral soil; Bar, Pol, Hum, Wet, Mos (22).

C. pyxidata (L.) Hoffm. – on/ among mosses, sometimes with mineral soil; Pol, Wet, Mos, Mtn, Sno (8).

C. scabriuscula (Delise) Nyl. – on/ among mosses with mineral soil; Pol (1). New to Canadian Arctic Archipelago.

C. squamosa Hoffm. – on/ among mosses; Mos, Mtn (2). New to Canadian Arctic Archipelago.

C. stygia (Fr.) Ruoss – on/ among mosses, sometimes with mineral soil; Mos (1).

This widespread arctic species seems not to have been reported from the Canadian Arctic Archipelago (Ahti & Hyvönen, 1985; Thomson, 1990).

C. trassii Ahti – on/ among mosses, sometimes with mineral soil; Bar, Pol, Hum, Mtn, Mir, Sno (10); 25 VII 2005, N. Matveeva (LE).

Collema ceraniscum Nyl. – on/ among mosses with mineral soil; Bar, Pol, Wet, Mos (13); 22, 24 VII 2005, N. Matveeva (LE).

C. tenax (Sw.) Ach. emend. Degel. – on/ among mosses with mineral soil; Bar (1).

C. undulatum Flot. var. *granulosum* Degel. – on/ among mosses with mineral soil; Bar (1); 28 VII 2005, N. Matveeva (LE).

Cystocoleus ebeneus (Dillwyn) Thwaites – on/ among mosses; Mos (2); 20 VII 2005, N. Matveeva (LE). This cosmopolitan species (Purvis et al., 1992) is known from the Arctic from a few localities, including Greenland (Hansen, 2002), Svalbard (Elvebakk & Hertel, 1997), Severnaya

Zemlya (Zhurbenko & Matveeva, in press) and seems to be new to the American Arctic.

Dactylina arctica (Richardson) Nyl. ssp. *arctica* – on/ among mosses; Mtn (3).

D. ramulosa (Hook.) Tuck. [P+ and P– chemotypes] – on/ among mosses; Mos (3); 26, 27 VII 2005, N. Matveeva (LE).

Dermatocarpon miniatum (L.) W. Mann var. *miniatum* (Syn. *Dermatocarpon arnoldianum* Degel.) – on stone above soil; Bar (1); 28 VII 2005, N. Matveeva (LE). According to Thomson (1984) this variety was known in the American Arctic from a single collection along the northwest coast of Alaska. However, *Dermatocarpon miniatum* var. *complicatum* (Lightf.) Th. Fr. has been reported from the Canadian Arctic Archipelago from Devon Is. (as *Dermatocarpon intestiniforme* (Korb.) Hasse; Thomson, 1990)

Endocarpon pusillum Hedw. – on mosses with mineral soil; Bar (1); 22 VII 2005, N. Matveeva (UAF). Thomson (1984) provided no records of the species in his catalogue of the American Arctic lichens. New at least to the Canadian Arctic Archipelago.

Euopsis sp. – on mineral soil; Bar (1).

Flavocetraria cucullata (Bellardi) Kärnefelt et A. Thell – on mosses; Pol, Mos (3).

F. nivalis (L.) Kärnefelt et A. Thell – on mosses; Mos (1).

Fuscopannaria praetermissa (Nyl.) P.M. Jørg. – on mosses and mineral soil, one of the dominant lichen crust species; Bar, Pol (17).

Hypogymnia subobscura (Vain.) Poelt – on mosses, sometimes with mineral soil; Bar, Pol, Mos (6); 24 VII 2005, N. Matveeva (UAF).

Japewia tornoënsis (Nyl.) Tønsberg – on lichens (*Cladonia macroceras, C. pocillum, Fuscopannaria praetermissa, Parmelia omphalodes ssp. glacialis*), mosses (*Racomitrium lanuginosum*), and sometimes on mineral soil; Bar, Pol, Mos, Sno (9); 20, 23 VII 2005, N. Matveeva (LE); 23, 26, 28 VII 2005, N. Matveeva (LE).

Lecanora epibryon (Ach.) Ach. – on mosses with mineral soil; Bar, Pol (3); 24 VII 2005, N. Matveeva (UAF).

