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ERIC STEEN HANSEN

# Lichens from Inglefield Land, NW Greenland

**Abstract**

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220 taxa of lichens are reported from four localities in Inglefield Land in NW Greenland. *Rhizocarpon anseris* is new to Greenland; seven taxa are new to W Greenland, viz. *Aspicilia mashiginensis, Candelariella dispersa, Collema substellatum, Gypsoplaca macrophylla, Lepraria lobificans, Rhizocarpon intermediellum* and *Xanthoria elegans* var. *splendens*. 42 taxa are new to NW Greenland, viz. *Acarospora schleicheri, Adelolecia pilati, Arctoparmelia separata, Aspicilia cinerea, A. mastrucata, Baeomyces placophyllus, B. rufus*, *Buellia punctata*, *Candelariella terrigena, Cladonia borealis*, *C. phyllophora*, *Collema glebulentum, C. undulatum* var. *granulosum*, *Diploschistes muscorum, Endocarpon pulvinatum, Fulgensia desertorum, Ionaspis suaveolens, Lecanora fuscescens, Lecidea silacea, Lecidella bullata, L. euphorea, Lepraria frigida, Leptogium lichenoides, Lobothallia alphoplaca, Melanelia stygia, Miriquidica garovaglii, Ochrolechia androgyna, O. lapuënsis, Pannaria hookeri, Pertusaria geminipara, Porpidia flavicunda, P. speirea, Protoblastenia calva, Rhizocarpon disporum, R. praebadium, Rinodina archaea, R. cacuminum, Staurothele fissa, Toninia tristis* subsp. *scholanderi, Umbilicaria nylanderiana, Verrucaria ceuthocarpa* and *Vestergrenopsis isidiata.* In addition, northern extensions of 169 taxa in NW Greenland are presented. Geology and climate of the area are briefly treated and selected plant communities more or less rich in lichens are discussed.

## Introduction

The author explored the lichen flora of Inglefield Land in late July and August 1999. This huge land area is separated from Canada by Smith Sound and Kane Basin and belongs to the northernmost floristic province in NW Greenland (NWn) (Bay 1997). In contrast to the surroundings of Qaanaaq and some settlements situated in Prudhoe Land just south of Inglefield Land, this polar desert area was almost completely unknown lichenologically prior to the present investigation. The Swedish botanist Thorild Wulff, who made systematic collections of lichens and other plants during the Second Thule Expedition 1916-18, died under rather dramatic circumstances in the northernmost part of Inglefield Land. His lichen collections from the north coast of Greenland were published by Lynge (1923) and are still of great importance. The author, who visited Qaanaaq in summer 1986, has outlined the previous lichenological research in NW Greenland (Hansen

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1989). He also published different lichen collections made by L. de Bonneval, B. Fredskild and L. Hansson in NW Greenland (Hansen 1980, 1983). Thomson (1984, 1997) states the occurrence of about thirty common macrolichens and one microlichen, viz. *Rhizocarpon geographicum*, in Inglefield Land.

### Localities and geology

The following four localities were investigated by the author in summer 1999 (Fig. 1).

I. Rensselaer Bugt, 78°36'N, 70°50'W, 19-25 August 1999; Palaeoproterozoic gneisses and granites of the Precambrian shield, overlain by Mesoproterozoic sandstones with minor carbonates and topped by Cambrian sandstones and carbonates.

II. Area east of Hiawatha Glacier, 78°50'N, 67°18'W, 29 July-2 August and 14-18 August 1999; Palaeoproterozoic gneisses (both paragneiss derived from sediments and orthogneiss derived from magmatic rocks) and granites with quartz-diorite.

III. Fire Fingre Sø, 78°59'N, 67°10'W, 3-10 August 1999; Palaeoprotozoic gneisses (both para- and orthogneiss), granites and amphibolite (schist). Scattered outcrops of diorite occur at the locality.

IV. Area south of Bonsall Øer, 79°04'N, 66°25'W, 11-13 August 1999; Palaeoproterozoic gneisses and granites with some calcium-silicate rocks, including marble.

The distribution of the three rock provinces, i.e. the Precambrian shield (Palaeoproterozoic), the Thule Basin (Mesoproterozoic) and the Franklinian Basin (Lower Palaeozoic; only the lower part of the succession (Cambrium) is preserved in Inglefield Land), can be seen on the geological map in Dawes & Higgins (2000: fig. 2).

### Climate

Inglefield Land has a high-arctic climate characterized by cool summers, very cold winters and comparatively low annual precipitation. The two localities rather close to the coast (I and IV) are supposed to have climatic conditions comparable with those of Qaanaaq. According to measurements made by the Greenland meteorological institution Asiaq at Nuuk, the mean temperature of July is 7 °C at Qaanaaq, while the mean temperature of the coldest month, January, is -22 °C. The mean annual precipitation is about 120 mm, most of it falling as snow. The two inland localities (II and III) probably have a drier climate with a more continental tendency.

## Material and methods

The lichens dealt with in the present paper were collected by the author at numerous sample plots at the four investigated localities in Inglefield Land. The material consists of about 1500 specimens of lichens, which were studied with Zeiss light microscopes. Standard TLC methods were used for identification of some specimens of *Lepraria* and other leprose, crustose lichens. The collections are deposited at the Botanical Museum, University of Copenhagen (C).

## Annotated list of lichens

The following list of lichens is based exclusively on the author's collections. The list cannot be considered representative as regards genera such as *Aspicilia, Verrucaria* and a number of lecideoid and leprose, crustose lichens, which all have been neglected during the present field studies. The lichenicolous fungi of Inglefield Land are also in need of additional investigation. Associated specimens, which are part of closely intermingled specimens, are referred to with the bracketed collection numbers of the numbered main specimen. Nomenclature follows Santesson (1993) with some exceptions. Annotations are given as regards the substrate of the lichens. The symbol ◊ preceding the name indicates that the collection is an addition to the known lichen flora of Greenland, the symbol ✷ that the collection is new to W Greenland, and □ that the collection is new to NW Greenland. The asterisk * in front of the name indicates that

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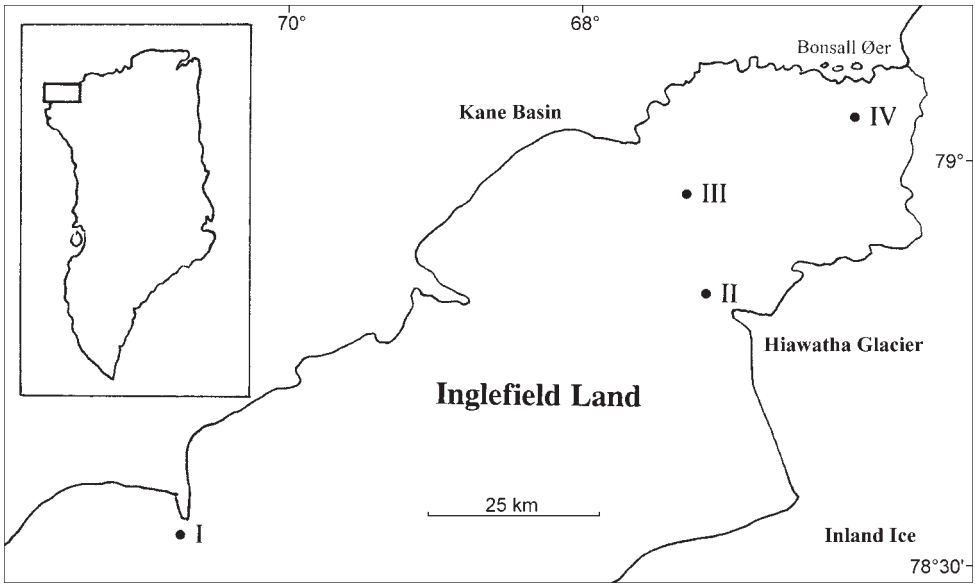



Fig. 1. The investigated localities in NW Greenland – I. Rensselaer Bugt; II. Area east of Hiawatha Glacier; III. Fire Fingre Sø; IV. Area south of Bonsall Øer.

the collection represents a northern range extension of the taxon in W Greenland. Following the collection number (in italics), presence of apothecia or perithecia are indicated by "ap" and "pe", respectively; sterile specimens are indicated by "st", following the collection number. The Roman numerals indicate the localities as given above. Collections which have been distributed previously or will be distributed shortly from the Botanical Museum Copenhagen (C) as part of "Lichenes Groenlandici Exsiccati" (LGE), are stated by their exsiccate numbers.

* ***Acarospora rhizobola*** (Nyl.) Alstrup
III: On soil and litter (*625* st).

□ ***Acarospora schleicheri*** (Ach.) A. Massal.
IV: On soil near copper mineralisation, *958* ap.

