

WORKING DRAFT
of the
LICHENS OF THE SOUTHERN LAKE MICHIGAN REGION
[For classroom use only]

Last Revised: 7 January 2019

Gerould Wilhelm
Conservation Research Institute
Cedarburg, Wisconsin

INTRODUCTION

The 47-county Southern Lake Michigan Region as defined in this lichen flora is somewhat larger than the 22-county area circumscribed by Wilhelm & Rericha (2017). The region includes the Michigan counties of Allegan, Berrien, Cass, Kalamazoo, Ottawa, St. Joseph, and Van Buren; Jefferson, Kenosha, Milwaukee, Racine, Rock, Walworth, and Waukesha, counties in Wisconsin; Boone, Cook, DeKalb, DuPage, Ford, Grundy, Iroquois, Kane, Kankakee, Kendall, Lake, LaSalle, Lee, Livingston, McHenry, Ogle, Will, and Winnebago counties in Illinois; and Benton, Elkhart, Fulton, Jasper, Kosciusko, Lake, LaGrange, LaPorte, Marshall, Newton, Porter, Pulaski, St. Joseph, Starke, and White counties in Indiana. These 47 counties in four states comprise the region around the southern end of Lake Michigan.

This region is entirely within the area covered by the last stages of the continental glacier that had receded fully from the landscape after the last emptying of the remnants of Glacial Lake Chicago, Lake Algoma, about 3,000 years ago. The oldest landscape in the region is in the northwestern region, which has been without ice for a little more than 25,000 years. Illinois Beach State Park, was fully formed in its present condition fewer than 2,000 years ago.

The Southern Lake Michigan region includes American Beech forests with eastern affinities, bogs with northern affinities, lake plains with Atlantic coast affinities, and prairie with western affinities. With regard to saxicolous habitats, lichen substrates include a few breaks and pavements of dolomite, siliceous erratics, and carbonate-rich man-made aggregates. There is a diverse array of corticolous substrates, probably far more diverse and frequently disposed than was the case at the time of settlement.

For all that, the Southern Lake Michigan Region could hardly be described as the garden spot of the world's lichens. Nowhere do lichens festoon every possible substrate such as is one can see in parts of southern Illinois and Indiana, Missouri, and the northern districts of Michigan and Wisconsin. Calkins (1896), who first provided a compendium on the lichens of "Chicago and Vicinity" noted that "this territory might be . . . sufficiently large to furnish an attractive field and ample material for the investigation and study of lichens," but lamented that:

“ . . . with the exception of the most common species, a few of which are cosmopolitan in their habits, the explorer will meet with a disappointment not to be experienced further south and west in regions where the conditions of the soil, the geological features of the country, and the climate favor a larger development of species . . . However, . . . enough varieties occur [locally] to form an excellent preliminary course of study [when the student] has become familiar with the Parmelias and Physcias which are so abundant on oaks and other trees along the lake shore and in the ‘wooded islands of the prairies.’”

The Southern Lake Michigan Region, of course, by 1896, had come to include one of the great metropolitan regions of North America, replete with the ubiquitous combustion of coal and its sulfur-rich effusions. Tillage agriculture and heavy grazing dominated the purlieu to urban edifice and structure. Much tree-planting had occurred throughout the rural the populated districts. Calkins was compelled to apologize for the ostensibly depauperate nature of the Chicago lichen flora, having believed it once to have been notably richer:

“Localities in and around Chicago formerly rich in lichenose vegetation are now destitute of it. The species were and are mostly corticolous, with a few on rocks, where exposed, and even on the boulders of the prairies. But the tidal waves of civilization have changed the conditions under which lichens grown, and to find them abundantly we must seek the country where the air on which they feed is pure and substrates suitable.”

Chicago and vicinity, as Calkins described it included significantly less area than this flora encompasses. It included all of Cook and DuPage counties, a sliver of Kane County, and the northern 8 townships of Will County, all in Illinois, and the northern half of Lake County, Indiana. Wilhelm (1998), one hundred years later, as best as one could given the changes in taxonomy and nomenclature that had occurred, compared the flora as he recorded it from the same region with what was described by Calkins. As Wilhelm interpreted it, Calkins had reported 125 species in 1896 and there were 147 species that had been discovered in the same area during the last decade of the Twentieth Century. Of the contemporary coterie of species, only 71 were in the area at turn of the previous century. Wilhelm concluded that while simple diversity had not declined over the century, there were definite indications that significant changes had occurred in composition and physiognomy. Many species were no longer evident; some others appeared to have entered the flora in more recent times. Larger foliose and fruticose lichens, which were considered common by Calkins, had been replaced by small foliose and crustose species; lichenized fungi with cyanobacterial photobionts also appeared to have much diminished over the century, particularly in the era following World War II.

Due to rather intensive surveys over the last 25 years, many more lichens have been collected in those same counties. Some of these specimens vindicate earlier reports of Calkins, but many others reflect a more recent origin in the region. The species composition lichen flora continues to change. This flora of the 47-county region presents 441 lichenized fungi recognized at present time, 51 of which are yet unknown specifically from the region but are well documented from the immediate vicinity.

Evidence of residency in the region is characterized four ways. Three-hundred seventeen of the them are represented by at least one record in the herbarium at the Morton Arboretum (MOR), most of which were collected within the last 35 years. Another 48 are known only from some other herbarium, which is signified by its Index Herbariorum acronym. Yet another 21 are reasonably reliable literature records for which voucher specimens have not yet been discovered. The species presented from just outside the region are included in order to alert researchers of their presence should they discover them locally and to make the flora a little more useful to lichenologists near the southern portion of Lake Michigan. At this writing, no species have been documented from all 47 counties. The occurrence of lichens locally is uneven, based at this point on the fact that the visitation by lichenologist is greatly uneven. While DuPage and Cook counties each have more than 185 species documented, St. Joseph County, Michigan has never been visited; seven counties have fewer than ten species recorded. The most frequently vouchered lichen include *Candelaria concolor*, *Chrysothrix caesia*, *Cladonia cristatella*, *Flavoparmelia caperata*, *Myriolecis dispersa*, *Parmelia sulcata*, *Phaeophyscia rubropulchra*, *Physcia millegrana*, *Physcia stellaris*, *Punctelia bolliana*, and *Punctelia rudecta*.

