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The Skibotn area in North Norway – An example of very high lichen species richness far to the north: A supplement with an annotated list of species.

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Abstract—During the 4-day NLF excursion in 2003, 653 lichen species were recorded from the Skibotn area in the eastern part of Troms, central North Norway. Another 26 species have been reported or collected on other occasions from the area, and 30 species a little further to the south (Elsnes – Signaldalen), and the area now includes 709 known lichen species. Among these species, 291 are considered rare, and 250 rare lichen species were found during the excursion. No less than 115 species are reported here as new to Troms, and 29 of these are new to North Norway. Among these, *Ameliella grisea, Caloplaca atrocyanescens, Lecanora flotowiana, L. perpruinosa, Miriquidica plumbeoatra* and *Strigula muscicola* are recorded as new to Norway, whereas *Caloplaca spitsbergensis* and *Stereocaulon groenlandicum* are new to Fennoscandia. Lichenicolous fungi are being reported separately, and include 94 additional fully identified species. The known total number of lichenized and lichenicolous fungal species of the area is 803, which to our knowledge is only surpassed by the Torneträsk area in northernmost Sweden. Although these areas are particularly well studied lichenologically, the high species number is remarkable for such a northern latitude as 68-69 °, and challenges the general concept of decreasing species richness by increasing latitudes. Rare species were found at all sites visited. Many of them belong to poorly known crustose genera, but predominantly fruticose/foliose genera such as *Melanelia* s.l., *Peltigera, Stereocaulon* and *Umbilicaria* are also locally rich in species. The locality near Brennfjellet obviously has favourable microclimatic conditions, and includes a mixture of southern, western and eastern rare species, and need to be evaluated as a possible extension of an adjacent forest reserve.

Keywords—lichenology, local flora, new records, Arctic fringe, biodiversity

Introuction

The Skibotn area has been much used for excursions and field courses after the establishment there of the field station of the University of Tromsø. An international congress in mycology resulted in the report of 818 species from excursions in the present study area and from the neighbouring area in Kåfjorden/Gáivuotna municipality (Mathiassen & Granmo 1995). Courses in bryology have resulted in about 250 species from the lower part of Skibotndalen (Elvebakk & Frisvoll, unpubl.). The vascular flora was described by Engelskjøn & Skifte (1995). Lichenology has mostly been taught at bachelor/master level. During excursions and related field trips several interesting species have been met with, but no lichenological exploration of the area has been attempted. The 2003 NLF (Nordisk Lichenologisk Förening/Nordic Lichen Society) Excursion in August 2003 thus represented the first recent professional study of the lichen flora of the area. The NLF excursion/meeting was combined with the symposium 'Lichenology in northern and polar regions' funded by the University of Tromsø, and nine presentations were given during morning and evening sessions.

Study area

Skibotn/Ivgobahta is situated at the outlet of the Skibotndalen/Ivgovuovdi valley, which runs in a northwest to southeast direction from the Lyngen fjord almost to the Finnish border near Kilpisjärvi. It is situated within Storfjord municipality, named after the innermost part of the fiord. The lower part of the valley belongs to the middle boreal zone, and has a quite continental climate. The mean July temperature for the period 1961-1990 is 13.5° C and the annual precipitation for the present Skibotn meteorological station (near the major bridge in the community) for the period 1984-1990 is 475 mm (Aune 1993). However, there are evidently local precipitation gradients, as 300 mm was recorded at the previous station a little further north during the period 1961-1972, and the central parts of the valley are probably drier. The valley experiences a pronounced local rain-shadow effect, as can be seen from a comparison with the villages of Kvesmenes/Vieksegieddi and Oteren/_avkkus, only about 15-20 km to the southwest along the main fiord, where precipitation values are 630 and 970 mm, respectively.

The bedrock pattern in the valley can be roughly divided in three parts: acidic arkosic schists in its lower part near the fiord, calcareous schists and marble in central parts from the Field station to Gustavsvingen, and acidic schists and other rock types in most of the area further to the east. On our

visit to the alpine Lávkajávri and Luh_ajávri areas, we met with the two latter areas: the interior quartzitic rocks along the first part of our drive, and then calcareous schists and marbles on the mountains further west, as shown by Arnesen (1998).

The vegetation in the lower part of the valley is dominated by pine forest. The vegetation definitively has a more xeric character than other valleys in Troms, and large ferns are for instance much more poorly represented. The most interesting higher plant vegetation types are present in the calcareous pine forests, abunding with orchids, and now protected. An acidic pine forest near Røykeneselva, just east of our locality # 3, is a nature reserve, although without any known particular botanical attractions. An area near the outlet of the river Skibotnelva has also recently been protected.

About 15 km to the SW, the neighbouring valley Signaldalen/_iek_alvuovdi with tributary valleys, runs in a parallel direction to Skibotndalen. In our list of lichen records we have included records also from this biogeographically similar area. The western part of the municipality, situated on the Lyngenhalvøya peninsula has not been explored lichenologically at all, and is not included here.

Lichenological exploration of the area

The most important general lichen collections were made in the Skibotn area by the Norwegian lichenologist Bernt Lynge during the years 1910 to 1912. Except for the crustose species, most of these collections were published in his review of most of the Norwegian macrolichens (Lynge 1921), and in his Physciaceae treatment (Lynge 1916). Today, label information from most of Lynge's specimens, as well as other collections from the area, are available through the Norwegian Lichen Database (NLD), a web-site hosted by the Natural History Museum, University of Oslo, http://www.toyen.uio.no/botanisk/lav/.

Skibotn has been visited quite often by Finnish lichenologists who have extended their studies in Finland also into adjacent areas of Norway, and quite a number of species are reported (e.g. Hakulinen 1954, 1955, 1962, 1965; Hämet-Ahti 1963, Vitikainen 1968). There certainly are quite a number of unpublished collections in Finnish herbaria.

Lichenologists from the University of Oslo (Eilif Dahl, Hildur Krog, Einar Timdal, Jon Holtan-Hartwig, Reidar Haugan, Jørn Middelborg) have visited the Signaldalen area on several occasions, and collections from this area have been incorporated in studies dealing with selected taxa; Holtan-Hartwig (1988 – *Peltigera frippii*), Hestmark (1993 – *Umbilicaria dendrophora*), Timdal (1991 – *Toninia*). The maps in the latter study are not detailed enough to show the records in our study area, but can be supplied with information given by Timdal (1987), who also included other rare species from Storfjord. Several corticolous crustose lichens were also reported and mapped by Tønsberg (1992).

Only two smaller studies are geographically focusing on the lichen flora of Storfjord municipality. Lynge (1940) recorded lichens from the summits of five mountains of the municipality based on collections of Jacob Vaage during the 1930s, and Elvebakk (1991) reported on the occurrence of the red-listed species *Ramalina dilacerata* and other corticolous macrolichens in a pine forest north of Oteren. Only three additional red-listed lichens are known from Troms, and one of these is *Physconia detersa*, collected by the first author near Gustavsvingen (Tønsberg et al. 1996).

The rarest known species from the area is *Candelariella margaretae* described from Oteren by Hakulinen (1954) and not reported from anywhere else in the world. It was suggested by Santesson et al. (2004) to be a dubious species. According to the protologue, it is very small, athalline, and with a much more olive-brown colour than other *Candelariella* species, probably making it difficult to discover. *Candelariella athallina* reported from Oteren by Hakulinen (1954) is also a very rare species.

Acarospora nitrophila published by Magnusson (1924) only has a few other known Norwegian localities. *Stereocaulon coniophyllum* from Rovvejohka in central parts of the valley (Vevle 1975), *Lecanora orae-frigidae* (Brodo & Vänskä 1984) from Skibotn, and *Peltigera ponojensis* from Signaldalen (Vitikainen 1994) are other reports of rare species.

In addition to species already published, a concentration of interesting species has been found by us prior to the NLF excursion at the southwestern slope of Brennfjellet, near Brennfjellet Camping, on S and SW facing slopes near the river. Some of these were dealt with in an unpublished master thesis by Werth (2001). Here coastal suboceanic species such as *Degelia plumbea* and *Pannaria conoplea* and, at these latitudes, the generally southern species *Xanthoparmelia conspersa* and *Physcia adscendens* meets with eastern species such as *Rhizoplaca chrysoleuca*, *Parmelia fraudans*, *Melanelia panniformis*, *Melanelixia subargentifera*, *Physconia enteroxantha, Phaeophyscia nigricans* and *P. constipata.* This has been considered by us to be a potential protection area, and one of our objectives with the NLF excursion was to have the local lichen flora better explored and have opinions from other lichenologists concerning its conservation value.

The river gorge near Gustavsvingen had also been found by us to house an interesting lichen flora. Examples are old growth forest elements, such as *Hypogymnia bitteri* and *Cyphelium tigillare*, and the

upper part of the inundation zone of the river has species such as *Lobothallia melanaspis* and *Vestergrenopsis isidiata.* However, this area is very rich in difficult crustose lichens, and we certainly expected many interesting species to be found by the visiting experts. Before the excursion, our list from the municipality area included 368 species, including three lichenicolous fungi. 294 of these species were recorded from the Skibotn area.

Material and Methods

The following list shows species found during the excursion marked with an asterisk, in addition to other species known from the area. Scientific names and species concepts follow Santesson et al. (2004), except for the genera *Melanelixia* and *Melanohalea* (Blanco et al. 2004a), *Xanthoparmelia* (Blanco et al. 2004b) and *Xanthomendoza* (Søchting et al. 2002), where author names are cited. The present treatment also recognizes three separate species in the *Caloplaca holocarpa* complex. Contributors among the excursion participants are recognized by their initials. Initials are accompanied by herbarium acronyms. Thus, "SWe s.n./US:TROM" means collected by Silke Werth, without collection number, identified by Ulrik Søchting, and deposited in TROM. Contributors are:

Vagn Alstrup (VA), Ulf Arup (UA), Line Balschmidt (LB), Jarle W. Bjerke (JWB), Brian Coppins (BC), Tina Dahl (TD), Åsa Dahlkild (ÅD), Stefan Ekman (SE), Arve Elvebakk (AE), Tony Foucard (TF), Lars Fröberg (LF), Hans Chr. Gjerlaug (HCG), Martin Grube (MG), Reidar Haugan (RH), Håkon Holien (HH), Håkan Lättman (HL), René S. Larsen (RSL), Louise Lindblom (LL), Jurga Motiejunaite (JM), Rikke R. Næsborg (RRN), Anders Nordin (AN), Björn Owe-Larsson (BOL), Ulrik Søchting (US), Einar Timdal (ET), Staffan Wall (SWa), Martin Westberg (MWb), Mats Wedin (MWn), Silke Werth (SWe), Mikhail Zhurbenko (MZ).

In addition, Bernt Lynge, who collected frequently in the area, is abbreviated 'BL'.

During the Nordic Lichen Society meeting in Skibotn (6 August – 9 August 2003), the 38 participants visited the localities cited below. Localities 2b, 8a and 8b were not on the official programme and were visited by single participants. All georeferences are of the category UTM_{WGS84}.

1. Skibotndalen, 700 m WNW of summit of Brennfjellet, 35-70 m alt. UTM: DB 743-745, 909-911. 6 August.
2. Skibotndalen, 0.5 km to 1 km NE of Kavelnes, southern side of river, 35-110 m alt. UTM: DB 744-747, 903-907. 6 August. (DB 747, 898 referred to as loc. 2b)
3. Røykeneset, 2 km N of Skibotn, by the fiord, 1-10 m alt. UTM: DC 707, 008. 6 August.
4. Skibotndalen, Gustavsvingen, between river and road, 98-205 m alt. UTM: DB 794-800, 851-855. 7 August.
5. Mountain range S of Skibotndalen, Lávkavággi, Lávkajávri, 619-680 m alt. UTM: DB 794-798, 785-790. 8 August.
6. Mountain range S of Skibotndalen, between Luh_ajávri and Stuoraoaivi, 680-834 m alt. UTM: DB 767-780, 836-847. 8 August.
7. Mountain range S of Skibotndalen, Luh_avárri and eastern part of Davimus Viessogasgáisi, 700-1150 m alt. UTM: DB 741-765, 828-840. 9 August.
8. a: Skibotndalen, 1.5 km SW of the University Field Station (= 500 m N of Isakstein, 60 m alt. UTM: DB 732, 924. 4 August

   b: 0-1.5 km E of the University Field Station (= 1-2.5 km E of Øvstevatnet), 140-220 m alt., UTM: DB 75-76, 93, 5 August.

In the species list, the localities are referred to by their numbers 1-8. Except for the most common species, previous unpublished and published records are listed, followed by localities where it was recorded during the excursions. Voucher specimens are also listed for many species. New reports of rare species are written in bold. These are either 'new to Troms' or known from few sites within North Norway or Norway, or phytogeographically noteworthy. Several species in difficult crustose genera are treated as 'rare', although their present status is certainly explained by lack of recent revisions. All rare species, including difficult species much overlooked by non-specialists, are commented, and the checklist by Santesson et al. (2004) is the primary source for records from counties. It has not been cited throughout. Other relevant literature and the Norwegian Lichen Database (NLD), have been consulted for defining and for commenting rare species.

The NLD database is not a publication, and reflects the present identifications of the herbarium collections included. When NLD records are cited, we therefore include a reference to the primary data source, cited as a herbarium acronym, a collection or accession number and the diamond symbol –, which indicates that this collection has not been studied by ourselves. Material submitted by excursion participants has been determined by the collectors themselves, unless stated otherwise.

The status of the lichens included in the 1998 official red-list of threatened species in Norway (Directorate for Nature Management 1999) are given. Note that the red-list status of macrolichens discovered in Norway after 1996 as well as all crustose lichens, were not evaluated for the 1998 list.

Some of the findings from the excursion have already been published elsewhere as new to Troms, either from 'Troms' by Santesson et al. (2004), probably valid for species such as *Absconditella annexa* and *Arctomia delicatula,* or more explicitly in the case of *Melanelia agnata* (Westberg et al. 2004) and *Psoroma tenue* (Jørgensen 2004). A short version of this manuscript with emphasis on lichen biodiversity has been submitted to Mycotaxon, and the present paper is its supplement in much stronger details.