* ***Acarospora sinopica*** (Wahlenb.) Körb.
II: On rusty-weathered gneiss, *482* st, *532* ap. III: On rusty-weathered gneiss, *637* ap. (*718* st).

* ***Acarospora smaragdula*** (Wahlenb.) A. Massal.
III: On rusty-weathered siliceous stone, *726* ap.

□ ***Adelolecia pilati*** (Hepp) Hertel & Hafellner
II: On siliceous stone and gravel, *448* ap.

* ***Alectoria nigricans*** (Ach.) Nyl.
I: On soil *(1200), 1202 (1329, 1336, 1375, 1401);* on mosses *(1310)*. III: On soil, *721 (816)*. IV: On soil, *915*. – All collections are sterile.

* ***Alectoria ochroleuca*** (Hoffm.) A. Massal.
I: On soil, *1203, 1205, LGE 813*. II: On soil *(389), 393, 467, 535, 536, 565 (1082);* on *Racomitrium lanuginosum*, *404*. III: On soil, *600 (601)*. IV: On soil, *913 (917), 1025*. – All collections are sterile.

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* ***Arctocetraria nigricascens*** (Nyl.) Kärnefelt & A. Thell
II: On soil, *446, 552, 573;* on *Racomitrium lanuginosum, 390, LGE 791*. III: On soil, *864;* on mosses and litter, *719*. – All collections are sterile.

* ***Arctoparmelia incurva*** (Pers.) Hale
I: On gneiss, *1348*. II: On gneiss, *484a, 528*. III: On rusty-weathered garnet quarzite, *704*. IV: On gneiss, *1022*. – All collections are sterile. Capitate soralia are present.

□ ***Arctoparmelia separata*** (Th. Fr.) Hale
I: On siliceous rock, *1291*. II: On rusty-weathered stones, *421, 519;* on quartz *(1077);* on *Racomitrium lanuginosum, 484b;* on litter, *455 (555), 586, LGE 783*. III: On gneiss, *658, 743 (764, 765);* on amphibolite, *644;* on *R. lanuginosum, 606;* on mosses and litter, *730a, 782 (794)*. IV: On siliceous stones, *1012, 1038;* on *R. lanuginosum, 1013;* on mosses and soil *(1043)*. – All collections are sterile. *A. separata* has recently been reported as new to Greenland (Hansen 2000).

* ***Arthrorhaphis alpina*** (Schaer.) R. Sant.
I: On soil and mosses, *1253, 1308 (1380, 1381)*. II: On sandy soil, *425, 471 (488), 1130*. III: On soil, mosses and litter, *731, 810*. IV: On soil, *979 (981, 1007)*. – All collections are sterile. *A. alpina* is separated from *A. citrina* by the occurrence of Ca-oxalate crystals in the medulla (Hansen & Obermayer1999*)*.

* ***Aspicilia aquatica*** Körb.
III: On rusty-weathered gneiss, *724* ap.

* ***Aspicilia candida*** (Anzi) Hue
I: On sandstone, *1172, 1186, 1289, 1298;* on gneiss, *1180, 1233*. IV: On gneiss, *972*. – All collections are fertile (ap).

□ ***Aspicilia cinerea*** (L.) Körb.
III: On gneiss, *773, 802*. – The two collections are fertile.

✶***Aspicilia mashiginensis*** (Zahlbr.) Oxner
III: On rusty-weathered gneiss, *732* st.

□ ***Aspicilia mastrucata*** (Wahlenb.) Th. Fr.
III: On amphibolite, *662* st.

* ***Baeomyces carneus*** Flörke
I: On soil and mosses, *1381*. IV: On soil, *939*. – The two collections are sterile.

□ ***Baeomyces placophyllus*** Ach.
III: On soil and mosses *(747)*. IV: On soil, *1045*. – The two collections are sterile.

□ ***Baeomyces rufus*** (Huds.) Rebent.
I: On soil, *1380*. III: On soil, *697*. – The two collections are sterile.

* ***Brodoa oroarctica*** (Krog) Goward
III: On gneiss *(635)*. IV: On gneiss, *889, 991*. – All collections are sterile.

* ***Bryocaulon divergens*** (Ach.) Kärnefelt
I: On soil and mosses *(1202), 1329, 1345, 1375, 1398*. II: On soil, *399 (467), 538, 585*. III: On soil and mosses *(609), 767, 833 (864)*. IV: On soil, *914*. – All collections are sterile.

* ***Bryonora castanea*** (Hepp) Poelt
III: On mosses (*887* ap).

* ***Bryoria chalybeiformis*** (L.) Brodo & D. Hawksw.
I: On soil, *1319 (1400)*. II: On soil and mosses, *392 (445, 462a, 496), 545, 1081a*. III: On soil, *603*. IV: On soil *(908), 916 (945)*. – All collections are sterile.

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* ***Bryoria nitidula*** (Th. Fr.) Brodo & D. Hawksw.
I: On soil, *1203*. II: On soil, *402 (1082)*. III: On soil, *601, 766*. IV: On soil and mosses, *1036 (1037)*. – All collections are sterile.

* ***Buellia geophila*** (Flörke ex Sommerf.) Lynge
I: On mosses *(1278, 1401)*. – The two collections are fertile (ap).

* ***Buellia papillata*** (Sommerf.) Tuck.
I: On mosses, soil and litter *(1252), 1280, 1327, 1387 (1389);* on old bone *(1199)*. II: On mosses, soil and litter, *411 (439, 593), 1155*. III: On mosses *(768, 780), 880*. IV: On mosses and litter, *950 (990), 1006*. – All collections are fertile (ap).

* ***Buellia pulverulenta*** (Anzi) Jatta
I: Parasitic on *Physconia muscigena, 1337* ap.

□ ***Buellia punctata*** (Hoffm.) A. Massal.
I: On soil and litter (*1225* ap).

* ***Caloplaca alcarum*** Poelt
II: On old bones, *466, 1086;* on gneiss *(1097)*. IV: On gneiss *(895)*. – All collections are fertile (ap).

* ***Caloplaca ammiospila*** (Wahlenb.) H. Olivier
I: On mosses, *1228 (1278, 1368, 1399)*. II: On soil, *410*. III: On mosses and litter *(730a, 744, 780), 829, 877 (883, 885)*. IV: On litter, *953, 1008*. – All collections are fertile (ap).

* ***Caloplaca castellana*** (Räsänen) Poelt
I: Associated with *Placynthium asperellum (1173, 1175, 1177, 1391, 1404);* associated with *Rhizocarpon geminatum (1164)*. II: Associated with *R. geminatum, 505*. III: Associated with *P. asperellum (659);* associated with *R. geminatum (672)*. IV: Associated with *P. asperellum (902);* associated with *R. geminatum (999)*. – All collections are fertile (ap).

* ***Caloplaca cerina*** (Ehrh. ex Hedw.) Th. Fr.
I: On mosses *(1349, 1367), 1385;* on bone *(1199), 1262*. II: On soil and litter, *401 (469), 506;* on bone *(576, 1086), 1135*. III: On litter *(772, 811);* on bone *(694), 695*. IV: On soil *(959)*. – All collections are fertile (ap).

* ***Caloplaca epithallina*** Lynge
I: Parasitic on *Rhizoplaca melanophthalma, 1382* ap.

* ***Caloplaca jungermanniae*** (Vahl) Th. Fr.
I: On mosses and litter, *1268, 1350, 1383*. III: On mosses *(719)*. IV: On mosses and litter *(953), 1005*. – All collections are fertile (ap).

* ***Caloplaca saxifragarum*** Poelt
II: On dead *Silene acaulis (401, 444), 488, 593*. – All collections are fertile (ap).

* ***Caloplaca tetraspora*** (Nyl.) H. Olivier
I: On mosses and litter, *1278*. II: On mosses and litter, *1139*. – The two collections are fertile (ap).

* ***Caloplaca tiroliensis*** Zahlbr.
I: On soil *(1239);* on mosses and litter *(1223, 1249, 1268, 1282, 1349, 1367);* on old bones, *1199 (1262)*. II: On mosses and litter *(401, 442, 574,1149,1162)*. III: On mosses and litter *(772, 798, 808, 811, 813, 814, 886);* on old bones *(610,694, 695)*. IV: On litter *(953), 1008*. – All collections are fertile (ap).

* ***Caloplaca tominii*** Savicz
I: On soil, *1342*. IV: On soil and litter, *927 (966), 990, 1065*. – All collections are sterile.

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* ***Candelariella aurella*** (Hoffm.) Zahlbr.
I: On old bones, *1168 (1262), 1388*. II: On old bones *(466, 1086), 1136*. III: On old bone, *694*. – All collections are fertile (ap).

