

# 10.

## Epiphytic lichens

### Skónir á trøum og runnum

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#### Abstract

54 lichen taxa are reported; 11 were found on the native shrubs, 47 on introduced trees in plantations and gardens, 22 of these are known from other substrates too. It is proposed that birch bark imported for roofing has been a major vehicle for the dispersal of the epiphytic lichens; they may also have been introduced on small trees or have been spread by birds or winds. Some species found on the imported bark have not become established in the Faroes.

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#### Introduction

The epiphytic lichens of the Faroes have not previously been dealt with separately, although there have been a few records in general papers on Faroese lichenology. Rostrup (1870) mentioned 10 corticolous species from Tórshavn and one species on the indigenous *Salix herbacea* at Hoyvík. Branth (1901) added *Pertusaria xanthostoma* from twigs of *Calluna vulgaris* from Svínoy and *Parmelia saxatilis* from elsewhere. Degelius (1966) reported a further 7 species from introduced trees.

In 1985 we investigated most of the plantations and also the remnants of native scrub of *Salix phylicifolia* at Hvalvík and *Juniperus communis* on Svínoy. Indigenous dwarf shrubs were investigated at several localities. Anna-Maria Fosaa kindly allowed us to identify her lichens collected at the “Studentaskúli” plantation at Hoydalar, and we also re-identified several old collections reported by Rostrup and Branth. This brings the total number of epiphytic lichens known from the area to 54, table 1.

#### List of epiphytic species

*Arthonia radiata* (Pers.) Ach. On broad-leaved trees in a garden in Tórshavn (Rostrup, Degelius).

*Arthothelium ruanum* (Massal.) Zw. On *Calluna* twig, Toftavatn.

*Bryoria fuscescens* (Gyeln.) Brodo & Hawksw. On *Picea* in the Tórshavn plantation.

*Buellia disciformis* (Fr.) Mudd. On *Acer* on Svínoy and found also on moss.

*Buellia pinctata* (Hoffm.) Massal. On *Sorbus intermedia*, *Betula* and *Larix* in a small plantation at Dalur. It is also known from driftwood on Suðuroy (Branth).

*Caloplaca flavorubescens* (Huds.) Laundon. On *Salix herbacea* at Hoyvík (Rostrup as *Placodium aurantiacum* α *salicinum*, not checked).

Table 1. The occurrence of the species dealt with on different substrates in the Faroes.

	Native woody plants	Introduced woody plants	Lignum in buildings and driftwood	Rocks, moss, etc.	Imported bark
<i>Arthothelium ruanum</i>	x				
<i>Caloplaca flavorubescens</i>	x				
<i>Lecanora fuscescens</i>	x				
<i>L. jamesii</i>	x				
<i>L. umbrina</i> f. <i>gregata</i>	x				
<i>Pertusaria xanthostoma</i>	x				
<i>Xylographa trunciseda</i>	x				
<i>Scoliciosporum chlorococcum</i>	x	x			
<i>Micarea lignaria</i>	x	x		x	
<i>Lecanora chlarotera</i>	x	x			x
<i>Lecanora symmicta</i>	x	x			x
<i>Arthonia radiata</i>		x			
<i>Candelariella xanthostigma</i>		x			
<i>Cladonia coniocraea</i>		x			
<i>Lecania cyrtella</i>		x			
<i>Lecanora carpinea</i>		x			
<i>Lecanora conizaeoides</i>		x			
<i>Lecanora intumescens</i>		x			
<i>Lecidella achristotera</i>		x			
<i>Lecidella elaeochroma</i>		x			
var. <i>flavicans</i>		x			
var. <i>soralifera</i>		x			
<i>Lepraria aeruginosa</i>		x			
<i>Micarea prasina</i>		x			
<i>Ochrolechia pallescens</i>		x			
<i>Opegrapha atra</i>		x			
<i>Opegrapha multipuncta</i>		x			
<i>Parmelia glabratula</i>		x			
<i>Parmelia subaurifera</i>		x			
<i>Physcia tenella</i>		x			
<i>Porina aenea</i>		x			
<i>Pseudevernia furfuracea</i>		x			
<i>Ramalina subfarinacea</i>		x			
<i>Trapeliopsis pseudogranulosa</i>		x		x	
<i>Xanthoria polycarpa</i>		x			
<i>Buellia punctata</i>		x	x		
<i>Cladonia pyxidata</i>		x	x		
<i>Hypogymnia physodes</i>		x	x		x
<i>Hypogymnia tubulosa</i>		x	x		x
<i>Bryoria fuscescens</i>		x			x
<i>Usnea subfloridana</i>		x			x
<i>Catillaria sphaeroides</i>		x		x	
<i>Cladonia fimbriata</i>		x		x	
<i>Peltigera canina</i>		x		x	

