

**Cladonia of the Western Upper Peninsula  
of Michigan  
With a Checklist of  
Northern Michigan Lichens**

**by Frederick B. Bevis**

**Ford Forestry Center**

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## FOREWORD

Lichen species of the genus Cladonia are of widespread distribution in northern Michigan, as well as in other parts of the world. Many of them are useful as indicators in evaluating site. This paper should be of interest to ecologists and foresters since it includes all of the common species of the Upper Peninsula of Michigan and presents keys for the identification of the more puzzling ones.

Eric A. Bourdo, Jr.

Director, Ford Forestry Center

CLADONIA OF THE WESTERN UPPER PENINSULA OF MICHIGAN,

WITH A CHECKLIST OF NORTHERN MICHIGAN LICHENS<sup>1,2</sup>

by

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The lichen flora of Michigan, particularly that of the northern peninsula of the state, has been the subject of relatively few studies. The flora has been published fragmentarily from time to time by various authors. The latest publication by Thomson (1951) deals entirely with lichens from the Keweenaw Peninsula. Ruthven (1906) and Darlington (1938) have reported on collections from the Porcupine Mountains in Ontonagon County, Dachnowski (1907), Hedrick (1940), and Lowe (1936) on collections from Alger and Marquette Counties, Holt (1909) and Hedrick and Lowe (1936) considered lichens of Isle Royale, Lake Superior, while Nichol's (1925) lists a few species from Mackinac and Chippewa Counties. Monographs on the genera Cladonia, subgenus Cladina (Ahti, 1961), Nephroma (Wetmore, 1960), Peltigera (Thomson, 1950), and the Umbilicariaceae (Llano, 1950), among other papers, report species for northern Michigan. Some of the early collections by E. T. Harper, B. Fink, and S. C. Stuntz and C. E. Allen, are included in the papers by Hedrick (1940) and Hedrick and Lowe (1936).

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<sup>2</sup>Paper presented at the 67th Annual Meeting of the Michigan Academy of Science, Arts, and Letters: Botany Section, March 22, 1963.

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A total of 28 families, 70 genera, and 375 species of lichens is known from the Upper Peninsula of Michigan. A list of these species, compiled from the published records, examination of collections from the Herbarium of the University of Michigan (MICH), and the author's collections from western upper Michigan, is appended.

Bevis (1962) lists 13 species in 10 genera from the Tahquamenon area in Luce County, Lowe (1936) 31 species in 16 genera from Alger and Marquette Counties, Holt (1909) 42 species in 17 genera from Isle Royale, and Darlington (1938) 73 species in 28 genera from the Porcupine Mountains, Ontonagon County. Thomson (1951) collected 186 species, varieties, and forms in 50 genera from Keweenaw County. Hedrick (1940) lists 226 species in 59 genera from Alger and Marquette Counties, based on work by J. L. Lowe; while Hedrick and Lowe (1936) list 296 lichens in 60 genera from Isle Royale, Lake Superior, Keweenaw County. Nichols (1925) reports 155 lichens from the Douglas Lake region in northern lower Michigan, of which 32 species in 19 genera actually are from Mackinac and Chippewa Counties in the Upper Peninsula. Other papers not cited in this summary add a small number of species and several genera to the flora. In comparison, Hale and Culberson (1960) give the lichen Flora of the continental United States and Canada as 40 families, 196 genera, and 2492 species.

This paper presents initial results of work originated in 1959 on the Cladoniae of the western Upper Peninsula of Michigan. The collections were made while conducting ecological investigations on bryophyte and lichen communities in forests of the Lake Superior region. To date, some 4000 specimens of bryophytes and lichens have been collected from 1000 micro-community plots in 100 forest stands. The genus Cladonia totals 600 specimens, with the majority being from Gogebic, Iron, and Baraga

Counties. In addition, Cladoniae for northern Michigan reported in the literature are included in the checklist.

A partial set of the specimens cited from Baraga, Gogebic and Iron Counties, as well as record of the geographic location of the collections, is available in the Herbarium of the Ford Forestry Center, Michigan Technological University. Additional specimens are in the herbarium of the University of Michigan and the author's collections. Nomenclature follows the recent checklist by Hale and Culberson (1960).