Results

During the 4-day NLF excursion in 2003, 653 determined lichen species were recorded from the Skibotndalen area in the eastern part of Troms, central North Norway. Another 26 species have been reported or collected on other occasions from the area, and 30 species a little further to the south (Elsnes – Signaldalen), and this whole area now has 710 known lichen species, as documented by the list below. Several additional species are being studied, including an alpine placodioid species not yet determined to genus level.

The * symbol below indicates that the species was found during the Excursion, and new reports of rare species are written in bold.

****Absconditella annexa***, 5, 6 - JM 6118:BILAS; BC 21492:E. In Fennoscandia previously only known from Berlevåg, Finnmark (V_zda 1965, Santesson 1993), but also listed from Troms and northernmost Sweden by Santesson et al. (2004), the former probably referring to the present report.

Acarospora fuscata, Skibotn (Magnusson 1924).

Acarospora glaucocarpa, Stordalen (RH 2202-O_)

**Acarospora molybdina* var. *molybdina*, 2, 3 - AN 5645:UPS, TROM; UA L03484:LD; HH; BOL 8922:UPS.

Acarospora nitrophila, Lulle (Magnusson 1924). In Norway otherwise reported by Magnusson (1924) from Loppa, Finnmark (as *A. normanii*), Hordaland (as *A. aequatula*) and probably from Møre og Romsdal (as *A. praeruptorum*), and by Degelius (1982) from Vega in Nordland.

**Acarospora sinopica*, 5, 7 – HH:TRH

**Acarospora smaragdula*, 2, 4, 7 - AE 03:221/MWn:TROM; UA L03546:LD; BOL 8932:UPS. At locality #7 as var. *lesdainii.*

****Acarospora veronensis***, 1, 6 - TF. In North Norway only reported from three localities before (Magnusson 1924, Degelius 1982, Santesson et al. 2004).

****Acarospora wahlenbergii***, Parasdalen, Stordalen (Timdal 1987), 5, 7 - ET 9577:O; RH Skib03-5-11:O. A rare species, in Norway only known from a few localities in southern Norway and central Troms (Timdal 1982, 1987).

Adelolecia pilati, Skibotn (BL:O-L67485_; O-L126076_) - These are the only collections from Troms, and have only been generally referred to the county by Hertel & Rambold (1995) and Santesson et al. (2004).

****Agonimia gelatinosa***, 7 - MWb/conf. LF:LD. Very rare in Norway, in Troms only reported from Tromsø before (Norman 1868).

****Agonimia tristicula***, 6 - Only collected a few times in Norway before, in Troms only from the Tromsø area (Norman 1872).

**Alectoria nigricans*, common

**Alectoria ochroleuca*, very common

Alectoria sarmentosa ssp. ***sarmentosa***, Oteren (AE:TROM) – Rare in Troms (Elvebakk & Fareth 1990).

**Allantoparmelia alpicola*, very common

**Amandinea cacuminum*, 5, 6

**Amandinea coniops*, 3 - AE 03:222/SWa:TROM; UA L03488, L03489:LD; HH:TRH.

**Amandinea punctata*, 1, 2, 6 - AN 5642:UPS; RH Skib03-6-13:O. Reported as new to Troms by Santesson et al. (2004), based on some additional NLD localities.

****Ameliella grisea*** Coppins & Fryday ined., 5 - BC 21500:E. No other records from Norway will be included in a forecoming publication included in the manuscript under publication (Coppins pers. comm.).

Amygdalaria elegantior, Stordalen (RH 2194-O_) - Reported as new to Troms by Santesson et al. (2004), and rare in Norway.

**Amygdalaria panaeola*, Helligskogen (Hakulinen 1955), 4

Anisomeridium biforme, Signaldalen (Norman:TROM) - Material not critically studied. Reported as new to Troms/North Norway by Santesson et al. (2004).

****Anzina carneonivea***, 5 – HH:TRH. New to Troms.

****Arctomia delicatula***, 6 - AN 5687:UPS. Added for Troms by Santesson et al. (2004), probably based on this collection. However, one of the 'Finnmark' collections cited by Henssen (1969) is actually from Tromsø.

**Arctoparmelia centrifuga*, common and locally dominant

**Arctoparmelia incurva*, common

****Arthonia lapidicola***, 7 - BOL 9019b:UPS. A very rare species in Norway.

Arthonia mediella, Lullesletta, on *Populus* (D. O. Øvstedal:BG-L30501_/BC). A rare species, but recorded from Tromsø in an often overlooked publication by Norman (1868).

**Arthonia radiata*, 4 - MWb:LD

**Arthrorhaphis alpina*, Gustavmoen in Signaldalen (Ihlen 1998), Viessogasgáisi (Arnesen 1998), Bærfjellet (AE 85:034:TROM), 2, 3, 6, 7 - VA.

**Arthrorhaphis citrinella*, 3, 5, 6 - AE 03:048 & JWB 042/03:TROM; LL 1243:BG

***Aspicilia aquatica**, 4, 6 - UA L03532:LD; BOL 8938:UPS. New to Troms; the only previously known locality in North Norway was at Tana, Finnmark (Magnusson 1939).

***Aspicilia caesiocinerea**, 1 - New to Troms and new northern limit, as a locality from Finnmark (Magnusson 1939, Santesson 1993) has now been rejected (Santesson et al. 2004).

**Aspicilia cinerea*, 1, 2, 4 - BOL 8900a, 8911, 8914:UPS.

***Aspicilia contorta**, 1 – BOL 8915a; TLC: aspilicin. Rare in North Norway and reported as new to Troms by Santesson et al. (2004).

***Aspicilia mastrucata**, 4, 6 - AN 5708:UPS; BOL 8930, 8969:UPS. Contains norstictic acid. New to Troms. Timdal (2005) only lists a handful of localities from Finnmark and Trøndelag.

***Aspicilia montana**, 1, 4, 6 - UA L03463:LD; BOL 8932, 8992, 9000:UPS. Contains norstictic acid. New to North Norway, mbut probably overlooked as there are several observations from Skibotn, and numerous collections from a local area in Hordaland, its only other Norwegian distribution area known so far.

***Aspicilia supertegens**, 4 - TF. A rare species in Norway.

***Aspicilia tenebrica**, 1 - BOL 8942:UPS (TLC: nil). A rare species in Norway.

***Aspicilia** aff. ***verrucigera**,* 1, 4 - BOL 8912, 8928:UPS (TLC: stictic acid).

**Bacidia bagliettoana*, 7 - AN 5717:UPS

***Bacidia igniarii**, 4 – HH:TRH. A rare species new to Troms.

**Bacidia subincompta*, 4 - MWb/UA:LD.

***Bacidia trachona**, 4 - JM 6153:BILAS. Very rare in Norway.

**Bacidina inundata*, 4 - JM 6156:BILAS

***Baeomyces carneus**, 6 - VA. New to Troms, cfr. Ihlen (1997).

**Baeomyces placophyllus*, Gálggojávri (AE), Ádjit (Hakulinen 1965), Stolpefjellet (AE 90:042:TROM), Hatteng (AE:TROM), 6

**Baeomyces rufus*, 2, 4, 6, 7

**Bellemerea alpina*, 5, 6, 7 - AN 5683:UPS; BOL 8993b:UPS

**Bellemerea cinereorufescens*, 6, 7

**Bellemerea diamarta*, 5, 6 - UA; BOL 8954:UPS; VA

**Bellemerea subsorediza*, Parasdalen (Timdal 1987) 5, 6

**Belonia russula*, 2, 4 - MG s.n.:TROM, GZU; RH Skib03-2-1:O

***Biatora albohyalina**, 4 - TF. Few collections from Norway, but several Norman collections from Tromsø listed by NLD may indicate that it is overlooked.

**Biatora cuprea*, 2, 4, 6 - JM 6167:BILAS; RH Skib03-7-24:O; VA; BC 21483:E.

Biatora efflorescens, 0.5 km N of Elsnes (Tønsberg 1992)

***Biatora subduplex**, Skibotndalen, Sallujohka (Tønsberg 11107, BG–), 1, 6 - AN 5701:UPS; HH; BC 21490:E. Otherwise rare in North Norway (Printzen 1995).

**Biatora vernalis*, Skibotn (BL:O-L69682–) 1, 2, 7 - AE 03:201:TROM; HH

**Brigantiaea fuscolutea*, 6 - AN 5686:UPS, TROM

**Brodoa intestiniformis*, Ádjit (Lynge 1940, Hakulinen 1965), Favresvarre (Mejland:BG♦; AE 90:470:TROM), Speainna_ohkat (Øvstedal:TROM); Gárdeborri (AE), 5, 6 - AE 03:050 & JWB:TROM

**Brodoa oroarctica*, Ádjit (Hakulinen 1965, as *B. intestiniformis*; Vaage:O-L37443–; AE 84:680:TROM), Gárdeborri (AE:TROM), 5, 6, 7 - HL/MWb, MWb:LD; BOL 9016:UPS.

**Bryocaulon divergens*, common in boulder fields both in the lowlands and in the mountains.

***Bryophagus gloeocapsa**, 6 - BC 21486:E. New to North Norway.

Bryodina rhypariza, Parasdalen (Timdal 1987)

***Bryonora castanea**, 7 - VA. Very rare in Norway, and in Troms only known from the mountain Bøntuva at Tromsø (Santesson 20135b:UPS–)

***Bryonora curvescens**, Skibotndalen (Holtan-Hartwig 1991), Falsnestinden (D. J. Galloway & JWB), 7 - JWB 363/03:TROM. Rare in Norway.

**Bryoria capillaris*, N of Oteren (Elvebakk 1991), Brennfjellet (Werth 2001), 2, 4

***Bryoria furcellata**, 4 - Rare in North Norway.

**Bryoria fuscescens*, very common, also above the tree limit.

**Bryoria simplicior*, very common

Buellia aethalea, Stordalen near Dalheim - RH 2196-O–. New to Troms

***Buellia arborea**, 2, 2b, 4, 8a - AE 03:252B/TF:TROM; RH Skib03-4-13:O; TF:TROM; HH. The only other published record from North Norway is from Dividalen (Bruteig & Wilmann 2004).

***Buellia badia**, 1 - AE 03:196/TF:TROM; AN 5629:UPS. A rarely collected species in Norway.

**Buellia chloroleuca*, 4 - AN 5656:UPS, TROM; UA L033519:LD

**Buellia disciformis*, very common

***Buellia ectolechioides**, 7 - BOL/conf. AN 9024b:UPS. Rare in Norway and new to Troms.

Buella erubescens, Lulle (BL:O-L271920, 271922–)

Buellia geophila, Lulle (BL:O-L566590, 56597–) - An uncommon species reported as new to Troms by Santesson et al. (2004). NLD also lists an old Tromsø collection by M.N. Blytt (O-L84337–), and Nordin (2000) mapped a locality near Kilpisjärvi.

Buellia griseovirens, 0.5 km N of Elsnes (Tønsberg 1992)
**Buellia insignis*, Lulle (BL:O-L71812–), 6, 8b - HH
**Buellia papillata*, Falsnestinden 500 m alt. (D. J. Galloway), 7 - AN 5709:UPS
***Buellia pulverulenta**, 4 - AN 5663:UPS. New to Troms. A rare, arctic-alpine lichenicolous lichen (Foucard et al. 2002). NLD also includes an old J. M. Norman collection from Tromsøya (O-L113121– as *Diplotomma*).
**Buellia triphragmioides*, S of bridge over Skibotnelva (RH 2212-O–), 1, 4, 8b - AN 5667:UPS, TROM; UA L03515:LD; HH:TRH.
***Calicium denigratum**, 4 - JM 6148: BILAS. Rare in North Norway.
***Calicium glaucellum**, 2b - HH. New northern limit of a species common further to the south.
**Calicium trabinellum*, Lulle (BL:O-L72043, 72044–), Signaldalen (Middelborg:O-L39154–, Schwenke:TROM), 2, 2b, 4 - AE 03:044:TROM; HH:TRH.
***Caloplaca ahtii** Søchting, 1 - AE 03:192/US:TROM. Cited by Søchting (1994) to be common in Troms and Finnmark, but no localities from Troms were reported (see also Santesson et al. 2004), and very few Norwegian localities are listed by NLD.
**Caloplaca ammiospila*, 6, 7 - MWb/UA:LD
***Caloplaca approximata**, 6 - MWb/UA:LD; UA:LD. Only recorded from very few localities in Norway and new to Troms.
***Caloplaca atrocyanescens**, 4, 6 - UA L03525, L03526:LD; BOL 8995:UPS. A rare, black-fruited species (Magnusson 1950) new to Norway.
**Caloplaca borealis*, 3, 4 - UA L03517:LD
***Caloplaca caesiorufella**, 6, 7 - In Norway previously only recorded from Troms/Tromsø (Magnusson 1944, Santesson et al. 2004).
***Caloplaca castellana**, Bárrás (Timdal 4268-O–), 6 - UA. Reported as new to Troms by Santesson et al. (2004). Like other *Caloplaca* species much overlooked.
**Caloplaca cerina*, Lulle (BL:O-L66675–), Viessogasgáisi (Arnesen 1998), Skibotn (Schwenke:TROM) 3, 4, 6, 7 - JM 6202:BILAS; HH:TRH.
***Caloplaca cerinelloides**, 1 - AE 03:191/US:TROM. In Norway previously only reported once from Nordland (Degelius 1982).
**Caloplaca citrina*, Skibotn (Nordin 1972), 1, 2, 4 – UA L03481(s. str.) 03547, 03548:LD.
Caloplaca chrysodeta, Skibotn (Hakulinen 1955; as *Callopisma chrysodetum*)
**Caloplaca crenularia*, 6
***Caloplaca diphyodes**, 1, 4 - AN 5654:UPS; UA L03522,-23, -24, -27, -28:LD; BOL/conf.UA:UPS. A rare, dark-fruited *Caloplaca* in mainland Norway only reported from Oppland (Magnusson 1950, Poelt & Buschardt 1978).
***Caloplaca exsecuta** 6 - LB:TROM; UA:LD. New to Troms, and very poorly known in Norway.
**Caloplaca flavorubescens,* 1
***Caloplaca flavovirescens**, Lulle (BL:O-L74094–),1, 2 - LB s.n.:TROM; UA L03450:LD, LF:LD: AE 03:037 & JWB/US:TROM. Reported as new to Troms by Santesson et al. (2004).
***Caloplaca fraudans,** 3 - SWe s.n./US:TROM. An arctic species only generally reported from Troms by Elvebakk & Hertel (1996) (Sandøya, Tromsø:TROM). In addition, NLD lists a Tromsøya collection by Lynge (O-L73464–).
***Caloplaca grimmiae**, 1 - New to Troms. In Norway previously only reported (as *C. congrediens*) from continental central Norway (Poelt & Buschart 1978) and from Alta in Finnmark (Timdal 1987).
**Caloplaca jungermanniae*, Lulle (BL:O-L73791–), 6, 7 - AN 5696:UPS
**Caloplaca lithophila* H. Magn. 1, 4, 6, 7 - BOL 9009b:UPS, as *C. holocarpa*. Described by Magnusson (1946) as a saxicolous species, most often (e.g. by Foucard 2001, Santesson et al. 2004) included in a widely-defined *C. holocarpa*, but treated as a separate and variable species by Hansen et al. (1987).
***Caloplaca magni-filii**, Parasdalen (Timdal 1987), 5, 7 - A rare species in Norway.
**Caloplaca marina*, Skibotn (Nordin 1972), 3
***Caloplaca nivalis**, Bærdalen (AE 85:900:TROM), 4, 5, 6 – UA:LD; BC 21493:E. New to Troms.
**Caloplaca obliterans*, Skibotn (Hakulinen 1955; as *Placodium obliterans*), 1, 2, 4 - MWb/conf.UA:LD; UA L03472:LD.
***Caloplaca phaeocarpella**, 3, 6 - In Norway, like *C. caesiorufella*, with certainty only recorded from Troms. Søchting (1989) argued that they should be accepted as separate species.
**Caloplaca pyracea*, 1, 4 - MWb/UA:LD; UA L03460:LD; HH:TRH. A corticolous species included in *C. holocarpa* by Santesson et al. (2004).
**Caloplaca saxicola*, 1, 4 - UA L03469, -70, -83, 3521:LD
**Caloplaca scopularis*, Skibotn (Nordin 1972), Larsbergneset (AE), Kvesmenes (Hakulinen 1955), 3 - HH 9590:TRH.
***Caloplaca spitsbergensis,** H. Magn. 3 - MWb/US:LD; UA L03505:LD. New to mainland Europe. Previously only reported from Svalbard, Greenland and Siberia (Magnusson 1944, Søchting 1989, Zhurbenko & Søchting 1993).
***Caloplaca tetraspora**, 7 - JM 6160: BILAS. New to Troms.

