

# Additions to the lichen flora of Iceland II.

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**ABSTRACT:** Ten species of foliose and fruticose lichens, which have been found in Iceland during the last ten years are recorded with their localities; The most important key characters to recognize these species are given, and their distribution discussed.

The first paper of this series, additions to the lichen flora of Iceland I, appeared in Acta Botanica Islandica 1972. Since then several other papers have been published, which include new records of lichen species in Iceland.

KARNEFELT'S (1979) treatment of *Cetraria* includes revision of Icelandic material of the *Cetraria islandica* complex. He recognized two subspecies of *Cetraria islandica* (L.) Ach. in Iceland, ssp. *islandica* and ssp. *crispiformis* (Räs.) Kärnef. He also discovered three specimens of *Cetraria ericetorum* Opiz. in collection from Iceland, a species which had not been correctly recorded there before. Previous records of this species ( as *Cetraria crispa* (Ach.) Nyl.) were based on the absence of fumarprotocetraric acid, a character which is not reliable in Iceland, since great part of *C. islandica* also lacks fumarprotocetraric acid (KRISTINSSON 1969).

AHTI (1980) cleared up some problems in the *Cladonia gracilis - ecmocyna* group, in his revision of *Cladonia gracilis* (L.) Willd. and related species. He recognized *Cladonia macroceras* (Delise) Ahti and *Cladonia gracilis* ssp. *nigripes* (Nyl.) Ahti in collections from Iceland, both taxa which had previously not been distinguished from *C. gracilis* and *C. ecmocyna* Leighton in Icelandic material.

The monograph of the genus *Stereocaulon* by M. LAMB (1977) includes the original diagnosis of *Stereocaulon uliginosum* M.Lamb, a species only known from two localities in Iceland.

Several papers have appeared with new records of crustose lichens in Iceland, belonging to the genera *Caloplaca* (NORDIN 1972, KRISTINSSON 1975, KRISTINSSON & HALLGRÍMSSON 1977), *Candelariella* (KRISTINSSON 1975), *Huilia* (HERTEL 1977), *Lecanora* (BAILEY 1968), *Lecidea* (HERTEL 1977), *Placynthium* (KRISTINSSON 1975), and *Zahlbrucknerella* (HENSSEN 1977).

The present paper records only foliose and fruticose lichen species, which have been encountered in Iceland during the last ten years.

*BRYORIA PSEUDOFUSCESCENS* (Gyeln.) Brodo & D.Hawksw. <sup>1)</sup>

The only common species of *Bryoria* in Iceland is *B. chalybeiformis* (L.) Brodo & Hawksw., which is frequent in the northern part of the country, growing in wind-exposed habitats on the ground or on rocks.

*B. pseudofuscescens* can be distinguished from *B. chalybeiformis* by more delicate main branches (less than 0.5 mm in diameter), and by the yellow PD reaction (remaining yellow) of the medulla and the sorals. *B. chalybeiformis* reacts to PD only in the sorals rather quickly turning to orange-red. This is due to the content of norstictic acid all over *B. pseudofuscescens*, instead of fumarprotocetraric acid only in the sorals of *B. chalybeiformis*.

I have seen only one specimen of *B. pseudofuscescens* from Iceland, collected on lava rock just south of Reykjavík by Jón B. Sigurðsson, in the fall of 1980. This species occurs on the west coast of N-America north to Alaska, and in Norway north to 65°, also found in Scotland. In most localities it is found on conifers or birches, rarely on rocks.

Specimen seen: GULLBRINGUSÝSLA: Gálgahraun, leg. Jón B. Sigurðsson (1979), 2259 (ICEL). <sup>2)</sup>

*CLADONIA SULPHURINA* (Michx.) Fr.

A specimen of *Cladonia* collected by Helgi Jónasson in 1964 in Skjaldfannardalur, NW-Iceland, first identified by me as *C. carneola* (Fr.) Fr. (KRISTINSSON 1972) - a species which is frequent in that region - has by closer investigation turned out to be *C. sulphurina*. This species has not been found in Iceland before: It differs from *C. carneola* mainly by having red apothecia instead of brown, but the specimen found was not fertile. Further differences are that *C. sulphurina* has perforated cups, which often are more or less distorted; the podetia are brighter yellow in color, and contain squamatic acid instead of zeorin by *C. carneola*. Consequently it is also whitish fluorescent in UV-light.

This single known locality in Iceland might possibly be indication for, that it belongs to the northwestern element in the Icelandic lichen flora. The species is widely distributed in the southern part of Greenland (DAHL 1950, as *C. deformis*), the British Isles and in Scandinavia.