✶***Candelariella dispersa*** (Räsänen) Hakul.
I: Parasitic on *Placynthium asperellum (1173, 1175, 1177, 1291, 1293, 1391, 1404)*. – All collections are fertile (ap). Distinguished from *Candelariella aurella* by its partially parasitic habit (Thomson 1997). Santesson (1993) considers the two species to be conspecific.

* ***Candelariella placodizans*** (Nyl.) H. Magn.
I: On soil, litter and mosses, *1260* ap (*1333* ap, *1381* st), *LGE 825*. II: On soil (*471* st), *LGE 786*. III: On soil, *624* ap, *715* ap (*883* st), *LGE 802*. IV: On soil and litter, *926* ap, *982* ap, *1031* ap (*1045* st).

□ ***Candelariella terrigena*** Räsänen
II: On soil, *487* ap. IV: On soil, litter and mosses, *933* st (*946* ap, *990* ap).

* ***Candelariella vitellina*** (Hoffm.) Müll. Arg.
I: On different siliceous rocks and stones *(1169, 1175, 1179, 1183, 1184, 1188, 1192, 1198)*. II: On siliceous rocks *(593, 1157);* on ironstone *(525)*. III: On gneiss *(656), 742 (773);* on amphibolite *(667)*. IV: On gneiss *(895, 941, 1054)*. – All collections are fertile (ap).

* ***Candelariella xanthostigma*** (Ach.) Lettau
I: On litter, *1225* ap; on soil (*1337* ap). II: On old dung (*596* st). III: On mosses and litter (*798* st, *808* st, *811* st, *813* st). IV: On litter, *937* st.

* ***Catapyrenium cinereum*** (Pers.) Körb.
IV: On soil, *968* pe (det. O. Breuss).

* ***Catapyrenium daedaleum*** (Kremp.) Stein
I: On mosses and soil, *1281*. III: On mosses *(886)* (det. O. Breuss). – The two collections are fertile (pe).

* ***Catapyrenium lachneum*** (Ach.) R. Sant.
I: On soil and litter, *1314* pe (*1330* st, *1405* pe). II: On soil, *486* pe. III: On soil, *683* st, *737* pe. IV: On soil, *959* pe, *969* pe.

* ***Cetraria islandica*** (L.) Ach.
I: On soil, *1200, 1315*. II: Among *Racomitrium lanuginosum*, *428, 463a*. – The two collections are sterile.

* ***Cetraria muricata*** (Ach.) Eckfeldt
I: On soil, *1259*. II: On soil *(467), 584*. III: On soil *(697)*. IV: On soil, *908*. – All collections are sterile.

* ***Cetrariella delisei*** (Bory ex Schaer.) Kärnefelt & A. Thell
I: On soil, *1204, 1243, LGE 821*. II: On soil, *549;* on mosses, *1110, LGE 812*. III: On soil, *761*. IV: On soil, *1027*. – All collections are sterile.

* ***Cladonia alaskana*** A. Evans
II: Among mosses, *463, LGE 785*. III: Among mosses, *879*. IV: On soil, *932*. – All collections are sterile.

* ***Cladonia amaurocraea*** (Flörke) Schaer.
II: Among mosses, *394, 435 (463b), 540, 572, 1145*. III: Among mosses, *708*. IV: Among mosses, *907*. – All collections are sterile.

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□ ***Cladonia borealis*** S. Stenroos
I: On mosses, *1263*. II: On soil and gravel, *434, 500, 547, 1156;* on mosses *(1145)*. III: On soil, *628 (696), 818;* on mosses *(619), 710 (719, 818, 878)*. IV: On soil, *929;* on mosses and litter, *1047*. – All collections, except *1145,* are sterile.

* ***Cladonia cenotea*** (Ach.) Schaer.
II: On litter, *464, 555*. III: On litter, *888*. – All collections are sterile.

* ***Cladonia chlorophaea*** (Flörke ex Sommerf.) Spreng.
I: On mosses *(1264), 1379*. II: On soil, *408, 502*. III: On mosses, *609, 787*. IV: On soil, *934*. – All collections are sterile.

* ***Cladonia cornuta*** (L.) Hoffm.
II: On soil, *400 (439);* on mosses, *1084*. – All collections are sterile.

* ***Cladonia cyanipes*** (Sommerf.) Nyl.
III: Among mosses, *763 (787)*. – All collections are sterile.

* ***Cladonia luteoalba*** Wheldon & A. Wilson
II: On litter, *1142* st.

* ***Cladonia mitis*** Sandst.
II: Among mosses, *534, 551, 566*. III: Among mosses, *807*. – All collections are sterile.

□ ***Cladonia phyllophora*** Hoffm.
II: Among mosses *(1146)*. III: Among mosses, *706, 762, 817*. IV: On soil, *930*. – All collections are sterile. It was somewhat surprising to find the species relatively common in Inglefield Land, growing among mosses along the border of *Salix arctica-Cassiope* heaths and on tussocks in marshes dominated by *Carex stans*. *C. phyllophora* is also common in SW Greenland (Hansen 1995a, Thomson 1984).

* ***Cladonia pleurota*** (Flörke) Schaer.
II: On soil, *437*. III: Among mosses, *709*. – The two collections are sterile.

* ***Cladonia pocillum*** (Ach.) Grognot
I: On litter and mosses, *1264, 1316, 1360, LGE 819*. II: On soil, *426, 440;* on mosses (1150). III: On mosses, *720 (783)*. IV: On litter, *1062*. – All collections are sterile.

* ***Cladonia pyxidata*** (L.) Hoffm.
I: On mosses, *1261, 1342, 1357, 1377*. II: On soil, *439 (452), 544, 1147*. III: On mosses, *786, 874*. IV: On soil, *935, 962 (1030);* on mosses and litter *(1046), 1048*. – All collections are sterile.

* ***Cladonia squamosa*** Hoffm.
IV: On soil, *931* st.

* ***Cladonia stricta*** (Nyl.) Nyl.
II: Among mosses, *1144*. III: Among mosses, *705, 736, 865*. IV: On soil *(935)*. – All collections are sterile.

□ ***Collema glebulentum*** (Nyl. ex Cromb.) Degel.
III: On siliceous rock, *884* st.

✶***Collema substellatum*** H. Magn.
IV: On soil, *1066* st.

□ ***Collema undulatum*** var. ***granulosum*** Degel.
I: On soil, *1344, 1405*. III: On mosses, *687, 885*. IV: On soil, *996*. – All collections are sterile.

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* ***Cystocoleus ebeneus*** (Dillwyn) Thwaites
II: On gravel, *453*. III: On mosses, *788.* – All collections are sterile.

* ***Dacampia hookeri*** (Borrer) A. Massal.
I: On soil and mosses, *1209* st, *1313* pe, *1370* pe, *LGE 799*. IV: On soil and mosses, *1015* pe.

* ***Dactylina arctica*** (Hook.) Nyl.
I: Among mosses *(1315), LGE 820.* II: Among mosses, *537.* III: Among mosses, *622, 815, LGE 805.* IV: Among mosses *(1048)*. – All collections are sterile.

* ***Dactylina ramulosa*** (Hook.) Tuck.
I: On soil and mosses, *1231 (1260), LGE 817.* III: On mosses, *768, LGE 806*. – All collections are sterile.

* ***Dimelaena oreina*** (Ach.) Norman
I: On quartzite, *1165* ap, *1283* ap, *1297* ap. II: On siliceous rocks, *483* st, *490* st. III: On amphibolite, *799* st. IV: On gneiss (*890* ap), *955* ap, *1057* ap.

□ ***Diploschistes muscorum*** (Scop.) R. Sant.
II: On soil, *470*. IV: On soil, *970.* – All collections are fertile (ap).

□ ***Endocarpon pulvinatum*** Th. Fr.
IV: On siliceous rock, *1004* pe.

* ***Flavocetraria cucullata*** (Bellardi) Kärnefelt & A.Thell.
I: Among mosses *(1201, 1203, 1342)*. II: Among mosses, *395, 438 (534).* III: Among mosses, *639, 776 (796).* IV: Among mosses, *910 (945).* – All collections are sterile.

* ***Flavocetraria nivalis*** (L.) Kärnefelt & A. Thell.
I: On soil and mosses *(1200, 1202, 1203), LGE 814, 822*. II: On soil, mosses and litter, *389 (392, 404,541, 553, 568)*. III: Among mosses, *605, 609*. IV: Among mosses, *909, 1026*. – All collections are sterile.

* ***Fulgensia bracteata*** (Hoffm.) Räsänen
I: On soil, *1208 (1211, 1334);* on mosses, *1264.* III: On soil, 842; on mosses, *872.* IV: On soil *(948, 1007), 1050.* – All collections are sterile.