L. geophila (Th. Fr.) Poelt – on mineral soil, sometimes with mosses; Bar, Pol (3); 22 VII 2005, N. Matveeva (LE).

L. hagenii (Ach.) Ach. var. *fallax* Hepp – on vasculars, lichens, mosses, and mineral soil; Bar, Pol (9); 23, 29 VII 2005, N. Matveeva (LE).

L. leptacinella Nyl. – on old shoots of *Racomitrium lanuginosum*; Mos, Mtn (2); 20 VII 2005, N. Matveeva (LE). The species has been previously known in the American Arctic only from Barrow, Alaska (Zhurbenko et al., 1995). New to the Canadian Arctic Archipelago.

Lecidea ramulosa Th. Fr. – on mosses, sometimes with mineral soil; Wet, Mir, Sno (5); 25 VII 2005, N. Matveeva (LE).

Lecidella wulfenii (Hepp) Körb. – on mosses, mineral soil (forming crusts), and vasculars; Bar, Pol (18); 22, 23 VII 2005, N. Matveeva (LE).

Lepraria neglecta (Nyl.) Lettau – on mosses above stones; Mtn (1); 25 VII 2005, N. Matveeva (LE).

L. cf. *vouauxii* (Hue) R. C. Harris – on mosses and mineral soil; Bar, Pol, Hum (10); 22, 23, 28 VII 2005, N. Matveeva (LE). The species has been recently reported from the Canadian Arctic Archipelago from Ellesmere Is. (Hansen, 2000).

Leptogium gelatinosum (With.) J.R. Laundon – on mosses with mineral soil; Bar, Pol (9); 22 VII 2005, N. Matveeva (UAF, LE).

L. lichenoides (L.) Zahlbr. – on mosses and mineral soil; Bar, Pol, Hum, Sno (9); 24 VII 2005, N. Matveeva (UAF).

Lopadium coralloideum (Nyl.) Lynge – on mosses, sometimes with mineral soil; Mos, Mtn (3); 20 VII 2005, N. Matveeva (UAF).

L. pezizoideum (Ach.) Körb. – on mosses, sometimes with mineral soil; Pol, Mos (3); 25, 27 VII 2005, N. Matveeva (UAF, LE).

Megalaria jemtlandica (Th. Fr. & Almq.) Fryday (Syn. *Catillaria jemtlandica* Th. Fr. & Almq., *Lecidea sublimosa* Nyl.) – on mosses and mineral soil, often forming crusts; Bar, Pol, Hum (16); 23, 24 VII 2005, N. Matveeva (UAF, LE). The species has been reported for the American Arctic from a few localities, including Ellesmere Island within the Canadian Arctic Archipelago (Thomson 1990, 1997; Fryday, 2004):

Megaspora verrucosa (Ach.) Hafellner & V. Wirth – on mosses and mineral soil; Bar, Pol (15); 28 VII 2005, N. Matveeva (LE); 30 VII 2005, D. Walker (UAF).

Micarea incrassata Hedl. – on mosses, sometimes with mineral soil; Pol, Hum, Mos, Sno (6); 23, 28 VII 2005, N. Matveeva (UAF, LE).

Mycoblastus sanguinarius (L.) Norman – on mosses; Pol, Mos, Sno (4); 23 VII 2005, N. Matveeva (LE).

Myxobilimbia lobulata (Sommerf.) Hafellner – on mineral soil with mosses; Pol (1); 24 VII 2005, N. Matveeva (UAF).

Nephroma expallidum (Nyl.) Nyl. – on mosses; Mtn (1); 23 VII 2005, N. Matveeva (UAF).

Neuropogon sphacelatus (R. Br.) Alstrup & E. S. Hansen – on rock; Mtn, Sno (3); 23 VII 2005, D. Walker (UAF, LE); 25 VII 2005, N. Matveeva (LE).

Ochrolechia grimmiae Lynge – on mosses; Mos, Mtn (3); 25 VII 2005, N. Matveeva (LE).

O. gyalectina (Nyl.) Zahlbr. – on mosses; Mtn (1); 25 VII 2005, N. Matveeva (LE).

O. inaequatula (Nyl.) Zahlbr. – on mineral soil (forming crusts), mosses and occasionally vasculars; Bar, Pol, Hum, Mos, Sno (22); 20, 22, 23, 28 VII 2005, N. Matveeva (UAF, LE).