***Caloplaca tiroliensis**, Lulle (BL:O-L74796–) 4, 6, 7 - JM 6203:BILAS; MWb:LD; RH Skib03-7-18:O; UA. Rarely collected in Norway, and reported as new to Troms by Santesson et al. (2004).

***Caloplaca tornoënsis**, Falsnestinden 500 m alt, on *Andreaea* cushions (D. J. Galloway & JWB) 5, 6 - LB s.n.:TROM; MWb:LD; UA:LD. A rare species (Søchting 1992) new to Troms.

**Caloplaca verruculifera*, Skibotn (Hakulinen 1955, Nordin 1972), Larsbergneset (AE), 3

***Caloplaca vitellinula**, Skibotn (Hakulinen 1955; as '*Callopisma vitellinum*'), 1, 4 - AE 03:198/US:TROM; UA L03471, -73, -79:LD. Reported as new to North Norway by Santesson et al. (2004), probably based on a listed record from Tromsøya (Havaas, DUKEhav2480–).

***Caloplaca xanthostigmoidea**, 2 - UA L03477, L03478:LD. Only reported once from Troms previously (Søchting & Tønsberg 1997).

**Calvitimela aglaea*, 6, 7 - TF

**Calvitimela armeniaca*, 5

**Calvitimela melaleuca*, 5, Stordalen (RH 2210:O-L101711♦), 5, 7 - AN 5672:UPS; RH skib03-5-6:O; BOL 8961:UPS

***Calvitimela perlata**, 5, 6, 7 - AE 03:265-TROM; RH skib03-6-12, 7-20:O. New to North Norway. Described by Haugan & Timdal (1994) from South and Central Norway and Greenland.

Candelariella athallina, Oteren area, Skibotn (Hakulinen 1954, 1955). Very rare species.

**Candelariella aurella*, Viessogasgáisi (Arnesen 1998), 6, 7

***Candelariella coralliza**, Falsnestinden 500 m alt. (D.J. Galloway & JWB:herb. DJG). New to Troms.

***Candelariella lutella**, Signaldalen (Hakulinen 1954), Lulle (BL:O-L76484–), 1, 4 - AN 5628:UPS; MWb:LD; UA L03467:LD; HH:TRH. A rare species only known from a few sites in Norway, most of them in Troms.

Candelariella margaretae, Kvesmenes (Hakulinen 1954, 1955)

**Candelariella placodizans*, Viessogasgáisi (Arnesen 1998), Skibotn (map Hakulinen 1954, 1955; as *C. septentrionalis*), 4, 7 - JWB 351/03, 362/03:TROM; RRN/MWb:LD. Uncommon in North Norway.

**Candelariella vitellina*, Horsnes, Skibotn (map Hakulinen 1954, 1955), 1, 4, 6, 7

***Carbonea atronivea**, 7 - RH Skib03-7-1:O. New to North Norway and in Fennoscandia only known from two counties.

***Carbonea intrusa**, 7 - TF 3347:UPS. New to Troms and very rare in Norway.

***Carbonea vorticosa**, Reahpennjárggavárri (Lynge 1940), 6 - RH Skib03-6-14:O; UA. These are the only localities known from Troms.

**Catapyrenium cinereum*, 6 - AN 5694:UPS

**Catapyrenium daedaleum*, 1 - JM 6144:BILAS

**Catillaria chalybeia*, 2 - RH Skib03-2-2:O

***Catillaria contristans**, 5, 6 - AN 5681:UPS; BC 21481, 21494:E. New to Troms, few records from Norway.

***Catinaria atropurpurea**, Lullesletta, on *Populus tremula* (Øvstedal:BG-L30501–), 4, 8 - TF; HH. Reported as new to Troms by Santesson et al. (2004).

***Catolechia wahlenbergii**, Viessogasgáisi (Arnesen 1998), 7 - RRL/VA:TROM. New to Troms, except for the unpublished report by Arnesen (1998).

***Cercidospora decolorella**, 6 - BC21483:E (with *Biatora cuprea* and *Pertusaria oculata*), BC 21486 (with *Bryophagus gloeocapsa*). New to Troms. Lichenized or saprophytic fungus.

**Cetraria aculeata*, very common

**Cetraria ericetorum*, Helligskogen (Lynge 1921, as *C. crispa*), Gálggojávri E, near Finnish border (AE), Gálggojávri N, Rovvejohka (Hämet-Ahti 1963; as '*C. crispa*'), W of Ádjit (AE 85:071:TROM), 4, 5, 6 – HH 9653, 9885:TRH.

**Cetraria islandica*, very common

**Cetraria muricata*, Bárrás (Dahl & Krog, O-L85093–), 4, 6, 7

Cetraria nigricans, Gálggojávri E (AE:TROM), Bárrás (Dahl & Krog:O-L42335–), Stordalen (ET 4050-O–), 2 km S of locality #6 (AE 03:160:TROM). Strongly northern species, uncommon in Troms.

**Cetraria sepincola*, common

**Cetrariella delisei*, very common

**Cetrariella fastigiata*, Skibotn (Kärnefelt 1978, on the beach slope, Kaalaas, O-L25054–), Stordalen (Timdal 1987), Signaldalen (Øvstedal, BG-L30746–), 6, 7 - ET 9542:O; MWb:LD; HH:TRH. For a long time the Kaalaas collection from Skibotn represented its only known locality in Norway, but it has now been reported from several sites (Timdal 1987).

**Chaenothecha chrysocephala*, Lullejohka-kløfta (AE 01:256:TROM), 4

***Chaenotheca ferruginea**, 4 - SWe s.n./HH:TROM. Rare in North Norway and in Troms previously only known from Dividalen (Middelborg & Mattsson 1987, map).

**Chaenotheca furfuracea*, 2, 2b, 4 – HH:TRH

***Chaenotheca gracilenta**, 2b, 4 – HH:TRH. In Troms previously only known from Kirkesdalen (Middelborg & Mattsson 1987, map).

***Chaenotheca stemonea**, Signaldalen (Middelborg & Mattsson 1987, map), 4 – HH:TRH. Rare in North Norway.

**Chaenotheca trichialis*, Bárrás (Middelborg & Mattsson 1987, map), Lullejohka-kløfta (AE 01:255:TROM), 4 - SWe s.n./HH: TROM

Chaenotheca xyloxena, Signaldalen (Middelborg 347, 348-O_), not shown by Middelborg & Mattsson (1987). Rare in North Norway.

****Chaenothecopsis debilis***, 2b – HH:TRH. A rare species included from Troms by Tibell (1999), but not included by Santesson et al. (2004).

****Chaenothecopsis pusilla***, 4 – HH:TRH. Rare in the north and new northern limit.

**Chromatochlamys muscorum,* 7 - LF:LD

**Chrysothrix chlorina*, Ák_ogaikunskáidi (AE), Lullejohka (AE 90:050:TROM, Vorren:TROM), Gálggojávri E, near Finnish border (AE)

**Cladonia amaurocraea*, Helligskogen (Lynge 1921), Skibotn (Schwenke:TROM), Bárrás (Lynge 1940), Signaldalen (Hämet-Ahti 1963), 1, 2, 4, 7

**Cladonia arbuscula* ssp. *mitis*, common. There are also some reports of the doubtful ssp. *arbuscula*.

**Cladonia bacilliformis*, Skibotn (Lynge 1921), 4

**Cladonia bellidiflora*, very common

**Cladonia botrytes*, Lulle, Skibotn (Lynge 1921), Skibotndalen (Øvstedal, BG-L1832), 2, 6, 8b – HH:TRH.

**Cladonia cariosa*, 4 - Rare in North Norway.

**Cladonia carneola*, Helligskogen, Gálggojávri, Signaldalen (Hämet-Ahti 1963), Bárrás (Dahl & Krog, NLD field note), 2, 4, 8a – HH:TRH.

**Cladonia cenotea*, Helligskogen (Lynge 1921), Bárrás (Dahl & Krog, NLD field note), 1, 2, 4

**Cladonia cervicornis*, Lulle (Lynge 1921), 3, 4, 6, 7

**Cladonia chlorophaea*, common, 1, 4

**Cladonia coccifera*, very common

**Cladonia coniocraea*, 1, 2, 4 - HCG s.n.:TROM

**Cladonia cornuta*, Helligskogen (Lynge 1921), 1, 2, 4

**Cladonia crispata*, Gálggojávri, Signaldalen (Hämet-Ahti 1963), 2, 4, 5, 8b – HH:TRH.

**Cladonia cyanipes*, Gálggojávri W (Hämet-Ahti 1963), Bárrás (Dahl & Krog, O-L52593_), 2, 4, 5, 6, 8a, 8b – VA; HH:TRH.

Cladonia deformis, Skibotn (Lynge 1921), Ádjit (Lynge 1940), Helligskogen, Gálggojávri (Hämet-Ahti 1963), Skibotndalen (Øvstedal:TROM)

**Cladonia digitata*, Lulle (Lynge 1921), AE 84:056:TROM; Bárrás (Dahl & Krog, NLD field note), 2, 4, 8b – HH:TRH.

**Cladonia ecmocyna*, Gálggojávri, Rovvejohka, Helligskogen, Signaldalen (Hämet-Ahti 1963; as '*C. ecmocyna* coll.'), 4, 5, 6, 7 - LL/T.Tønsberg 1259:BG.

**Cladonia fimbriata*, Helligskogen (Schwenke:TROM), 2, 4, 8b – HH:TRH.

Cladonia floerkeana, E of Nedrevatnet (AE:TROM) - A suboceanic species rare in eastern Troms.

**Cladonia furcata*, Gálggojávri, Bárrás (Hämet-Ahti 1963), 6, 7

**Cladonia gracilis* ssp. *gracilis*, common

**Cladonia gracilis* ssp. *elongata*, 4, 5, 7 - HCG s.n.:TROM

**Cladonia luteoalba*, Gárdeborri (AE:TROM), Ádjit (AE 84:078:TROM), Kitdalen (Elven:TROM), 7 – JWB 359/03:TROM. First obscurely reported from Troms by Schwenke & Elvebakk (1981) and Elvebakk (1984), later also listed from the county by Santesson et al. (2004).

****Cladonia macilenta***, Lulle (Lynge 1921), 1, 4 - Rare in North Norway.

****Cladonia macroceras***, Fávrrosvárnjunni (AE 90:473:TROM), 5, 6 - In Norway for a long time only known from the locality reported by Øvstedal (1986), but is now known from five counties (Santesson et al. 2004).

**Cladonia macrophylla*, Helligskogen (Lynge 1921, as '*C. alpicola*'), Gálggojávri N, Helligskogen (Hämet-Ahti 1963, as '*C. alpicola*'), Skibotn (Schwenke:TROM), 4, 5, 6 - JM 6184:BILAS; HH:TRH.

****Cladonia macrophyllodes***, 7 - New to Troms, but some Troms collections are listed by NLD.

****Cladonia maxima,*** Persskogen, 4, 5, 6 - ET 9464, 9517:O. Rarely collected.

**Cladonia merochlorophaea*, Skibotn (Holien & Tønsberg 1985; as chemotype I, without fumarprotocetraric acid), 5 – HH:TRH.

**Cladonia metacorallifera,* 4 - HCG s.n.:TROM

****Cladonia novochlorophaea***, 8b - HH. Reported as new to Troms by Santesson et al. (2004), otherwise rare in North Norway and only known from the very southernmost area (Holien & Tønsberg 1985).

****Cladonia ochrochlora*** 2 - HCG s.n.:TROM. Rare in North Norway.

****Cladonia parasitica***, 4 - HCG s.n.:TROM; HH:TRH. In North Norway previously only reported from Dividalen (Troms) and Finnmark (Timdal 1987), but is also listed from Nordland by Santesson et al. (2004).