□ ***Fulgensia desertorum*** (Tomin) Poelt
IV: On soil, *1060* ap. – Recently reported as new to W Greenland (Hansen 2000). The niche of *F. desertorum* at locality IV is in good accordance with previous records of its occurrence in Peary Land and Kangerlussuaq: dry, exposed loess soil, where it grows together with *Caloplaca tominii, Collema substellatum, Phaeorrhiza nimbosa, P. sareptana* var. *sphaerocarpa, Psora vallesiaca* and *Toninia sedifolia*.

* ***Gyalecta foveolaris*** (Ach.) Schaer.
III: On litter, *625* ap.

✷***Gypsoplaca macrophylla*** (Zahlbr.) Timdal
I: On soil, *1211* st. – Apart from the north and northeast a rare lichen in Greenland. It occurs on loess and sandy soil in desert and steppe vegetation (Alstrup & al. 2000, Hansen 1995b, 2001a).

* ***Hymenelia lacustris*** (With.) M. Choisy
II: On siliceous rock *(1159)*. III: On diorite, *741.* – The two collections are fertile (ap).

* ***Hypogymnia austerodes*** (Nyl.) Räsänen
I: On sandstone, *1167.* II: On mosses, *574.* III: On litter, *849, 854, 871.* IV: On siliceous rock, *1041;* on mosses and litter, *928, 1074*. – All collections are sterile.

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* ***Hypogymnia physodes*** (L.) Nyl.
II: On mosses and litter, *397, 420, 443*. – All collections are sterile.

* ***Hypogymnia subobscura*** (Vain.) Poelt
I: On mosses and litter, *1226, 1252, 1310, 1393, 1400;* on old bones *(1168, 1388);* on sandstone, *1404, LGE 800.* II: On mosses and litter *(390, 401, 429, 464), 522, 596;* on soil *(400, 439, 452, LGE 784.* III: On mosses and litter *(606, 629), 641 (749), 785, 816.* IV: On mosses and litter, *912 (945, 951), 976 (978), 1040 (1047)*. – All collections are sterile.

□ ***Ionaspis suaveolens*** (Ach. ex Schaer.) Stein.
I: On siliceous stone *(1172).* III: On siliceous stone, *722*. – The two collections are fertile (ap).

* ***Lecanora argopholis*** (Ach.) Ach.
I: On different siliceous rocks, *1166, 1176, 1187.* III: On siliceous gravel, *888.* – All collections are fertile (ap).

* ***Lecanora atrosulphurea*** (Wahlenb.) Ach.
III: On siliceous rocks, *740, 793.* – The two collections are fertile (ap).

* ***Lecanora beringii*** Nyl.
I: On old bones *(1199), 1262.* II: On dead *Silene acaulis (401);* on old bone *(1135).* III: On old bone, *694.* – All collections are fertile (ap).

* ***Lecanora contractula*** Nyl.
II: On old bones *(466, 1086)*. III: On gneiss *(774).* IV: On siliceous stone *(895)*. – All collections are fertile (ap).

* ***Lecanora dispersa*** (Pers.) Sommerf.
III: On diorite *(663);* on old bones, *610 (1388)*. – All collections are fertile (ap).

* ***Lecanora epibryon*** (Ach.) Ach.
I: On soil, mosses and litter *(1214), 1223 (1260, 1275, 1327, 1389, 1392).* III: On soil, mosses and litter, *621 (720), 744, 783, 811 (872, 883).* IV: On soil, mosses and litter, *925 (949), 995, 1042.* – All collections are fertile (ap).

□ ***Lecanora fuscescens*** (Sommerf.) Nyl.
II: On dead *Salix arctica (1098)*. III: On dead *Salix arctica (772).* – The two collections are fertile (ap). Extremely rare in NW Greenland. Many collections from SW Greenland are extant in C (Alstrup 1982, Thomson 1997).

* ***Lecanora geophila*** (Th. Fr.) Poelt
I: On soil and litter, *1330, 1356.* II: On soil, mosses and litter, *422, 539, 1140 (1151).* III: On soil and mosses, *680, 747, 779, 843.* IV: On soil and mosses, *919, 960, 1030.* – All collections are sterile.

* ***Lecanora intricata*** (Ach.) Ach.
I: On siliceous rock *(1291)*. II: On different siliceous rocks, *415 (503, 1094), 1159*. III: On gneiss, *728,774.* IV: On gneiss *(1000)*. – All collections are sterile.

* ***Lecanora luteovernalis*** Brodo
I: On mosses and soil, *1212,1306, 1358, 1399.* II: On litter, *557.* III: On mosses, litter and soil, *693, 745, 771, 791, 826.* IV: On soil, *1007, LGE 796.* – All collections are fertile (ap).

* ***Lecanora marginata*** (Schaer.) Hertel & Rambold
I: On siliceous rock (*1235* ap).

* ***Lecanora polytropa*** (Ehrh. ex Hoffm.) Rabenh.
I: On gneiss, *1265 (1354)*. II: On different siliceous rocks, *447 (462b), 563*. III: On amphibolite, *668 (671)*. – All collections are fertile (ap).

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* ***Lecidea atrobrunnea*** (Ramond ex Lam. & DC.) Schaer.
I: On siliceous rocks, *1174 (1198)*. II: On siliceous rock *(1994)*. IV: On gneissic rock with malachite coating, *1011*. – All collections are fertile (ap).

* ***Lecidea auriculata*** Th. Fr.
II: On gneiss, *458*. III: On gneiss, *660*. – The two collections are fertile (ap).

* ***Lecidea lactea*** Flörke ex Schaer.
IV: On siliceous rock (*891* ap).

* ***Lecidea lapicida*** (Ach.) Ach.
III: On siliceous rock, *703* ap.

* ***Lecidea ramulosa*** Th. Fr.
I: On soil and mosses, *1220*. II: On mosses and litter, *406, 430*. III: On litter, *857*. IV: On mosses and litter, *1008, 1018, 1046, LGE 797*. – All collections are sterile.

□ ***Lecidea silacea*** Ach.
II: On gneiss with limonite coating, *476*. III: On siliceous stones with limonite coating, *838, 861*. IV: On siliceous stone with limonite coating, *1017*. – All collections are fertile (ap).

* ***Lecidea tessellata*** Flörke
I: On different siliceous rocks, *1164 (1173, 1174), 1191*. II: On different siliceous rocks, *513, 1158*. III: On different siliceous rocks, *672, 724, 726*. *IV:* On gneiss, *999*. – All collections are fertile (ap).

□ ***Lecidella bullata*** Körb.
I: On calcareous rocks, *1181, 1185;* on different siliceous rocks *(1233, 1352, 1361)*.

□ ***Lecidella euphorea*** (Flörke) Hertel
I: On old bone, *1388* ap.

* ***Lecidella stigmatea*** (Ach.) Hertel & Leuckert
II: On old bone, *576* ap.

* ***Lecidella wulfenii*** (Hepp) Körb.
I: On mosses, *1279*. II: On litter *(442)*. III: On mosses and litter *(720, 820, 829)*. IV: On mosses *(1042)*. – All collections are fertile (ap).

□ ***Lepraria frigida*** J. R. Laundon
I: On mosses, *1216, 1127, 1363, Lange 816*. II: On soil *(453), 498*. III: On mosses and soil, *627, 689, 844*. IV: On mosses *(1007, 1030, 1047)*. – Thallus contains alectorialic acid (TLC).

✶***Lepraria lobificans*** Nyl.
II: On mosses, *1150*. – Hitherto probably neglected in Greenland. Thallus contains atranorin, stictic acid, constitic acid and zeorin (TLC).

* ***Leprocaulon subalbicans*** (I. M. Lamb) I. M. Lamb & A. M. Ward
I: On mosses, *1275*. III: On mosses, *642, 876*. IV: On mosses and litter *(951, 976, 1006)*.

□ ***Leptogium lichenoides*** (L.) Zahlbr.
I: On mosses and soil, *1244*. II: On soil, *1153*. III: On mosses, *LGE 795*. IV: On mosses and soil, *938, 963, 1010*. – All collections are sterile. Probably a common, but somewhat overlooked lichen on calcareous soil in NW Greenland. Fairly common on Disko (Hansen 1995a).

* ***Leptogium tenuissimum*** (Dicks.) Körb.
II: On soil, *454*. III: On mosses, *832*. – The two collections are fertile (ap).

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□ ***Lobothallia alphoplaca*** (Wahlenb.) Hafellner
III: On siliceous rock, *836* ap.

* ***Lobothallia melanaspis*** (Ach.) Hafellner
III: On siliceous rock, *722* ap.