THE SOUTHERN LAKE MICHIGAN REGION FLORA

Of the 390 species known from the 47-county region, with the exception of about 35 species (9%) that can be described as frequent or common, most of our lichens can be said to be uncommon or rare. Some of these uncommon species, such as *Canoparmelia texana* and *Teloschistes exilis* are likely to be wholly adventive in the region. It is known that certain common species, such as *Xanthocarpia feracissima*, are found locally almost exclusively on weathered concrete and flagstone, and that others, such as *Caloplaca microphyllina* and *Amandinea punctata*, have exploited weathered fence rails and old wood. They are probably far more common in the Southern Lake Michigan region today than in presettlement times, but to declare them allochthonous elements is risky, given the quality of our baseline information. Until more is known about the native ranges of our species, we have largely resisted the temptation to speculate on which species are native and which are not. Several non-lichenized ascomycetous genera are included here because they are regularly collected with lichens and generally not treated as a group elsewhere: *Calicium*, *Didymosphaeria*, *Hysterium*, *Julella*, *Kirschsteiniotelia*, *Mycoglaena*, *Naetrocymbe*, and *Phaeocalicium*.

The flora begins with an artificial key to the families and is followed by an even more artificial key to the genera. The latter is followed by an alphabetical catalog of the genera and their species; keys to the species immediately follow the genus entry. Family keys to genera are intercalated alphabetically within the text. For each genus, the family is listed, along with the known photobiont; a brief description of the spores is also provided. The nomenclature approximates that given in Esslinger (2016) as are the authors and their orthography.

For each species, there is a list of counties from which the lichen is known. Counties for which there are either herbarium records or literature citations are shown in lower case and underscored; those known only from literature reports are rendered without underlining. In the instances where Calkins (1896) did not mention a county location, but described a lichen's distribution as "common throughout our area" or something to that effect, we have taken the liberty of assuming that he at least had seen the alleged lichen in Cook County. The NY code refers to the New York Botanical

Garden, wherein there is set of Calkins's *exsiccati*, which Richard Harris examined in 1992 during his review of an early version of this flora; all NY designations represent his determinations. It would seem that the numbers on the set at the New York Botanical Garden do not correspond to those of the set at the University of Illinois, the latter of which still requires contemporary inspection.

In addition to the valid lichen names applied to greater Southern Lake Michigan Region lichens, there are numerous synonyms, misapplied names, and orthographic errors that we have, perhaps too cavalierly, subsumed under a more valid name or closely allied taxon. In some instances, these names may be misidentifications or legitimate older names that are known now to have narrower distributions or species circumscriptions. In other instances they may be related species or names relevant to taxonomic problems that are discussed. All of these names appear in the "Index of Synonyms and Misapplied Names" section and are indexed to the species under which they are discussed.

Lichens known to us from districts near the Southern Lake Michigan Region, but not known to be within the 47-county region, have their names presented in *bold italics*. We have not generally included species confined to the unglaciated districts of southern Illinois or Indiana nor those from the boreal districts of Wisconsin or Michigan.

For each taxon, we have attempted to provide an etymology. Such information on lichen names is scant in the literature. Rarely do lichenologists explain the origin of epithets when they name a species. Yet, very often the epithet is descriptive of the lichen, and knowing the linguistic roots can be interesting as well as informative. Frequently, notable lichenologists have been honored in a lichen name, but if no one notes who the person was, the honor is empty. In some cases, the epithet might even seem nonsensical, or its origin ambiguous. To wit, for quite a while we had blithely assumed that for *Cladonia rei*, the epithet was some recondite derivation of the Latin noun *res, rei*, a word of such complexity that it used to give the author fits in Latin translation. Actually it is an honorific derivative of an Italian botanist by the name of Goiovani Re! Necessarily, our interpretations of epithet origin are sometimes fanciful, derived from a certain experience with the lichen and a limited knowledge of Greek and Latin. Except for obvious cases where the meaning seems certain, we must assure the reader that we have had no more access to the mind of the namer than readily available sources can provide. The etymological remarks are offered with the idea that fellow lichenologists will proffer suggestions or emendations.

PHOTOBIONTS

With respect to the taxonomy of lichenized fungi, little attention has accrued to the photobiont, inasmuch as lichen taxa are organized prevalingly around the morphology of the ascoma, spores, and fungal thallus. Most lichens that have amyloid hymenia are associated with *Trebouxia* species; most of those with non-amyloid hymenia are lichenized with species of *Trentepohlia*. Both genera are Chlorophycean algae. Frequently, the identification of algae associated with lichenized fungi is difficult, because the morphologies of algal species, although fairly distinct when cultured on agar, are frequently modified significantly when in association with a lichenized fungus. For

instance, cells of filamentous genera frequently become solitary, and sometimes the chromatophore takes on quite a different aspect. In many apothecial or algal layer sections, several genera of algae other than the known photobiont can be observed, but a physical association with the fungal hyphae is difficult to verify. More than one genus of photobiont may be noted for a lichen genus. This does not mean that this is the case for all species in the genus or that it is routinely applicable for Southern Lake Michigan Region species. Neither does it mean that there are no other gonidia [photobionts] involved. The following is a key to the photobiont genera known from lichens presented here; it is adapted from Ahmadjian's (1967) descriptions, although we are in the process of bringing the photobiont delineations up to date.