**Cladonia phyllophora*, 1, 4, 7, 8a - HCG s.n.:TROM; HH:TRH.

**Cladonia pleurota*, common

**Cladonia pocillum*, common

**Cladonia pyxidata*, common

**Cladonia rangiferina*, very common

**Cladonia squamosa*, Skibotn area (Lynge 1921, as 'f. *denticollis* subf. *squamossisima*'), Rovvejohka (Hämet-Ahti 1963), Bárrás (Lynge 1940), 4, 6
**Cladonia stellaris*, common
**Cladonia strepsilis*, Bárrás (Timdal 4265:O–), 4 - ET 9494:O. Elsewhere in Troms only known from Kirkesdalen (Timdal 3926:O–), a strange pattern for a generally coastal species.
**Cladonia stricta* s. l., Viessogasgáisi (Arnesen 1998), Bárrás and Pollvartind (Lynge 1940), 4, 6, 7 – HH:TRH.
***Cladonia stygia**, 2, 4, 7 - HCG&JWB s.n.:TROM. New to Troms, but certainly overlooked.
**Cladonia subfurcata*, Gálggojávri (Hämet-Ahti 1963), Bárrás (Dahl & Krog, NLD field note)
**Cladonia subulata*, Bárrás (Dahl & Krog, NLD field note), 2, 8a - HCG s.n.:TROM; HH:TRH.
**Cladonia sulphurina*, common
**Cladonia symphycarpia*, Lulle (AE), 2b – HH 9868:TRH.
Cladonia turgida, Bárrás (Dahl & Krog, NLD field note)
**Cladonia uncialis*, very common
**Clauzadea monticola*, Stordalen (Haugan 2202-O–), 7 - LF:LU
***Cliostomum pallens,** 3, 4, 8b - RSLs.n./HH:TROM; AN 5640:UPS, TROM; HH:TRH. A very rare species in Norway, recently reported from Dividalen in Troms (Bruteig & Wilmann 2004).
***Collema ceraniscum**, 1, 7 - JM 6136:BILAS. Few collections from mainland Norway.
**Collema cristatum*, 6, 7 - ET 9545:O, RH Skib03-7:21:O
**Collema flaccidum*, 1 - JM 6142:BILAS
**Collema furfuraceum*, Lulle (Degelius 1954), 4 - ET 9496:O
**Collema fuscovirens*, Bárrás (Dahl & Krog, O-L59666–), 6 - LL1251:BG
**Collema glebulentum*, 6, 7
**Collema nigrescens*, 4 - AE 85:127:TROM
**Collema polycarpon*, Storfjord (Degelius 1954), 6, 7 - ET 9546:O; LL 1254:BG
**Collema undulatum*, Storfjord (Degelius 1954), 6 - ET 9530:O; LL1262:BG
***Collemopsidium halodytes**, 3 - LB:TROM. New to Troms.
Collemopsidium sublitorale, shore N of Falsnestinden, on *Balanus* (AE). Common in Troms (Santesson 1939).
***Cyphelium inquinans**, 4 - Rare in North Norway (Middelborg & Mattsson 1987).
***Cyphelium pinicola**, 4 - MWb:LD. In North Norway previously only known from three localities in Troms (Middelborg & Mattsson 1987).
**Cyphelium tigillare*, Middelborg & Mattsson (1987, map), common, 2, 4 - MWb:LD; UA L03510:LD; RH Skib03-4-12:O; HH:TRH.
***Cystocoleus ebeneus,** 4 - MWb:LD; Brennfjellet, E of the road, T. Schott & M. Naal/AE. New to Troms.
***Dacampia hookeri**, 6 - VA; MZ 0388:LE. In Fennoscandia a northern uncommon species.
***Degelia plumbea**, Brennfjellet, Kavelnes (Werth 2001), 1, 2 - AE 03:214:TROM. A marginal locality of a suboceanic species, see map in Krog et al. (1994).
**Dermatocarpon miniatum*, 1, 4 - common
**Dibaeis baeomyces* 4, 6
***Dimelaena oreina**, Bárrás (Timdal 1987), 6, 7 - JWB 308/03 & ET:TROM. A rare continental species in Troms, known from a few more localities (Schwenke 1985, Timdal 1987).
**Diploschistes muscorum*, Bærfjellet (AE:TROM), 1
**Diploschistes scruposus*, Lulle (BL:O-L94518-20♦, BG-L15097♦), 1, 4, 6, 8b – HH:TRH.
**Diplotomma alboatrum,* 1, 2, 4 - AN 5634:UPS; UA L03475:LD; AE 03:043&JWB/MZ:TROM
***Endocarpon pulvinatum** 5, 6 - LF:LD. In Norway a very rare species, only known from Akershus and Finnmark.
***Endocarpon pusillum** 1 - JM 6194: BILAS. New to Troms and new northern limit.
***Enterographa zonata**, 2, 4 - Rare in Troms.
***Ephebe hispidula**, 4 - BOL 8947:UPS. New to Troms.
***Ephebe lanata**, 4 - JM 6201:BILAS. Very rare in Troms, probably overlooked.
***Epilichen glauconigellus**, 7 - AN 5713:UPS. Only a couple of localities known from Troms before (Ihlen 1998)
**Epilichen scabrosus*, Skibotndalen, Signaldalen, Steindalen (Ihlen 1998), 2, 7 - AN 5705:UPS.
**Euopsis granatina*, 4
**Euopsis pulvinata*, 4, 5, 6, 7 - AN 5685:UPS; BOL 8998:UPS; BC 21503:E.
Evernia prunastri, N of Oteren (Elvebakk 1991)
***Farnoldia jurana**, 6, 7 - AN 5699:UPS, RH Skib03-7-13, 22:O. Rare in Troms.
**Flavocetraria cucullata*, common, also found on *Pinus* (Elvebakk 1991)
**Flavocetraria nivalis*, very common, also found on *Pinus* (Elvebakk 1991)
**Frutidella caesioatra*, 5, 6, 7 - JM 6132:BILAS, ET 9559:O; BC 21495:E
**Fulgensia bracteata*, Viessogasgáisi (Arnesen 1998) 6, 7 - ET 9531:O
***Fuscidea gothoburgensis**, 2 - BOL 8920:UPS. Contains divaricatic acid. Rare in Troms.
**Fuscidea mollis*, Parasdalen (ET 4040: O-L91148♦), 4 - RH Skib03-4-3,4:O
**Fuscopannaria leucophaea*, 4, 6 - AE 03:199:TROM

**Fuscopannaria praetermissa*, 2b, 4, 7 – HH:TRH
**Gyalecta foveolaris*, Lullesletta (AE 84:048:TROM), Viessogasgáisi (Arnesen 1998), 2 - AE 03:036 & JWB:TROM
**Gyalecta jenensis*, 2 - RH Skib03-2-3:O
***Gyalecta peziza**, 7 - AN 5720:UPS; UA. Rare in Norway.
**Halecania alpivaga*, 7 - AN 5726:UPS, TROM; BOL/AN 9015:UPS
***Helocarpon crassipes**, 6 - BC 21487:E. New to Troms.
***Hymenelia arctica**, 4 - JM 6155: BILAS; UA L03537:LD. New to North Norway.
***Hymenelia cyanocarpa**, 4 - AN 5665:UPS; UA L03538:LD. New to Troms.
***Hymenelia heteromorpha**, 7 - TF 3351:UPS; BOL 9015:UPS. Not recorded from North Norway by Santesson et al. (2004), but some localities are cited by NLD.
***Hymenelia melanocarpa**, 7 - LF:LD; BOL 9012:UPS. New to Troms, very rare, and in Norway previously only known from Nordland.
***Hypocenomyce friesii**, 2b, 4 - JM 6150:BILAS; ET 9497:O; MWb:LD; HH:TRH. In Troms previously only recorded from Dividalen (Timdal 1984, 1987).
***Hypocenomyce scalaris**, 1 - AE 03:205:TROM. Only reported from two localities in Troms before (Timdal 1984).
**Hypogymnia austerodes*, Brennfjellvatn (AE:TROM), Stolpefjellet (AE 90:039:TROM), Fávrrosvárnjunni (AE 90:471:TROM), Signaldalen (E. Dahl & H. Krog:O-L33401♦), 2, 6, 7 - ET 9556:O; MWb:LD; HH 9656:TRH. Continental species.
***Hypogymnia bitteri**, Lulle (Lynge 1921, as '*Parmelia obscurata*'), which is the only Troms locality mapped by Krog et al. (1994), Brennfjellvatnan (AE), Lullejohka-kløfta (AE 90:034:TROM), 2, 4 - JWB s.n.:TROM
**Hypogymnia physodes*, dominant
**Hypogymnia tubulosa*, 1, 4 - Locally thermophilous, and only partly common in the lowland.
**Hypogymnia vittata*, Viessogasgáisi (Arnesen 1998), Lullejohka (H. Tømmervik:TROM), Bárrás (E.Dahl & H.Krog: O-L52797♦), 7 – HH:TRH.
**Icmadophila ericetorum*, common
**Imshaugia aleurites*, common
**Ionaspis lacustris*, 4 - RH Skib03-4-1:O
**Japewia subaurifera*, 4, 8b - JM 6164:BILAS; HH:TRH.
**Japewia tornoënsis* 1, 4, 5, 6, 7 - AE 03:245:TROM; VA; HH; BC 21499:E.
**Koerberiella wimmeriana,* 1, 2, 4, 6
***Lecanactis dilleniana**, 4 - RH Skib03-4-7:O. Rare in North Norway.
***Lecania hyalina**, 4 - TF. Rare in North Norway.
***Lecania subfuscula,** 6 - JM 6204:BILAS. An extremely rare species, in Norway previously only known from a single locality in Finnmark (Santesson et al. 2004, Timdal 2005), and it is also very rare in northernmost Sweden (Foucard 2001).
***Lecanora actophila**, 3 - AN 5649:UPS. New to Troms.
***Lecanora andrewii**, 3 - AN 5648:UPS. A southern seashore species in Norway previously only known from Vega, Nordland (Degelius 1982).
**Lecanora argopholis*, 6
***Lecanora atrosulphurea**, 3 - UA L03503:LD. A northern species rare in Troms.
***Lecanora boligera**, 5 - JWB 305/03:TROM; TF. Rare in Troms.
***Lecanora cadubriae**, 4, 5, 8b - RSL s.n./HH:TROM; HH:TRH. Rare in Troms.
**Lecanora caesiosora*, 2
Lecanora cavicola, Gálggojávri E, 50 m from Finnish border (D. J. Galloway & JWB, herb. DJG). New to North Norway.
**Lecanora cenisia*, Helligskogen (Haugan 1994, as the host of *Lecanora lecanoricola*), BL:TROM, Lulle (BL:O-L111316♦) 1, 4 - AE 03:190/TF:TROM; LF:LD.
***Lecanora chloroleprosa**, 2, 4 - AN 5668:UPS; UA L03545:LD. A very rare species in Norway, only reported from Telemark (Poelt & Buschard 1978) and Finnmark (Santesson 1994) previously.
***Lecanora chlorophaeodes**, 4 - UA l03514:LD; BOL 8940a:UPS. New to North Norway, Very rare species only listed from three other counties in Norway.
**Lecanora circumborealis*, 4, 8b – HH:TRH
**Lecanora contractula*, 3 - UA L03485:LD. Strongly northern species.
***Lecanora dispersa**, 1 - Few records from North Norway.
Lecanora epanora, Stordalen (Timdal 1987).
**Lecanora epibryon* Viessogasgáisi (Arnesen 1998), 6, 7 - BOL 9020:UPS; HH; LL 1249:BG. Common.
Lecanora expallens, 0.5 km N of Elsnes (Tønsberg 1992).
***Lecanora flotowiana**, 6, 7 - LF:LD; UA:LD. New to Norway.
**Lecanora frustulosa*, Bárrás (Timdal 1987) 1, 2, 4, 6 - BOL 8904:UPS
**Lecanora fuscescens*, Skibotn (BL:O-L111845♦), 2, 8b – HH:TRH; ET 9549:O; BC 21499:E.
***Lecanora hypoptella**, 2 - TF. New to Troms, very rare in Norway.
**Lecanora intricata*, 4, 6 - JM 6145: TROM, BILAS

**Lecanora leptacina*, 5, 6, 7 - JWB 306/03:TROM; MWb:LD

***Lecanora leucococca**, 6 - MWb:LD, UA:LD; BOL 8996:UPS. Rare in Norway, in Troms also known from Tromsø (J.M. Norman:O-L112675♦).

**Lecanora marginata,* 7 - RH Skib03-7-15,27:O

Lecanora orae-frigidae, Skibotn (Brodo & Vänskä 1984). Strongly northern species.

***Lecanora perpruinosa**, 1, 7 - LF:LD; BOL 9019a:UPS. New to Norway.

**Lecanora phaeostigma*, Lulle (BL:TROM; O-L112390♦)

**Lecanora poliophaea*, 3

**Lecanora polytropa*, common

**Lecanora reagens*, Nedrevatnet (AE:84:062:TROM), Bárrás (Timdal 4274:O-L37870♦), 1, 2, 4 - AN 5631:UPS; MWb:LD; UA L03476:LD.

***Lecanora rimicola**, 3 - AN 5647:UPS, TROM; UA L03487:LD. New northern distribution limit. Very few records from Norway, previously only known from Sogn og Fjordane and Vega, Nordland (Degelius 1982, Santesson et al. 2004).

***Lecanora salina**, 3 - AE 03:223/SWa:TROM. Rare in Norway.

***Lecanora soralifera**, 2 - TF. Rare in Norway, with only two previous localities in North Norway (Timdal 1987).

***Lecanora subintricata**, 8a – HH:TRH. Rare in Norway, and in North Norway only known from Vega (Degelius 1982) and Innset, Bardu, BL:O-L112894♦ (Timdal 2005).

