

Keweenaw Mine Lichen Study

Report

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Nov. 2005

During July, 2005 complete lichen collections were made on and near the abandoned copper mines in Keweenaw County, Michigan. About 1000 collections were made at 21 localities. One collection site was at each mine site and another within about one km from the mine. The locality at the Audubon Sanctuary was used as a control site. An attempt was made to select sites for the off-mine sites in vegetation as similar to the mine as possible. At each site all species of lichens observed were collected.

Collections were identified and entered in the University of Minnesota Herbarium and the label data were entered into a MS Access database.

Table 1 lists all species found during this study. Table 2 gives locality data for all localities. Table 3 is a comparison of the species collected in this study and those known from the Keweenaw Peninsula based on NPLICHEN. The species collected at each locality are given in an MS Access database file.

Table 1

Total species list of lichens collected.

<i>Acarospora americana</i>	<i>Caloplaca holocarpa</i>
<i>Acarospora fuscata</i>	<i>Candelaria concolor</i>
<i>Amandinea punctata</i>	<i>Candelaria fibrosa</i>
<i>Arthonia caesia</i>	<i>Candelariella aurella</i>
<i>Arthonia didyma</i>	<i>Candelariella efflorescens</i>
<i>Arthonia fuliginosa</i>	<i>Candelariella vitellina</i>
<i>Arthonia patellulata</i>	<i>Cetraria americana</i>
<i>Arthrosporum populorum</i>	<i>Cetraria oakesiana</i>
<i>Aspicilia caesiocinerea</i>	<i>Cetraria pinastri</i>
<i>Bacidia bagliettoana</i>	<i>Cetraria sepincola</i>
<i>Bacidia laurocerasi</i>	<i>Cetrelia olivetorum</i>
<i>Bacidia rubella</i>	<i>Chaenothecopsis debilis</i>
<i>Bacidia sabuletorum</i>	<i>Cladonia borealis</i>
<i>Bellemeria cinereorufescens</i>	<i>Cladonia botrytes</i>
<i>Biatora epixanthoides</i>	<i>Cladonia cenotea</i>
<i>Biatora helvola</i>	<i>Cladonia cervicornis</i> subsp. <i>verticillata</i>
<i>Biatora longispora</i>	<i>Cladonia chlorophaea</i>
<i>Bryoria capillaris</i>	<i>Cladonia coniocraea</i>
<i>Bryoria furcellata</i>	<i>Cladonia cornuta</i>
<i>Bryoria trichodes</i>	<i>Cladonia crispata</i>
<i>Buellia alboatra</i>	<i>Cladonia cristatella</i>
<i>Buellia disciformis</i>	<i>Cladonia decorticata</i>
<i>Buellia stillingiana</i>	<i>Cladonia digitata</i>
<i>Calicium trabinellum</i>	<i>Cladonia fimbriata</i>
<i>Caloplaca ahtii</i>	<i>Cladonia floerkeana</i>
<i>Caloplaca arenaria</i>	<i>Cladonia furcata</i>
<i>Caloplaca cerina</i>	<i>Cladonia gracilis</i>
<i>Caloplaca chrysophthalma</i>	<i>Cladonia macilenta</i> var. <i>bacillaris</i>
<i>Caloplaca citrina</i>	<i>Cladonia merochlorophaea</i>

Cladonia mitis
Cladonia multiformis
Cladonia phyllophora
Cladonia pleurota
Cladonia pyxidata
Cladonia rangiferina
Cladonia rei
Cladonia scabriuscula
Cladonia squamosa
Cladonia stygia
Cladonia turgida
Cladonia uncialis
Collema subflaccidum
Collema tenax
Conotrema urceolatum
Cresponea chloroconia
Diploschistes scruposus
Evernia mesomorpha
Evernia prunastri
Flavoparmelia caperata
Flavopunctelia flaventior
Flavopunctelia soledica
Graphis scripta
Heterodermia speciosa
Hypocenomyce scalaris
Hypogymnia physodes
Hypogymnia tubulosa
Imshaugia aleurites
Julella sericea
Lecanora albella var. *rubescens*
Lecanora albellula
Lecanora allophana
Lecanora caesiorubella
Lecanora caesiorubella subsp.
caesiorubella
Lecanora carpinea
Lecanora circumborealis
Lecanora dispersa
Lecanora impudens
Lecanora intricata
Lecanora muralis
Lecanora polytropa
Lecanora pulicaris
Lecanora rugosella
Lecanora strobilina
Lecanora symmetrica