1. Photobiont blue-green.
 2. Cells in paired or gelatinous clusters
 3. Cells in uniformly paired units.
 - Units simply 2-celled *Chroococcus*
 - Units in multiples of paired cells *Chroococciopsis*
 3. Cells not uniformly paired.
 - Gelatinous envelopes yellowish brown *Xanthocapsa*
 - Gelatinous envelopes hyaline *Gloeocapsa*
 2. Cells end-to-end in filaments or chains.
 4. Cells spherical, in beadlike chains *Nostoc*
 4. Cells cylindrical, in filaments.
 5. Filaments mostly 2–4 cells thick *Stigonema*
 5. Filaments 1 cell thick.
 - Heterocysts basal, branches tending to attenuate from base to apex *Dichothrix*
 - Heterocysts within the filaments, branches not much attenuate *Scytonema*
1. Photobiont green.
 6. Larger cells more than 16 μm long.
 - Droplets of orange red pigment usually apparent in the chromatophore; cells irregularly cylindric to ovoid *Trentepohlia*
 - Reddish pigments absent; cells spherical to oval *Trebouxia*
 6. Larger cells up to 16 μm long (chlorococcoid).
 7. Cells elongate, sausage-shaped *Stichococcus*
 7. Cells spherical to ovoid.
 8. Cells mostly 2–4 in packets *Protococcus*
 8. Cells solitary or in short filaments.
 9. Cells rarely more than 5 μm long *Hyalococcus*
 9. Cells mostly more than 5 μm long.
 10. Chromatophore irregularly folded *Myrmecia*
 10. Chromatophore lining the cell wall, cup-shaped or platelike.
 11. Chromatophore lining most of the inner cell wall Chlorococcoid; *Chlorella*
 11. Large portions of the inner cell wall exposed.
 - Chromatophore cup-shaped *Coccomyxa*
 - Chromatophore platelike or bowl-like *Pseudochlorella*

ACKNOWLEDGMENTS

I am continually grateful to the helpful comments and critiques of Doug Ladd, of the Missouri Botanic Garden and to Caleb Morse of the Kansas Biological Survey at the University of Kansas. Also the continued good offices of the Morton Arboretum and the Cook County Forest Preserve are much appreciated.

ARTIFICIAL KEY TO THE FAMILIES

The following key attempt to help the reader organize lichen genera into related or seemingly related groups. Natural ordinations of lichen phylongeny, particularly with regard to morphological features, remains elusive, so the families presented here must be regarded as representing provisional relationships. For specimens with mature ascocarps, however, it represents an alternative approach to the key to the genera. For sterile specimens, we refer the user to the latter key, though our local flora has produced many unidentifiable (to us) collections. Such is the state of the art at the floristic level.

- A. Ascospores too numerous to count; thallus crustose, or if 8 then the apothecium long-stalked; photobiont green.
 - B. Asci disintegrating into a mazaedial mass.
 - Mazaedium mass black **CALICIACEAE**
 - Mazaedium mass not black **CONIOCYBACEAE**
 - B. Asci not forming a mazaedium.
 - C. Ascospores curved **PARMELIACEAE**
 - C. Ascospores not curved.
 - D. Exciple not thalloid, without algae
 - Apothecium stalked **MYCOCALICIACEAE**
 - Apothecium sessile **BIATORELLACEAE**
 - D. Exciple thalloid, with an algal component.
 - Thallus absent; apothecium bright yellow, opening by a tiny pore **THELOCARPACEAE**
 - Thallus present, or if not evident then apothecium not bright yellow .. **ACAROSPORACEAE**
- A. Ascospores no more than 64 per ascus; apothecium never long-stalked.
 - E. Ascocarp a perithecium, opening through a distal pore.
 - F. Paraphyses, absent, unbranched, or very coarse and difficult to discern.
 - G. Paraphyses distinctly unbranched, or soon reduced to a hymenial gel.
 - Paraphyses present **STRIGULACEAE**
 - Paraphyses absent **VERRUCARIACEAE**
 - G. Paraphyses obscure in structure, but neither distinctly unbranched or gelatinous.
 - Hymenium interspersed with large droplets, mostly multi-chambered **MYCOPORACEAE**
 - Hymenium not interspersed, a single chamber **NAETROCymbACEAE**
 - F. Paraphyses present, slender, and at least sparingly branched.
 - H. Ascocarps imbedded in thalloid warts or heaps of powdery soredia concolorous with the thallus.
 - Ascospores septate **TRYPETHELIACEAE**
 - Ascospores simple **PERTUSARIACEAE**
 - H. Ascocarps not imbedded in thalloid warts or heaps of powdery soredia-like masses.
 - I. Ascospore walls notably thickened **PYRENULACEAE**
 - I. Ascospore walls not notably thickened.
 - J. Ascospores becoming brown.
 - K. Ascospores several-septate to muriform **DECAMPIACEAE**
 - K. Ascospores 1-septate.
 - Ascospores notably constricted at the septum, the cells usually unequal in size ..
..... **KIRSCHSTEINIOTHELIA**
 - Ascospores not notably constricted at the septum, the cells subequal in size
..... **DIDYMOSPHERIA**
 - J. Ascospores persistently hyaline.
 - L. Ascospores muriform; photobiont absent
 - Ascomata black throughout **TRYPETHELIACEAE**