Parmelia omphalodes (L.) Ach. ssp. *glacialis* Skult – on mosses, sometimes with mineral soil; Bar, Pol, Hum, Mos, Sno (16); 24, 28 VII 2005, N. Matveeva (UAF, LE).

Peltigera canina (L.) Willd. – on mosses, sometimes with mineral soil; Bar, Pol, Hum, Wet (12); 24 VII 2005, N. Matveeva (UAF).

P. didactyla (With.) J.R. Laundon – on mosses, sometimes with mineral soil; Bar, Pol, Hum, Mos (12); 20, 22 VII 2005, N. Matveeva (UAF, LE). In some specimens soredia turn to isidia.

P. frippii Holt.-Hartw. – on mosses; Pol, Hum, Mos (3); 20 VII 2005, N. Matveeva (LE). The species is known in the Arctic from scattered finds: Greenland, Svalbard, Siberia (Gydan Peninsula, Severnaya Zemlya Archipelago, Taimyr Peninsula, New Siberian Islands) (Vitikainen, 1994; unpublished data of M. Zhurbenko and O. Vitikainen). Though *Peltigera frippi* is not yet included in the North American lichen checklist (Esslinger, 1997) it has been reported from North America in Vitikainen (1994) without indication of the locality which was: Canada, Northwest Territories, Reindeer Station, 68° 39'N 134° 05'W, 1965 leg. Scotter 6032 (preserved in H) (O. Vitikainen, pers. comm.). New to the Canadian Arctic Archipelago.

P. leucophlebia (Nyl.) Gyeln. – on mosses, sometimes with mineral soil; Bar, Pol, Hum, Wet, Mos, Sno (13); 23 VII 2005, N. Matveeva (UAF).

P. rufescens (Weiss) Humb. – on mosses, sometimes with mineral soil; Bar, Pol, Wet, Sno (10); 26 VII 2005, N. Matveeva (UAF).

P. scabrosa Th. Fr. – on mosses; Pol, Hum, Sno (3); 28 VII 2005, N. Matveeva (UAF).

P. venosa (L.) Hoffm. – on mineral soil, sometimes with mosses; Bar, Pol (6); 24 VII 2005, N. Matveeva (UAF).

Pertusaria atra Lynge – on mosses with mineral soil; Pol (1); 23 VII 2005, N. Matveeva (LE). This rare species morphologically resembles *Pertusaria saximontana* Wetmore (Zhurbenko & Lumbsch, in press). It was described from Churchill at the coast of Hudson Bay (58°40' N), Manitoba, Canada (Lynge, 1939) and was further collected at Labrador coast (ca. 51°30' N) (Dibben, 1980) and western Greenland (Hansen & Poelt, 1987). New to the American Arctic.

**P. dactylina* (Ach.) Nyl. – on mosses; Mtn (2).

P. geminipara (Th. Fr.) Brodo – on mosses; Mos, Mtn, Sno (3).

P. glomerata (Ach.) Schaer. – on mosses, sometimes with mineral soil; Pol (2).

P. octomela (Norman) Erichsen – on mosses, sometimes with mineral soil; Bar, Pol (11); 23, 26 VII 2005, N. Matveeva (UAF, LE).

P. oculata (Dicks.) Th. Fr. – on mosses with mineral soil; Bar (1); 28 VII 2005, N. Matveeva (UAF).

P. panyrga (Ach.) A. Massal. – on mosses; Mos (1).

Phaeorrhiza nimbosa (Fr.) H. Mayrhofer & Poelt – on mosses with mineral soil; Bar (1); 28 VII 2005, N. Matveeva (UAF).

Physcia dubia (Hoffm.) Lettau – on herbaceous sheet among mosses; Mos (1).

Physconia muscigena (Ach.) Poelt – on mosses, sometimes with mineral soil; Bar, Pol (6); 26 VII 2005, N. Matveeva (UAF).

Placopsis gelida (L.) Linds. – on loamy soil; Bar, Pol (3); 22 VII 2005, N. Matveeva (LE). The species usually grows on stones in wet situations.

Polychidium muscicola (Sw.) Gray – on/ among mosses, sometimes with mineral soil; Pol, Mos, Sno (4); 20 VII 2005, N. Matveeva (LE).