Table 1. The occurrence of the species dealt with on different substrates in the Faroes.

	Native woody plants	Introduced woody plants	Lignum in buildings and driftwood	Rocks, moss, etc.	Imported bark
<i>Physcia dubia</i>		x		x	
<i>Ramalina farinacea</i>		x		x	
<i>Sphaerophorus globosus</i>		x		x	
<i>Xanthoria candelaria</i>		x		x	
<i>Xanthoria calcicola</i>		x		x	
<i>Buellia disciformis</i>		x		x	x
<i>Cetraria chlorophylla</i>		x	x	x	x
<i>Parmelia omphalodes</i>		x		x	x
<i>Parmelia saxatilis</i>		x		x	x
<i>Platismatia glauca</i>		x		x	x
<i>Arthopyrenia</i> sp.					x
<i>Buellia erubescens</i>					x
<i>Buellia poeltii</i>					x
<i>Cetraria pinastri</i>					x
<i>Lecanora</i> cfr. <i>allophana</i>					x
<i>Lecanora pulicaris</i>					x
<i>Ochrolechia androgyne</i>					x
<i>Parmelia exasperatula</i>					x
<i>Parmelia olivacea</i>					x
<i>Parmelia sulcata</i>					x
<i>Parmeliopsis aleurites</i>					x
<i>Parmeliopsis ambigua</i>					x
<i>Parmeliopsis hyperopta</i>					x
<i>Pertusaria amara</i>					x
<i>Pertusaria hemisphaerica</i>					x
<i>Usnea hirta</i>					x
<i>Evernia divaricata</i>					x

- Candelariella xanthostigma* (Ach.) Lettau. On *Acer* in a graveyard in Tórshavn.
- Catillaria sphaeroides* (Massal.) Schuler. On *Pinus* and on moss at Selatrað. On trees in Tórshavn (Branth as *Lecidea parasema* var. *pilularis*).
- Cetraria chlorophylla* (Willd.) Vain. On *Acer* in a graveyard, Tórshavn; on *Pinus* at Selatrað and on a fence post west of Skopun. The species is also found on rock.
- Cladonia coniocraea* auct. On a stump of *Pinus* at Selatrað and on an unidentified tree in the Tórshavn plantation.
- Cladonia fimbriata* (L.) Fr. On rotten twigs and moss in Tórshavn, Hvalba, and Hoyvík (Rostrup).
- Cladonia pyxidata* (L.) Hoffm. On lignum (Degelius) and on *Pinus* at Hoydalar.
- Cladonia* sp. A large number of basal squamules were found in Tórshavn and Selatrað.
- Hypogymnia physodes* (L.) Nyl. On *Pinus contorta* at Selatrað; *Acer*, *Larix* and *Picea* at Tórshavn and on *Pinus* at Hoydalar. This is a rare species on the Faroes as pointed out by Degelius.
- Hypogymnia tubulosa* (Schaer.) Havaas. On *Picea* in the Tórshavn plantation and on *Acer* and *Sorbus intermedia* in the graveyard. At the latter locality it was more abundant than *H. physodes* and was even fertile. Degelius found it on a fence post in Tórshavn.
- Lecania cyrtella* (Ach.) Th.Fr. In a Tórshavn garden (Rostrup, not checked).