* ***Lopadium coralloideum*** (Nyl.) Lynge
I: On mosses, *1276* ap.

* ***Lopadium pezizoideum*** (Ach.) Körb.
II: On litter, *429*. III: On litter, *630, 823 (830)*. IV: On mosses and litter *(1046, 1049)*. – All collections are fertile (ap).

* ***Megaspora verrucosa*** (Ach.) Hafellner & V. Wirth
I: On mosses and litter, *1249, 1311 (1401)*. II: On mosses, 1089. III: On mosses and litter *(748, 828)*. IV: On mosses *(1005)*. – All collections are fertile (ap).

* ***Melanelia disjuncta*** (Erichsen) Essl.
I: On different siliceous rocks, *1179, 1287*. II: On different siliceous rocks *(503), 525 (563, 1077)*. III: On schist, *866*. IV: On siliceous rocks *(892, 1054)*. – All collections are sterile.

* ***Melanelia infumata*** (Nyl.) Essl.
I: On different siliceous rocks *(1193, 1236), 1250 (1367), 1390, 1394*. II: On different siliceous rocks, *494 (562), 591 (598)*. III: On gneiss, *714 (770, 793)*. IV: On different siliceous rocks, *921 (952, 1003)*. – All collections are sterile.

□ ***Melanelia stygia*** (L.) Essl.
I: On sandstone *(1175)*. II: On siliceous rock, *460*. III: On amphibolite *(644), 669;* on gneiss *(656, 801, 825)*. – All collections are sterile.

□ ***Miriquidica garovaglii*** (Schaer.) Hertel & Rambold
III: On gneiss, *741* ap.

* ***Mycobilimbia lobulata*** (Sommerf.) Hafellner
I: On mosses, *1324*. III: On soil and litter, *692*. – The two collections are fertile (ap).

□ ***Ochrolechia androgyna*** (Hoffm.) Arnold
II: On soil and litter, *407, 433;* on mosses, *521*. III: On litter, *612*. IV: On soil and litter *(943), 961;* on mosses, *1028*. – All collections are sterile.

* ***Ochrolechia frigida*** (Sw.) Lynge
II: On litter, *560* st. III: On litter and mosses, *629* st (*730a* ap), *794* ap, *875* ap.

□ ***Ochrolechia lapuënsis*** (Räsänen) Räsänen
I: On mosses, *1274*. II: On litter, *554*. IV: On mosses and litter, *951*. – All collections are sterile.

* ***Ochrolechia upsaliensis*** (L.) A. Massal.
I: On litter and mosses, *1217, 1351*. II: On soil and litter *(450), 594*. III: On litter and mosses *(630) 686, 780, 883*. IV: On litter and mosses *(912, 928), 949, 971 (1008, 1037)*. – All collections are fertile (ap).

* ***Omphalina alpina*** (Britzelm.) Bresinsky & Stangl
III: On soil, *837*.

* ***Omphalina hudsoniana*** (H. S. Jenn.) H. E. Bigelow
II: On mosses, *569, 575*. III: On mosses, *806*.

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* ***Ophioparma ventosa*** (L.) Norman
I: On gneiss, *1364* ap. II: On different siliceous rocks and gravel, *412* st (*448* st, *485* ap, *510* st), *590* ap, *1088* ap. III: On gneiss, *613* ap (*679* ap), *848* ap, *859* st; on amphibolite, *647* ap. IV: On gneiss, *1053* ap, *1070* ap.

* ***Orphniospora moriopsis*** (A. Massal.) D. Hawksw.
II: On siliceous rocks, *597, 1088*. III: On different siliceous rocks, *635 (656,801, 825), 853 (863);* on amphibolite, *655 (677)*. – All collections are fertile (ap).

□ ***Pannaria hookeri*** (Borrer ex Sm.) Nyl.
IV: On gneiss, *1058* ap. – Occasionally occurring in SW Greenland northwards to Disko (Hansen 1995a). Very rare in NW Greenland.

* ***Pannaria pezizoides*** (Weber) Trevis.
III: On soil and mosses, *821* ap.

* ***Parmelia omphalodes*** (L.) Ach.
I: On mosses, *1261, 1263*. II: On mosses *(571);* on litter *(403), 431, 497, 568, 592*. III: On mosses, *765;* on litter, *640 (772), 839 (888);* on gneiss, *730b (742), 839;* on amphibolite *(644), LGE 804*. IV: On gneiss *(945), 1037*. – All collections are sterile.

* ***Parmelia saxatilis*** (L.) Ach.
I: On siliceous rock *(1230)*. II: On litter, *567*. IV: On siliceous rocks, *896, 945*. – All collections are sterile.

* ***Parmelia sulcata*** Taylor
I: On mosses, *1336, 1395*. II: on mosses, *462a;* on siliceous rocks, *445, 496*. III: On mosses, *784, 814*. – All collections are sterile.

□ ***Parmeliella triptophylla*** (Ach.) Müll. Arg.
I: On mosses *(1351)* II: On litter, *623, 795*. IV: On soil, *984*. – All collections are sterile.

* ***Peltigera aphthosa*** (L.) Willd.
II: On mosses, *570*. III: On mosses, *749*. – The two collections are sterile.

* ***Peltigera didactyla*** (With.) J. R. Laundon
I: On mosses, *1247*. II: On mosses, *587*. – The two collections are sterile.

* ***Peltigera lepidophora*** (Nyl. ex Vain.) Bitter
II: On soil, *469*. III: On soil, *828*. IV: On soil, *967, 988 (1061)*. – All collections are sterile.

* ***Peltigera leucophlebia*** (Nyl.) Gyeln.
I: On mosses, *1241 (1254, 1307), 1338, 1368, 1378*. II: On mosses, *LGE 801*. III: On mosses, *711, 777, 841;* on litter, *685*. IV: on mosses, *906, 985, LGE 808*. – All collections, except *1338,* are sterile.

* ***Peltigera malacea*** (Ach.) Funck
II: On mosses and soil, *1138*. III: On mosses, *602, 712, 809*. IV: on mosses, *929, 987*. – All collections are sterile.

* ***Peltigera rufescens*** (Weiss) Humb.
I: On mosses, *1246, 1309, 1355, 1372 (1379, 1397);* on soil, *1207*. II: On mosses, *588, 1149*. III: On mosses, *604, 645, 808*. IV: On mosses and soil, *905*. – All collections are sterile.

* ***Peltigera venosa*** (L.) Hoffm.
I: On mosses, *1232* st, *1277* ap. II: On soil, *1141* st. III: On soil, *678* ap, *778* st, *824* ap. IV: On soil, *986* st.

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* ***Pertusaria coriacea*** (Th. Fr.) Th. Fr.
I: On mosses, *1214, 1269*. II: On mosses, *523*. III: On mosses and litter, *727, 748, 790*. IV: On mosses and litter *(960), 998, 1019 (1040)*. – All collections are fertile (ap).

* ***Pertusaria dactylina*** (Ach.) Nyl.
I: On mosses and soil *(1203, 1231), 1258 (1301)*. II: On mosses, e.g., *Racomitrium lanuginosum,* and litter, 442, 495, 582. III: On mosses, e.g., *R. lanuginosum,* and litter, *620, 691, 725 (796);* on soil, *713*. IV: On mosses and litter, *923, 1029 (1049)*. – All collections are sterile.

□ ***Pertusaria geminipara*** (Th. Fr.) C. Knight ex Brodo
I: On *Racomitrium lanuginosum, 1328*. II: On *R. lanuginosum, 465, 542*. III: On *R. lanuginosum, 765, 796*. IV: On *R. lanuginosum, 1033*. – All collections are sterile.

* ***Pertusaria oculata*** (Dicks.) Th. Fr.
III: On mosses and litter, *878* st.

* ***Pertusaria panyrga*** (Ach.) A. Massal.
I: On mosses, *1215, 1362*. II: On mosses and litter *(391), 405, 449 (522), 550;* on soil *(439, 573)*. III: On mosses, *619*. IV: On mosses and litter, *943, 947, 989, 1043*. – All collections are fertile (ap).

* ***Phaeophyscia sciastra*** (Ach.) Moberg
I: On mosses on different siliceous rocks *(1291), 1302 (1369)*. III: On mosses on siliceous rocks, *626, 661 (671, 684)*. IV: On mosses on siliceous rocks *(952, 1003)*. – All collections are sterile.

* ***Phaeorrhiza nimbosa*** (Fr.) H. Mayrhofer & Poelt
I: On soil and mosses, *1222, 1304, 1389*. IV: On soil and mosses, *948, 965, 1061*. – All collections are fertile (ap).

* ***Phaeorrhiza sareptana*** var. ***sphaerocarpa*** (Th. Fr.) H. Mayrhofer & Poelt
IV: On soil, *966* ap.