Lecanora thysanophora
Lecanora wisconsinensis
Lecidea atrobrunnea
Lecidea plana
Lecidella carpathica
Lecidella effugiens
Lecidella patavina
Lepraria neglecta
Leptogium cyanescens
Leptorhaphis epidermidis
Lobaria pulmonaria
Lobaria quercizans
Lopadium pezizoideum
Loxospora elatina
Megaspora verrucosa
Melanelia exasperatula
Melanelia olivacea
Melanelia septentrionalis
Melanelia soledica
Melanelia subargentifera
Melanelia subaurifera
Melanelia subolivacea
Micarea denigrata
Mycobilimbia pilularis
Mycobilimbia tetramera
Mycocalicium subtile
Myelochroa galbina
Nephroma bellum
Nephroma parile
Ochrolechia arborea
Ochrolechia trochophora
Opegrapha varia
Parmelia squarrosa
Parmelia sulcata
Parmeliella triptophylla
Parmeliopsis ambigua
Parmeliopsis hyperopta
Peltigera canina
Peltigera collina
Peltigera degenii
Peltigera didactyla
Peltigera elisabethae
Peltigera evansiana
Peltigera horizontalis
Peltigera malacea
Peltigera polydactylon

<i>Peltigera praetextata</i>	<i>Ramalina farinacea</i>
<i>Peltigera rufescens</i>	<i>Ramalina intermedia</i>
<i>Pertusaria alpina</i>	<i>Rhizocarpon badioatrum</i>
<i>Pertusaria amara</i>	<i>Rhizocarpon geographicum</i>
<i>Pertusaria consocians</i>	<i>Rhizocarpon lecanorinum</i>
<i>Pertusaria macounii</i>	<i>Rhizocarpon petraeum</i>
<i>Pertusaria ophthalmiza</i>	<i>Rhizocarpon reductum</i>
<i>Pertusaria trachythallina</i>	<i>Rinodina polyspora</i>
<i>Pertusaria velata</i>	<i>Scoliciosporum chlorococcum</i>
<i>Phaeophyscia chloantha</i>	<i>Sphinctrina turbinata</i>
<i>Phaeophyscia ciliata</i>	<i>Stereocaulon dactylophyllum</i>
<i>Phaeophyscia melanchra</i>	<i>Stereocaulon paschale</i>
<i>Phaeophyscia pusilloides</i>	<i>Strigula stigmatella</i>
<i>Phaeophyscia rubropulchra</i>	<i>Strigula submuriformis</i>
<i>Phlyctis argena</i>	<i>Trapeliopsis flexuosa</i>
<i>Physcia adscendens</i>	<i>Trapeliopsis granulosa</i>
<i>Physcia aipolia</i>	<i>Usnea cavernosa</i>
<i>Physcia dubia</i>	<i>Usnea filipendula</i>
<i>Physcia stellaris</i>	<i>Usnea hirta</i>
<i>Physconia detersa</i>	<i>Usnea lapponica</i>
<i>Physconia leucoleiptes</i>	<i>Usnea subfloridana</i>
<i>Placynthiella dasaea</i>	<i>Xanthoparmelia angustiphylla</i>
<i>Platismatia glauca</i>	<i>Xanthoparmelia conspersa</i>
<i>Platismatia tuckermanii</i>	<i>Xanthoparmelia cumberlandia</i>
<i>Porpidia crustulata</i>	<i>Xanthoparmelia somloensis</i>
<i>Porpidia herteliana</i>	<i>Xanthoria elegans</i>
<i>Protoblastenia rupestris</i>	<i>Xanthoria fallax</i>
<i>Pseudevernia consocians</i>	<i>Xanthoria hasseana</i>
<i>Punctelia perreticulata</i>	<i>Xanthoria ulophyllodes</i>
<i>Punctelia rudecta</i>	<i>Xylographa opegraphella</i>
<i>Pyxine sorediata</i>	<i>Xylographa vitiligo</i>
<i>Ramalina americana</i>	

Total - 212 species.