- Lecanora carpinea* (L.) Vain. On a garden tree in Tórshavn (det. VA; Rostrup named this sample *Lecanora subfusca* var. *albella*),
- Lecanora chlarotera* Nyl. On native *Salix phylicifolia* and on *Acer* at Hvalvík, on *Acer* on Svínø, and also on *Betula* and *Larix* at Dalur.
- Lecanora conizaeoides* Cromb. *Acer* in a street in Tórshavn, reported also by Degelius from this town.
- Lecanora fuscescens* (Sommerf.) Nyl. On *Empetrum* on Svínø.
- Lecanora intumescens* (Rebent.) Rabenh. On a garden tree in Tórshavn (reported by Rostrup as *L. subfusca*).
- Lecanora jamesii* Landon. On *Juniperus communis* at Selatrað, and on a twig of *Calluna vulgaris* at Toftavatn.
- Lecanora symmetrica* (Ach.) Ach. On unidentified tree in the Tórshavn plantation and on *Empetrum hermaphroditum* on Svínø.
- Lecanora umbrina* f. *gregata* Harm. On lignum of native *Salix* at Hvalvík.
- Lecidella achristotera* (Nyl.) Hertel & Leuckert. On *Acer* in a Tórshavn graveyard.
- Lecidella elaeochroma* (Ach.) Choisy. On *Acer* at Hvalvík and a graveyard in Tórshavn; *Sorbus intermedia* in the Tórshavn plantation; and on *Pinus* and *Ulmus* at Selatrað. The species was also reported by Degelius and, as *Lecidea parasema*, by Rostrup and Branth.
- var. *flavicans* (Ach.) Hertel. On *Sorbus intermedia* at Selatrað.
- var. *soralifera* (Erichs.) Clauz. & Roux. On *Acer* in the Tórshavn graveyard and on an unidentified tree in the Tórshavn plantation.
- Lepraria aeruginosa* sensu Ozenda & Clauzade. Common in the Tórshavn plantation and the graveyard, in the Hoydalar plantation and at Selatrað. It was also reported by Degelius.
- Micarea lignaria* (Ach.) Hedl. On *Pinus* at Selatrað, native *Juniperus* and *Empetrum* on Svínø and native *Cassiope tetragona* at Toftavatn. The species is common in plant debris, turf etc.
- Micarea prasina* Fr. On *Larix* in the Tórshavn plantation.
- Ochrolechia pallescens* (L.) Massal. On *Sorbus aucuparia* in the Tórshavn plantation.
- Opegrapha atra* Pers. In a Tórshavn garden (Rostrup).
- Opegrapha multipuncta* Coppins & James. On *Sambucus nigra* and *Betula* at Dalur, *Acer* at Hvalvík, *Sorbus aucuparia* in the Tórshavn plantation and *Acer* on the graveyard.
- Parmelia glabrutula* (Lamy) Nyl. Unidentified tree in the Tórshavn plantation, on *Acer* in the graveyard, *Pinus* at Hoydalar and on *Sorbus intermedia* at Selatrað.
- Parmelia omphalodes* (L.) Ach. On *Pinus* at Selatrað. The species is common on rocks.
- Parmelia saxatilis* (L.) Ach. On *Larix* at Dalur and in the Tórshavn plantation, on *Acer* in the graveyard, *Pinus* at Hoydalar and on *Sorbus intermedia* at Selatrað. The species is common on rocks.
- Parmelia subaurifera* Nyl. *Sorbus intermedia* and *Pinus* at Selatrað.
- Peltigera canina* (L.) Wild. On the base of *Acer* in a Tórshavn graveyard and common on moss on the ground.
- Pertusaria xanthostoma* (Sommerf.) Fr. On twigs of *Calluna vulgaris* and on moss on Viðø. Branth reported it from similar substrates from Viðø and Svínø.
- Physcia dubia* (Hoffm.) Lett. On *Sambucus* and *Larix* at Dalur and *Acer* on Svínø. A part of the collection from *Ribes rubrum* at Kirkjubøur reported by Rostrup as *Physcia stellaris* is *P. dubia*.
- Physcia tenella* (Scop.) DC. On *Ribes rubrum* at Kirkjubøur, part of the same collection reported as *P. stellaris* by Rostrup, and on *Larix* at Dalur.
- Platismatia glauca* (L.) W. Culb. & C. Culb. on *Pinus* in the Tórshavn plantation and on rock.
- Porina aenea* (Wallr.) Zahlbr. On an unidentified tree in the Tórshavn plantation and on *Salix* and *Acer* on the graveyard.
- Pseudevernia furfuracea* (L.) Zopf. On *Pinus* at Selatrað. An old report of the species in Landt (1800) was questioned by Rostrup. The species could hardly have existed in the islands before the plantations were established.
- Ramalina farinacea* (L.) Ach. On *Acer* in the Tórshavn graveyard. Branth referred earlier reports of *R. subfarinacea* to this species, which is found also in other habitats in the Faroes.
- Ramalina subfarinacea* (Cromb.) Nyl. On *Betula* at Dalur (see remark under *R. farinacea*).
- Scoliosporum chlorococcum* (Stenh.) Vezda. On native *Salix phylicifolia* at Hvalvík, on *Empetrum* on Svínø and *Larix* in the Tórshavn plantation.
- Sphaerophorus globosus* (Huds.) Vain. On *Pinus* at Selatrað and common on soil in heathland.
- Trapeliopsis pseudogranulosa* Coppins & P. James. On *Acer* in a Tórshavn graveyard, and on unidentified trees in the plantations in Tórshavn and Hvalvík; also on moss at Toftavatn.