**Lecanora symmicta*, common

**Lecanora varia*, 2

**Lecidea alpestris*, Skibotn, Svartbergene (B. Kaalaas: BG-L43268♦, O-L113260♦), 5 - BC 21496:E.

***Lecidea atrobrunnea**, Bárrás (Timdal 1987), 6 - RH Skib03-6-6:O. Uncommon.

**Lecidea auriculata*, Skibotn (Hertel 1991), 3 - AE 03:225:TROM; UA L03499-450:LD

**Lecidea botryosa*, 4 - HH & JWB s.n.:TROM; HH; MWb:LD; UA L03512:LD

***Lecidea confluens**, 6 - BOL 8972:UPS. New to Troms and rare in Norway.

**Lecidea diapensiae*, 6 - AN 5688:UPS, TROM; RH Skib03-6-10:O. Northern and alpine.

***Lecidea diducens**, 3 - AN 5650:UPS, TROM. Scattered in Norway.

***Lecidea ementiens**, 6, 7 - MWb:LD. Very rare in Norway, but collected in Troms at Innset, Bardu (BL:O-L111521♦).

***Lecidea fuliginosa**, 4 - TF. New to Troms and new northern limit.

**Lecidea diducens*, 3 - AN 5650:UPS

**Lecidea lapicida*, 2, 5, 6, 8 - JWB/RH:TROM; TF; BOL 8988-9:UPS, as var. *pantherina*; BOL 8986:UPS, as var. *lapicida*.

**Lecidea leucothallina*, 5, 6 - ET 9521:O; BOL 8953:UPS.

**Lecidea lithophila,* 6 - BOL 8974:UPS, TLC: dimethylplanaic acid.

**Lecidea praenubila*, 1, 4, 5, 6 - AN 5679:UPS; UA L03535:LD; BOL 8939:UPS.

**Lecidea pullata*, 2, 2b, 4, 8b - JM 6127:BILAS; HH:TRH.

***Lecidea pycnocarpa**, 5 - Very rare species, but collected in Troms at Innset, Bardu (BL:O-L111521♦).

**Lecidea ramulosa*, Viessogasgáisi (Arnesen 1998), 7 - ET 9560:O. Strongly northern species.

**Lecidea silacea*, 1, 5, 7 - RH Skib03-5-9:O

***Lecidea sphaerella**, 4 – HH:TRH. Very rare in North Norway.

**Lecidea turgidula*, 4 - JM 6147:BILAS

***Lecidella carpatica**, 1 - RH Skib03-1-10:O; TF. New to Troms and rare in North Norway.

***Lecidella euphorea**, 6 - New to Troms, and rare in North Norway.

***Lecidella patavina**, 4, 7, 8 - RH Skib03-4-5, 7-23:O; TF 3350:UPS; BOL 9009a:UPS. Rare in North Norway.

**Lecidella stigmatea*, 1, 4, 6 - RH Skib03-4-10:O; TF; BOL 8906:UPS.

***Lecidella wulfenii**, 6, 7, 8b - RH Skib03-7-9:O; HH:TRH; BC 21489:E. New to Troms, in Norway previously only known from two counties.

**Lecidoma demissum*, Ádjit (AE 84:081:TROM), 4, 6, 7 - JM 6135:BILAS.

**Leciophysma finmarkicum*, 6, 7 - JM 6157: BILAS. A northern species.

***Leciophysma furfurascens**, 5, 6 - AN 5695/PMJ: UPS. A very rare species and the only other known locality in Norway is at Varangerhalvøya in Finnmark (Nordin 2004).

***Lempholemma isidiodes**, 1 - AN 5632: UPS; LF:LD. In mainland Norway previously known from scattered localities northwards to Vega, Nordland (Degelius 1982).

***Lempholemma polyanthes**, 1 - MWb:LD. New to Troms.

***Lempholemma radiatum**, 7 - AN 5714:UPS, TROM. Rare in Troms.

***Lepraria borealis**, 4 - BOL 8925:UPS. Contains atranorin, rangiformic and roccellic acids. New to Troms.

***Lepraria cacuminum**, 5 – HH:TRH. New to Troms.

***Lepraria diffusa** var. ***chrysodetoides**, 4 - BOL 8926:UPS. Contains oxypannaric acid-2-methylester. New to North Norway.

***Lepraria lobificans**, 4 - BOL 8926:UPS. Contains atranorin, zeorin, stictic and norstictic acids. Rare in North Norway.

**Lepraria membranacea*, 1, 2, 4, very common
**Lepraria neglecta*, 5 - AN 5674:UPS
***Lepraria rigidula**, 2 - AN 5643:UPS. New to Troms.
**Lepraria vouauxii*, 1, 2, 4, 7 - BOL 9021:UPS; LL 1227, 1234:BG. Contains pannaric acid-6-methylester.
***Leptochidium albociliatum**, 1 - HH:TRH. A rare species, first listed from Troms by Santesson et al (2004). Rare in North Norway.
**Leptogium lichenoides*, 1, 2, 4 - JM 6172:BILAS; MWb:LD.
**Leptogium saturninum*, Brennfjellet, Bærfjellet (Werth 2001), 1, 2, 4, 8a – HH:TRH.
***Leptogium tenuissimum**, 1 - JM/A. Guttova 6189:BILAS. New to Troms.
**Leptorhaphis epidermidis*, 1, 4 - JM 6141:BILAS. A non-lichenized corticiaceous fungus often included in lichen lists, not lichenicolous.
**Lichenomphalia alpina*, 4 - VA
**Lichenomphalia hudsoniana*, Lullejohka (AE 90:048:TROM), Bárrás (map Høiland 1987), 4, 6
**Lichenomphalia umbellifera*, 8b – HH:TRH
***Lichenomphalia velutina**, 4. Rare species.
**Lichina confinis*, Larsbergneset (AE & JWB), 3 - UA L03486:LD.
***Lichinodium sirosiphoideum**, 4 - VA. New to Troms and very rare in Norway.
***Lobaria amplissima**, 4 - MZ 0355:TROM; RH:TROM; LL 1235:BG, as its cyanomorph (= '*Dendriscocaulon umhausense')* only. A rare, thermophilous species in northernmost Norway.
**Lobaria linita*, 2, 6, 7, common.
**Lobaria pulmonaria*, common in the Brennfjellet area, local at Falsnes.
**Lobaria scrobiculata*, Lulle (Lynge 1921), common in the lowland
**Lobothallia melanaspis*, Lullejohka (AE), Rovvejohka (SW/AE 00:229B:TROM), 1, 4 - AN 5655:UPS; BOL 8943a:UPS, no TLC detectable substances; ET 9503:O.
**Lopadium coralloideum*, 1, 2, 2b - AE 03:035 & JWB:TROM; UA L03533:LD; HH:TRH.
**Lopadium pezizoideum*, Bærfjellet, Brennfjellet E (AE 85:928, 931:TROM) Lulle (BL O-L107069♦), 1, 2, 6, 7 - AE 03:200:TROM; AE 03:039 & JWB:TROM; RH skib03-6-11:O; HH; BC 21484:E.
**Massalongia carnosa*, common
**Megaspora verrucosa*, Lulle (BL:O-L65553♦) 6, 7 - LF:LD; MWb:LD.
**Melanelia agnata*, 4, 7 - HL/MWb:LD; MWb:LD. Collected as new to Troms during the excursion, but this has already been reported by Santesson et al. (2004) and Westberg et al. (2004).
**Melanelia commixta*, Helligskogen (BL:O-L95275♦), 4, 7 - MWb:LD.
**Melanelia disjuncta*, common
**Melanelia hepatizon*, very common
***Melanelia panniformis** (Lynge 1921), Brennfjellet (Werth 2001), 1, 2, 4 - UA L03465:LD. Rare in Troms.
**Melanelia sorediata*, Skibotn, Lulle (Lynge 1921), Nedrevatnet (AE), 1
**Melanelia stygia*, Skibotndalen, several places (Lynge 1921), 1, 2, 4, 5, 6, 7.
***Melanelia tominii**, 1 - ET 9472:O; UA L03464:LD. A phytogeographically interesting record of a species in Norway previously only known from the dry-climate areas of Oppland and neighbouring Sør-Trøndelag, and otherwise in Fennoscandia only from Torne Lappmark in Sweden (Tønsberg et al. 1996). Red-listed as rare in Norway.
**Melanelixia fuliginosa* (Fr. ex Duby) O. Blanco et al., common at lower altitudes
***Melanelixia subargentifera** (Nyl.) O. Blanco et al., 1, 2, 4 - AE 85:124:TROM; JWB 039/03 & AE:TROM. The only previous locality in North Norway was at Vadsø, Finnmark, but it is now being reported from Skibotndalen, Kvænangen and along the Alta/Kautokeino watercourse (Elvebakk 2006, in press).
**Melanelixia subaurifera* (Nyl.) O. Blanco et al., Lulle (Lynge 1921), Brennfjellet, Bærfjellet (Werth 2001), Signaldalen, east side of Borrenes (JWB, field note), 2, 4
**Melanohalea exasperata* (De Not.) O. Blanco et al., Lulle (Lynge 1921, as '*Parmelia aspidota*'), Balones, Borucorru, Magernes, Fossen, Dreyerholmen, Kvesmenes (Nylund 1997), Brennfjellet, Kavelnes (Werth 2001), 1, 2
**Melanohalea infumata* (Nyl.) O. Blanco et al., Skibotn, Lulle (Lynge 1921, Hakulinen 1966), 1
**Melanohalea olivacea* (L.) O. Blanco et al., dominant, including f. *caesiopruinosa* Lynge.
**Melanohalea septentrionalis* (Lynge) O. Blanco et al., 2, 4 - JM 6180:BILAS
**Micarea assimilata*, Viessogasgáisi (Arnesen 1998), 5 - BC 21498:E.
***Micarea cinerea** f. *tenuispora*, 5 - BC 21502:E. New to Troms.
***Micarea denigrata**, 2b – HH:TRH. New to Troms, and very rare in North Norway.
***Micarea incrassata**, 7 - AN 5731:UPS; BC 21485, 21501:E. New to Troms, and rare in Norway.
***Micarea melaena**, 2, 8a – HH:TRH. New to Troms.
***Micarea turfosa**, 5 - JM 6176:BILAS. New to Troms, and new northern limit.
**Miriquidica atrofulva*, Skibotn (Hertel 1991), Bárrás (Timdal 4263:O♦), 2, 4, 5 - ET 9483:O; BOL 8916:UPS.
***Miriquidica complanata**, 1, 4 - AN 5662:UPS, TROM. New to Troms.
**Miriquidica garovaglii*, Bárrás (Timdal 1987), 5 - RH skib03-5-10:O; TF. In North Norway mostly collected in central Troms (Timdal 1987).

***Miriquidica griseoatra**, 4, 5, 6 - TF; BOL 8976:UPS, new chemotype with lobaric acid. Reported as new to Troms by Santesson et al. (2004) and very rare in North Norway.

***Miriquidica intrudens**, 4 - BOL 8928, 8939:UPS, on *Lecidea praenubila* on rocks near the river. A strongly southern species new to North Norway.

***Miriquidica lulensis**, 5, 6 - TF; BOL 8965, 8968b, 8977:UPS. A rare species reported as new to Troms by Santesson et al. (2004).

**Miriquidica nigroleprosa*, Skibotn (Hertel 1991), 5, 6 - BOL 8959, 8961:UPS, as var. *nigroleprosa* with miriquidic acid.

***Miriquidica obnubila**, 5 - BOL 8958:UPS, with miriquidic acid. New to Troms and very rare in Norway.

***Miriquidica plumbeoatra**, 4 - UA L03531:LD; BOL 8944:UPS, no TLC detectable substances. On rocks near the river. New to Norway.

Multiclavula corynoides, Gálggojávri (AE). Reported as new to Troms by Santesson et al. (2004).

**Mycobilimbia berengeriana*, 6, 7 - AN 5706:UPS; HH:TRH

**Mycobilimbia carneoalbida*, Lulle (BL:BG-L72323♦, O-L69433♦), 2b – HH:TRH

**Mycobilimbia epixanthoides*, 4, 6 - AN 5692:UPS; HH:TRH

**Mycoblastus alpinus*, 2, 7, 8a - JWB 310/03:TROM; HH:TRH

***Mycoblastus fucatus**, 0.5 km E of Elsnes (Tønsberg 1992), 8b – HH:TRH. Rare in Troms and new northern limit.

**Mycoblastus sanguinarius*, 1, 4, 8b

**Mycocalicium subtile*, 4 - SWe & TD s.n.:TROM

**Myxobilimbia lobulata* 2b, 4, 6, 7 - MZ s.n.:TROM; HH:TRH

**Naetrocymbe punctiformis*, 1, 2, 4 - RSL s.n.:TROM; TF

Naetrocymbe rhyponta, Mannfjellet (J.M. Norman:TROM)

**Nephroma arcticum*, very common

**Nephroma bellum*, common

**Nephroma expallidum*, Skibotn (Lynge 1921, Hakulinen 1955), Gálggojávri (Hakulinen 1965), Falsnestinden (JWB & D. J. Galloway), Viessogasgáisi (Arnesen 1998), 4, 6, 7 - MWb:LD; HH:TRH.

**Nephroma parile*, common

**Ochrolechia androgyna*, Falsnes (JWB & D. J. Galloway), 1, 4, 7, 8a, 8b – HH:TRH

**Ochrolechia frigida*, common

**Ochrolechia grimmiae*, Stordalen (Timdal 1987), Viessogasgáisi (Arnesen 1998), Gustavsvingen (JWB & D. J. Galloway), 7 - ET 9565:O; HH:TRH

Ochrolechia inaequatula, Reahpennjárggavárri (Lynge 1940), Gálggogobba (Timdal 9460:O)

***Ochrolechia microstictoides**, 4 - JWB & HH s.n.:TROM; HH. A southern species, rare in Troms.

**Ochrolechia upsaliensis*, Viessogasgáisi (Arnesen 1998), Lulle (e.g. BL:O-L114191♦), 1, 4, 6, 7 - JWB s.n.:TROM; MWb:LD; RH skib03-7-11:O; ET 9473:O; HH:TRH.

***Opegrapha gyrocarpa**, 2, 4 - Rare in Troms.

**Ophioparma lapponica*, scattered in Skibotndalen, and rarer than *O. ventosa* (Lerfall 2001), 6

**Ophioparma ventosa*, widespread, 1, 4, 5, 6, 7

**Orphniospora moriopsis*, 5, 6 - RH skib03-6-5:O; BOL 9017:UPS.

***Pannaria conoplea**, Brennfjellet (Werth 2001), Bærfjellet, Lullejohka (AE 86:031, 90:034:TROM), 1, 2 - AE 88:045, AE 03:046 & JWB:TROM. A suboceanic species near its northern limit.