Table 2

Localities where collections were made for the study. The numbers at the beginning of each locality are the collection number for that locality. All localities were in Keweenaw County, Michigan.

93251,93292. Around Clark Mine (2 mi SSE of Copper Harbor). Around mine tailings with balsam fir, quaking aspen, and white birch, elev. 915 ft. Sec. 9, T58N, R28W. 47°26'42"N, 87°51'37"W. 20 July 2005.

93293,93330. 1.5 mi N of Clark Mine (1.7 mi SSE of Copper Harbor). Along logging

road in mixed forest of white pine, balsam fir, quaking aspen, sugar maple, and white birch, elev. 970 ft. Sec. 4, T58N, R28W. 37 47°27'08"N, 87°51'43"W. 20 July 2005.

93331,93363. Townsite of Manganese Mine N of Manganese Lake (1 mi SSE of Copper Harbor). Clearing with rock outcrops, crabapple, quaking aspen, and chokecherry, elev. 765 ft. Sec. 5, T58N, R28W. 47°27'28"N, 87°52'44"W. 20 July 2005.

93364, 93393. N of Manganese townsite (0.7 mi SSE of Copper Harbor). Ridge with red oak, white pine, and white birch, elev. 700 ft. Sec. 32, T59N, R28W. 47°27'42"N, 87°52'48"W. 20 July 2005.

93394,93435. Mandan Mine (6.5 mi SW of Copper Harbor). Around mine tailings in forest with sugar maple, red oak, and few pines and spruce, elev. 1080 ft. Sec. 17, T58N, R29W. 34 47°25'36"N, 88°00'31"W. 21 July 2005.

93436,93489. Half mile N of Mandan Mine (5.7 mi SW of Copper Harbor). Ridge with red oak, sugar maple, and few dead quaking aspen, elev. 1150 ft. Sec. 16, T58N, R29W. 42 47°25'47"N, 87°59'38"W. 21 July 2005.

93490,93551. Delaware Mine (10.3 mi SW of Copper Harbor). Mixed forest with red oak, red maple, sugar maple, elm, and quaking aspen, elev. 1190 ft, Sec. 15, T58N, R30W. 47°25'26"N, 88°05'44"W. 22 July 2005.

93552,93595. 1 mi NW of Delaware Mine (11 mi SW of Copper Harbor). Hill with red oak, sugar maple, and elm, 1200 ft. Sec. 16, T58N, R30W. 47°25'31"N, 88°06'55"W. 22 July 2005.

93596,93629. Central Mine (4.5 mi ESE of Eagle River). Around edge of mine tailings in white birch, quaking aspen, pines, and white spruce, elev. 1180 ft. Sec. 23, T58N, R31W. 47°24'24"N, 88°11'52"W. 22 July 2005.

93630,93669. East of Central Mine (5.1 mi ESE of Eagle River). In forest of white spruce, red pine, balsam fir and hardwoods with large *Amelanchier*, elev. 1150 ft. Sec. 24, T58N, R30W. 47°24'30"N, 88°11'10"W. 23 July 2005.

93670,93728. Arnold Mine (3.1 mi E of Eagle River). Around mine tailings above stream with balsam fir, *Thuja*, white birch, and quaking aspen, elev. 1090 ft. Sec. 15, T58N, R31W. 47°25'05"N, 88°13'48"W. 23 July 2005.