Detailed descriptions of each locality are not given for the species included in the list, but are indexed as follows:

1. Au Train, Alger County (Hedrick, 1940; Lowe, 1936): collections from three areas in the county - Laughing Fish Pt. (called Laughing Whitefish Pt. by Hedrick and Lowe), T47N, R22W, 87°00'-46°32'; Au Train Lake, Au Train Falls, and the city of Au Train, T46N, R20W, 86°50'-46°25'; and a few from the Pictured Rocks area northeast of Munising, T47N, R18W, 86°35'-46°28'.
2. Baraga County (this paper): collections largely from two areas - northern hardwood forests in the vicinity of the Sturgeon River, T49N, R33W, 88°28'-46°38', and red pine and jack pine forests on sandy, glacial outwash plains, T49N, R34W, 88°32'-46°38'.
3. Gogebic County (this paper): collections from approximately 5 localities in the southeast corner of the county, T44N, R38W, 89°04'-46°13'.
4. Iron County (this paper): collections from approximately 45 localities in the west half of the county, including T42N to T46N, R35W to R37W, between 88°37' to 89°00'-46°00' to 46°26'.
5. Isle Royale, Lake Superior, Keweenaw County (Hedrick and Lowe, 1936; Holt, 1909: collections from three areas on the island - Rock Harbor, T66N, R34W, 88°30'-48°10'; McCargoe Cove, T66N, R35W, 88°39'-48°10'; and in the vicinity of Siskiwit Bay (Ryan Island, Siskiwit Lake, south of the lake, and Hay Bay on Siskiwit Bay), T65N, R35W and R36W, 88°50'-47°55'.

6. Keweenaw Peninsula, Keweenaw County (Thomson, 1951): collections from two regions - north side of the peninsula, along the shore near Agate Harbor, T59N, R30W, 88°04'-47°28', and at Copper Harbor, T59N, R28W, 87°52'-47°28'; and in the central part of the peninsula near Delaware Mine, T58N, R30W, 88°07'-47°25', and at Mt. Bohemia, T58N, R29W, 88°00'-47°24'.
7. Porcupine Mountains, Ontonagon County (Darlington, 1938; Ruthven, 1905; this paper): collections from the vicinity of Lake of the Clouds, T51N, R43W, 89°45'-46°47' (called "Carp Lake" by Darlington and placed incorrectly in R42W).
8. Prentiss Bay, Mackinac and Chippewa Counties (Nichols, 1925): collections from the two counties in the vicinity of Prentiss Bay, T41N, R2E, 84°12'-45°59'.
9. Sugarloaf Mountain, Marquette County (Hedrick, 1940; Lowe, 1936: northwest of the city of Marquette, T49N, R25W, 87°27'-46°35'; and at Bald Mountain near Big Bay, T52N, R28W, Sect. 5, 87°46'-46°51'.
10. Tahquamenon (this paper): a few collections from two areas - in the vicinity of the Upper Tahquamenon Falls, T48N, R28W, 85°16'-46°34', Luce County; and several from Whitefish Point, T40N, R6W, 85°00'-46°46', Chippewa County.
11. Huron Mountains, Marquette County (this paper): T52N, R28W, Section 21, 87°52'-46°53'.

#### LIST OF SPECIES

(NOTE: The number or numbers following each species refers to the localities listed immediately above. It should be noted that index publications are cited for each locality.)

*alpestris* (L.) Rabenh. 1,2,3,4,5,6,7,9,11  
*apodocarpa* Robbins 6  
*amaurocraea* (Flörke) Schaer. 1,2,4,5,9  
*bacillaris* (Ach.) Nyl. 1,5,9  
*botrytes* (Hag.) Willd., 1,5,9  
*caespiticia* (Pers.) Flörke 1  
*capitata* (Michx.) Spreng. 5  
*cariosa* (Ach.) Spreng. 1,4,5,6  
*cenotea* (Ach.) Schaer. 1,2,4,5,6,8  
*chlorophaea* (Flörke) Spreng. 1,2,3,4,5,6,8,9,10,11