Specimen seen: ÍSAFJARBARSÝSLA: Skjaldfannardalur, Laugaland, leg. Helgi Jónasson (1964) 10542 (AEY). <sup>3)</sup>

<sup>1)</sup> The genus *Bryoria* has recently been separated from the genus *Alectoria*.

<sup>2)</sup> The year of collection is shown in parenthesis, the collection number in italics.

<sup>3)</sup> Herbarium of the Museum of Natural History in Akureyri.

*COLLEMA FURFURACEUM* (Arn.) DuRietz

This relatively large (5-8 cm), broad-lobed species is easily distinguished from other Icelandic *Collema* species by the elongate, isidiate ridges or wrinkles on the upper side of the lobes. It grows on vertical rock faces of the ancient sea cliffs around Vík, and seems to be restricted to the extremely oceanic southern coast of Iceland.

It is widely distributed throughout the oceanic parts of Scandinavia and Western Europe, also found in North America including Canada, but not found in Greenland. Outside Iceland the species is much more frequent on trees than on rock.

Specimens seen: VESTUR-SKAFTAFELLSSÝSLA: Mýrdalur District, Höfðabrekka, leg. H. Kristinsson (1978) 19396 (ICEL). Mýrdalur District, Hjørleifshöfði, leg. H. Kristinsson (1978) 20355 (RVK).<sup>1)</sup>

*DERMATOCARPON RIVULORUM* (Arn.) DT. & Sarnth.

This is a foliose species, without rhizines on its lower side, but attached to the rock by a central chord. It differs from similar Icelandic species by the darker color, both on the upper and lower side, by net-like wrinkles on the lower side, and by larger ascospores (17-22 µm long). The specimens found were relatively small, usually 1-2 cm in diameter.

I have seen this species only from two localities. One of them is on basalt rock in a lava field south of Reykjavík, along the shore of a spring lake. The rocks are periodically wetted by spring water through upheaval caused by the tides, without becoming mixed with salt water. The other specimen was collected on rock along a creek.

In his paper on Icelandic macrolichens, LYNGE (1940) mentioned a young and undeveloped specimen of *Dermatocarpon*, which might well belong to *Dermatocarpon rivulorum*, collected in Egilsstaðir in NE-Iceland.

Specimens seen: GULLBRINGUSÝSLA: Straumsvík, Urtartjörn Lake, leg. H. Kristinsson (1980) 2263 (ICEL, RVK). BORGARFJARÐARSÝSLA: Below Akrafjall, Kúludalur, leg. H. Kristinsson (1975) 4295.

*NEPHROMA BELLUM* (Spreng.) Tuck.

This large, foliose lichen species is morphologically very similar to *Nephroma laevigatum* Ach., which is rather common in the southern and western part of Iceland. It differs by having white medulla which reacts PD negative, instead of yellow medulla with PD+ red-violet reaction by *N. laevigatum*. It has only been found in one locality in Iceland, growing on trunks and branches of *Betula pubescens*.

*Nephroma bellum* is rather common in Scandinavia, and has also been found in the British Isles and in Greenland (HANSSEN 1971).

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<sup>1)</sup> RVK is used as an abbreviation for the herbarium of the Institute of Biology, University of Iceland, Reykjavík.

Specimen seen: MÝRASÝSLA: Near Hreðavatn, Grábrókarhraun, leg. H. Kristinsson 1583 (ICEL, RVK).

*PHAEOPHYSCIA CONSTIPATA* (Norrl. & Nyl.) Moberg

This species has very narrow (0.2-0.5 mm), branched lobes, which are upright and about 7 mm long, growing in dense tufts, gray to brownish gray, with delicate, white, sparse rhizines. In Iceland only known from one locality, on the eastern shore of Lake Mývatn, growing on the top and the sides of lava-formations, manured by birds. This species is found here and there throughout Europe, even north to Spitzbergen, but not common. It has also been recorded from Greenland and the Canadian arctic. According to Hansen (1962) the species has continental distribution in Greenland, which conforms with its single locality in Iceland.

Specimen seen: SUDUR-ÞINGEYJARSÝSLA: Lake Mývatn, Kálfaströnd, leg. H. Kristinsson (1972) 15583 (AEY).

*PILOPHORUS CEREOLUS* (Ach.) Th. Fr.

This species forms whitish-gray, crustose basal thallus, consisting of 0.1-0.2 mm broad granules and brown cephalodia of up to 1 mm size. The erect, unbranched pseudopodetia are a few mm to 1 cm tall, sorediate toward the top. Collected on lava rock and on palagonite tuff in two localities.