93729,93779. Half mile SW of Arnold Mine (2.7 mi E of Eagle River). Hardwood forest with red oak, sugar maple, red maple, quaking aspen, and some balsam fir, elev. 1125 ft. Sec. 21, T58N, R31W. 47°24'55"N, 88°14'12"W. 23 July 2005.

93780,93851. Audubon Brockway Mt. Sanctuary (5.9 mi W of Copper Harbor). Hillside with ridges and mixed conifers and hardwoods of red oak, quaking aspen, balsam fir, and *Thuja*, elev. 800 ft. Sec. 5, T58N, R30W. 47°27'58"N, 88°00'51"W. 24 July 2005.

93852,93899. Phoenix Mine (1.8 mi SSE of Eagle River). On mine tailings with white birch, quaking aspen, and balsam poplar, elev. 990 ft. Sec. 30, T58N, R31W. 47°23'26"N, 88°16'49"W. 24 July 2005.

93900,93939. N of Phoenix Mine (1.5 mi SSE of Eagle River). Hillside with quaking aspen, sugar maple, and *Amelanchier*, elev. 925 ft. Sec. 30, T58N, R31W. 47°23'44"N, 88°16'55"W. 24 July 2005.

93940,93985. Cliff Mine (3.1 mi SSW of Eagle River). On and around mine tailings with white birch, balsam fir, and tamarack, elev. 980 ft. Sec. 1, T57N, R32W. 47°22'20"N, 88°18'50"W. 25 July 2005.

93986,94034. W of Cliff Mine (3.5 mi SSW of Eagle River). At lower end of gully with white birch, sugar maple, few white pine, and balsam fir, elev. 1035 ft. Sec. 2, T57N, R32W. 47°22'03"N, 88°19'23"W. 25 July 2005.

94035,94091. N of Seneca Mine (6.1 mi NE of Calumet). Hardwood forest with white birch, red maple, sugar maple, and red oak, elev. 960 ft. Sec. 21, T57N, R32W. 47°18'56"N, 88°22'18"W. 25 July 2005.

94092,94140. Seneca Mine (6.2 mi NE of Calumet). Around mine tailings with white birch, quaking aspen, and balsam fir, elev. 1020 ft. Sec. 28, T57N, R32W. 47°18'44"N, 88°21'49"W. 26 July 2005.

94141,94192. Town of Gay. Around stamp sands along Lake Superior with white birch, quaking aspen, and balsam fir, elev. 625 ft. Sec. 30, T56N, R30W. 47°13'31"N, 88°09'41"W. 26 July 2005.

94193,94243. 1.4 mi NE of Gay. Mixed forest near Lake Superior with white birch, red maple, balsam fir, white spruce, and *Thuja*, elev. 630 ft. Sec. 20, T56N, R31W. 47°14'19"N, 88°08'01"W. 26 July 2005.

Table 3

Comparison of species collected during the 2005 mine study and the species reported from the Keweenaw Peninsula in NPLICHEN, a database of all of the lichens in the National Parks. The species in the Keweenaw Peninsula are those listed for Keweenaw National Park in NPLICHEN were obtained from Thomson (1951 & 1954) and the University of Minnesota Herbarium.

The shaded names in each column are those not found in the other column.

2005 Study	NPL
Acarospora americana	Acarospora badiofusca
Acarospora fuscata	Acarospora fuscata
Allocetraria oakesiana	Amandinea punctata
Amandinea punctata	Anaptychia palmulata