Protopannaria pezizoides (Weber) P.M. Jørg. & S. Ekman – on mosses and mineral soil; Bar, Pol, Hum, Wet, Mos, Sno (21); 25, 27 VII 2005, N. Matveeva (UAF, LE).

**Pseudephebe pubescens* (L.) M. Choisy – on scree, partly among mosses; Mos (2); 20 VII 2005, N. Matveeva (UAF).

Psoroma hypnorum (Vahl) Gray – on mosses and mineral soil; Bar, Pol, Hum, Mos, Sno (21); 23 VII 2005, N. Matveeva (UAF, LE).

Rinodina mniaraea (Ach.) Körb. var. *mniaraea* and var. *mniaraeiza* (Nyl.) H. Magn. – on mosses, sometimes with mineral soil; Bar, Pol, Mos (6); 23 VII 2005, N. Matveeva (LE).

R. olivaceobrunnea C. W. Dodge & G. E. Baker – on mosses, lichens (*Peltigera didactyla, P. frippii*, crusts), and vasculars; Bar, Pol, Hum, Mos, Sno (16); 20 VII 2005, N. Matveeva (LE).

R. roscida (Sommerf.) Arnold – on mosses, sometimes with mineral soil; Bar (3).

R. terrestris Tomin (Syn. *Rinodina mucronatula* H. Magn.) – on mineral and scree soil (one of the main crust-formers) and mosses; Bar, Pol (13); 22, 24, 26, 29 VII 2005, N. Matveeva (UAF, LE). *Rinodina terrestris* was described from semidesert growing on salt soil at Baskunchak Lake, Russia, south east Europe (Tomin, 1929), and is further known from scattered finds in central and northern Europe, central and northern Asia, North America and western Greenland, being characteristic of dry steppe- or desert-like sites (Mayrhofer & Moberg, 2002). The species has been previously reported from Greenland and the American Arctic not from soil, but from *Salix* twigs and decaying wood (?!) (as *Rinodina mucronatula*; Hansen, 1986; Thomson 1997). New to the Canadian Arctic Archipelago.

R. turfacea (Wahlenb.) Körb. – on mosses, sometimes with mineral soil, lichens (*Fuscopannaria praetermissa, Parmelia omphalodes* ssp. *glacialis, Peltigera* sp., *Solorina crocea, Sticta arctica*), and vasculars; Bar, Pol, Hum, Wet, Sno (19); 24 VII 2005, N. Matveeva (UAF).

Schadonia fecunda (Th. Fr.) Vězda & Poelt – on mosses with mineral soil; Pol, Sno (2); 24 VII 2005, N. Matveeva (UAF). New to the Canadian Arctic Archipelago.

Solorina bispora Nyl. var. *subspongiosa* (Zschacke) Frey – on mosses and mineral soil; Bar, Pol, Wet, Mos, Sno (9); 23, 25, 27 VII 2005, N. Matveeva (UAF, LE). The variety is often morphologically very similar to *Solorina spongiosa* (Ach.) Anzi, with well-developed external cephalodia. Due to our observations in the Siberian Arctic (Zhurbenko & Matveeva, in press) this is a dominant, though often overlooked, variety of *Solorina bispora* in the high Arctic. The variety is known from Europe (see e. g.: Hafellner & Türk, 2001; Purvis et al., 1992; Frey, 1952), but has not been reported from Greenland and North America.

**S. crocea* (L.) Ach. – on mineral soil and mosses; Pol, Mos (2); 24 VII 2005, N. Matveeva (UAF).

Sphaerophorus fragilis (L.) Pers. – on scree soil; Pol (2); 24 VII 2005, N. Matveeva (UAF).

**S. globosus* (Huds.) Vain. – on/ among mosses, sometimes with mineral soil; Pol, Mos (7).

**Stereocaulon alpinum* Funck – on/ among mosses, sometimes with mineral soil; Pol, Mos, Sno (6); 20, 23 VII 2005, N. Matveeva (UAF, LE).

**S. botryosum* Ach. – on scree, occasionally among mosses; Mos (2); 20 VII 2005, N. Matveeva (UAF); 23 VII 2005, D. Walker (LE).

