

CONTRIBUTION TO THE LICHEN FLORA OF SOUTH EAST GREENLAND. II. THE TUGTILIK AREA

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Abstract

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The paper lists 69 lichen taxa from the Tugtilik area, South East Greenland. Of these, 48 lichens were recorded for the first time from the area. *Peltigera extenuata* is new to Greenland, and *Acarospora fuscata* is new to East Greenland. Seven lichen taxa are new to South East Greenland, viz. *Acarospora rhizobola*, *Amygdalaria panaeola*, *Collema undulatum* var. *granulosum*, *Hymenelia arctica*, *Ionaspis lacustris*, *Megaspora verrucosa* and *Parmeliella triptophylla*.

Keywords: Arctic region, diversity, lichens, species.

INTRODUCTION

One hundred and seven lichens collected by the author in the Tugtilik area were previously listed in a paper dealing with the occurrence and distribution of lichens in South East Greenland (HANSEN, 1978a). A new revision of the lichen material from Tugtilik resulted in numerous additional lichens, which were neglected during the original study c. 40 years ago. The main purposes of the field work in summer 1971 were to carry out ecological and phytosociological investigations and collect lichens. There were only few data on lichens prior to the work by HANSEN (1978a) and those included only few species. HAWKSWORTH (1968) listed only 34 lichen taxa collected by J. E. Elsley in the Tugtilik area during the University of Newcastle-upon-Tyne Expedition in June and August 1967. Earlier BÖCHER (1933), during his studies on the vegetation of the east coast between Ittoqqortoormiit and Tasiilaq Böcher, included 44 lichen species, which were later listed also by LYNGE (1933). Thirty six lichen taxa were collected during the

Wager Expedition in the Kangerlussuaq area north of Tugtilik in 1935–1936 (LAMB, 1940).

The present paper aims to contribute further to the knowledge about the lichen flora of Tugtilik and to stimulate future lichen research in this area.

STUDY AREA

Tugtilik (66° 20' N, 35° 00' W) is located near the outer coast c. 150 km north east of Tasiilaq. Up to more than 1000 m high mountains mainly composed of Archaean granodioritic gneisses intersected by basic dykes occur in the surroundings of Tugtilik (HANSEN, 1978a, b). Lichens were studied in the lowland and up to c. 650 m a.s.l. in the investigation area. Floristically and climatically, Tugtilik is situated in the low arctic, oceanic region (JENSEN, 1999). *Salix glauca* copses and *Empetrum-Vaccinium uliginosum* heaths rich in lichens are best developed in the lowland and the basal part of the mountains. Fell fields with more or less scattered vegetation are widely distrib-

uted in the lowland, in particular in places exposed to strong winds, and they are also of great importance at higher levels on the mountains. Snow patches dominated by *Salix herbacea*, *Sibbaldia procumbens* and *Harrimanella hypnoides* prefer more or less north exposed sites. Rocks, boulders and stones support a rich flora of saxicolous lichens. Neutral to slightly alkaline soil near wet flushes or basic dykes hold lichens such as *Peltigera venosa* and *Solorina bispora* (HANSEN, 1978a, b). According to the measurements made by Asiaq/Grønlands Forundersøgelse, the mean temperature of the warmest month, July, is 10°C in Tasiilaq, while the mean temperature of the coldest month, February, is -20°C. The mean annual precipitation is 951 mm (HANSEN, 2002).

MATERIALS AND METHODS

Collecting of lichens was carried out at numerous sites in the area between the head of the western branch of Tugtilik Fjord and the surroundings of Lake Tugtilip imia on 1–9 August 1971. The lichen specimens were studied using Zeiss light microscopes and identified by the author. The nomenclature in the list is presented after SANTESSON et al. (2004) with some exceptions. The specimens are deposited at the Botanical Museum of the University of Copenhagen (C).

Lichens new to the Tugtilik area are marked with one asterisk (*). Two asterisks (**) indicate a taxon new to South East Greenland, three (***) – species is new to East Greenland. Species new to Greenland are marked with “#”, “ap.” and “pe.” mean presence of apothecia and perithecia, respectively, in case of species being often sterile; “st.” means that the specimen is sterile. Annotations are given regarding substrate of the lichens and their occurrence in South East Greenland. Additional information about the distribution in Greenland is given for selected species of particular interest. General information about the total distribution of the lichens in Greenland is presented after HANSEN (1995), THOMSON (1984, 1997), KRISTINSSON et al. (2010).