*coccifera* (L.) Zopf 4,5,6,9  
*coniocraea* (Flörke) Sandst. 1,2,3,4,5,6,9,10  
*conista* (Ach.) Robbins 4,10  
*cornuta* (L.) Schaer. 1,2,4,5,9  
*cornutoradiata* (Coem.) Vain. 1,5  
*crispata* (Ach.) Flot. 1,3,4,5,6  
*cristatella* Tuck. 1,2,3,4,5,6,7,10,11  
*cryptochlorophaea* Asahina 4  
*decorticata* (Flörke) Spreng. 5,9  
*deformis* (L.) Hoffm. 1,2,3,4,5,11  
*degenerans* (Flörke) Spreng. 1,3,4,5,6,7,9  
*delicata* (Ehrh.) Flörke 1,4,5  
*digitata* Schaer. 1,2,4,5,6,8  
*flörkeana* (Fr.) Flörke 1,7  
*fimbriata* (L.) Fr. 1,2,3,4,5,6,7,9,11  
*furcata* (Huds.) Schrad. 1,2,3,4,5,6,9  
*gracillis* (L.) Willd. 1,2,3,4,5,6,8,11  
*grayi* Merr. 2,4,6,11  
*macilenta* Hoffm. 1,2,9,10  
*mitis* Sandst. 2,3,4,6,11  
*multiformis* Merr. 1,4,5,6,8  
*nemoxyna* (Ach.) Nyl. 1,9  
*norrlinii* Vain. 4,10  
*ochrochlora* Flörke 1,8  
*pityrea* (Flörke) Fr. 5  
*pleurota* (Flörke) Schaer. 1,2,5,6  
*pyxidata* (L.) Fr. 1,4,5,6,7  
*rangiferina* (L.) Web. 1,2,3,4,5,6,7,10,11  
*scabriuscula* (Del.) Leight. 5,6,9  
*simulata* Robbins 6  
*squamosa* (Scop.) Hoffm. 1,2,3,4,5,6,7,9,11  
*sylvatica* (L.) Hoffm. (=arbuscula (Wallr.) Rabenh.) 1,2,4,5,7  
*turgida* (Ehrh.) Hoffm. 1,2,5,6,7,9,11  
*uncialis* (L.) Web. 1,2,3,4,5,6,9,11  
*verticillata* (Hoffm.) Schaer. 1,2,4,5,6,7,9,11

Forty-five species of Cladonia are reported for the Upper Peninsula of Michigan. Twenty-nine are from Gogebic and Iron Counties (Localities 3 and 4) and twenty-two from Baraga County (Locality 2), from which there are no previous literature records and no collections in the Herbarium of the University of Michigan (MICH). Three species, Cladonia conista (Ach.) Robbins, C. cryptochlorophaea Asahina, and C. norrlinii Vain., are reported for the first time from the state.

Thirty-two species occur in Alger County (Locality 1), twenty-five in Keweenaw County (Locality 6), twenty-four in Marquette County (Localities 9 and 11), and ten in Ontonagon County (Locality 7). Eight species are listed for the Tahquamenon area in Luce and Chippewa Counties, and six from Prentiss Bay in Mackinac and Chippewa Counties (Localities 10 and 8, respectively). The collections of Cladoniae from Isle Royale, Lake Superior, also in Keweenaw County, total thirty-two species (Locality 5).

These totals undoubtedly reflect the tendency of collectors to visit scenic localities, or places of particular ecological interest. They can hardly be considered as a fair indication of the variety and distribution of the Cladonia flora. On the other hand, the total of forty-five species from the Upper Peninsula of Michigan probably represents closely the flora for this part of the state. It is possible that this figure is only 10 to 15 species lower than the sum for the entire state. When one realizes that Ahamdjian (1958) lists 46 species from Massachusetts, Evans (1930) 45 from Connecticut, Luttrell (1954) 48 from Virginia, and Thomson (1942) 47 from Wisconsin, this report of forty-five Cladoniae from northern Michigan, takes on further significance.

Six species are reported from only one locality (Cladonia apodocarpa Robbins, C. caespiticia (Pers.) Flörke, C. capitata [Michx.] Spreng., C. cryptochlorophaea Asahina, C. pityrea [Flörke] Fr., and C. simulata Robbins). Eight are known from two localities (Cladonia conista (Ach.) Robbins, C. cornutoradiata (Coem.) Vain., C. decorticata (Flörke) Spreng., C. floerkeana (Fr.) Flörke, C. grayi Merr., C. nemoxyna (Ach.) Nyl., C. norrlinii Vain., and C. ochrochlora Flörke).

Until more critical collecting is done throughout the Upper Peninsula, these fourteen species can be considered rare. The other species apparently are frequent to common in the northern part of the state.

Certain species deserve further comment. Thirty-five specimens of the Cladonia chlorophaea complex (a group of closely related species separated on the basis of the lichen chemistry) were subjected to chemical tests. Cladonia merochlorophaea Asahina (merochloropaeic acid), an extremely rare species, was not found. One specimen contained cryptochlorophaeic acid (C. cryptochlorophaea Asahina) and seven grayanic acid (C. grayi Merr.). The chemistry of the remaining twenty-seven specimens placed them in the group C. chlorophaea (Flörke) Spreng. A key to this complex, based on comparative morphology and reaction to the standard KOH (saturated solution of potassium hydroxide), C (calcium hypochlorite, Ca[ClO]<sub>2</sub>) and P (paraphenylenediamine) tests when applied to the cortex or medulla of the thallus- the podetia-, is presented. A few species of similar morphology, but not in the C. chlorophaea complex are included.