*Berberis darwinii* úr Rio Negro økinum, Argentina blómandi í Hoydølum.  
B. darwinii from Rio Negro, Arg. flowering in Hoydalar. Photo S. Ødum, June 1986.



Landssjúkrahúsið  
Tórshavn  
1983



Rósurnar við Landssjúkrahúsið.  
*Rosa rugosa* at the hospital in Tórshavn.  
Photo T. í Hoyvík, Aug. 1983.



*Viðbenda á húsaveggi,  
Tinghúsvegur 52,  
Tórshavn.*

*Hedera helix on a house  
in Tórshavn. Photo S.  
Rasmussen, June 1988.*



*Rhododendron  
catawbiense, aftanfyri  
royniviður. Meiaríð,  
Tórsgøta 7, Tórshavn.  
R. catawbiense in a  
garden in Tórshavn. In  
the background Sorbus  
intermedia. Photo T. í  
Hoyvík, July 1984.*

(*Usnea barbata* (L.) Web. Reported by Landt as *Usnea hirta*, but according to Rostrup this collection is *U. barbata*. However, it is not kept in C and may have been gathered from introduced material).  
*Usnea subfloridana* Stirt. On *Pinus* and *Larix* in the Tórshavn plantation and on *Pinus* at Selatrað.  
*Xanthoria candelaria* (L.) Th. Fr. On *Sambucus* and *Larix* at Dalur, *Acer* on Svínøi and *Pinus* at Selatrað. It was reported on *Sorbus* at Vestmanna by Degelius and is also found on rock.  
*Xanthoria polycarpa* (Hoffm.) Riber. On *Acer pseudoplatanus* in Tórshavn (Degelius).  
*Xylographa trunciseda* (Th. Fr.) Minks. On dead twigs of *Empetrum hermaphroditum* on Svínøi.