RESULTS

The present paper demonstrated that the lichen flora of Tugtilik is richer in interesting lichens than

it had been indicated by the comparatively few previous records from the area. One species, *Peltigera extenuate*, is new to Greenland, and one, *Acarospora fuscata*, is new to East Greenland. Seven lichen taxa were reported for the first time from South East Greenland and 48 were new to the Tugtilik area.

Lichens, growing over plant remains on neutral to slightly alkaline soil, such as *Buellia papillata*, *Caloplaca jungermanniae*, *C. tetraspora*, *C. tirolensis* and *Megaspora verrucosa*, are more or less common in Tugtilik. It is also interesting that pioneers on soil in open places in dwarf shrub heaths, species such as *Acarospora rhizobola*, *Baeomyces rufus*, *Candelariella canadensis*, *Myxobilimbia lobulata* and *Pyrenopsis furfurea* were reported from the area. Scattered rocks influenced by guano support some rare nitrophilous lichens, for example, *Acarospora fuscata*, *Amandinea cacuminum* and *Rimularia furvella*, and temporarily moist rocks hold lichens such as *Euopsis pulvinata*, *Hymenelia arctica*, *Ionaspis lacustris* and *Staurothele fissa*. It is no surprise that widely distributed lichens, with a distinct preference for siliceous seashore rocks, such as *Verrucaria maura*, *V. ceuthocarpa* and *V. mucosa*, were found in Tugtilik. In many respects the lichen flora of Tugtilik agrees well with that of Tasiilaq and is just as rich in more or less oceanic lichens.

List of species

*** *Acarospora fuscata* (Schrad.) Th.Fr. – on siliceous rock manured by birds together with *Candelariella vitellina* and *Rimularia furvella*; ap. – *A. fuscata* is widely distributed in West Greenland and has also been reported from the north coast of Greenland (THOMSON, 1997; HANSEN, 2009).

** *Acarospora rhizobola* (Nyl.) Alstrup – on gravelly soil, plant remains and weathered siliceous rock; ap.

* *Acarospora sinopica* (Wahlenb.) Körb. – on basaltic rock; ap. – The species has previously been found on iron-rich rocks in Tasiilaq (HANSEN, 1986, 2002).

* *Amandinea cacuminum* (Th. Fr.) H.Mayrhofer & Sheard – on siliceous rock manured by birds; ap. – The species has previously been reported from Tasiilaq (HANSEN, 2002).

** *Amygdalaria panaeola* (Ach.) Hertel & Brodo – on siliceous rock together with *Lecidea tessellata* and *Miriquidica leucophaea*; st.

* *Aspicilia mastoidea* (Lyngé) Thomson – on siliceous rocks together with *Bellemerea alpina* and *B. cinereorufescens*; ap. – *A. mastoidea* has previously been reported from Ammassalik Ø (HANSEN, 2002).

* *Baeomyces rufus* (Huds.) Rebert. – on soil together with *Arthrorhaphis citrinella*; st. – *B. rufus* is also known from Ammassalik Ø (DANIELS et al., 1985; HANSEN, 2002).

Bellemerea alpina (Sommerf.) Clauzade & Cl.Roux – on siliceous rocks together with *Rhizocarpon geographicum* and *Umbilicaria virginis*; ap. – Several specimens, including one collected by J.E. Elsley in Rejsehus in the Tugtilik area in 1967 (HAWKSWORTH, 1968).

* *Bellemerea cinereorufescens* (Ach.) Clauzade & Cl.Roux – on siliceous rock together with *Aspicilia mastoidea* and *Rhizocarpon badioatrum*; ap. – *B. cinereorufescens* appears to be widely distributed in South East Greenland (DAHL et al., 1937).

* *Bellemerea subsorediza* (Lyngé) R.Sant. – on siliceous rock together with *Rhizocarpon geographicum*; st.

* *Biatora vernalis* (L.) Fr. – on plant remains together with *Bryonora castanea*, *Buellia papillata* and *Rinodina turfacea*; ap.

* *Bryonora castanea* (Hepp) Poelt – on plant remains together with *Caloplaca nivalis*, *C. tetraspora* and *Pertusaria oculata*; ap.

* *Buellia papillata* (Sommerf.) Tuck. – on plant remains and mosses; ap.

* *Caloplaca castellana* (Räsänen) Poelt – on moist siliceous rock together with *Euopsis pulvinata*, *Miriquidica leucophaea* and *Tremolecia atrata*; ap.

Caloplaca cerina (Ehrh. ex Hedw.) Th.Fr. – on old bone together with *Lecanora leucococca*; ap. – *C. cerina* is widely distributed in South East Greenland (HANSEN et al., 1987).