* ***Physcia caesia*** (Hoffm.) Fürnr.
I: On different siliceous rocks *(1175), 1178 (1193, 1294, 1402)*. II: On different siliceous rocks with limonite coating, *499, 512 (525)*. III: On amphibolite, *659;* on old bone *(694)*. IV: On different siliceous rocks *(921, 1921, 1059)*. – All collections are sterile.

* ***Physcia dubia*** (Hoffm.) Lettau
I: On different siliceous rocks, *1251 (1266, 1294);* on mosses *(1367);* on old bone *(1199)*. II: On different siliceous rocks *(472, 506, 525, 562, 598);* on old bone *(466)*. III: On amphibolite, *684;* on gneiss, *770 (793)*. IV: On different siliceous rocks *(895, 941, 1003)*. – All collections are sterile.

* ***Physconia muscigena*** (Ach.) Poelt
I: On mosses and litter, *1218 (1223), 1242, 1349 (1350), 1369, 1401;* on soil and gravel *(1202, 1252, 1268, 1314, 1337);* on calcareous rock *(1177)*. II: On mosses, *546*. III: On mosses *(626, 646), 690 (784, 814, 880)*. IV: On mosses and soil, *920, 952 (967, 981), 983, 990, 1005, 1066), LGE 807*. – All collections, except *1242,* are sterile.

* ***Placynthium asperellum*** (Ach.) Trevis.
I: On different siliceous rocks, *1163 (1166), 1173 (1183, 1187, 1291, 1391, 1404);* on calcareous rocks *(1177, 1181, 1286, 1288)*. II: On siliceous rock, *527*. III: On amphibolite *(659);* on gneiss, *882;* on old bone *(694)*. IV: On gneiss, *902, 1002*. – All collections are sterile.

* ***Pleopsidium chlorophanum*** (Wahlenb.) Zopf
II: On siliceous rocks with limonite coating, *477, 492, 578 (1090), 1097*. III: On gneiss, *648*. – All collections are fertile (ap).

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* ***Polyblastia bryophila*** Lönnr.
I: On mosses over soil, *1281, 1325*. – The two collections are fertile (ap).

* ***Polyblastia terrestris*** Th. Fr.
I: On soil, *1234* pe.

□ ***Porpidia flavicunda*** (Ach.) Gowan
II: On siliceous stone, *473*. III: On siliceous rocks, *698, 852;* on amphibolite, *653*. IV: On siliceous rock with malachite coating, *1011*. – All collections are fertile (ap).

* ***Porpidia flavocoerulescens*** (Hornem.) Hertel & A. J. Schwab
I: On gneiss, *1346*. III: On different siliceous rocks *(637), 733 (800)*. – All collections are sterile.

□ ***Porpidia speirea*** (Ach.) Kremp.
III: On siliceous stones, *LGE 794* (det. A. Fryday). – The collection is fertile.

□ ***Protoblastenia calva*** (Dicks.) Zahlbr.
I: On calcareous rocks *(1181), 1286*. – The two collections are fertile (ap). A common lichen in N and NE Greenland, where it grows on limestone, calcareous sandstone and dolomite (Alstrup & al. 2000). Very rare in W Greenland (Lynge 1937).

* ***Protoblastenia terricola*** (Anzi) Lynge
I: On soil, *1305*. II: On soil, *1137*. III: On soil, *681*. IV: On soil, *1009*. – All collections are fertile (ap).

* ***Protoparmelia badia*** (Hoffm.) Hafellner
I: On siliceous rock, *1290*. II: On different siliceous rocks *(564, 597, 1097), 1166*. – All collections are fertile (ap).

* ***Pseudephebe minuscula*** (Nyl. ex Arnold) Brodo & Hawksw.
I: On different siliceous rocks *(1165, 1175, 1179), 1182 (1187), 1190 (1196, 1198, 1291, 1364)*. II: On different siliceous rocks *(448, 459, 462), 474 (485, 504, 509, 519, 524, 529, 563, 578, 597, 1076, 1078, 1088, 1092), 1094, LGE 789*. III: On different siliceous rocks *(656, 700, 775, 792, 851, 855);* on amphibolite *(644), 657 (660, 671), 804*. IV: On different siliceous rocks *(889, 892, 901), 1001, 1034 (1038, 1052), 1056 (1075);* on siliceous rock with malachite coating, *1011, LGE 809*. – All collections are sterile.

* ***Pseudephebe pubescens*** (L.) M. Choisy
I: On gneiss, *1365*. III: On gneiss, *764*. – The two collections are sterile.

* ***Psora decipiens*** (Hedw.) Hoffm.
I: On soil, *1405* ap.

* ***Psora rubiformis*** (Ach.) Hook.
I: On soil, *1210* ap. II: On soil, *409* st, *432* ap (*470* ap), *1151* ap, *LGE 787*. III: On soil, *614* ap; on mosses and litter (*748* st, *877* st); on siliceous rock (*740* st). IV: On soil, *904* ap (*968* st, *990* st), *1032* st.

* ***Psora vallesiaca*** (Schaer.) Timdal
IV: On soil, *964* st, *1063* ap.

* ***Psoroma hypnorum*** (Vahl) Gray
I: On mosses *(1264)*. III: On mosses, *820*. IV: On mosses, *922, 993*. – All collections are fertile (ap).

◊ ***Rhizocarpon anseris*** Lynge
III: On gneiss (*613* ap). – Previously known from Novaya Zemlya, NW Territories and Alaska (Lynge 1928, Thomson 1997).

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* ***Rhizocarpon copelandii*** (Körb.) Fr.
II: On siliceous rocks, *414, 504*. III: On siliceous rocks, *675, 858*. IV: On gneiss, *903*. – All collections are fertile (ap).

□ ***Rhizocarpon disporum*** (Nägeli ex Hepp) Müll. Arg.
I: On sandstone *(1183)*. IV: On gneiss *(897, 1001)*. – All collections are fertile (ap).

* ***Rhizocarpon geminatum*** Körb.
I: On different siliceous rocks *(1164, 1171, 1175, 1178, 1187), 1194, 1235 (1265, 1285, 1293, 1353, 1361, 1391), 1404;* on calcareous rocks *(1177)*. II: On different siliceous rocks, *461, 503 (512, 524, 563, 1157)*. III: On different siliceous rocks, *636 (658, 666, 669, 703, 718, 742, 866);* on amphibolite *(659, 669, 671)*. IV: On different siliceous rocks *(890, 901, 955, 999, 1012, 1021, 1075);* on siliceous rock with malachite coating *(1011)*. – All collections are fertile (ap).

* ***Rhizocarpon geographicum*** (L.) DC.
I: On different siliceous rocks *(1179, 1190, 1196, 1213, 1364)*. II: On different siliceous rocks, *417 (427, 456, 460, 485), 1079 (1091, 1094), 1161, LGE 788*. III: On different siliceous rocks, *631 (658, 665, 743, 773);* on amphibolite, *662, 671, 676*. IV: On different siliceous rocks *(889, 891), 897 (898), 1075*. – All collections are fertile (ap).

* ***Rhizocarpon grande*** (Flörke) Arnold
II: On different siliceous rocks *(484, 590, 1077), 1087*. III: On siliceous rocks *(704), 901;* on amphibolite *(644, 654)*. IV: On siliceous rocks *(1038, 1056)*. – All collections are fertile (ap).

* ***Rhizocarpon inarense*** (Vain.) Vain.
II: On siliceous rocks with limonite coating, *493, 530, 1078*. III: On gneiss, *632*. IV: On gneiss, *957*. – All collections are fertile (ap).

✶***Rhizocarpon intermediellum*** Räsänen
I: On gneiss, *1352*. III: On siliceous rocks, *701, 858*. – All collections are fertile (ap). Occasionally occurring in NE and central E Greenland (Hansen 1982, Alstrup & al. 2000).

□ ***Rhizocarpon praebadium*** (Nyl.) Zahlbr.
I: On gneiss, *1195, 1197, 1366;* on sandstone *(1255)*. II: On different siliceous rocks, *413 (418), 427 (456), 509 (528, 563, 590, 1077, 1079), 1091, 1092 (1096)*. III: On different siliceous rocks *(632), 674 (702, 801, 803), 855;* on amphibolite *(644, 657, 662, 671)*. IV: On gneiss *(900, 1022, 1052, 1053)*. – All collections are fertile (ap).

* ***Rhizocarpon pusillum*** Runemark
I: On different siliceous rocks *(1165, 1190, 1285, 1297)*. III: On gneiss *(775)*. IV: On gneiss, *890, 940*. – All collections are fertile (ap).