## Methods of dispersal

26 species have been found only on trees introduced to the Faroes. The majority of the species must have spread to the islands after the planting started, and several methods of dispersal are possible. These include dispersal by wind or migrating birds and introduction with small trees, tree products, or as a result of other human activity. In spite of prevailing winds being from the west, wind born propagules could easily have arrived from Norway and Scotland. Only a few migrating birds visit the young plantations thus bird transport is not likely to have played an important role for the dispersal.

On a concrete dam east of Vestmanna we found *Xanthoria elegans* for the first time on the Faroes. Since it is a spectacular orange lichen it is unlikely to have escaped previous detection if it had been indigenous, and it is unlikely, that the species was introduced with the construction material used for the dam, so its presence on the dam supports the theory for dispersal by natural transport rather than man.

Many trees established in the plantations were brought to the islands from nurseries in Denmark and it is possible, that lichen propagules were brought with them. Private imports of garden trees and bushes may also have contributed, especially if they were elder specimens. In recent years small trees have been transferred from South America, but their epiphytic flora has not been investigated. If lichens of South American origin could be found on these trees, this would strongly confirm their introduction with the plants.

## The importation of bark

Tree products, especially birch bark, may have contributed much to the introduction of new lichen species. Large quantities were imported to be used for tanning and for roofing. Imports were 6.660 kg in 1735, went down to zero in 1880, rose again to 17.700 kg in 1910 and finally stopped in the 1930s. Table 2. The largest quantities of bark came from Norway with 13.800 kg in 1916 and the rest from Denmark. However, it is unlikely that the bark was produced in Denmark; it was probably exported on Danish ships from the Murmansk-Petsamo area. We know that 57 kg were imported from the UK in 1935, but the origin of the bark is often obscure since for long periods Danish companies had a monopoly of the trade.

It is unclear whether medieval houses had bark roofs, the old “kongsbonde”

Table 2. The amounts of birch bark in kg imported to the Faroes according to Danmarks Statistik 1918, 1937.

Year	1735	1760	1770	1860	1880	1890	1910	1916	1935
Import	6.600	3.600	6.300	1.950	0	15.362	17.700	16.928	423

farms Kirkjubøur and Húsavík may originally have had bark roofs covered by grass (Winther 1975), but they could also have been renovated at some later date. The decline in import in the 19th century is remarkable but is hardly due to any lower demand. Bruun (1907) mentions that bark was readily available then, and that this saved straw. An employee in a timber store told us, that it was difficult to get bark in about 1935, because Norwegian timber was barked by machines which cut it into small pieces. Bark was imported from Finland, but in the 1930s the best quality came from Russia.

### Lichens on imported bark

The imported bark supported a rich lichen flora. 26 species were found on a 15 m<sup>2</sup> sample taken from the second author's house in Tórshavn, and a further species, *Everniã divaricata* (L.) Ach., was found with the bark but not attached to it, table 1. The bark was probably air dried in the forests before it was stacked and exported, and it is very likely, that many propagules also of species not growing on the birch were able to start growing after being brought to the Faroes. Upon arrival the bark was again handled in the open so that propagules could spread to trees and bushes in nearby gardens and onto wooden houses. Most of the lichens on the investigated roof sample looked quite healthy and could easily be identified, only the outer part of the roof was damaged by water and molds.

Apart from the lichens only a few plants were found on the bark, but the fungus *Mycomicrothelia wallrothii* (Hepp) D. Hawksw. was very common, and *Nesolechia oxyspora* (Tul.) Massal. was found parasitic on *Parmelia sulcata*.

The earlier authors did not mention imported bark when dealing with the lichen flora, but at least Rostrup was aware of the import, as a crustose lichen sample is found on bark in C, kept in one of his characteristic blue envelopes marked with his handwriting. Rostrup (1870) did not mention that sample, but he identified it as *Buellia parasema*. However, after Clauzade & Roux (1985) the sample in question is *Buellia poeltii* Schauer, which is known only from Bavaria, Austria and Transilvania. Although it is impossible to trace the origin of this bark sample we must assume, that bark may have been imported from such distant localities in periods of failing supplies from traditional sources.