KEY TO THE CLADONIA CHLOROPHAEA GROUP<sup>1</sup>

- 1. Apothecia present . . . . . 2
- 1. Apothecia absent . . . . . 3
  - 2. Apothecia red . . . . . C. pleurota (Flörke) Schaer.  
(KOH-, P-)
  - 2. Apothecia brown . . . . . 4
- 3. KOH-, P-, cups yellow-green, zeorine present (positive Lieberman's test) . . . . . C. pleurota (Flörke) Schaer.
- 3. KOH- or KOH+, P- or P+, cups gray-green, brownish-green, or whitish gray, zeorine absent. . . . . 4

4. Podetia and cups soresiose . . . . . 5
4. Podetia and cups without soredia . . . C. pyxidata (L.) Fr.  
(KOH-, P+ red)
5. Soredia granular (to warty). . . . . 6
5. Soredia farinose (finely powdery). . . . . 7
6. KOH-, P- or P+ red . . . . . 8
6. KOH+ red or brown, P- or P+ red. . . . . 9
7. KOH-, P+ red . . . . . C. fimbriata (L.) Fr.
7. KOH+ brown, P+ red . . . . . C. conista (Ach.) Robbins
8. KOH-, P- . . . . . C. grayi Merr.
8. KOH-, P+ red-orange. . . . . C. chlorophaea (Flörke) Spreng.
9. KOH+ red, P- (or rarely P+ red). . . . . C. cryptochlorophaea Asahina
9. KOH+ brown, P+ red . . . . . C. conista (Ach.) Robbins  
(normally with farinose soredia)

<sup>1</sup>This group comprises part of the members of the genus Cladonia that form cups. The podetia are short and stout, typically with goblet-shaped cups, and without central or marginal proliferations (the apothecia may be on minute stalks from the margin of the cup), and the podetia lack squamules. Other Cladoniae with cups have squamulose podetia, the podetia are normally tall and narrow, and the cups usually have central or marginal proliferations or are extremely small terminating long, slender podetia.

KOH (a solution of freshly prepared, saturated, KOH) and P (paraphenylenediamine, a freshly prepared solution of P- 5% P in 95% alcohol) when applied to small portions of the podetia of the lichen thallus, either give a positive color reaction or do not react.

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Two species, Cladonia mitis Sandst. and C. sylvatica (L.) Hoffm. are extremely difficult to distinguish in the field. The presence or absence of one or the other from a locality, unless carefully collected for study, may be the result of lack of recognition only. The species are normally separated on their P reaction (presence or absence of fumarprotocetraric acid). C. sylvatica (L.) Hoffm. are normally P+ orange to red, while C.

mitis Sandst. are P- (negative); however, specimens of C. sylvatica (L.) Hoffm, from the Great Lakes region are either P + orange to red or P- (negative). Ahti (1961) (in Table 1, page 125 and on pages 116-120, of his monograph on the reindeer lichens) has given careful consideration to the separation of C. mitis Sandst. and C. sylvatica (L.) Hoffm. (designated C. arbuscula (Wallr.) Rabenh.). Specimens P + orange to red (fumarprotocetraric acid present) are clearly C. arbuscula (Wallr.) Rabenh., while those P- (fumarprotocetraric acid absent) must be differentiated on morphological features. Below are summarized some of the distinguishing morphological features separating the P- (negative) form of C. arbuscula (Wallr.) Rabenh. from C. mitis Sandst. in Table 1.

Table 1: Morphological Features Distinguishing Cladonia arbuscula (Wallr.) Rabenh. and Cladonia mitis Sandst. (after Ahti, 1961).

<u>C. arbuscula</u>	<u>C. mitis</u>
Podetia color yellowish-green	Podetia color pale whitish-green
Main stem generally robust and yellowish-gray	Main stem generally thin (slender) and pale bluish-gray
Usually coarse and densely branched	Usually slender and sparsely branched
Apical branchlets often deflexed in one direction (unilaterally)	Apical branchlets usually erect or slightly deflexed in various directions
Ultimate apical branchlets of the podetia conspicuously brown	Ultimate apical branchlets of the podetia only slightly browned

## SUMMARY.

The present paper is chiefly based on collections for the western Upper Peninsula of Michigan made by the author since 1959 and from the published records. Forty-five (45) species of Cladoniae are listed, twenty-nine (29) of these previously unreported from Baraga, Gogebic or Iron Counties, and three apparently new published records for the state, C. conista (Ach.) Robbins, C. cryptochlorophaea Asahina, and C. norrlinii Vain. Comments on the C. chlorophaea complex and a key to these species and species of similar morphology are presented. In addition, attention is called to the difficulty of separating the P- (negative) "strain" of C. sylvatica (L.) Hoffm., syn. C. arbuscula (Wallr.) Rabenh., from C. mitis Sandst. Morphological characters helping to distinguish these species are summarized.