- Ascomata with blue-green walls MICROPELTIDACEAE
- L. Ascospores not muriform; photobiont usually present.
 - M. Photobiont blue-green or absent
 - Photobiont absent ARTHOPYRENACEAE
 - Photobiont blue-green XANTHPYRENACEAE
 - M. Photobiont green.
 - N. Spores simple THROMBIACEAE
 - N. Spores septate.
 - Ascospores commonly more than 3-septate PORINACEAE
 - Ascospores 1-3 septate MONOBLASTIACEAE
- E. *Ascomata disciform* (obscurely so in the STICTIDACEAE, which has elongate, vermiform ascospores with contractions at the septa) Most sterile species are in families found here.
 - O. Photobiont blue-green.
 - P. Thallus foliose.
 - Q. Thallus gray or nigrescent, gelatinous when wet COLLEMATACEAE
 - Q. Thallus brown, not gelatinous when wet.
 - Medulla with secondary metabolites, either K+ yellow or C+ rose LOBARIACEAE
 - Medulla without secondary metabolites, K- and C- PELTIGERACEAE
 - P. Thallus crustose, squamulose, or fruticose
 - R. Thallus crustose, black, with a blue-green hypothallus; ascospores 1-3 septate PLACYNTHIACEAE
 - R. Thallus variously squamulose, fruticose, or crustose, but without a blue-green hypothallus; ascospores simple.
 - Thallus minutely filamentous suffruticose, dark brown to black; photobiont *Stigonema* ... COCCOCARPIACEAE
 - Thallus various, but not filamentous suffruticose; photobiont not *Stigonema* LICHINACEAE
 - N. Photobiont green [sterile specimens are more likely to be determined through use of the Artificial Key to the Genera.]
 - S. Thallus foliose and rhizinate or distinctly squamulose, with an upper and lower cortices, or fruticose with simple or branched podetia or branches; never yellow or orange.
 - T. Ascospores simple, hyaline.
 - U. Thallus foliose or with fruticose branches with a medullary core PARMELIACEAE
 - U. Thallus squamulose, any podetia with a hollow core
 - Squamules lying flat upon the substrate and imbricate over others, the margins with labriform soralia [see also the PSORACEAE] OPHIOPARMACEAE
 - Squamules erect or ascending, the margins esorediate or with poorly delimited soralia CLADONIAACEAE
 - T. Ascospores septate, often hyaline or brown.
 - V. Thallus fruticose.
 - Thallus of flattened lobes or branches RAMALINACEAE
 - Thallus lobes not distinctly flattened STEREOCAULACEAE
 - V. Thallus foliose.
 - W. Lower surface a close, felt-like indument PELTIGERACEAE
 - W. Lower surface without a felt-like indument.
 - Lower cortex white; medulla orange or salmon CALICIACEAE
 - Lower cortex white, brown, or black; medulla white or red PHYSCIACEAE

- S. Thallus neither foliose nor distinctly squamulose or fruticose, or if so then the thallus distinctly yellow or orange.
- X. Thallus or apothecial discs distinctly yellow or some shade of orange; exciple thalloid.
- Y. Thallus bright yellow; fruticose **PARMELIACEAE**
- Y. Thallus yellow or some shade of orange, fruticose or not.
- Z. Apothecial discs and/or the thallus K+ deep purple [anthraquinones] ascospores thick-walled **TELOSCHISTACEAE**
- Z. Apothecial discs and thallus not K+ deep purple; ascospores thin-walled.
- A1. Soredia granular, organized into soralia, or soredia absent
 Ascospores brown; thallus placodioid **CANDELARIACEAE**
 Ascospores hyaline; thallus not placodioid **CALICIACEAE**
- A1. Soredia fine, diffuse, not in organized soralia.
 Rhizocarpic acid present **PSILOLECHIACEAE**
 Rhizocarpic acid absent **CHRYSOTHRICEAE**
- X. Neither thallus nor apothecial discs distinctly yellow or orange, or if the apothecium rarely so then the exciple not thalloid.
- B1. Ascospores simple, hyaline.
- C1. Exciple thalloid, with an algal component.
- D1. Ascospore walls thick **PERTUSARIACEAE**
- D1. Ascospore walls thin.
- E1. Ascospores less than 15 μm long **LECANORACEAE**
- E1. Ascospores more than 15 μm long. [fertile ohrolechias might key here although none are known locally]
 Apothecial disc flat or concave, the surface at or below the surface of the thallus. **MEGASPORACEAE**
 Apothecial discs adnate, sessile, set well above the surface of the thallus
 **TRAPELIACEAE**
- C1. Exciple not thalloid, without an algal component.
- F1. Thallus of appressed squamules, or if crustose then the apothecium K+ deep purple
 **PSORACEAE**
- F1. Thallus not of appressed squamules, the apothecium not K+ purple.
- G1. Thallus C+ pink [gyrophoric acid], or if C- then terricolous and consisting of granules, many of which more than 0.5 mm across **TRAPELIACEAE**
- G1. Thallus C-, never terricolous.
- H1. Larger apothecia more than 0.5 mm across **PORPIDIACEAE**
- H1. Apothecia less than 0.5 mm across.
- I1. Axis of ascus apex not notably amyloid **LECANORACEAE**
- I1. Axis of ascus apex strongly amyloid.
 Thallus saxicolous **PILOCARPACEAE**
 Thallus on plant detritus or lignicolous or corticolous
 **LECIDEACEAE**
- B1. Ascospores septate to muriform, hyaline or brown.
- J1. Ascospores brown or muriform, or both, or if hyaline then the apothecia elongate or irregular with a black exciple.
- K1. Apothecia round, the exciple black or otherwise.
- L1. Ascospores more than 17 μm long, muriform.
 Thallus C+ red **THELOTREMATAACEAE**
 Thallus C- **RHIZOCARPACEAE**
- L1. Ascospores less than μm long, submuriform or merely septate.

- Ascospore walls thickened, polaribilocular **PHYSICIACEAE**
 Ascospore wall thin throughout **CALICIACEAE**
- K1. Apothecia elongate or irregular, black exciple.
 M1. Ascospores with lenticular cells, the walls of the septa much thicker near the spore wall; apothecia irregular, often branched or elongating; hymenium IKI-; ascospores usually IKI+ bluish black **GRAPHIDACEAE**
 M1. Ascospores with cylindrical cells; apothecia more or less circular to oblong, to simply forked; hymenium IKI+; ascospores IKI+ blue to orange.
 N1. Thallus thin to evanescent, smooth; ascospores 3-septate
 Ascospores brown, at least in two of the cells . . . **HYSTERIACEAE**
 Ascospores colorless **ARTHONIACEAE**
 N1. Thallus thin to obscurely chinky or pulverulent; ascospores 3–15 septate.
 Ascospores less than 5 μ wide, not including the outer hyaline sheath (perispore), if present **OPEGRAPHIDACEAE**
 Ascospores more than 5 μ wide **LECANOGRAPHACEAE**
- J1. Spore hyaline, never muriform.
 O1. Asci nearly as long as wide; paraphyses indistinct or absent.
 Thallus leprose or finely granular **CHRYSOTHRICACEAE**
 Thallus not leprose; apothecia nor or only weakly pruinose
 **ARTHONIACEAE**
 O1. Asci notably longer than wide; paraphyses evident, distinct or intertwined.
 P1. Spore walls thickened differentially, at least at the septa; apothecia with a thalloid rim.
 Ascospores vermiform, multi-septate with constrictions as the septa
 **STICTIDACEAE**
 Ascospores 2-celled, polaribilocular **TELOSCHISTACEAE**
 P1. Spore walls thin throughout; apothecia without a thalloid rim.
 Q1. Paraphyses distinct.
 Apothecia dark, the paraphyses nigrescent at the tip
 **CATILLARIACEAE**
 Apothecia pale, flesh-colored, the paraphyses hyaline
 **COENOGONIACEAE**
 P1. Paraphyses intertwined and anastomosed.
 R1. Ascospores 1-septate, or if rarely 3-septate, then the ascus tip strongly amyloid **PILOCARPACEAE**
 R1. Ascospores 1-several septate, the ascus tip weakly to strongly amyloid.
 Ascospores notably coiled in the ascus
 **SCOLIOSPORACEAE**
 Ascospores straight in the ascus **RAMALINACEAE**