**Parmelia fraudans*, Helligskogen, Skibotn, Lulle (Lynge 1921), Nedrevatnet (AE 84:067:TROM), Parasdalen (ET 3936:O♦)

**Parmelia omphalodes*, common

**Parmelia saxatilis*, very common

**Parmelia sulcata*, dominant

**Parmeliella triptophylla*, common

**Parmeliopsis ambigua*, very common

**Parmeliopsis hyperopta*, very common

**Peltigera aphthosa*, very common

Peltigera britannica, coastal; Falsnes (JWB, AE & D. J. Galloway), Larsbergbukta (ET 3894:O♦), Larsbergneset (T.Tønsberg 7293-4:BG♦).

**Peltigera canina*, very common

**Peltigera collina*, widespread at low altitudes, 1, 2, 4

**Peltigera didactyla* s. lat., very common

**Peltigera elisabethae*, 2b, 4 - HCG s.n.:TROM; HH:TRH

***Peltigera frippii**, Helligskogen, Bárrás (map Holtan-Harwig 1988, 1993, and Vitikainen 1994), 4 - ET 9507:O; HH:TRH. Rare and bicentric. Norwegian responsibility species.

**Peltigera hymenina*, Skibotn – HH:TRH

**Peltigera kristinssonii*, (map Vitikainen 1994), Viessogasgáisi (Arnesen 1998), Bárrás (J. Holtan-Hartwig 4364:O♦)

**Peltigera lepidophora*, Skibotn (Hakulinen 1955), 1, 6 - JM 6190:BILAS; LL 1230:BG.

**Peltigera leucophlebia*, common

**Peltigera malacea*, common

**Peltigera membranacea* (map Vitikainen 1994), Rovvejohka (Werth 2001), 2, 4, 7

**Peltigera neckeri*, (map Holtan-Harwig 1993, map Vitikainen 1994), 1, 2 - AE 03:042 & JWB:TROM; HH:TRH

**Peltigera neopolydactyla*, Bárrás (map Holtan-Harwig 1993 (chemotype I), map Vitikainen 1994), Brennfjellet, Helligskogen, Rovvejohka (Werth 2001), 4 – HH:TRH. Not included from North Norway by Santesson et al. (2004), but numerous localities shown by NLD.

**Peltigera polydactylon*, Lulle (map Holtan-Harwig 1993, map Vitikainen 1994), Gálggojávri, Signaldalen (Hämet-Ahti 1963), 1, 4 - JM:BILAS

Peltigera ponojensis, Signaldalen (map Vitikainen 1994). A rare species not included from Troms by Santesson et al. (2004).

**Peltigera praetextata*, Signaldalen (map Vitikainen 1994), Brennfjellet (Werth 2001), 1, 2

**Peltigera rufescens*, common

**Peltigera scabrosa*, Helligskogen (map Holtan-Harwig 1993 (chemotype I), map Vitikainen 1994), Gálggojávri S (Hämet-Ahti 1963), 2, 4, 6, 7 - VA

**Peltigera scabrosella*, Bárrás area (J. Holtan-Hartwig 4349b, -57, -61, -67b:O♦), Røykeneselva (AE), 2 - ET 9486:O

**Peltigera venosa*, common in calcareous areas

****Pertusaria albescens***; 4 – HH:TRH. Very rare in North Norway, and in Troms previously only reported from Nordreisa (Tønsberg 1992).

**Pertusaria bryontha*, 6, 7 - AN 5728:UPS

**Pertusaria carneopallida*, Lulle (BL:O-L107002♦) 4, 6, 7 - JM 6120:BILAS; VA

****Pertusaria coccodes***, 4 – HH:TRH. New to Troms, and new northern limit.

****Pertusaria coriacea***, 7 - New southern limit in Norway of a strongly northern species.

****Pertusaria coronata***, 7 km N of Skibotn, S of Innerbuktelva, (Tønsberg 1992), 1, 2 – UA L03453:LD; BOL 8900b:UPS, stictic & norstictic acids; AE/T.Tønsberg 03:215:TROM, on rocks associated with *Degelia*; probably the first locality on rocks in Norway of this corticolous and suboceanic species (Tønsberg 1992).

**Pertusaria geminipara*, 4, 6, 7 - ET 9566:O

****Pertusaria glomerata***, 7 - BOL 8985:UPS. Rare in North Norway.

**Pertusaria dactylina*, 4, 5, 6, 7 – HH:TRH

**Pertusaria lactea*, Bárrás (ET 4269:O♦), 4 - JWB & BC s.n.:TROM

Pertusaria leioplaca, Signaldalen, (T. Tønsberg 7307:BG♦)

****Pertusaria octomela***, 1, 7 - ÅD s.n./TF:TROM; HH 9885:TRH. A rare species only known from three counties in Norway.

**Pertusaria oculata*, Skibotn (BL:O-L107909♦), Viessogasgáisi (Arnesen 1998), 4, 5, 6, 7 - ET 9511:O; MWb:LD; HH; BC 21483:E.

**Pertusaria panyrga*, Lulle (BL:O-L107651♦), 4, 5, 6, 7, 8a – HH:TRH; JM 6123:BILAS; BOL 9023:UPS.

Pertusaria pupillaris, Elsnes (Tønsberg 1992).

Phaeophyscia ciliata, 1 (Werth 2001) - Uncommon and thermophilous so far to the north, but herbarium voucher is lacking.

****Phaeophyscia constipata***, Skibotn - Lulle (BL:O-L62828♦), Bærfjellet (AE 85:027:TROM), 1 - AE, HH:TRH; UA L03451:LD. A rare, eastern species, previously only reported twice from Troms (Schwenke 1985, Timdal 1987).

**Phaeophyscia endococcina*, Bærfjellet (AE 86:033:TROM), Skibotn (J.T. Schwenke:TROM), 1, 2, 4, 6.

****Phaeophyscia nigricans***, 1 (Werth 2001), 1 - AE 03:207 & RH:TROM, ET 9494:O. A strongly southern species only reported from three localities in North Norway before (Søchting & Alstrup 1986, Timdal 1987).

**Phaeophyscia sciastra*, common

Phlyctis argena, Elsnes (Tønsberg 1992)

****Phylliscum demangeonii***, 1, 4 - AN 5669:UPS; MWb:LD. Rare in Troms.

****Physcia adscendens***, 1 (Werth 2001) - JWB 160/03:TROM; AE 03:197:TROM. Uncommon in Troms, and, except for the thesis by Werth (2001), first reported from the county by Santesson et al. (2004).

**Physcia aipolia* var. *aipolia*, common

**Physcia caesia*, common

**Physcia dubia*, common

**Physcia stellaris*, (Moberg 1977, map), Brennfjellet, Bærfjellet (Werth 2001), 1 - JM 6138: BILAS

**Physcia tenella* (Werth 2001, as the southern var. *tenella*); Skibotn, close to Skogtun (AE, as var. *marina*), 1.

****Physconia detersa*** 4 - Tønsberg et al. (1996), HCG s.n.:TROM. Red-listed as insufficiently known (DM*) in Norway.

**Physconia distorta*, Lulle (BL:O-L61841♦, map Moberg 1977), Signaldalen: Fossen (AE 84:741:TROM)), 1, 4 - Werth (2001). A southern species.

****Physconia enteroxantha***, Skibotndalen, W of Ra__avárri (Vitikainen 1968), Brennfjell (AE 88:467:TROM), Bárrás (Dahl & Krog:O-L61778♦, map Moberg 1977) 1, 2 - AE 03:046 & JWB 40/03:TROM. In North Norway a rare eastern species.

**Physconia muscigena*, common

**Physconia perisidiosa*, Skibotndalen, W of Ra__avárri (Vitikainen 1968; as '*P. farrea*'), 1, 2, 4 - Werth (2001); AE 85:125, 86:032:TROM; AE 03:045 & JWB:TROM; UA L03452:LD; HH:TRH.

**Pilophorus cereolus*, Bárrás (Dahl & Krog:O-L116548♦), Lullejohka (AE 85:081:TROM), 2 - AE 03:033 & JWB:TROM; ET 9487:O. Uncommon.

Placidium lachneum, Lulle (BL:O-L100137-8♦)

**Placopsis gelida*, Lullejohka (AE 85:080:TROM), near Finnish border (J.T. Schwenke:TROM), Signaldalen:Gustavmoen (AE 84:801:TROM), 4, 6, 7 - RH skib03-7-28:O.

Placopsis lambii, Lulle (BL:BG-L15519-21♦), cfr. Moberg & Carlin (1996). Uncommon in North Norway.

**Placynthiella dasaea*, 0.5 km N of Elsnes (T.Tønsberg 7300c:BG♦), 2, 4, 8b - TF

**Placynthiella uliginosa*, 2 - MWb/conf.UA:LD; VA

**Placynthium asperellum*, Lulle (BL:O-L108272♦), 4, 6, 7 - AN 5724/PMJ:UPS

***Placynthium dolichoterum**, 6 - AN 5700/PMJ:UPS. Elsewhere in Norway only known from Sør-Trøndelag and Nordland.

**Placynthium flabellosum*, 4 - AN 5666 UPS; MWb:LD; BOL 8945:UPS

**Placynthium nigrum*, Lulle (BL:O-L108869♦), 6, 7 - RH skib03-7-19:O

**Placynthium* cf. *pannariellum*, 7 - AN 5727: UPS. Not reported from Troms.

***Placynthium rosulans**, 4, 6 - AN 5671:UPS; UA L03530:LD; BOL 8946:UPS. New to Troms, very rare in North Norway.

**Platismatia glauca*, common

**Pleopsidium chlorophanum*, common

***Pleopsidium flavum**, Bárrás (Timdal 1987, as *Acarospora oxytona*), 4, 7 - ET 9570:O. Rare in Norway.

***Polyblastia abscondita**, 6 - TF. Very rare in Fennoscandia.

***Polyblastia cruenta**, 4 - LF:LD. New to Troms.

***Polyblastia cupularis**, 2, 5, 6, 7 - A rare species reported as new to Troms by Santesson et al. (2004).

***Polyblastia hyperborea**, 1 - TF. New to Troms, rare in Norway.

**Polyblastia melaspora*, 5, 6 - LF:LD

***Polyblastia peminosa**, 4 - TF. New to North Norway, very rare in Fennoscandia.

***Polyblastia terrestris**, 5 - JM 6177: BILAS. A rare species new to Troms.

**Polyblastia theleodes*, 7 - RH skib03-7-16:O; LH:LD; BOL 9005:UPS.

**Polychidium muscicola*, Skibotn (Hakulinen 1955), 1, 2, 4, 6 - SWe s.n./HH:TROM; HH; RH skib03-6-8:O; MWb:LD; UA L03534:LD.

***Polysporina ferruginea**, 5 - SE:BG. New to Troms and very rare in Fennoscandia.

***Porina mammillosa**, 4 - MWb:LD. New to Troms, and very rare in Norway.

***Porpidia cinereoatra**, 1 - New to Troms, rare in Norway.

***Porpidia crustulata**, 4, 5, 6 - TF; BOL 8967:UPS. A rare species.

**Porpidia flavocaerulescens*, 4, 5, 6, 7 - BOL 8999:UPS; VA.

**Porpidia macrocarpa*, Helligskogen (Hakulinen 1955), 2, 4, 6 - TF; BOL 8973:UPS

**Porpidia melinodes*, Reahpennjárggavárri (Lynge 1940), 4, 5, 6, 7

***Porpidia ochrolemma**, 4 - AN 5658:UPS; BOL 8935:UPS. Contains stictic acid. New to Troms. A southern to middle boreal species (Gowan & Ahti 1993), very rare in Norway.

**Porpidia speirea*, 4 - RH skib03-4-8:O

***Porpidia superba**, 4, 6 - BOL 8995:UPS. A rare species.

***Porpidia tuberculosa**, 4, 5 - BOL 8937, 8956b, 8993c:UPS, with confluentic acid. New to Troms, and very rare in North Norway.

**Protoblastenia calva*, 7 - AN 5725:UPS; MWb:LD

**Protoblastenia incrustans*, 7 - RH skib03-7-14:O

**Protoblastenia rupestris*, 6

**Protoblastenia siebenhaariana*, 6, 7 - LF:LD

***Protoblastenia terricola**, 7 – UA:LD. Rare arctic-alpine species, from Troms only reported by Timdal (1987).

**Protomicarea limosa*, 5, 6, 7, 8b - AN 5676:UPS; HH:TRH; BC 21480:E

**Protopannaria pezizoides*, common

**Protoparmelia badia*, Pollvartind (Lynge 1940), 1, 4, 5, 6, 7, common

Protoparmelia nephaea, Stordalen: Dalheim (ET 4051:O, RH 2201:O♦) - Reported as new to Troms by Santesson et al. (2004), and rare in North Norway.

***Protoparmelia oleagina**, 4 - MWb:LD. New to North Norway.

**Protothelenella sphinctrinoidella*, 2, 5, 6 - JM 6198:BILAS; BC 21497:E

**Protothelenella sphinctrinoides*, 6 - JM 6107:BILAS

**Pseudephebe minuscula*, Skibotn, Helligskogen, Lulle (Hakulinen 1955), 4, 5, 6, 7 - ET 9522:O

**Pseudephebe pubescens*, common

***Pseudosagedia chlorotica**, 4 - RH skib03-4-2:O. New to Troms and new northern limit.

**Psora decipiens*, 2, 6, 7 - ET 9536:O

**Psora rubiformis*, Bárrás (ET 4270:O♦), 1, 6 - ET 9475, 9537:O

**Psoroma hypnorum*, common

**Psoroma tenue*, 6 - ET 9538/PMJ:O. New to Troms, but already reported by Jørgensen (2004).

Psorotichia schaereri, 6 - LF:LD. New to Troms, and very rare in Norway.

Psorula rufonigra, 1 - AE 03:248B:TROM; HH:TRH; Timdal 9476:O; UA L03456:LD; BOL 8903:UPS. In Norway otherwise only known from the continental areas of Oppland and Hedmark and from two collections in Målselv (Timdal 1987), the latter not included by Santesson et al. (2004).