* *Caloplaca jungermanniae* (Vahl) Th.Fr. – on plant remains together with *C. tetraspora*; ap. – *C. jungermanniae* is also known from Tasiilaq and Kangerlussuaq (DAHL et al., 1937; HANSEN, 2002).

* *Caloplaca nivalis* (Körb.) Th.Fr. – on mosses; ap.

* *Caloplaca tetraspora* (Nyl.) H.Olivier – on plant remains; ap.

Caloplaca tirolensis Zahlbr. – on plant remains together with *Buellia papillata*; ap.

* *Calvitimela aglaea* (Sommerf.) Hafellner – on

siliceous rock together with *Rhizocarpon geographicum*; ap.

Candelariella canadensis H. Magn. – on soil; st.

* *Candelariella dispersa* (Räsänen) Hakul. – on *Rhizocarpon geminatum* on siliceous rock; ap.

* *Candelariella vitellina* (Hoffm.) Müll.Arg. – on siliceous rock; ap.

* *Cladonia macroceras* (Delise) Hav. – on soil; st.

Cladonia pocillum (Ach.) Grognot – on plant remains; st.

* *Cladonia trassii* Ahti – on soil; st.

** *Collema undulatum* Laurer ex Flot. var. *granulosum* Degel. – on siliceous rock; st. – The species is widely distributed in more northern parts of East Greenland (HANSEN, 1995, 2008a; ALSTRUP et al., 2000).

Dermatocarpon rivulorum (Arnold) Dalla Torre & Sarnth. – on moist siliceous rock; pe. – The species is fairly common in South East Greenland (HANSEN, 1978a; THOMSON, 1984).

Euopsis pulvinata (Schaer.) Vain. – on moist siliceous rock; ap.

* *Frutidella caesioatra* (Schaer.) Kalb – on mosses on rock together with *Caloplaca nivalis* and *Lecanora leptacina*; ap. – *F. caesioatra* is widely distributed in South East Greenland (LYNGE, 1932; HANSEN, 2002, 2012).

** *Hymenelia arctica* (Lyngé) Lutzoni – on siliceous rock in the inundation zone together with *Dermatocarpon rivulorum* and *Staurothele fuscocuprea*; ap.

** *Ionaspis lacustris* (With.) Lutzoni – on temporarily moist siliceous rock together with *Rhizocarpon geminatum* and *Tremolecia atrata*; ap. – *I. lacustris* has previously been reported from Ittoqqortoormiit in Central East Greenland (HANSEN, 1995).

* *Lecanora hagenii* (Ach.) Ach. var. *fallax* Hepp – on dead thallus of *Peltigera malacea*; ap.

* *Lecanora intricata* (Ach.) Ach. – on siliceous rock; ap.

* *Lecanora leptacina* Sommerf. – on soil and mosses on siliceous rock together with *Melanelixia elegantula*, *Miriquidica leucophaea* and *Rhizoplaca melanophthalma*; ap.

* *Lecanora leucococca* Sommerf. – on siliceous rock and old bones; ap.

* *Lecanora marginata* (Schaer.) Hertel & Ram-

bold – on siliceous rock together with *L. leucococca*; ap.

Lecidea atrobrunnea (Ramond ex Lam. & DC.) Schaer. – on siliceous rock; ap.

Lecidea auriculata Th. Fr. – on siliceous rock together with *Lecanora polytropa*; ap.

Lecidea lapicida (Ach.) Ach. var. *pantherina* Ach. – on siliceous rock together with *Bellemerea alpina* and *Umbilicaria deusta*; st.

* *Lecidea tessellata* Flörke – on siliceous rock; ap. – The species is probably common in South East Greenland (HANSEN, 2002, 2012).

* *Lepraria subalbicans* (I.M.Lamb) Lendemer & Hodgkinson – on soil. – *L. subalbicans* has a scattered occurrence in South East Greenland (HANSEN, 2002; SAAG et al., 2007).

* *Lepraria vouauxii* (Hue) R.C.Harris – on mosses. – The species occurs scattered in South East Greenland (SAAG et al., 2007).

* *Leptogium lichenoides* (L.) Zahlbr. – on mosses together with *Physconia muscigena*; st. – *L. lichenoides* is rare in South East Greenland (VAINIO, 1905).

** *Megaspora verrucosa* (Ach.) Hafellner & V.Wirth – on plant remains; ap. – The species is common and widely distributed in Central and North East Greenland (LYNGE, 1940; HANSEN, 1995, 2009; ALSTRUP et al., 2000).