ARTIFICIAL KEY TO THE GENERA

The following key is a wholly artificial key to the genera, which means the associated groupings suggest no foundational morphological features, other than descriptive terms to describe them are similar. In recent years there has been a fair amount of DNA work that attempts to express phylogenetic relationships, but correlative morphological features are uncommonly presented. Those interested in such relationships must pursue that literature with a fairly robust level of experience in the anatomy and morphology of lichenized fungi.

1. Thallus subcrustose with marginal lobes to foliose, squamulose, umbilicate, or fruticose, usually with a well defined lower cortex Group I
1. Thallus crustose, tightly adnate or enmeshed with the substrate, without defined lobes, podetia, or a lower cortex Group II

Group I

1. Thallus gelatinous when wet, dark brown to black or dark slate gray; medulla absent.
 2. Thallus subcrustose, without distinct lobes; prothallus blue green and evident at the margins PLACYNTHIUM
 2. Thallus appearing foliose or fruticose, without a blue green prothallus.
 3. Thallus pulvinate or umbilicate, usually attached at only a central point; photobiont *Gloeocapsa* or *Chroococcus*.
 - Thallus fruticose, the lobes long and strap-like; usually pruinose THYREA
 - Thallus more or less umbilicate, the lobes about as long as broad; usually epruinose LICHINELLA
 3. Thallus attached to the substrate at several locations; photobiont *Nostoc*.
 4. Thallus with a layer of more or less isodiametric cortical cells; upper surfaces usually smooth to sublustrous, slate gray to brown.
 - Thallus lobes less than 2.5 mm across, gray or brown SCYTINIUM
 - Thallus lobes broader, gray LEPTOGIUM
 4. Thallus lacking an organized cortex, the hyphae interwoven; upper surfaces dull, usually olivaceous to black.
 5. Thallus lobes large, flat, neither thickened nor wrinkled, the larger more than 4 mm long COLLEMA
 5. Thallus lobes small, thickened, wrinkled, or, warty isidiate, less than 4 mm long.
 6. Apothecia rare; thallus gray, finely wrinkled, saxicolous LATHAGRIUM
 6. Apothecia common; thallus gray to olivaceous or nigrescens, but not finely wrinkled, saxicolous, terricolous, or corticolous.
 - Spores simple; apothecia rare LEMPHOLEMMA
 - Spores septate or muriform; apothecia usually present ENCHYLIUM
 1. Thallus not gelatinous, variously colored; medulla evident, or thallus lichenicolous.
 7. Thallus fruticose, podetiate, or of adnate to suberect squamules, or thallus lichenicolous.
 8. Thallus of adnate or appressed squamules, or thallus lichenicolous.
 9. Thallus parasitic on the lower side of *Dermatocarpon* TONINIA
 9. Thallus not parasitic on *Dermatocarpon*.
 10. Thallus saxicolous or ascoma a perithecium or both.
 11. Ascoma an apothecium; squamules white-rimmed PSORA
 11. Ascoma a perithecium; squamules not white-rimmed.
 - Spores nonseptate PLACIDIUM
 - Spores muriform, with horizontal and longitudinal septa ENDOCARPON
 10. Thallus terricolous, muscicolous, or corticolous, or lichenicolous; ascoma an apothecium, or ascoma absent.
 12. Thallus soresiate, corticolous HYPOCENOMYCE
 12. Thallus esorediate, not corticolous.
 13. Thallus brown, either with a nigrescent margin or with cortical hairs, lichenicolous or muscicolous.
 - Thallus without cortical hairs, lichenicolous on *Spilonema* PSORULA
 - Thallus with numerous cortical hairs; muscicolous AGONIMIA
 13. Thallus pink, or if brown then with a pale margin or with reddish apothecia, terricolous or saxicolous.