* ***Rhizocarpon superficiale*** (Schaer.) Vain.
I: On gneiss, *1198;* on sandstone, *1255, 1256*. II: On different siliceous rocks, *524 (529, 597, 1077), 1096*. III: On different siliceous rocks, *633, 656, 677, 863*. IV: On siliceous rock, *1055*. – All collections are fertile (ap).

* ***Rhizoplaca melanophthalma*** (DC.) Leuckert & Poelt
I: On different siliceous rocks manured by birds *(1236, 1266, 1354, 1367, 1382, 1402)*. II: On different siliceous rocks *(483, 490, 506, 522, 591)*. III: On gneiss *(690, 794)*. IV: On different siliceous rocks *(903), 940 (1003, 1059)*. – All collections are fertile (ap).

□ ***Rinodina archaea*** (Ach.) Arnold
II: On *Salix arctica (594)*. III: On *Salix arctica*, *772*. – The two collections are fertile (ap). Previously known from SW Greenland (Alstrup 1982, Thomsson 1997). It should be searched for in E Greenland, from where remarkably few epiphytic lichens have been reported.

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□ ***Rinodina cacuminum*** (Th. Fr.) Malme
I: On sandstone (*1173* ap).

* ***Rinodina mniaraea*** (Ach.) Körb.
I: On soil, *1335*. IV: On soil and mosses, *980*. – The two collections are fertile (ap).

* ***Rinodina roscida*** (Sommerf.) Arnold
I: On mosses and soil *(1208), 1323 (1349);* on old bone *(1168)*. III: On mosses and litter, *744 (811, 886)*. IV: On soil, *964*. – All collections are fertile (ap).

* ***Rinodina turfacea*** (Wahlenb.) Körb.
I: On mosses and soil *(1239, 1264, 1342)*. II: On mosses *(411);* on old musk ox dung *(596)*. III: On mosses and litter *(619, 769, 780), 797*. IV: On mosses, soil and litter *(935, 967, 1008)*. – All collections are fertile (ap).

* ***Solorina bispora*** Nyl.
I: On soil and mosses, *1221 (1264), 1270, 1312*. II: On soil, *543, 558, 595*. III: On soil and mosses *(627), 682, 749 (872)*. IV: On soil, *977*. – All collections are fertile (ap).

****Solorina crocea*** (L.) Ach.
III: On soil, *618* ap.

* ***Solorina saccata*** (L.) Ach.
I: On soil and mosses, *1384* ap.

* ***Sphaerophorus globosus*** (Huds.) Vain.
I: On mosses, *1331, 1359*. II: On mosses, *391 (534, 571), 1082*. III: On mosses, *608*. IV: On mosses, *917, 1024 (1048)*. – All collections are sterile.

* ***Sporastatia testudinea*** (Ach.) A. Massal.
I: On different siliceous rocks *(1165, 1183, 1187, 1190, 1196, 1198), 1285 (1297, 1348, 1365)*. II: On different siliceous rocks, *416 (462, 524, 530, 563, 1076), 1095*. III: On different siliceous rocks, *775, 825, 851, 863;* on amphibolite *(655)*. IV: On gneiss, *890 (897), 940*. – All collections are fertile (ap).

□ ***Staurothele fissa*** (Taylor) Zwackh
I: On siliceous rocks *(1180, 1186)*. – The two collections are fertile (ap).

* ***Stereocaulon alpinum*** Laurer
I: On soil *(1231)*. II: On soil and among mosses, *398, 571*. III: Among mosses, *607 (620), 696*. IV: On soil and among mosses, *911 (978, 1025)*. – All collections, except *696,* are sterile.

* ***Stereocaulon arenarium*** (Savicz) I. M. Lamb
II: On soil and gravel, *424, 1081, LGE 811*. III: On soil, *840*. – All collections are sterile.

* ***Stereocaulon botryosum*** Ach.
II: On gneiss, *441*. III: On gneiss, *611, LGE 792*. – The two collections are sterile.

* ***Stereocaulon glareosum*** (Savicz) H. Magn.
I: On gravelly soil, *LGE 815*. II: On soil and gravel, *423, 577, 1152*. III: On soil and mosses, *716, 822*. IV: On soil, *936,1044*. – All collections, except *LGE 815,* are sterile.

* ***Thamnolia vermicularis*** (Sw.) Schaer.
I: On soil *(1203, 1211, 1262);* on mosses *(1310, 1342, 1368, 1401)*. II: On soil, *396*. III: On mosses, *616 (622, 645, 646, 841, 881)*. IV: On mosses, *918 (945, 978), 1014*.

* ***Toninia arctica*** Timdal
I: On soil, *1318 (1334)*. – The two collections are fertile (ap).

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* ***Toninia sedifolia*** (Scop.) Timdal
I: On soil, *1317, 1334*. IV: *959 (781, 1060, 1061, 1064, 1067)*. – All collections are fertile (ap).

□ ***Toninia tristis*** subsp. ***scholanderi*** (Lynge) Timdal
IV: On soil, *1067* ap.

* ***Tremolecia atrata*** (Ach.) Hertel
I: On siliceous rock with limonite coating, *1353*. II: On different siliceous rocks *(458, 482, 519), 531 (1094, 1159)*. III: On different siliceous rocks *(613), 665 (698), 701 (703, 718, 733), LGE 803*. IV: On siliceous rocks, *893, 1016*. – All collections are fertile (ap).

* ***Umbilicaria arctica*** (Ach.) Nyl.
II: On rock manured by birds, *514* ap.

* ***Umbilicaria decussata*** (Vill.) Zahlbr.
I: On rock (*1224* st), *1257* st. II: On rock, *478* ap (*562* st, *578* st), *580* st, *1183* ap, *LGE 810*. III: On rock, *650* ap. IV: On rock, *1059* st.

* ***Umbilicaria hyperborea*** (Ach.) Hoffm.
I: On rock, *1303* ap, *1340* ap, *1354* st (*1371* st), *1394* ap. II: On rock *1090* ap. III: On rock, *651* ap (*870* st). IV: On rock, *975* ap (*1039* ap), *1052* st.

* ***Umbilicaria leiocarpa*** DC.
II: On rock, *481, 581* (det. G. Hestmark). – The two collections are sterile.

* ***Umbilicaria lyngei*** Schol.
I: On different siliceous rocks *(1183, 1188, 1190, 1213, 1256, 1348), 1371, 1373, 1394, LGE 823, 827*. II: On different siliceous rocks, *457, 480, 517 (524, 564), 579 (1076, 1078), 1183, LGE 790*. III: On siliceous rocks *(634), 652 (656), 670, 834 (858), 867;* on amphibolite, *671*. IV: On siliceous rocks, *944, 974, 1039*. – All collections, except *1373,* are sterile.

□ ***Umbilicaria nylanderiana*** (Zahlbr.) H. Magn.
II: On gneiss with limonite coating (*491* st) (det. G. Hestmark). – A rare lichen in Greenland; one previous collection is known from the Thule district (specimen at C).

* ***Umbilicaria proboscidea*** (L.) Schrad.
II: On different siliceous rocks, *418, 456, 479, 518 (1079)*. III: On rocks, *617, 812, 868*. IV: On rock *(975)*. – All collections are fertile (ap).

* ***Umbilicaria torrefacta*** (Lightf.) Schrad.
II: On different siliceous rocks, *459, 515 (563, 564, 690, 1092)*. III: On different siliceous rocks (*613* st), *700 (782), 869*. – All collections, except *613,* are fertile (ap).

* ***Umbilicaria vellea*** (L.) Hoffm.
II: On gneiss with limonite coating *(512, 516, 525)*. – All collections are sterile.

* ***Umbilicaria virginis*** Schaer.
I: On different siliceous rocks *(1169), 1224 (1257), 1374, LGE 818*. II: On rock, *1162*. III: On rocks, *649, 870*. IV: On siliceous rocks, *973 (1021)*. – All collections are fertile (ap).

□ ***Verrucaria ceuthocarpa*** Wahlenb.
I: On gneiss, *1248* pe.

□ ***Vestergrenopsis isidiata*** (Degel.) E. Dahl
I: On sandstone, *1294*. III: On amphibolite, *654*. IV: On rock *(1017)*. – All collections are sterile.

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* ***Xanthoria borealis*** R. Sant. & Poelt
I: On rocks manured by birds *(1251, 1367), LGE 824*. II: On different manured siliceous rocks *(472, 506), 562 (591), 598*. III: On gneiss *(770, 793, 831)*. IV: On rock manured by birds, *1003*. – All collections are sterile.