Arthonia caesia	Arthonia radiata
Arthonia didyma	Arthonia spadicea
Arthonia fuliginosa	Arthopyrenia analepta
Arthonia patellulata	Arthopyrenia punctiformis
Arthrosporium populorum	Aspicilia caesiocinerea
Aspicilia caesiocinerea	Aspicilia cinerea
Bacidia bagliettoana	Bacidia bagliettoana
Bacidia laurocerasi	Bacidia laurocerasi
Bacidia rubella	Bacidia rubella
Bellemerea cinereorufescens	Bacidina inundata
Biatora helvola	Bellemerea cinereorufescens
Biatora longispora	Biatora botryosa
Bryoria capillaris	Biatora helvola
Bryoria furcellata	Biatora vernalis
Bryoria trichodes	Bryoria capillaris
Buellia stillingiana	Bryoria furcellata
Calicium trabinellum	Bryoria implexa
Caloplaca ahtii	Caloplaca carolinae
Caloplaca arenaria	Caloplaca cerina
Caloplaca cerina	Caloplaca cinnabarina
Caloplaca chrysophthalma	Caloplaca holocarpa
Caloplaca citrina	Caloplaca invadens
Caloplaca holocarpa	Caloplaca sideritis
Candelaria concolor	Candelaria concolor
Candelaria fibrosa	Candelariella aurella
Candelariella aurella	Candelariella reflexa
Candelariella efflorescens	Candelariella vitellina
Candelariella vitellina	Catillaria glauconigrans
Cetrelia olivetorum	Cetraria islandica subsp. islandica
Chaenothecopsis debilis	Cetrelia cetrarioides
Cladonia borealis	Chaenotheca brunneola
Cladonia botrytes	Cladonia apodocarpa
Cladonia cenotea	Cladonia arbuscula
Cladonia cervicornis subsp. verticillata	Cladonia cariosa
Cladonia chlorophaea	Cladonia cenotea
Cladonia coniocraea	Cladonia cervicornis subsp. verticillata
Cladonia cornuta	Cladonia chlorophaea
Cladonia crispata	Cladonia coccifera
Cladonia cristatella	Cladonia coniocraea
Cladonia decorticata	Cladonia crispata
Cladonia digitata	Cladonia cristatella
Cladonia fimbriata	Cladonia cryptochlorophaea
Cladonia floerkeana	Cladonia digitata
Cladonia furcata	Cladonia farinacea
Cladonia gracilis	Cladonia fimbriata
Cladonia macilenta var. bacillaris	Cladonia floerkeana
Cladonia merochlorophaea	Cladonia furcata
Cladonia mitis	Cladonia gracilis
Cladonia multiformis	Cladonia grayi
Cladonia phyllophora	Cladonia macilenta var. bacillaris

Cladonia pleurota	Cladonia mitis
Cladonia pyxidata	Cladonia multiformis
Cladonia rangiferina	Cladonia phyllophora
Cladonia rei	Cladonia pleurota
Cladonia scabriuscula	Cladonia pocillum
Cladonia squamosa	Cladonia pyxidata
Cladonia stygia	Cladonia rangiferina
Cladonia turgida	Cladonia scabriuscula
Cladonia uncialis	Cladonia squamosa
Collema subflaccidum	Cladonia stellaris
Collema tenax	Cladonia turgida
Conotrema urceolatum	Cladonia uncialis
Cresponea chloroconia	Conotrema urceolatum
Diploschistes scruposus	Cyphelium tigillare
Diplotomma alboatrum	Dermatocarpon luridum
Evernia mesomorpha	Dermatocarpon miniatum
Evernia prunastri	Ephebe solida
Flavoparmelia caperata	Evernia mesomorpha
Flavopunctelia flaventior	Flavoparmelia caperata
Flavopunctelia soledica	Fuscopannaria leucophaea
Graphis scripta	Fuscopannaria leucosticta
Hafellia disciformis	Graphis scripta
Heterodermia speciosa	Gyalecta jenensis
Hypocenomyce scalaris	Hafellia disciformis
Hypogymnia physodes	Heterodermia speciosa
Hypogymnia tubulosa	Hyperphyscia adglutinata
Imshaugia aleurites	Hypogymnia physodes
Julella sericea	Hypogymnia tubulosa
Lecanora albella var. rubescens	Imshaugia aleurites
Lecanora albellula	Ionaspis lavata
Lecanora allophana	Lecanora albella
Lecanora caesiorubella	Lecanora albella var. rubescens
Lecanora carpinea	Lecanora allophana
Lecanora circumborealis	Lecanora argentata
Lecanora dispersa	Lecanora argopholis
Lecanora impudens	Lecanora cadubriae
Lecanora intricata	Lecanora caesiorubella
Lecanora muralis	Lecanora carpinea
Lecanora polytropa	Lecanora cenisia
Lecanora pulicaris	Lecanora circumborealis
Lecanora rugosella	Lecanora dispersa
Lecanora strobilina	Lecanora hagenii
Lecanora symmicta	Lecanora hybocarpa
Lecanora thysanophora	Lecanora hypoptoides
Lecanora wisconsinensis	Lecanora muralis
Lecidea atrobrunnea	Lecanora orosthea
Lecidea plana	Lecanora polytropa
Lecidella carpathica	Lecanora subrugosa
Lecidella effugiens	Lecanora symmicta
Lecidella patavina	Lecanora thysanophora