- Squamules brownish to olivaceous, neither pink nor soresiate; photobiont blue-green HEPPIA
- Squamules pinkish, brownish, or soresiate; photobiont green PSORA
8. Thallus various, but not of adnate squamules or appressed, never lichenicolous.
14. Thallus crustose, the small cylindrical podetia arising from smooth, aggregated, crustose granules PYCNOTHELIA
14. Thallus not crustose.
15. Thallus in part or entirely of ascending squamules.
- Squamules brown on both surfaces; perithecia present DERMATOCARPON
- Squamules greenish or grayish above, white below; perithecia absent CLADONIA
15. Thallus without squamules.
16. Thallus brown or black, at least on one surface.
17. Thallus of a filamentous, more or less tangled cushion or mass, saxicolous SPILONEMA
17. Thallus not filamentous, or if so, the not forming a cushion or mass, corticolous or terricolous.
- Thallus terricolous, flattened and involute-margined, P- CETRARIA
- Thallus corticolous, terete, P+ red (fumarprotocetraric acid) BRYORIA
16. Thallus not brown.
18. Thallus of flattened lobes or branches.
19. Thallus K- RAMALINA
19. Thallus K+ deep purple
- Apothecia ciliate TELOSCHISTES
- Apothecia eciliate XANTHORIA
18. Thallus of uniformly or irregularly rounded branches.
20. Stalks or branches of thallus hollow.
- Podetia with a fibrous, dull surface CLADINA
- Podetia with a corticate, smooth, lustrous surface CLADONIA
20. Stalks or branches of thallus with a central medullar core, not hollow.
21. Thallus whitish gray, bushy-branched, the branches decorticate in some areas, otherwise covered with tiny corticate granules or squamules STEREOCAULON
21. Thallus yellow green, or yellow, neither bushy-branched nor beset with a granular cortex.
22. Thallus bright yellow LETHARIA
22. Thallus yellow-green.
- Fibrils evident; branches smoothly terete USNEA
- Fibrils absent; branches irregularly wrinkled EVERNIA
7. Thallus adnate to loosely appressed, but distinctly foliose or umbilicate.
23. Thallus orange, yellow, yellowish green, or yellowish gray.
24. Cortex K+ deep purple.
25. Thallus placodioid and effigurate to subcrustose, all portions tightly adnate Group II
25. Thallus foliose to subcrustose, but at least the lobe tips elevated or loosely adnate.
26. Thallus soresiate XANTHOMENDOZA
26. Thallus esoresiate.
27. Thallus saxicolous RUSAVSKIA
27. Thallus corticolous.
28. Rhizines abundant XANTHOMENDOZA
28. Rhizines absent or quite scarce.
- Thallus small to 2 cm across, the lobes notably divided and incised

- POLYCAULIONA
 Thallus large, often exceeding 2 cm across; lobes broad, broadly crenate, but
 not notably divided or incised XANTHORIA
- 24 Cortex K- or K+ yellow.
29. Thallus with granular or powdery soredia
30. Thallus bright lemon yellow or yellow green; lobes small, less than 1 mm wide
 CANDELARIA
30. Thallus yellow green; lobes more than 1 mm wide.
31. Medulla C+ red FLAVOPUNCTELIA
31. Medulla C-.
- Lobes less than 2 mm wide, linear PARMELIOPSIS
- Lobes mostly more than 3 mm wide, rounded FLAVOPARMELIA
29. Thallus esorediate.
32. Larger lobes more than 1 mm wide.
- Isidia fine, all of nearly equal size XANTHOPARMELIA
- Isidia coarse, of various sizes, sometimes breaking into granular pustules
 FLAVOPARMELIA
32. Lobes less than 1 mm wide.
33. Apothecial disc bright yellow CANDELARIA
33. Apothecial disc brown or black.
- Apothecial disc brown; spores colorless PROTOPARMELIOPSIS
- Apothecial disc black; spores brown DIMELAENA
23. Thallus without yellowish tints.
34. Thallus brown or brownish gray (rarely pale gray and umbilicate); cortex K-.
35. Lower cortex covered by a dense tomentum or matted appressed hairs, or lower cortex absent.
36. Apothecia infrequent, elongate, marginal or terminal; medula C- PELTIGERA
36. Apothecia usually evident marginal or laminal, round or nearly so; medulla C - or C+ rose.
- Apothecia common, in deep surficial pits SOLORINA
- Apothecia marginal or on isidiate ridges on the lamina, or absent, not in deep surficial
 pits LOBARIA
35. Lower cortex smooth or sparsely to densely rhizinate, but not concealed by a dense tomentum.
37. Lobe surfaces abundantly pruinose; soralia marginal PHYSCONIA
37. Lobe surfaces smooth, or if pruinose, then esorediate.
38. Lobes erect or suffruticose, or thallus umbilicate.
39. Thallus umbilicate with imbedded perithecia DERMATOCARPON
39. Thallus foliose; perithecia absent.
- Thallus abundantly and conspicuously beset with granular pseudocyphellae
 TUCKERMANELLA
- Thallus with pseudocyphellae TUCKERMANNOPSIS
38. Lobes appressed.
40. Thallus margins and rims of apothecia dissected into isidioid lobules
 ANAPTYCHIA
40. Thallus without isidioid lobules.
41. Medulla C+ red
- Thallus without isidia or soredia MELANOHALEA
- Thallus isidiate, many of the isidia breaking down into soredia
 MELANELIXIA
41. Medulla C-.
42. Rhizines absent; lobes discrete or appearing to flow together, tightly
 adnate HYPERPHYSCIA

42. Rhizines present; lobes discrete, loosely appressed but not tightly adnate.
 Thallus light to dark tan, with numerous imbedded black dots (perithecia) PLACIDIUM
 Thallus brownish gray to dark gray; perithecia absent PHAEOPHYSCIA
34. Thallus mineral gray, whitish gray, or greenish gray, never umbilicate; cortex K+ yellow or K-.
43. Either the upper cortex with small white pores or the medulla C+ red, or both . . . PUNCTELIA
43. Upper cortex without white pores; medulla C-.
44. Lower cortex white, light tan, or absent.
45. Thallus isidiate, or lower surface fibrous, or both.
 Cortex K+ pale yellow HETERODERMIA
 Cortex K+ deep yellow IMSHAUGIA
45. Thallus without isidia, the lower surface corticate.
46. Soredia in marginal soralia; medulla K+ yellow HETERODERMIA
46. Soredia absent or laminal, or if marginal, then medulla and cortex K-.
47. Cortex K- PHYSCIELLA
47. Cortex K+ yellow.
48. Larger lobes 3 mm or more across; lower cortex tan PUNCTELIA
48. Lobes less than 3 mm across; lower cortex white.
 Thallus margins long-ciliate HETERODERMIA
 Thallus margins eciliate PHYSCIA
44. Lower cortex brown or black (occasionally pale near the margins).
49. Medulla distinctly tinted orange or salmon PYXINE
49. Medulla white or pale yellow.
50. Medulla K-.
51. Thallus sorediate
 Thallus lobes inflated, hollow HYPOGYMNIA
 Thallus lobes flat, not hollow CANNOPARMELIA
51. Thallus esorediate; lobes solid.
 Medulla KC-; lower cortex with a thick tomentum; lobes appearing inflated ANZIA
 Medulla KC+ rose; lobes flat, merely rhizinate HYPOTRACHYNA
50. Medulla K+ yellow or red.
52. Lobes broad, usually 4 mm or more wide, typically with a rhizine-free zone near the margins; medulla K+ red PARMOTREMA
52. Lobes narrower; rhizines typically distributed throughout on the lower surface; medulla K+ yellow or red.
53. Upper cortex without white markings; medulla pale but distinctly yellow near the soralia MYELOCHROA
53. Upper cortex reticulate or with distinct white markings, at least toward the lobe tips.
 Upper cortex reticulate-alveolate; medulla K+ deep yellow, stictic acid CRESPOA
 Upper cortex, not reticulate-alveolate, with distinct white markings; medulla K+ yellow to red, salazinic acid PARMELIA