* ***Xanthoria elegans*** (Link) Th. Fr. var. ***elegans***
I: On different siliceous rocks *(1166), 1169, 1171 (1174, 1178, 1189, 1196, 1199), 1266 (1285, 1289, 1294, 1298, 1303, 1323, 1354);* on old bone *(1262), LGE 826*. II: On different siliceous rocks, *472 (499, 513), 520 (527, 1097);* on amphibolite *(671)*. III: On gneiss *(660), 663 (666, 687), 774*. IV: On different siliceous rocks *(890), 895 (897, 902), 941, 955, 999, 1003), 1021*. – All collections are fertile (ap).

✶***Xanthoria elegans*** var. ***splendens*** (Darb.) Christ. ex Poelt
III: On different siliceous rocks and stones, *718 (724, 738), LGE 793*. IV: On siliceous rock, *894*. – All collections are sterile. Previously known from N and NE Greenland (Alstrup & al. 2000, Hansen 2001b). It shows extensive growth in temporarily moistened riverbeds.

* ***Xanthoria sorediata*** (Vain.) Poelt
I: On sandstone, *1230*. III: On siliceous rock, *615;* on amphibolite *(793)*. IV: On siliceous rock, *1035*. – All collections are sterile.

## Discussion

Of the 220 lichens reported in this investigation 74 taxa are terricolous, 86 taxa saxicolous and the remaining either muscicolous (33 taxa), lichenicolous or growing on other substrates such as old bones and dung. There is no sharp limit between the different groups, as many are able to grow on different substrates. Lichenicolous fungi are not dealt with in the present paper apart from a few taxa with independent lichen thallus such as *Buellia pulverulenta* and *Caloplaca castellana*. In the following, some selected plant communities more or less rich in lichens are described.

A. Terricolous vegetation
Heaths dominated by *Cassiope tetragona* D. Don are of great importance at all four localities. Their lichen content varies to some extent according to, e.g., pH and moisture of the soil (Hansen 1989). A tussocky *Cassiope* heath at locality I contains the following lichens: *Buellia papillata, Cetraria islandica, Cladonia pocillum, Dactylina ramulosa, Flavocetraria cucullata, F. nivalis, Lecanora epibryon, Peltigera leucophlebia, Pertusaria dactylina, Stereocaulon alpinum* and *Thamnolia vermicularis*. Probably their habitat has a rather thin snow cover during winter and good drainage in summer. Somewhat moister *Cassiope* heaths with lichens such as *Cetrariella delisei, Dactylina ramulosa, Peltigera venosa, Pertusaria oculata* and *Solorina crocea* occur abundantly at locality III. The two last mentioned species are very rare in Inglefield Land, but very common in snowbeds in more southern parts of Greenland (Hansen 1999a).

A very interesting and unique type of *Cassiope* heath occurs at locality II. Here *Cassiope* grows in 5-10 cm deep ice wedges intersecting a large outwash plain at the Hiawatha Glacier. The following lichens were recorded in this characteristic habitat: *Alectoria nigricans, A. ochroleuca, Arctocetraria nigricascens, Arctoparmelia separata, Cetrariella delisei, Cladonia alaskana, C. borealis, Flavocetraria cucullata, F. nivalis, Hypogymnia physodes, H. subobscura, Ochrolechia frigida, Pertusaria dactylina, Solorina bispora, Stereocaulon alpinum* and *Thamnolia vermicularis*. The flats are colonized by, e.g., *Lecanora geophila* and *Ochrolechia upsaliensis*, while lichens such as *Arthrorhaphis alpina, Candelariella placodizans, Catapyrenium lachneum, Diploschistes muscorum, Peltigera lepidophora* and *Psora rubiformis* bind the soil on rocky ledges somewhat above the plains. *Carex stans* Drej. or *Racomitrium lanuginosum* (Hedw.) Brid. are the dominant plants in some ice wedges (locality II and III). Lichens

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such as *Alectoria nigricans*, *Bryoria chalybeiformis* and *Sphaerophorus globosus* are occasionally found growing directly upon *Racomitrium*. In some places *Vaccinium uliginosum* L. and *Cassiope* form mixed dwarf shrub heaths together with, e.g., *Hypogymnia subobscura* and *Ochrolechia upsaliensis* (locality II).

Different types of *Dryas integrifolia* heaths occur more or less scattered in Inglefield Land. At locality I *Dryas* forms a characteristic association with *Cladonia pocillum, Dacampia hookeri, Lecanora epibryon, Peltigera rufescens, Solorina bispora* and *S. saccata*. It is best developed on somewhat sloping ground with moist, calcareous soil. On dry soil *Dryas* forms a characteristic and widely distributed association with, e.g., *Alectoria nigricans, A. ochroleuca, Cetraria muricata, Flavocetraria cucullata, F. nivalis* and *Thamnolia vermicularis* (Gelting 1955). At locality IV *Lecanora luteovernalis* grows abundantly in a *Dryas-Carex misantra-C. nardina* heath. Here *Dryas* also occurs together with *Carex capillaris* L., *Kobresia simpliciuscula* Mack. and *Rhododendron lapponicum* Wahlenb. and the lichens *Cladonia pocillum, Flavocetraria nivalis* and *Lecanora epibryon*. Lichen-rich soil crusts occur in some communities of *Carex rupestris* All. and *Kobresia myosuroides* Fiori & Paoletti at locality IV and are composed of the following lichen taxa: *Caloplaca tominii, Collema substellatum, Fulgensia bracteata, Phaeorrhiza nimbosa, P. sareptana* var. *sphaerocarpa, Physconia muscigena* and *Toninia sedifolia*. The crusts occur on sandy soil on S exposed slopes in an area with flocks of snow geese. Probably the soil crust lichens have been transported by snow geese and other birds to this area from similar crusts in other parts of Greenland (Alstrup & al. 2000, Hansen 2001a). This also applies to some soil (loess) crusts covered by, e.g., *Caloplaca tominii, Fulgensia bracteata, Gypsoplaca macrophylla, Rinodina mniaraea* and *Toninia sedifolia,* at locality I. *Mycobilimbia lobulata,* occurring on moist soil near a water course at locality III, and *Acarospora schleicheri,* which was found growing near a siliceous rock coated with malachite and thalli of *Lecidea atrobrunnea* and *Pseudephebe minuscula* on a small hill at locality IV, also belong to this group of soil-binding lichens. Disjunctions such as *Fulgensia desertorum* and *Gypsoplaca macrophylla* are of great phytogeographical interest (Hansen 1993).

B. Saxicolous vegetation

Rust-red and ochraceous rocks rich in oxidized iron are a very characteristic landscape feature at locality II. Such rocks also occur at other localities, but here they are less conspicuous. *Acarospora sinopica, A. smaragdula, Lecidea silacea, Porpidia flavicunda* and *Tremolecia atrata,* all with rusty coloured thalli, are among the most important lichens on iron-rich rocks and boulders, in particular near melt water streams. Other lichens with dark brown, grey, yellow or black thalli such as *Pleopsidium chlorophanum, Pseudephebe minuscula, Umbilicaria hyperborea, U. lyngei, U. proboscidea* and *Sporastatia testudinea,* occasionally grow together with the ferruginous lichens mentioned. Rocks rich in pyrite were observed at locality III. They are often strongly weathered because of the development of sulphuric acid under moist weather conditions. Accordingly they are totally free of lichen vegetation.

Rocks and stones manured by birds and other animals such as reindeer, musk oxen and arctic foxes represent an important substrate for different nitrophilous lichens. At locality I guano from the Greenland gyrfalcon influences the lichen vegetation of scattered boulders to a considerable extent. *Melanelia infumata, Parmelia sulcata, Physcia caesia, Rhizocarpon melanophthalma, Umbilicaria decussata, U. virginis, Xanthoria borealis* and *X. elegans* grow abundantly on these boulders, while, e.g., *Caloplaca epithallina* is a rare member of this characteristic association. Along the coast gulls and terns manure the rocks, which hold lichens such as *Dimelaena oreina, Xanthoria sorediata* and other nitrophilous species. Lichens occurring on stones on plains near the sea are probably also influenced by sea birds. Such stones are covered by thalli of *Aspicilia candida, Caloplaca castellana, Dimelaena oreina, Melanelia disjuncta, Phaeophyscia sciastra, Physcia dubia, Placynthium asperellum, Protoparmelia badia, Rhizocarpon geminatum, R. pusillum* and *Xanthoria elegans*.

Nitrophilous, saxicolous lichen communities comparable to the above-mentioned associations also occur on the other investigated localities, but more scattered and poorer in lichens than

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at locality I. However, *Xanthoria elegans* var. *splendens* is a marked exception. It occurs abundantly in the bottom of a riverbed at locality III and on moist, sloping rock faces at locality IV (Alstrup & al. 2000). Nitrophilous lichens are also of great importance in Washington Land, but here they predominantly occur on dolomite and limestone (Hansen 2000b).

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