Lepraria neglecta	Lecanora varia
Leptogium cyanescens	Lecanora wisconsinensis
Leptorhaphis epidermidis	Lecidea auriculata
Lobaria pulmonaria	Lecidea brunneofusca
Lobaria quercizans	Lecidea carnulenta
Lopadium pezizoideum	Lecidea lapicida
Loxospora elatina	Lecidea pycnocarpa
Megaspora verrucosa	Lecidea tessellata
Melanelia exasperatula	Lecidella anomaloides
Melanelia olivacea	Lecidella elaeochroma
Melanelia septentrionalis	Lecidella euphorea
Melanelia sorediata	Lepraria incana
Melanelia subargentifera	Lepraria membranacea
Melanelia subaurifera	Leptogium cyanescens
Melanelia subolivacea	Leptogium lichenoides
Micarea denigrata	Leptogium milligranum
Mycobilimbia epixanthoides	Leptogium saturninum
Mycobilimbia pilularis	Leptorhaphis epidermidis
Mycobilimbia tetramera	Lobaria pulmonaria
Mycocalicium subtile	Lobaria quercizans
Myelochroa galbina	Lobothallia alphoplaca
Myxobilimbia sabuletorum	Melanelia fuliginosa
Nephroma bellum	Melanelia olivacea
Nephroma parile	Melanelia sorediata
Ochrolechia arborea	Melanelia subaurifera
Ochrolechia trochophora	Micarea prasina
Opegrapha varia	Mycobilimbia berengeriana
Parmelia squarrosa	Mycobilimbia carneoalbida
Parmelia sulcata	Mycobilimbia lurida
Parmeliella triptophylla	Mycoblastus sanguinarius
Parmeliopsis ambigua	Myelochroa aurulenta
Parmeliopsis hyperopta	Nephroma bellum
Peltigera canina	Nephroma helveticum
Peltigera collina	Nephroma parile
Peltigera degenii	Ochrolechia tartarea
Peltigera didactyla	Opegrapha varia
Peltigera elisabethae	Pannaria lurida
Peltigera evansiana	Parmelia omphalodes
Peltigera horizontalis	Parmelia saxatilis
Peltigera malacea	Parmelia squarrosa
Peltigera polydactylon	Parmelia sulcata
Peltigera praetextata	Parmelina quercina
Peltigera rufescens	Parmeliopsis ambigua
Pertusaria alpina	Parmotrema perforatum
Pertusaria amara	Peltigera aphthosa
Pertusaria consocians	Peltigera canina
Pertusaria macounii	Peltigera didactyla
Pertusaria ophthalmiza	Peltigera elisabethae
Pertusaria trachythallina	Peltigera evansiana
Pertusaria velata	Peltigera horizontalis