Group II

1. Ascoma a perithecium, the spores released through a small pore.
2. Thallus saxicolous or terricolous.
 3. Spores abundantly muriform.
 - Spores 8; thallus rimose WILLEYA
 - Spores 2; thallus squamulose or areolate, often scattered ENDOCARPON
 3. Spores either without septa, or with only transverse septa (rarely somewhat muriform in *Thelidium*).
 4. Spores septate.
 5. Spores all less than 20 μm long, 1-septate; photobionts blue-green PYRENOCOLLEMA
 5. Spores all exceeding 20 μm long, 1+ septate; photobionts green
 6. Thallus on base-rich rock THELIDIUM
 6. Thallus on siliceous rock.
 - Spores 2-celled PLACIDIOPSIS
 - Spores more than 2-celled PSEUDOSAGEDIA
 4. Spores nonseptate.
 7. Thallus either squamulose or membranaceous and subgelatinous.
 - Thallus squamulose; hamathecium evanescent PLACIDIUM
 - Thallus membranaceous; hamathecium of persistent, scarcely branches paraphyses THROMBIUM
 7. Thallus crustose.
 - Perithecia deeply imbedded in the substrate, to 0.3(4) mm across BAGLIETTOA
 - Thallus thin to thick, evidently epilithic and corticate, sordid to grayish or olive green, or brownish to black VERRUCARIA
2. Thallus corticolous.
 8. Thallus of thick, brown, rounded squamules PLACIDIUM
 8. Thallus not of thick, rounded squamules.
 9. Spore walls notably thickened.
 10. Ascomata embedded in a thalloid wart or pseudostroma.
 - Ascospores simple PERTUSARIA
 - Ascospores septate TRYPETHELIUM
 10. Ascomata not embedded in a thalloid wart or pseudostroma.
 - Spores brown, 3-septate or occasionally 4–7 septate or even imperfectly muriform PYRENULA
 - Spores 7–9 septate, or colorless and 3-septate TRYPETHELIUM
 9. Spores walls not notably thickened.
 11. Spores becoming brown.
 12. Spores 1-septate.
 - Spores notably constricted at the septum, the cells usually unequal in size KIRSCHSTEINIOTHELIA
 - Spores not notably constricted at the septum, the cells subequal in size DIDYMOSPHAERIA
 12. Spores several-septate to muriform.
 - Spores muriform MYCOPORUM
 - Spores 3–6 septate EOPYRENULA
 11. Spores persistently hyaline.
 13. Paraphyses unbranched or absent.
 - Perithecia pale or darkening, but not black; paraphyses absent PSOROGLAENA
 - Perithecia black; paraphyses present STRIGULA

13. Paraphyses loosely to densely branched.
14. Spores muriform, with both transverse and longitudinal septa.
 Ascumata black, HNO₃⁻, to 0.3 mm in diameter JULELLA
 Ascumata blue green, HNO₃⁺ reddish, the larger ones more than 0.3 mm across
 MYCOGLAENA
14. Spores not muriform, with transverse septa only.
15. Thallus restricted to *Betula* and *Populus*; spores much elongate, nearly or quite as long as the asci LEPTORHAPHIS
15. Thallus of a diversity of corticolous substrates; spores oblong to oval, much shorter than the asci.
16. Spores up to 20 μ m long.
 Septum of spores eccentric, the cells notably unequal in volume; asci more than 3 times as long as wide ANISOMERIDIUM
 Septum of spores not eccentric, the cells about equal; asci less than three times as long as wide NAETROCYMBE
16. Larger spores more than 20 μ m long.
 Spores more than 31 μ m long and 12 μ m wide ACROCORDIA
 Spores less than 31 μ m long and 12 μ m wide ARTHOPYRENIA
1. Ascoma an exposed apothecium, without a pored enclosure, or if more or less enclosed then immersed in thalloid warts or powdery soralia, or ascumata absent (ascumata flasklike in the bright yellow genus *Thelocarpon*).
17. Apothecia chronically absent or rare.
18. Thallus K+ deep purple.
19. Thallus lignicolous or corticolous
 Thallus chromate yellow SOLITARIA
 Thallus orange CALOPLACA
19. Thallus saxicolous.
 Thallus margins effigurate; soredia in soralia confined to the ends of the interior lobes
 LEPROPLACA
 Thallus not effigurate; soredia in poorly delimited soralia FLAVOPLACA
18. Thallus K- or K+ yellow or red.
20. Thallus nearly or quite sorediate throughout, or if soredia discrete, then atranorin present
21. Thallus bright yellow.
22. Soredia granular, in delimited, often scattered soralia CANDELARIELLA
22. Soredia fine, diffuse, unorganized into soralia.
 Rhizocarpic acid present PSILOLECHIA
 Rhizocarpic acid absent CHRYSOTHRIX
21. Thallus granules without yellowish tints or with faint yellow in *Lepraria vouauxii*.
23. Prothallus evident at the margin, or the margin with scattered corticate areoles; zeorin present; usnic acid present or absent; atranorin, if present, occasionally the sole secondary metabolite LECANORA
23. Prothallus absent; usnic acid absent, zeorin present or absent; atranorin, if present, not as the sole secondary metabolite.
 Thallus with terpenes only, grayish green BOTRYOLEPRARIA
 Thallus with secondary metabolites other than or in addition to terpenes; variously tintured LEPRARIA
20. Thallus not sorediate throughout, or if sorediate then atranorin absent.
24. Thallus black throughout; photobionts usually blue-green.
25. Thallus arenicolous. PLACYNTHIELLA
25. Thallus saxicolous.
 Thallus well developed, with a distinctly blue green prothallus evident at the margins