Of the species found on the roof bark, *Bryoria fuscescens*, *Hypogymnia physodes*, *H. tubulosa*, and *Usnea subfloridana* have only been found on introduced trees and lignum in the Faroes, and they may all have been introduced with the bark. *Cetraria chlorophylla* and *Platismatia glauca* are also found occasionally on





10.1. Næfur frá eini tekju um leið  $45 \times 30$  cm við skónunum *Parmelia sulcata* og *Hypogymnia physodes* ovast högrumegin og *Platismatia glauca* ovast í miðjuni. Myrku partarnir í neðra eru soppar. A piece of birch bark from of roof measuring appr.  $45 \times 30$  cm, showing big rosettes of *Parmelia sulcata*, *Hypogymnia physodes* (top right) and *Platismatia glauca* (top center). The lower part is darkened by a mould. Photo Lene Christiansen.

rocks with the *Cetraria* apparently increasing in frequency on the rocks, so these may have been introduced as well.

Some species were common on the roof sample but have never been found growing in the Faroes. These species are *Cetraria pinastri*, *Ochrolechia androgyne*, *Parmelia olivacea*, *P. sulcata*, *Parmeliopsis ambigua*, *P. hyperopta*, and *Pertusaria hemisphaerica*. Considering the amount of diaspores which must have been introduced, it must be concluded, that the climatic conditions in the islands make it impossible for these species to grow there.

## Conclusions

The epiphytic flora is very sparse on the native woody plants and probably always was. The introduced trees and bushes in gardens and plantations have provided new habitats for the epiphytic lichens. There are many possible methods of dispersal. Amongst these, natural transport by migrating birds or wind seems to have been responsible at least for the introduction of *Xanthoria elegans* on a concrete dam, but human activities including bark importation are suggested as important

reasons for the rapid colonizing of the new habitat. The flora is still rather poor and more species are likely to spread to the islands in the future. Dispersal by birds is suggested to become more important with an increasing bird population in the mature plantations.

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## Føroyskt úrtak

53 sløg av skónum, sum vaksa á trøum, eru umrødd í greinini. 10 vórðu funnin á teimum upprunaligu føroysku runnum: píli og baraldi. 47 vórðu funnin á innfluttum trøum í viðarlundum og urtagørðum og av hesum 47 eru tey 21 sløgini eisini kend aðrastaðni, sum t.d. á jørð ella á steinum. Høvundarnir halda, at ein høvuðsfarleið til Føroya hjá skónum, ið vaksa á trøum, hevur verið við innfluttari nævur til tekjur. Teir kunnu tó eisini hava vaksið á smáum trøum, sum eru innflutt ella hava verið førd við fugli ella vindi. Nøkur av teimum sløgum, sum eru funnin á innfluttari nævur eru ikki vorðin natúrligur partur av heimligu florum enn, t.e., tey eru ikki funnin aðrastaðni enn á nævur.

## References

- Branth, J. S. D. 1901: Lichenes. – In Botany of the Faroes. Vol 1. Copenhagen.
- Bruun, D. 1907: Gammel Bygningsskik paa Færøerne. – Kristiania.
- Clauzade, G. & C. Roux 1985: Likenoj de Okcidenta Europo, Illustrita determinlibro. – Bull. Soc. Bot. Centre-Ouest, Nouv. Ser.-Num. Spec. 7.
- Danmarks Statistik 1918: Statistiske Oplysninger om Færøerne. – København.
- Danmarks Statistik 1937: Færøerne – Befolknings- og Erhvervsforhold. – København.
- Degelius, G. 1966: Notes on the lichen flora of the Faroe Islands. – Acta Horti Gotoburgensis 28:1–13.
- Landt, J. 1800: Forsøg til en Beskrivelse over Færøerne. – København.
- Rostrup, E. 1870: Færøernes Flora. – Botanisk Tidsskrift 4.
- Winther, Á. 1975: Boligbyggeri på Færøerne. – Arkitekten.