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## APPENDIX:

## A CHECKLIST OF NORTHERN MICHIGAN LICHENS

LIST OF GENERA<sup>1</sup>

Acarospora 3	Acarosporaceae	Opegrapha 3	Opegraphaceae
Actinogyra 1	(Verrucariaceae)	Pannaria 5	Pannariaceae
Alectoria 3	Usneaceae	Parmelia 26	Parmeliaceae
Anaptychia 5	Physciaceae	Parmeliella 2	Pannariaceae
Arthonia 7	Arthoniaceae	Parmeliopsis 3	Parmeliaceae
Arthopyrenia 3	Arthopyreniaceae	Peltigera 9	Peltigeraceae
Arthothelium 2	Arthoniaceae	Pertusaria 7	Pertusariaceae
Bacidia 15	Lecideaceae	Phlyctis 1	Lecanoraceae
Baeomyces 1	Cladoniaceae	Physcia 19	Physciaceae
Buellia 7	Buelliaceae	Placynthium 1	Pannariaceae
Calicium 7	Caliciaceae	Polyblastiopsis 1	Arthopyreniaceae
Caloplaca 10	Caloplacaceae	Pseudocyphellaria 1	Stictaceae
Candelaria 2	Parmeliaceae	Pyrenula 2	Pyrenulaceae
Candelariella 3	Lecanoraceae	Pyxine 1	Physciaceae
Catillaria 4	Lecideaceae	Ramalina 7	Usneaceae
Cetraria 10	Parmeliaceae	Rhizocarpon 8	Lecideaceae
Chaenotheca 5	Caliciaceae	Rinodina 5	Buelliaceae
Cladonia 45	Cladoniaceae	Sarcogyne 2	Acarosporaceae
Collema 6	Collemataceae	Solorina 2	Peltigeraceae
Coniocybe 1	Caliciaceae	Staurothele 2	Verrucariaceae
Conotrema 1	Diploschistaceae	Stenocybe 1	Caliciaceae
Crocynia 1	Fungi Imperfecti	Stereocaulon 3	Stereocaulaceae
Cyphelium 2	Cypheliaceae	Sticta 2	Stictaceae
Dermatocarpon 2	Verrucariaceae	Teloschistes 1	Teloschistaceae
Dimerella 2	Gyalectaceae	Toninia 2	Lecideaceae
Diploschistes 1	Diploschistaceae	Trypethelium 1	Pyrenulaceae
Ephebe 1	Ephebeaceae	Umbilicaria 4	Umbilicariaceae
Evernia 2	Usneaceae	Usnea 7	Usneaceae
Graphis 1	Graphidaceae	Verrucaria 4	Verrucariaceae
Gyalecta 1	Gyalectaceae	Xanthoria 3	Teloschistaceae
Haematomma 2	Lecanoraceae		
Icmadophila 1	Lecanoraceae		
Ionaspis 1	Lecanoraceae		
Lasallia 2	Umbilicariaceae		
Lecanora 27	Lecanoraceae		
Lecidea 37	Lecideaceae		
Lepraria 1	Fungi Imperfecti		
Leptogium 5	Collemataceae		
Leptorhaphis 1	Arthopyreniaceae		
Lobaria 2	Stictaceae		
Lopadium 1	Lecideaceae		
Melaspilea 1	Graphidaceae		
Mycoblastus 1	Lecideaceae		
Nephroma 4	Peltigeraceae		
Ochrolechia 2	Lecanoraceae		

<sup>1</sup>The number of species in each genus for the Upper Peninsula of Michigan is given, and the family follows.