*Pilophorus cereolus* is widely distributed through Northern Europe, but rare, and is as far I know not known from Greenland.

Specimens seen: SNÆFELLSNESSÝSLA: Kerlingarskarð Pass, Mt. Hafrafell, leg. H. Kristinsson (1967) 7261 (DUKE). ÁRNESSÝSLA: Along Hvítá River, Brúarhlöð, leg. H. Kristinsson (1978) 22484 (ICEL).

*PSEUDOCYPHELLARIA CROCATA* (L.) Vain.

Foliose lichen, gray-brown to brown above, reminding on a small *Peltigera*, but dotted with bright yellow soralia on the upper side and along the margin, light brown and tomentose below.

I have seen this species from one locality in Iceland, growing over mosses on basalt rock. According to information from P.M. Jörgenson, there is also one specimen from Iceland in the herbarium of the Botanical Museum in Oslo, collected by E. Dahl, but this find has not been published.

This is a rather rare species in the oceanic parts of western Europe, from Portugal to Norway. It is found in some parts of North America, but as far I know not in Greenland.

Specimen seen: SNÆFELLSNESSÝSLA: Lóndrangar, leg. H. Kristinsson (1978) 7354 (ICEL).

*STEREOCAULON DEPRESSUM* (Frey) Lamb

This species forms rather large (5-8 cm) flat cushions on rock, made of more or less creeping, dorsiventral branches. The phyllocladia are rather small, verrucose, and the branches brittle. It

is apparently not rare in Iceland, but has been overlooked.

*Stereocaulon depressum* is a species with northern distribution, known from Norway, Sweden, and Finland, and also in Greenland and Jan Mayen. It is therefore not surprising to find it in Iceland. Very little is known yet about its distribution within Iceland, except that it is apparently common in the southwestern lowland regions, and also in the high mountains around Akureyri. Since these two areas are climatically very different, I suspect it to be widely distributed throughout the country, even though it is so sparsely represented in collections.

The Icelandic specimens contain besides atranorin also bourgeanic acid (according to TLC-chromatograms with bourgeanic acid from *Cladonia conista* as a control), a substance not present in other known Icelandic species of *Stereocaulon*.<sup>1)</sup>

Specimens seen: BORGARFJARÐARSÝSLA: Leirársveit, Álfatangi, 4279 (AEY). Leirársveit, Lækjarnes, 4400 (AEY). Leirársveit, Pollholt, 4277 (AEY). HÚNAVATNSSÝSLA: Laxárdalur, Mánaskál, 12651 (RVK). Auðkúluheiði, Úlfkels-höfði, 12700 (RVK). EYJAFJARÐARSÝSLA: Mt. Glerárdalshnjúkur, 14750 (RVK). Mt. Tröllafjall, 14805 (RVK). SUBUR-ÞINGEYJARSÝSLA: Höfðahverfi, Mt. Skessu-hryggur, 14748 (RVK). All specimens collected by the author in 1975-1980.

#### XANTHORIA SOREDIATA (Vain.) Poelt.

This is a bright orange-red, foliose species, much resembling *X. elegans* (Link.) Th.Fr., but differs by having numerous wart-like to globular isidia on its upper surface, especially toward the centre. The isidia are frequently breaking up and forming soredia.

*X. soredata* appears to be scattered throughout at least the northern part of the country. It is rare compared with *X. elegans*. It prefers shady rocky walls, overhanging cliffs or cave mouths. It is distributed throughout Europe and also found in Greenland.

Specimens seen: SKAGAFJARÐARDÝSLA: Along Víðimýrará, 13789 (DUKE). EYJAFJARÐ-ARSÝSLA: Kaupangssveit, Króksstaðir, 307 (AEY). Mt. Hlíðarfjall, Hlíðarhryggur, 14667 (AEY). Akureyri, Glerá, 552 (AEY). Hrafnagilshreppur, Syðra-Gil, 14711 (AEY). SUBUR-ÞINGEYJARSÝSLA: Goðafoss, 15597 (AEY). NORÐUR-MÚLASÝSLA: Fljótsdalshérað, Droplaugarstaðir, 167 (AEY). All specimens collected by the author in 1961-1975.

#### ACKNOWLEDGEMENTS

I thank Dr. Hildur Krog, Oslo, for the loan of specimens of *Stereocaulon depressum* for comparison with the Icelandic specimens.

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<sup>1)</sup> An unknown species of *Stereocaulon*, completely sorediate, collected in two localities in the Dyngjufjöll Mountains, also contains bourgeanic acid.

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