S. depressum (Frey) I. M. Lamb – on scree soil; Bar (1). The species is rather common in the Arctic, being known for instance from Greenland, Franz Josef Land, Taimyr Peninsula, Severnaya Zemlya Archipelago, Wrangel Island (Dombrovskaya, 1996), but according to Esslinger (1997) is new to North America.

S. glareosum (Savicz) H. Magn. – on mosses and mineral soil; Bar, Pol, Mos (8); 22, 24 VII 2005, N. Matveeva (UAF, LE).

S. groenlandicum (E. Dahl) I. M. Lamb – on stones and scree soil with moss remnants; Pol, Mos, Mir, Sno (5); 25, 26 VII 2005, N. Matveeva (UAF, LE). New to Canadian Arctic Archipelago

S. rivulorum H. Magn. – on moss and scree soil; Bar, Pol, Hum, Wet, Mir, Sno (20); 22, 26 VII 2005, N. Matveeva (UAF, LE).

Sticta arctica Degel. – on mosses and mineral soil; Bar, Pol (8); 23, 26 VII 2005, N. Matveeva (LE); 30 VII 2005, D. Walker (UAF).

Tetramelas insignis (Hepp) Kalb – on mosses, sometimes with mineral soil; Bar, Pol, Hum (14); 22, 23 VII 2005, N. Matveeva (UAF, LE).

T. papillatus (Sommerf.) Kalb – on mosses, mineral soil, and lichens (*Fuscopannaria praetermissa*); Bar, Pol (5); 24, 28 VII 2005, N. Matveeva (UAF, LE).

Thamnolia vermicularis (Sw.) Schaer. var. *subuliformis* (Ehrh.) Schaer. – on/ among mosses with mineral soil; Bar, Pol, Hum, Mos (14).

T. vermicularis (Sw.) Schaer. var. *vermicularis* – on/ among mosses; Pol, Mos (3).

Umbilicaria lyngei Schol. – on stone; Mos (1).

**U. proboscidea* (L.) Schrad. – on stone; Mos (1).

Xanthoria sp. – on herbaceous sheet among mosses; Mos (1).

Discussion

Seven species are associated with stone substrates, the other 112 are terricolous lichens. The terricolous lichen flora of the Isachsen Bay is one of the richest among the known floras of the Canadian Arctic Archipelago (Thomson, 1990). However, taking into consideration that such floras within the polar desert zone can comprise 160–180 species (Zhurbenko, Matveeva, in press), we can estimate that the list is still only 70% complete.

The lichen genera with the most species are typical for the polar desert terricolous lichen floras: *Cladonia* (12 species), *Caloplaca* (7), *Peltigera* (7), *Pertusaria* (7), *Stereocaulon* (6), *Rinodina* (5), *Lecanora* (4), *Collema* (3), *Ochrolechia* (3). Thirteen genera contain 2 species, and 39 contain 1 species (61 genera total).

The most frequent species within 30 relevés are as follows: occurring at more than 20 relevés – *Cladonia pocillum, Ochrolechia inaequatula, Protopannaria pezizoides, Psoroma hypnorum*; at 16–20 relevés – *Caloplaca ammiospila, C. cerina, C. tiroliensis, Cetraria islandica, Fuscopannaria praetermissa, Lecidella wulfenii, Parmelia omphalodes, Rinodina olivaceobrunnea, R. turfacea, Stereocaulon rivulorum*; at 10–15 relevés – *Alectoria nigricans, A. ochroleuca, Bryocaulon divergens, Candelariella terrigena, Cladonia trassii, Collema ceraniscum, Lepraria* cf. *vouauxii, Megaspora verrucosa, Peltigera canina, P. didactyla, P. leucophlebia, P. rufescens, Pertusaria octomela, Rinodina terrestris, Tetramelas insignis, Thamnolia vermicularis*.

The main lichens forming crusts over bare frost patterned ground are *Candelariella terrigena*, *Fuscopannaria praetermissa*, *Lecidella wulfenii*, *Ochrolechia inaequatula,* and *Rinodina terrestris*. Sometimes they exhibit tiny knobs, evidently due to erosion of neighbouring silty soils that are easily eroded by wind and running water. It is noteworthy that according to Hansen (2001) none of these species are dominant in the lichen-rich soil crusts of Arctic Greenland.

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