LIST OF SPECIES<sup>1</sup>

<i>Acarospora badiofusca</i>	<i>Buellia parasema</i>
<i>Acarospora fuscata</i>	<i>Buellia punctata</i>
<i>Acarospora glaucocarpa</i>	<i>Buellia spuria</i>
<i>Actinogyra muhlenbergii</i>	( <i>Buellia stillingiana</i> )
(= <i>Gyrophora muhlenbergii</i> Ach.)	<i>Calicium albonigrum</i>
<i>Alectoria implexa</i>	<i>Calicium floerkei</i>
<i>Alectoria jubata</i>	<i>Calicium lenticulare</i>
(? <i>Alectoria americana</i> )	(? <i>C. sphaerocephalum</i> )
<i>Alectoria nidulifera</i>	<i>Calicium pusillum</i>
<i>Anaptychia ciliaris</i>	<i>Calicium salicinum</i>
<i>Anaptychia hypoleuca</i>	<i>Calicium subtile</i>
<i>Anaptychia leucomelaena</i>	<i>Calicium trabinellum</i>
<i>Anaptychia palmatula</i>	<i>Caloplaca carolinae</i>
<i>Anaptychia speciosa</i>	<i>Caloplaca cerina</i>
<i>Arthonia abietina</i>	<i>Caloplaca cinnabarina</i>
<i>Arthonia caesia</i>	<i>Caloplaca citrina</i>
<i>Arthonia convexella</i>	<i>Caloplaca elegans</i>
<i>Arthonia diffusella</i>	<i>Caloplaca ferruginea</i>
<i>Arthonia lecideola</i>	<i>Caloplaca murorum</i>
<i>Arthonia lurida</i>	<i>Caloplaca pyracea</i>
<i>Arthonia radiata</i>	<i>Caloplaca sideritis</i>
<i>Arthopyrenia epidermidis</i>	<i>Caloplaca ulmorum</i>
<i>Arthopyrenia gemmata</i>	<i>Candelaria concolor</i>
<i>Arthopyrenia punctiformis</i>	( <i>Candelaria fibrosa</i> )
( <i>Arthothelium spectabile</i> )	<i>Candelariella aurella</i>
( <i>Arthothelium taediosum</i> )	<i>Candelariella cerinella</i>
<i>Bacidia acclinis</i>	<i>Candelariella vitellina</i>
<i>Bacidia atrogrisea</i>	<i>Catillaria atropurpurea</i>
<i>Bacidia chlorococca</i>	<i>Catillaria glauconigrans</i>
<i>Bacidia fuscorubella</i>	( <i>Catillaria griffithii</i> )
<i>Bacidia incompta</i>	<i>Catillaria micrococca</i>
<i>Bacidia inundata</i>	<i>Cetraria aurescens</i>
<i>Bacidia lignaria</i>	<i>Cetraria ciliaris</i>
<i>Bacidia luteola</i>	<i>Cetraria glauca</i>
<i>Bacidia melaena</i>	<i>Cetraria islandica</i>
<i>Bacidia muscorum</i>	<i>Cetraria juniperina</i>
<i>Bacidia naegelii</i>	<i>Cetraria lacunosa</i>
<i>Bacidia sabuletorum</i>	<i>Cetraria oakesiana</i>
<i>Bacidia schweinitzii</i>	<i>Cetraria pinsatri</i>
<i>Bacidia sphaeroides</i>	<i>Cetraria sepincola</i>
(= <i>Bilimbia sphaeroides</i> )	<i>Cetraria tuckermanii</i>
<i>Bacidia suffusa</i>	<i>Chaenotheca brunneola</i>
<i>Baeomyces rufus</i>	<i>Chaenotheca chrysocephala</i>
<i>Buellia alboatra</i>	<i>Chaenotheca melonophaea</i>
<i>Buellia dialyta</i>	<i>Chaenotheca phaeocephala</i>
<i>Buellia lauri-cassiae</i>	<i>Chaenotheca trichialis</i>

<sup>1</sup>The species enclosed within parentheses are known from the northern lower peninsula of Michigan in Cheboygan and Emmet Counties, and are to be expected in the Upper Peninsula of Michigan. Nomenclature follows the 1960 checklist of Hale and Culberson.