Phaeophyscia ciliata	Peltigera lepidophora
Phaeophyscia pusilloides	Peltigera leucophlebia
Phaeophyscia rubropulchra	Peltigera malacea
Phlyctis argena	Peltigera polydactylon
Physcia adscendens	Peltigera rufescens
Physcia aipolia	Pertusaria albescens
Physcia dubia	Pertusaria alpina
Physcia stellaris	Pertusaria amara
Physciella chloantha	Pertusaria consocians
Physciella melanchra	Pertusaria leioplaca
Physconia detersa	Pertusaria ophthalmiza
Physconia leucoleiptes	Pertusaria pustulata
Placynthiella dasaea	Pertusaria sommerfeltii
Platismatia glauca	Pertusaria trachythallina
Platismatia tuckermanii	Pertusaria velata
Porpidia crustulata	Phaeophyscia ciliata
Protoblastenia rupestris	Phaeophyscia endococcina
Pseudevernia consocians	Phaeophyscia hispidula
Punctelia perreticulata	Phaeophyscia orbicularis
Punctelia rudecta	Phaeophyscia rubropulchra
Pyxine sorediata	Phaeophyscia sciastra
Ramalina americana	Physcia adscendens
Ramalina farinacea	Physcia aipolia
Ramalina intermedia	Physcia albinea
Rhizocarpon badioatrum	Physcia caesia
Rhizocarpon geographicum	Physcia stellaris
Rhizocarpon lecanorinum	Physcia subtilis
Rhizocarpon obscuratum	Physcia tenella
Rhizocarpon petraeum	Physconia detersa
Rinodina polyspora	Physconia muscigena
Scoliosporum chlorococcum	Platismatia glauca
Sphinctrina turbinata	Platismatia tuckermanii
Stereocaulon dactylophyllum	Porpidia albocaerulescens
Stereocaulon paschale	Porpidia crustulata
Strigula stigmatella	Porpidia macrocarpa
Strigula submuriformis	Porpidia speirea
Trapeliopsis flexuosa	Porpidia superba
Trapeliopsis granulosa	Protoblastenia rupestris
Tuckermannopsis americana	Protopannaria pezizoides
Tuckermannopsis sepincola	Pseudevernia consocians
Usnea cavernosa	Pseudocyphellaria aurata
Usnea filipendula	Psilolechia lucida
Usnea hirta	Psora decipiens
Usnea lapponica	Psora globifera
Usnea subfloridana	Punctelia rudecta
Vulpicida pinastri	Pyrenopsis fuscoatra
Xanthomendoza fallax	Pyrrhospora elabens
Xanthomendoza hasseana	Ramalina americana
Xanthomendoza ulophyllodes	Ramalina calicaris
Xanthoparmelia angustiphylla	Ramalina fastigiata

Xanthoparmelia conspersa	Ramalina intermedia
Xanthoparmelia cumberlandia	Ramalina pollinaria
Xanthoparmelia somloënsis	Rhizocarpon disporum
Xanthoria elegans	Rhizocarpon geographicum
Xylographa opegraphella	Rhizocarpon grande
Xylographa vitiligo	Rhizocarpon hochstetteri
	Rhizocarpon lecanorinum
yellow cells are new records	Rhizocarpon petraeum
	Rhizocarpon riparium
	Rimularia limborina
	Rinodina bischoffii
	Scoliciosporum chlorococcum
	Solorina saccata
	Staurothele drummondii
	Stereocaulon dactylophyllum
	Stereocaulon paschale
	Stereocaulon saxatile
	Stereocaulon tomentosum
	Tuckermannopsis americana
	Tuckermannopsis ciliaris
	Tuckermannopsis sepincola
	Umbilicaria deusta
	Umbilicaria hyperborea
	Umbilicaria mammulata
	Umbilicaria muehlenbergii
	Umbilicaria vellea
	Usnea cavernosa
	Usnea filipendula
	Usnea hirta
	Usnea subfloridana
	Verrucaria aethiobola
	Verrucaria margacea
	Vulpicida canadensis
	Vulpicida pinastri
	Xanthomendoza fallax
	Xanthoparmelia angustiphylla
	Xanthoparmelia conspersa
	Xanthoria candelaria
	Xanthoria elegans
	Xanthoria polycarpa
	Xanthoria sorediata

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