**Pycnora leucococca*, Parasdalen (ET 3937:O♦), 4 – HH:TRH

**Pycnora sorophora*, 4 - MWb:LD; AE 01:341:TROM

**Pycnora xanthococca*, Lulle (BL:O-L60269♦), 4 - MWb:LD; HH:TRH

**Pycnothelia papillaria*, Lulle, Skibotn (Lynge 1921), 3, 6 - JWB 041/03 & AE 03:047:TROM: Rare in Troms.

***Pyrenopsis furfurea**, 4 - AN 5670: UPS. New to Troms, and rare in Norway.

**Pyrrhospora elabens*, Lulle (BL:O-L108455-9♦; AE 84:050:TROM), 4, 8a - AE/BC 03:244:TROM; HH:TRH.

Ramalina dilacerata, N of Oteren (Elvebakk 1991, Tønsberg *et al.* 1996). Very rare and red-listed as vulnerable in Norway.

**Ramalina pollinaria*, common at lower altitudes

**Ramalina polymorpha*, Skibotndalen (Lynge 1921), Ádjet (AE 84:073:TROM), 4, 6 - VA

**Rhexophiale rhexoblephara*, 6 - JM 6115: BILAS

**Rhizocarpon alpicola*, Helligskogen (Runemark 1956), Skibotn (BL:O-L87842♦), 6

***Rhizocarpon amphibium**, 4 - AN 5657:UPS, TROM; BOL 8934:UPS. New to North Norway. In Norway previously only known from Western Norway, but in Sweden it is a common species north to Torne Lappmark (Santesson et al. 2004, Foucard 2001).

***Rhizocarpon atroflavescens**, 6 - AN 5697: PS. New to Troms, and only known from three other counties in Norway.

**Rhizocarpon badioatrum*, 4 - BOL 8949:UPS

***Rhizocarpon copelandii**, Parasdalen (ET 4041:O♦), Stordalen (RH 2205:O♦), 4, 5 - TF; BOL/conf.TF 8983:UPS. Reported as new to Troms by Santesson et al. (2004).

**Rhizocarpon eupetraeum*, Helligskogen (Hakulinen 1955, BL:O-L38160-1♦) 1, 4, 8b - TF; HH.

**Rhizocarpon geminatum*, 1, 4 - BOL 8902, 8915, 8928:UPS.

**Rhizocarpon geographicum*, N of Oteren (Runemark 1956, also as ssp. *lindsayanum*), common

**Rhizocarpon grande*, Helligskogen, Skibotn, Lulle (e.g. BL:BG-L50641♦), 1, 2, 4 - TF; BOL 8910, 8932:UPS.

Rhizocarpon hochstetteri, Ádjit (Lynge 1940)

**Rhizocarpon inarense*, N of Oteren (Runemark 1956), 5 - ET 9524:O; BOL 8961, 8970:UPS.

**Rhizocarpon lavatum*, Skibotndalen (Ihlen 2004), 4 - TF; BOL/conf.P.G.Ihlen 8948:UPS, no TLC detectable substances.

***Rhizocarpon norvegicum**, Bárrás, Stordalen (Timdal 1987), 5 - TF. Rare in North Norway.

***Rhizocarpon reductum**, Reahpennjárggavárri (Lynge 1940, as *R. obscuratum*), 4 - Rare elsewhere in North Norway.

**Rhizocarpon oederi*, Stordalen (Timdal 1987), 5

**Rhizocarpon polycarpon*, 4 - TF.

**Rhizocarpon umbilicatum*, 6, 7 - ET 9539:O; BOL 9008:UPS.

***Rhizoplaca chrysoleuca**, 1, 2 - AE 88:453:TROM; UA L03454:LD. Locally common on south-facing rocks. A strongly continental species, in Troms only reported from Nordreisa before (Schwenke 1985).

***Rhizoplaca melanophthalma**, Gálggojávri S, near Finnish border (JWB & D. J. Galloway), 1 - Only known from a few sites in Troms (Schwenke 1985).

***Rimularia badioatra**, 1 - BOL 8902, 8910:UPS, with gyrophoric acid. Only reported from two areas in Norway, but probably overlooked as it was found scattered at several sites at Vega, Nordland (Degelius 1982). New to Troms.

***Rimularia furvella**, 5 - Reported as new to Troms by Santesson et al. (2004). Rare in North Norway.

***Rimularia fuscosora**, 8b – HH:TRH. Rare in Norway, and first reported from Troms (Dividalen) by Bruteig & Wilmann (2004).

***Rimularia impavida**, 3, 4, 5 - TF 3348:UPS; BOL 8924, 8965:UPS. A rare species, new to Troms.

**Rinodina archaea*, 3, 6 - MWb/conf. H. Mayrhofer:LD; UA L03506:LD; TF.

***Rinodina bischoffii**, 7 - BOL/conf. AN 9010:UPS. Rare in North Norway.

**Rinodina* cf. *interpolata*, 2 - BOL/AN 8921:UPS. Not known from North Norway.

**Rinodina mniaraea*, 6, 7 - VA; BC 21489:E.

**Rinodina olivaceobrunnea*, 1, 2 - JWB 303/03:TROM.

***Rinodina parasitica**, 4 - BOL/AN 8932:UPS, as cf. *parasitica*. Rare in Fennoscandia, but known from two old Norman collections from Troms (NLD).

**Rinodina roscida*, 7 - AN 5712:UPS

**Rinodina septentrionalis*, Lulle (e.g. BL:O-L76512♦) 1, 4, 6 - JM 6181:BILAS; MWb:LD; UA L03462:LD

**Rinodina turfacea*, 1, 4, 7 - JM 6167: BILAS

Ropalospora lugubris, Stordalen (RH 2201:O♦)

**Sagiolechia protuberans*, 7 - AN 5710:UPS; RH skibo3-7-12:O

***Sarcogyne clavus**, 4 - Rare in North Norway.

***Sarcogyne privigna**, 1 - AN 5633:UPS, TROM. Reported as new to Troms by Santesson et al. (2004). Rare in Norway.

**Schaereria cinereorufa*, 1, 4 - ET 9477:O

Schaereria corticola, (Tønsberg 1992).

**Schaereria fuscocinerea*, 4, 5 - RH skib03-5-2:O

**Sclerophora coniophaea*, Bárrás, Signaldalen (Middelborg & Mattsson 1987, map), 4 - HH.

***Scoliciosporum umbrinum**, 4 - BOL 8920, 8940a:UPS. New to Troms.

**Solorina bispora*, Skibotn (Hakulinen 1955), Markus Malla, Signaldalen (L. Ryvarden: O-L44624♦), 4, 6 7 - ET 9540, 9572:O.

**Solorina crocea*, common in the mountains, scattered in the lowlands

**Solorina saccata*, common

**Solorina spongiosa*, 2, 6, 7 - ET 9541:O; RH skib03-7-25:O

**Sphaerophorus fragilis*, common

**Sphaerophorus globosus*, common

***Spilonema revertens**, 1 - AE 03:195/MZ:TROM; UA L03457-8:LD; BOL 8903:UPS; HH. A rare species associated with *Psorula rufonigra*, and with a similar, but not identical distribution (Timdal 1987, NLD).

**Sporastatia polyspora*, Pollvartind (Lynge 1940, as '*S. cinerea*'), 5 - TF; BOL 8957, 8964:UPS.

**Sporastatia testudinea*, Lávkajávri (AE & JWB:TROM) 5, 6, 7 - AN 5678:UPS; JWB 352/03/ET:TROM.

***Squamarina degelii**, 1 - ET 9478:O; UA L03455, 468:LD. A south-eastern species (Timdal 1983) new to North Norway.

***Staurothele areolata**, 6 - LF:LD. New to Troms, rare in Norway.

***Staurothele frustulenta**, 4 - LF:LD. Rare in Norway.

***Staurothele fuscocuprea**, 4 - LF:LD. Rare in Norway.

***Steinia geophana**, 1, 5, 6 - JM 6191: TROM, BILAS; BC 21488:E. Rare in Norway.

**Stereocaulon alpinum*, common

***Stereocaulon arcticum**, 5 - A rare northern species new to Troms. Uncertain status.

***Stereocaulon arenarium**, 6 - A very rare northern species, reported as new to Troms by Santesson et al. (2004). Norwegian responsibility species (Directorate for Nature Management 1999).

**Stereocaulon botryosum*, Reahpennjárggavárri (Lynge 1940), 7 - VA; HH:TRH.

**Stereocaulon capitellatum*, Bárrás (Dahl & Krog:O-L12126, 56059♦), 2.

**Stereocaulon condensatum*, Skibotn (Lynge 1921), Bárrás (Dahl & Krog:O-L45570, -4♦), near Finnish border (J.T: Schwenke:TROM), 2, 4, 5, 6, 8a - VA; HH

***Stereocaulon coniophyllum**, Rovvejohka (Vevle 1975), Lullejohka (AE 85:079:TROM), 6 - RH skib03-6-9:O. Uncommon in North Norway. Norwegian responsibility species (Directorate for Nature Management 1999).

**Stereocaulon cumulatum*, Signaldalen (Øvstedal:BG-L53359♦), Lullesletta (AE 84:046:TROM), 4, 5, 6, 7 - MZ 0334, 0339:LE; ET 9574:O; MWb:LD

Stereocaulon dactylophyllum, Bárrás (Dahl & Krog:O-L106892♦)

**Stereocaulon depressum*, Kitdalen, Naimakka (Hasselrot:UPS-L77112♦), 7 - MZ 0391:LE; VA

***Stereocaulon evolutum**, 4 - Rare in North Norway.

**Stereocaulon glareosum*, 2, 5, 6 - VA, common.

***Stereocaulon groenlandicum** (E. Dahl) I. M. Lamb, 6 - MZ03117:LE. New to Fennoscandia. The species was collected and determined by MZ, who knows this lichen species very well from the Russian Arctic ('it Severnaya Zemlya it is locally absolutely dominating') as the host of *Lasiosphaeriopsis stereocaulicola.* VA (pers. comm.) believes it is overlooked in Fennoscandia.

Stereocaulon grande, Persskogen (ET 9467:O♦)

Stereocaulon leucophaeopsis, Gálggogobba (ET 9462:O♦) - New to North Norway. A rare crustose species in Norway, typical of heavy-metal substrates (Purvis & James 1985).

**Stereocaulon nanodes,* Bárrás (Dahl & Krog:O-L38795, -7♦), 4, 7 - RRN/HCG:TROM; HH

**Stereocaulon paschale*, common

***Stereocaulon pileatum**, 4 - JM 6146:BILAS. Rare in North Norway.

**Stereocaulon rivulorum* 2, 4, 6 - ET 9514:O, common.

***Stereocaulon saxatile**, 4 - VA. New to Troms.

Stereocaulon spathuliferum, Bárrás (Dahl & Krog:O-L56026, O-L56066♦), Reahpennjárggavárri (Vaage:O-L56040♦)

**Stereocaulon symphycheilum*, Bárrás (Dahl & Krog:O-L22521, O-L22522♦), 4 - ET 9515:O

**Stereocaulon tomentosum*, Lulle (Lynge 1921), Bárrás (Dahl & Krog:O-L38534♦), Signaldalen (Hämet-Ahti 1963), 4

***Stereocaulon tornense**, 5 - ÅD/ET:TROM; BOL 8955:UPS; ET 9525:O. Another rare crustose *Stereocaulon* species new to North Norway.

**Stereocaulon vesuvianum*, common

***Strigula muscicola** F. Berger, Coppins, Cl. Roux & Sérus. ined. 6 - BC 21479:E. No other records from Norway included in the manuscript under publication (Coppins, pers. comm.).

**Tephromela atra*, 1, 2b, 4, 7 - MZ:LE; HH:TRH

**Thamnolia vermicularis*, common, especially in the mountains. Both varieties are reported.

*****Thelidium aeneovinosum***, 4, 5, 6 - AE 03:218/LF:TROM; LF:LD. Reported as new to Troms by Santesson et al. (2004), and rare in North Norway.

*****Thelidium incavatum***, 7 - LF:LD. New to Troms and rare in Norway.

*****Thelidium papulare***, 6 - LF:LD. Very rare in North Norway.

*****Thelidium pluvium***, 4 - JM 6154:BILAS. New to North Norway, and very rare in Norway.

*****Thelidium pyrenophorum***, 5 - Reported as new to Troms by Santesson et al. (2004). Rare in Norway.

*****Thelignya lignyota***, 6 - LF:LD; BOL 8995:UPS. Rare in Norway.

**Thelocarpon epibolum*, 4, 6, 7 - VA; MZ 03113:LE. Recorded for the first time on apothecia and thallus of *Protopannaria pezizoides*.

*****Thelocarpon impresellum***, 5 - JM 6178:BILAS, TROM. New to Troms, and rare in Norway.

**Thrombium epigaeum*, 5, 6, 7 - JM 6161:BILAS; BC 21488:E.

*****Timdalia intricata***, Bárrás (Timdal 1987, as *Acarospora*), 7 - ET 9577:O; LL 1261:BG. Rare in Norway.

**Toninia alutacea*, near the farm Paras (Timdal 1987), 1 - ET 9480:O

**Toninia aromatica*, 5 - ET 9578:O

Toninia rosulata, Bárrás (Timdal 1987)

**Toninia sedifolia*, Lulle (BL:TROM, O-L26731♦), 2b - HH:TRH

**Toninia squalida*, Bárrás (Timdal 1987 as *T. verruculosa*), 1

Toninia verrucarioides, Bárrás (Timdal 1987 as *T. cervina*)

**Trapelia coarctata*, 1, 5

**Trapelia involuta*, 5 - TF

**Trapeliopsis flexuosa*, 4, 8a, 8b – HH_TRH

**Trapeliopsis granulosa*, Skibotn (Hakulinen 1955), 4, 8b – HH:TRH

*****Trapeliopsis pseudogranulosa***, 2 - AN 5639:UPS, TROM. New northern distribution limit. Previously known north to Rødøy in Nordland (Tønsberg 1992).