<i>Cladonia alpestris</i>	<i>Conotrema urceolatum</i>
<i>Cladonia amaurocraea</i>	<i>Crocynia membranacea</i>
<i>Cladonia apodocarpa</i>	( <i>Amphiloma lanuginosum</i> )
<i>Cladonia bacillaris</i>	<i>Cyphelium lucidum</i>
<i>Cladonia botrytes</i>	<i>Cyphelium tigillare</i>
<i>Cladonia caespiticia</i>	<i>Dermatocarpon fluviatule</i>
<i>Cladonia cariosa</i>	<i>Dermatocarpon miniatum</i>
<i>Cladonia capitata</i>	<i>Dimerella diluta</i>
<i>Cladonia cenotea</i>	(= <i>Microphiale diluta</i> )
<i>Cladonia chlorophaea</i>	<i>Dimerella lutea</i>
<i>Cladonia coccifera</i>	(= <i>Microphiale lutea</i> )
<i>Cladonia coniocraea</i>	<i>Diploschistes scruposus</i>
<i>Cladonia conista</i>	<i>Ephebe solida</i>
<i>Cladonia cornuta</i>	<i>Evernia mesomorpha</i>
<i>Cladonia cornutoradiata</i>	<i>Evernia prunastri</i>
<i>Cladonia crispata</i>	<i>Graphis scripta</i>
<i>Cladonia cristatella</i>	<i>Gyalecta jenensis</i>
<i>Cladonia cryptochlorophaea</i>	<i>Haematomma cismonicum</i>
<i>Cladonia decorticata</i>	<i>Haematomma elatinum</i>
<i>Cladonia deformis</i>	<i>Icmadophila ericetorum</i>
<i>Cladonia degenerans</i>	<i>Ionaspis lavata</i>
<i>Cladonia delicata</i>	<i>Lasallia papulosa</i>
<i>Cladonia degitata</i>	<i>Lasallia pensylvanica</i>
<i>Cladonia floerkeana</i>	<i>Lecanora alphoplaca</i>
<i>Cladonia fimbriata</i>	<i>Lecanora atra</i>
<i>Cladonia furcata</i>	<i>Lecanora cadubriae</i>
<i>Cladonia gracilllis</i>	<i>Lecanora cenisea</i>
<i>Cladonia grayi</i>	<i>Lecanora cinerea</i>
<i>Cladonia macilenta</i>	<i>Lecanora collocarpa</i>
<i>Cladonia mitis</i>	<i>Lecanora dispersa</i>
<i>Cladonia multiformis</i>	<i>Lecanora frustulosa</i>
<i>Cladonia nemoxyna</i>	<i>Lecanora fuscescens</i>
<i>Cladonia norrlinii</i>	<i>Lecanora gibbosula</i>
<i>Cladonia ochrochlora</i>	<i>Lecanora hageni</i>
<i>Cladonia pityrea</i>	<i>Lecanora hypoptoides</i>
<i>Cladonia pleurota</i>	<i>Lecanora laevata</i>
<i>Cladonia pyxidata</i>	<i>Lecanora muralis</i>
<i>Cladonia rangiferina</i>	<i>Lecanora mutabilis</i>
<i>Cladonia scabriuscula</i>	<i>Lecanora oregana</i>
<i>Cladonia simulata</i>	<i>Lecanora pallida</i>
<i>Cladonia squamosa</i>	<i>Lecanora polytropa</i>
<i>Cladonia sylvatica</i>	<i>Lecanora rubina</i>
(= <i>G. arbuscula</i> )	<i>Lecanora rugosella</i>
<i>Cladonia turgida</i>	<i>Lecanora rupicola</i>
<i>Cladonia uncialis</i>	<i>Lecanora sambuci</i>
<i>Cladonia verticillata</i>	<i>Lecanora subfusca</i>
<i>Collema auriculatum</i>	<i>Lecanora subfuscata</i>
<i>Collema cyrtaspis</i>	<i>Lecanora subrugosa</i>
<i>Collema flaccidum</i>	<i>Lecanora varia</i>
<i>Collema nigrescens</i>	<i>Lecanora versicolor</i>
<i>Collema tenax</i>	<i>Lecidea albocaerulescens</i>
<i>Collema tunaeforme</i>	( <i>Lecidea anthracophila</i> )
<i>Coniocybe furfuracea</i>	<i>Lecidea atrofusca</i>

*Lecidea auriculata*  
*Lecidea berengeriana*  
*Lecidea botryosa*  
*Lecidea brujeriana*  
*Lecidea brunneofusca*  
*Lecidea carnulenta*  
*Lecidea crustulata*  
*Lecidea cyrtidia*  
*Lecidea decipiens*  
*Lecidea elabens*  
*Lecidea euphorea*  
 (*Lecidea friesii*)  
*Lecidea fuscoatra*  
*Lecidea globifera*  
*Lecidea goniophila*  
*Lecidea granulosa*  
*Lecidea lapicida*  
*Lecidea lucida*  
*Lecidea lurida*  
*Lecidea orosthea*  
*Lecidea pantherina*  
*Lecidea pycnocarpa*  
*Lecidea sanguineoatra*  
 (*Lecidea scalaris*)  
*Lecidea steriza*  
*Lecidea symmicta*  
*Lecidea tessellata*  
*Lecidea trochodes*  
*Lecidea turgidula*  
*Lecidea uliginosa*  
*Lecidea varians*  
*Lecidea vernalis*  
*Lecidea viridescens*  
*Lecidea vulgata*  
 (*Lepraria aeruginosa*)  
*Leptogium corticola*  
*Leptogium cyanescens*  
*Leptogium lichenoides*  
*Leptogium plicatile*  
*Leptogium saturninum*  
*Leptorhaphis epidermidis*  
*Lobaria pulmonaria*  
*Lobaria quercizans*  
*Lopadium pezizoideum*  
*Melaspilea arthonioides*  
*Mycoblastus sanguinarius*  
*Nephroma bellum*  
 (= *N. laevigatum*)  
*Nephroma helveticum*  
*Nephroma parile*  
*Nephroma resupinatum*  
 (= *N. tomentosum*)  
 (*Ochrolechia pallescens*)  
*Ochrolechia tartarea*