* *Miriquidica leucophaea* (Flörke ex Rabenh.) Hertel & Rambold – on siliceous rocks; ap.

* *Myxobilimbia lobulata* (Sommerf.) Hafellner – on clayey soil; ap.

* *Ochrolechia alaskana* (Verseghy) Kukwa – on plant remains and mosses; ap.

** *Parmeliella triptophylla* (Ach.) Müll.Arg. – on plant remains; st. – The species has previously been reported from Central and North East Greenland (HANSEN, 1995, 2008a; ALSTRUP et al., 2000).

Peltigera extenuata (Nyl. ex Vain.) Lojka – on mosses; st.

* *Peltigera leucophlebia* (Nyl.) Gyeln. – among mosses on soil; st.

* *Placynthium pannariellum* (Nyl.) H.Magn. – on siliceous rocks together with *Miriquidica leucophaea*; ap.

* *Polychidium muscicola* (Sw.) Gray – on mosses; ap. – The species has previously been reported from Tasiilaq (HANSEN, 2002).

* *Porpidia flavocaerulescens* (Hornem.) Hertel & A.J.Schwab – on siliceous rock together with *Miriquidica leucophaea*; ap.

Protoblastenia rupestris (Scop.) J.Steiner – on siliceous rock together with *Staurothele fuscocuprea*; ap. – There is an additional record of *P. rupestris* from Ikáteq near Tasiilaq in South East Greenland (HANSEN, 1978a). The species is fairly common in Central and North East Greenland (LYNGE, 1940; ALSTRUP et al., 2000; HANSEN, 2008a, b).

* *Psoroma tenue* Henssen var. *boreale* Henssen – on plant remains and wood; ap.

* *Pyrenopsis furfurea* (Nyl.) Leight. – on soil together with *Acarospora rhizobola*; st.

* *Rhizocarpon badioatrum* (Flörke ex Spreng.) Th.Fr. – on siliceous rock; ap. – The species is fairly common in South East Greenland (DAHL et al., 1937; Hansen, 2002).

* *Rhizocarpon geminatum* Körb. – on siliceous rocks; ap.

Rhizocarpon grande (Flörke) Arnold – on siliceous rock together with *Placopsis gelida*; ap. – The species has previously been reported from Rejsehus (HAWKSWORTH, 1968).

* *Rimularia furvella* (Nyl. ex Mudd) Hertel & Rambold – on siliceous rocks manured by birds; st. – The species is also known from Tasiilaq (HANSEN, 2002).

* *Rinodina archaea* (Ach.) Körb. – on plant remains; ap.

* *Staurothele fissa* (Taylor) Zwackh – on temporarily moist siliceous rock; pe.

Staurothele fuscocuprea (Nyl.) Zschacke – on siliceous seashore rocks; pe. – The species has previously been reported from Rejsehus as “*Staurothele clopima*” (HAWKSWORTH, 1968).

* *Stereocaulon arcticum* Lynge – on soil; st. – The species is fairly common in South East Greenland (HANSEN, 1978a, 2012).

* *Umbilicaria virginis* Schaer. – on siliceous rock; ap.

* *Verrucaria maura* Wahlenb. – on siliceous seashore rock; pe. – The species has previously been reported from Møretun and Tasiilaq (DAHL et al., 1937; HANSEN, 2002).

* *Verrucaria ceuthocarpa* Wahlenb. – on siliceous seashore rock; pe. – The species is probably common in South East Greenland (HANSEN, 2002, 2012).

* *Verrucaria mucosa* Wahlenb. – on siliceous seashore rock; pe. – The species has previously been reported from Tasiilaq (HANSEN, 2002).

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PAPILDOMI DUOMENYS APIE PIETRYČIŲ GRENLANDIJOS KERPIŲ FLORĄ II. TUGTILIK APYLINKĖS

Eric Steen HANSEN

Santrauka

Straipsnyje pateikiami duomenys apie 69 kerpių taksonus iš Tugtilik apylinkių pietryčių Grenlandijoje. Keturiasdešimt rūšių pateikiamos pirmą kartą šiai vietai. *Peltigera extenuata* rasta pirmą kartą Grenlandijoje, o *Acarospora fuscata* pirmą kartą aptikta rytinėje Grenlandijoje. *Acarospora rhizobola*, *Amygdalaria panaeola*, *Collema undulatum* var. *granulosum*, *Hymenelia arctica*, *Ionaspis lacustris*, *Megaspora verrucosa* ir *Parmeliella triptophylla* rastos pirmą kartą pietrytinėje Grenlandijoje.