**Tremolecia atrata*, very common, 1, 3, 4, 5, 6, 7

**Tuckermanopsis chlorophylla*, common

**Umbilicaria arctica*, common in the mountains

**Umbilicaria cylindrica*, common, also including reports of var. *delisei*

**Umbilicaria decussata*, Bárrás (Dahl & Krog:O-L38754♦), Parasdalen (ET 4042:O♦), Helligskogen (Hakulinen 1962), 2

*****Umbilicaria dendrophora***, Bárrás, Stordalen (Hestmark 1993), 5 - AE 03:048b & JWB:TROM; HH. A very rare and bicentric species in Norway (Hestmark 1993). Norwegian responsibility species (Directorate for Nature Management 1999).

**Umbilicaria deusta*, Skibotn, Helligskogen (Lynge 1921), Hakulinen (1962; several cited localities), 1, 4, 6

**Umbilicaria hirsuta*, Bárrás (Dahl & Krog:O-L85985-6♦), 5 - JWB 301/03: TROM

**Umbilicaria hyperborea*, common

Umbilicaria leiocarpa, Skibotn area (Lynge 1921) - Not included from North Norway by Hasselrot (1941), but from Kilpisjärvi close to Skibotndalen by Hakulinen (1962).

Umbilicaria lyngei, SW slope of Ádjit (B. Larsen 99:11:TROM,) Fárvrosvárnjunni (AE 90:472:TROM) – The former specimen was confirmed against the similar *U. decussata* by Løvfall & Timdal (2005), who reported them to be chemically distinct. An arctic-alpine species not known from other collections in Troms.

**Umbilicaria polyphylla*, 6

**Umbilicaria proboscidea*, very common

**Umbilicaria rigida*, several published (Hasselrot 1941, Hakulinen 1962) and unpublished collections, 2, 7 - ET 9582:O.

**Umbilicaria torrefacta*, common

**Umbilicaria vellea*, common

Umbilicaria virginis, Bárrás (Hakulinen 1962, Timdal 1987), Ádjit (B. Larsen 99:3:TROM), rare.

Usnea filipendula, 2 km NE of Oteren (Elvebakk 1991)

Usnea hirta, Ruohtovarri, 2 km NE of Oteren (AE/JWB:TROM) - New to Troms.

Usnea lapponica, 2 km NE of Oteren (Elvebakk 1991)

**Usnea subfloridana*, N of Oteren (Elvebakk 1991), Borucorru, Magernes, Fossen, Dreyerholmen, Kvesmenes (Nylund 1997), Kavelnes (Werth 2001), 4 - AE 85:128/JWB:TROM.

**Varicellaria rhodocarpa*, Skibotndalen, Didnujohka (Tønsberg 1992), 5 - VA

*****Verrucaria aethiobola***, 4, 7 - JM 6152:BILAS; LF:LD. Rare in North Norway.

**Verrucaria ceuthocarpa*, 3 - AN 5646:UPS, TROM

*****Verrucaria degelii***, 3 - SE:BG; UA L03494-5:LD. Very rare in Norway, but localties from Nordland and Troms cited by Santesson (1939) were not included by Santesson et al. (2004).

*****Verrucaria halophila***, 3 - SE:BG; UA L03491-2:LD. New to Troms and very rare in Norway.

*****Verrucaria halophiloides***, 3 - UA L03493, 7-8:LD. New to Troms. A high-arctic species (Santesson 1939), only reported once from mainland Europe (Finnmark, Santesson 1993), which is shown by NLD to be based on a collection from Båtsfjord (R. Santesson 18878b, UPS-L89596♦).

****Verrucaria hydrela***, 4 - AN 5659:UPS, TROM. Rare in Norway.
****Verrucaria latebrosa***, 4 - UA L03540:LD. New to Troms and rare in Norway.
**Verrucaria margacea*, 4, 7 - UA L03542,4:LD; LF:LD.
**Verrucaria maura*, Larsbergneset (AE), 3
**Verrucaria mucosa*, 3 - UA L03490:LD
****Verrucaria nigrescens***, 7 - LF:LD. Rare in North Norway.
****Verrucaria praetermissa***, 4, 5 - UA L03541:LD; LF:LD. New to North Norway. A southern species, in Norway previously only known from Hordaland.
**Verrucaria striatula*, 3 - UA L03496:LD
****Vestergrenopsis isidiata***, 4, 6 - Overlooked in Troms and only reported from a few sites (Schwenke & Elvebakk 1981, Timdal 1987).
**Vulpicida pinastri*, common
****Vulpicida tubulosus***, 7 - JWB 311/03:TROM. New to North Norway. In Fennoscandia previously only accepted from southern Sweden by Mattsson & Lai (1993), but more northern material of *Vulpicida* (e.g. from several South Norwegian counties) was recognized as *V. tubulosus* by Santesson et al. (2004).
****Xanthoparmelia conspersa***, 1 - Rare in the north
**Xanthoparmelia pulla* (Ach.) O. Blanco et al., Skibotn (Lynge 1921, as '*Parmelia prolixa*'), Larsbergneset (JWB & AE), 3
****Xanthomendoza borealis*** (R. Sant. & Poelt) Søchting, Kärnef. & Kondratyuk, 6 – H. Blom/LL:BG. New to Troms. A rare species in Norway.
**Xanthoria candelaria*, common
**Xanthoria elegans*, very common
**Xanthoria parietina*, 2
**Xanthoria sorediata*, common
**Xylographa parallella*, 2, 4, 8b – HH:TRH
**Xylographa vitiligo*, 2, 8b – HH:TRH

Among the species listed above, 291 are considered rare, but 20 of these are only cited from the literature without new information and 6 species are reported as new to Troms, with Santesson et al. (2004) as the major reference source. Among these, 29 species are recorded as new to North Norway. Among these species, *Ameliella grisea, Caloplaca atrocyanescens, Lecanora flotowiana, L. perpruinosa, Miriquidica plumbeoatra* and *Strigula muscicola* are recorded as new to Norway, whereas *Caloplaca spitsbergensis* and *Stereocaulon groenlandicum* are new to Fennoscandia.

Rare species were found in all localities visited. The seashore rocks at Røykeneset had several rare northern species, such as *Caloplaca fraudans, C. spitsbergensis, Lecanora atrosulphurea* and *Verrucaria halophiloides*, together with the southern species *Lecanora andrewii* and *Verrucaria praetermissa*. The rocky slopes near Brennfjellet had their interesting thermophilous lichen flora supplied by species such as *Leptochidium albociliatum, Melanelia tominii, Psorula rufonigra, Spilonema revertens* and *Squamarina degelii*.

The river gorge at Gustavsvingen had a richly developed inundation zone with rocks with many rare species, e. g. *Aspicilia aquatica, A. supertegens, Caloplaca atrosulphurea, C. diphyodes, Ephebe hispidula, E. lanata, Hymenelia arctica, Miriquidica plumbeoatra, Placynthium flabellosum, P. rosulans, Porpidia ochrolemma, Rhizocarpon amphibium* and *Verrucaria latebrosa*. Some rare calicioid lichens were found on old *Betula* trunks, and the cyanomorph of *Lobaria amplissima* was also recorded from southfacing cliffs.

In the mountains, *Carbonea atronivea, Calvitimela perlata, Lecania subfuscula, Lecanora flotowiana, Leciophysma furfurascens, Polysporina ferruginea*, *Stereocaulon arenarium, S. groenlandicum, Umbilicaria dendrophora* and *Vulpicida tubulosus* are examples of rare species.

There are many rare species within poorly studied crustose genera such as *Hymenelia, Lecanora, Lepraria, Micarea, Miriquidica, Polyblastia, Thelidium* and *Verrucaria.* However, many rare macrolichen species are also reported here, and genera such as *Melanelia* s. lat.*, Peltigera, Stereocaulon* and *Umbilicaria* are very richly represented in the area by 15, 22, 25 and 17 species, respectively. In the case of *Stereocaulon*, three of the species are crustose.

Discussion

Species richness and diversity

This topic is discussed in more detail in the paper published in Mycotaxon (Elvebakk & Bjerke. 2006. Mycotaxon 96: 141-146).

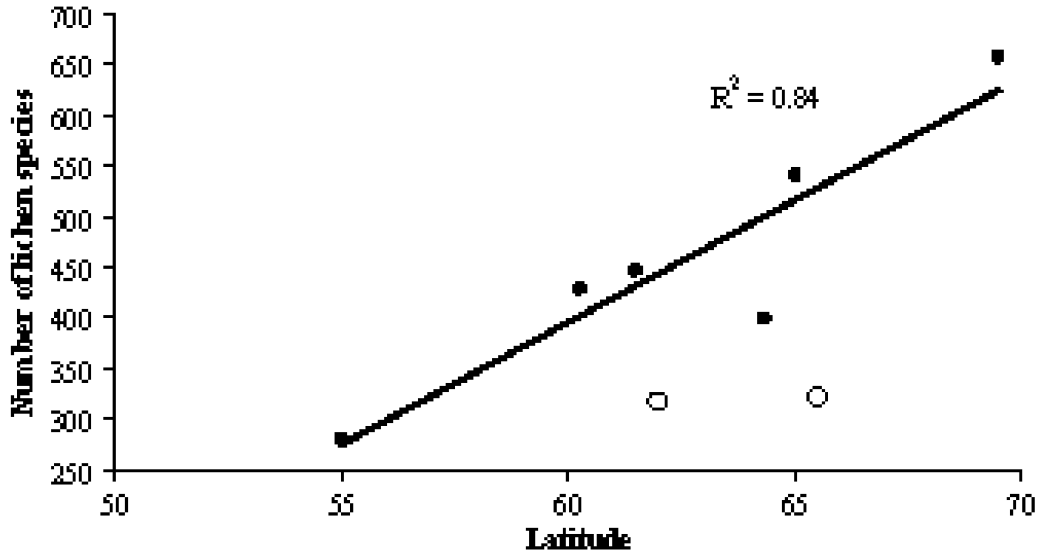

Figure 1—Correlation between the numbers of fully identified lichen species reported from all previous NLF excursions in Fennoscandia and latitudinal position of the visited areas. The corresponding data from the excursions to Iceland and the Faeroe Islands are shown with open dots and are not included in the indicated estimation of the correlation coefficient. See text for further details.

The visited localities in a conservation perspective

Concerning the localities visited during the excursion, the Røykenesset sea shore rocks had a remarkable concentration of northern species. This was unexpected, given the fact that the area is only moderately exposed and experiences much warmer summers than most sea-shore sites along the northern coasts. However, northern litoral shores are very poorly studied lichenologically, as illustrated by the fact that quite a number of northern species are only known from very few northern Norwegian littoral sites, see Santesson et al. (2004). The pattern may primarily be explained by the lack of investigations, a fact which is alarming considering the threath scenario for these habitats related to the strongly increasing petroleum activity in the Barents Sea, particularly sea-borne transport.

Røykeneselva Nature Reserve was quite recently established very close to this locality, on the other side of the road. This protected area does not have any known botanical attractions, and seems to us to be too weakly founded. However, the heavily trafficked road separating the Reserve from our study site, in combination with the general poor knowledge of these lichen species, makes us refrain from proposing an extension of the present Reserve.

Locality # 2 near Brennfjellet is a similar case, of a very rich lichen locality being situated just outside a nearby protected area. Here, quite a large number of macrolichens and umbilicate and placodioid lichens are concentrated, representing a mixture of southern, eastern and western elements. The locality has a strong resemblance to the interesting flora of the south-facing cliff Darfaloalgge ('Tarfalaålke') near Kebnekajse in northern Sweden presented by Degelius (1945). Characteristic species in common are *Dimelaena oreina, Lobaria amplissima* (cyanomorph), *Melanelia panniformis, Melanelixia subargentifera, Nephroma laevigata, Pannaria conoplea, Psorula rufonigra,* both *Rhizoplaca* species, and *Xanthoparmelia conspersa*, in addition to several rare crustose species. Both these localities apparently represent a northern enclave of southern species of different phytogeographical affinities. The fact that suboceanic species become 'replaced' to continental sites near their northern distribution limit is of particular interest, cfr. Elvebakk & Sandvik (1980). These

macrolichens are so well known that we expect this to represent a real pattern not obscured by insufficient investigations.

The Brennfjellet locality is surrounded by anthropogenic influences from all directions. Towards the south is is disturbed by the main entrance of the hydroelectric water masses, by clear-cutting in central areas, towards the east by the camping site and associated activities, including a training site for rock climbing, and towards the north by the main road to Finland. Therefore we thought that this site needs to be protected, particularly as the Lulle Forest Reserve starts immediately on the opposite side of the road. However, recent results from a student's course show that several of the rare species are also present in abundance across the road within the Forest Reserve, and this should be studied more carefully before a possible proposal of extension of the reserve.

The Gustavsvingen river gorge yielded a particularly high number of rare species, some with a strongly eastern distribution pattern, e.g. *Caloplaca diphyodes*. The river has been affected by hydroelectric regulation for more than three decades, but the inundation zone is still very well developed and with a very rich lichen flora. The dramatic canyon also represents stronger landscape values than the Røykeneselva Nature Reserve, and includes fragments of old-growth forests. It is a better candidate for a protection area than the former, but it should be admitted that the lichen flora of rocky freshwater and river shores is very poorly studied in the north.

The strongly contrasting lichen floras of the acidic mountain locality # 5 and the circumneutral/alkaline ones at #6 and 7 are also within an area affected by the hydroelectric installations. The sites visited are not threatened by additional activities. Limestone sites at high altitudes are very poorly studied in North Norway. It would be most important to increase this knowledge, particularly within a context of comparisons with high-arctic sites. The numerous characteristic *Aspicilia* species known from Svalbard were not discovered, and striking species like *Vulpicida tubulosus* and *Umbilicaria dendrophora* are lacking from the High Arctic, whereas overlooked species such as *Stereocaulon arcticum* and *S. arenarium* represent similarities.

A revision of the Norwegian redlist of threatened species is under preparation (www.artsdatabanken.no). Related to the results presented here, we suggest that the following species should be considered as candidates for inclusion among threathened macrolichens in Norway: *Cladonia macroceras, Collema ceraniscum, Melanelia agnata, Stereocaulon arenarium, S. groenlandicum, Vulpicida tubulosus* and *Xanthomendoza borealis*, as well as the small-fruticulose *Leciophysma* species.

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