*Opegrapha lichenoides*  
*Opegrapha pulicaris*  
 (= *O. varia*)  
*Opegrapha viridis*  
*Pannaria leucosticta*  
*Pannaria lurida*  
*Pannaria pezizoides*  
*Pannaria pityrea*  
*Pannaria rubiginosa*  
*Parmelia aurlenta*  
 (*Parmelia bolliana*)  
*Parmelia borrieri*  
 (= *P. dubia*)  
*Parmelia caperata*  
*Parmelia centrifuga*  
*Parmelia cetrariodes*  
*Parmelia cetrata*  
*Parmelia conspersa*  
 (*Parmelia crinita*)  
*Parmelia exasperata*  
*Parmelia furfuracea*  
*Parmelia isidiata*  
*Parmelia olivacea*  
*Parmelia omphalodes*  
*Parmelia perforata*  
*Parmelia perlata*  
*Parmelia pertusa*  
*Parmelia physodes*  
*Parmelia quercina*  
*Parmelia rudecta*  
*Parmelia saxatilis*  
*Parmelia solediosa*  
 (? *P. solediota*)  
*Parmelia stenophylla*  
*Parmelia subargentifera*  
*Parmelia subaurifera*  
*Parmelia sulcata*  
*Parmeliella lepidiota*  
*Parmeliella microphyllia*  
*Parmeliopsis aleurites*  
 (= *P. pallescens*)  
*Parmeliopsis ambigua*  
*Parmeliopsis hyperopta*  
*Peltigera apthosa*  
*Peltigera canina*  
*Peltigera evansiana*  
*Peltigera horizontalis*  
*Peltigera lepidophora*  
*Peltigera malacea*  
*Peltigera polydactyla*  
*Peltigera scutata*  
*Peltigera venosa*  
*Pertusaria alpina*  
*Pertusaria amara*

Pertusaria leioplaca  
 Pertusaria multipuncta  
 Pertusaria pertusa  
 Pertusaria pustulata  
 Pertusaria velata  
 (Phlyctis agelaea)  
 Physcia aipolia  
 Physcia albinea  
 Physcia caesia  
 Physcia ciliata  
 Physcia elaeina  
 Physcia grisea  
 Physcia leucoleiptes  
 Physcia lithotodes  
 Physcia millegrana  
 Physcia muscigena  
 Physcia orbicularis  
 (inc. P. virella)  
 Physcia pulverulenta  
 Physcia sciastra  
 (= P. lithotea)  
 Physcia stellaris  
 Physcia subtilis  
 Physcia tenella  
 Physcia teretiuscula  
 Physcia tribacia  
 (Physcia tribacoides)  
 Placynthium nigrum  
 Polyblastiopsis fallax  
 Pseudocyphellaria aurata  
 Pyrenula leucoplaca  
 Pyrenula nitida  
 (Pyxine sorediata)  
 Ramalina calicaris  
 Ramalina farinacea  
 Ramalina fastigiata  
 Ramalina fraxinea  
 Ramalina geniculata  
 Ramalina intermedia  
 Ramalina pollinaria  
 Rhizocarpon badioatrum  
 Rhizocarpon disporm  
 Rhizocarpon eupetraeum  
 Rhizocarpon geographicum  
 Rhizocarpon grande  
 Rhizocarpon hochstetteri  
 Rhizocarpon lecanorinum  
 (Rhizocarpon obscuratum)  
 Rinodina atrocinerea  
 Rinodina bischoffii  
 Rinodina confragosa  
 Rinodina exigua  
 Rinodina oreina  
 Sarcogyne clavus  
 (Sarcogyne simplex)  
 Solorina saccata  
 Solorina spongiosa  
 Staurothele clopima  
 Staurothele umbrina  
 Stenocybe major  
 Stereocaulon dactylophyllum  
 (= S. coralloides)  
 Stereocaulon paschale  
 Stereocaulon tomentosum  
 Sticta fuliginosa  
 Sticta weigellii  
 (Teloschistes chrysophthalmus)  
 Toninia caeruleonigricans  
 Toninia squalida  
 (Trypethelium virens)  
 Umbilicaria deusta  
 (= Gyrophora deustra)  
 Umbilicaria hyperborea  
 (= Gyrophora hyperborea)  
 Umbilicaria mammulata  
 (= Gyrophora dillenii)  
 Umbilicaria vellea  
 Usnea cavernosa  
 Usnea ceratina  
 Usnea comosa  
 Usnea dasypoga  
 Usnea florida  
 Usnea hirta  
 Usnea longissima  
 (Verrucaria macrostoma)  
 Verrucaria margacea  
 Verrucaria nigrescens  
 Verrucaria rupestris  
 Verucaria viridula  
 Xanthoria candelaria  
 (Xanthoria fallax)  
 Xanthoria polycarpa