- PLACYNTHIUM
 Thallus effuse, granular, without an evident prothallus LICHENOTHELIA
24. Thallus not black throughout; photobionts green.
26. Thallus C-.
27. Thallus without yellowish tints.
 Thallus corticolous PLACYNTHIELLA
 Thallus saxicolous LECIDEA
27. Thallus yellow or with yellowish tints.
 Thallus yellow, of notable corticate granules or granular soredia
 CANDELARIELLA
 Thallus yellowish green, the soredia in discrete soralia LECANIA
26. Thallus C+.
28. Thallus UV+ yellow (lichexanthone) OCHROLECHIA
28. Thallus UV-.
29. Thallus esorediate PLACYNTHIELLA
29. Thallus sorediate.
 Soredia erupting from verrucae or cortical warts TRAPELIOPSIS
 Soredia not erupting from verrucae TRAPELIA
17. Apothecia present.
30. Apothecia irregular to elongate, never flesh-colored; thallus rudimentary, often little more than a discoloring of the substrate around the apothecia; never stalked.
31. Spores muriform, with 1–5 longitudinal septa, or simple with parasitic apothecia.
32. Spores simple PHACOPSIS
32. Spores septate to muriform.
 Ascoma circular to misshapen, but with the epithecium continuous; spores muriform
 ARTHOTHELIUM
 Ascoma indistinctly shaped, with portions of the epithecium incompletely exposed at the surface; spore septate to muriform ARTHONIA
31. Spores merely septate, with 3–11 transverse septa only.
33. Spores with lenticular cells, the walls of the septa much thicker near the spore wall; apothecia irregular, often branched or elongating; hymenium IKI-; spores usually IKI+ bluish black
 GRAPHIS
33. Spores with cylindrical cells; apothecia more or less circular to oblong, to simply forked; hymenium IKI+; spores IKI+ blue to orange.
34. Thallus thin to evanescent, smooth; spores 3-septate
 Spores brown, at least in two of the cells HYSTERIUM
 Spores colorless ARTHONIA
34. Thallus thin to obscurely chinky or pulverulent; spores 3–15 septate.
35. Spores less than 5 μ wide, not including the outer hyaline sheath (perispore), if present
 OPEGRAPHA
35. Spores more than 5 μ wide.
 Spores more than 7-septate, the larger more than 40 μ long ZWACKHIA
 Spores 4–6 septate, less than 40 μ long ALYXORIA
30. Apothecia mostly regular, rounded, or absent, or if somewhat irregular, then flesh-colored, sessile or stalked; thallus rudimentary to well developed.
36. Apothecia stalked.
37. Thallus fungicolous on *Trichaptum biforme* PHAEOCALICIUM
37. Thallus corticolous.
 Stalks and exciples black CALICIUM
 Stalks and exciples pale to reddish SCLEROPHORA

36. Apothecia not stalked.
38. Visible thallus and apothecia black throughout; spores simple to 1–3 septate.
39. Thallus well defined, with a distinctly blue green prothallus evident at the margins, or thallus arenicolous.
- Thallus arenicolous PLACYNTHIELLA
- Thallus saxicolous PLACYNTHIUM
39. Thallus effuse, granular, without an evident prothallus, never arenicolous.
40. Paraphyses absent; photobiont with a reddish, K+purple sheath CRYPTOTHELE
40. Paraphyses present, branches; photobiont with yellowish, K- sheaths.
- Proper exciple rather evident between the thallus and the hymenium
- PYRENOCARPON
- Proper exciple absent or inconspicuous PSOROTICHIA
38. Thallus and apothecia variously colored, but not black throughout, or thallus absent; spores various.
41. Exciple thalloid, with an algal component, or the apothecia K+ purple.
42. Spores septate, muriform, or polaribilocular.
43. Spores either muriform or with 20 or more transverse septa.
- Spores muriform, with 1–3 longitudinal septa DIPLOSCHISTES
- Spores without longitudinal septa CONOTREMA
43. Spores 1–3 septate or polaribilocular.
44. Spores merely septate, or if somewhat polaribilocular, then brown; apothecia and thallus K– or K+ yellow or red.
45. Spores hyaline.
- Apothecia yellow or yellowish CANDELARIELLA
- Apothecia black, brown, or whitish pruinose LECANIA
45. Spores gray or brown.
46. Asci disintegrating, not evident with mature spores . CYPHELIUM
46. Asci evident.
- Spore walls thin and evenly developed, the lumina cylindrical AMANDINEA
- Spore walls unevenly thickened, the lumina often angled
- RINODINA
44. Spores polaribilocular; spores not brown; apothecia or thallus or both often K+ deep purple.
47. Apothecia without a rim, usually convex PROTOBLASTENIA
47. Apothecia with rim, usually flat.
48. Apothecia black; thallus white PYRENODESMIA
48. Apothecia black or orange; thallus not white or if so then the apothecial disk orange or pale.
49. Rims of apothecia white, gray, or nigrescent, not yellow or orange, or if so then the thallus effigurate at the margin
- CALOPLACA
49. Rims of apothecia yellow or orange, or apothecia absent; thallus absent, areolate, squamulose, but never effigurate.
50. Thallus absent or essentially so (rarely with scant yellow, appressed patches); saxicolous; apothecia less than 0.3 mm across; isthmus no more than 1/3 as long as the spore
- XANTHOCARPIA
50. Thallus present, or if absent then the apothecia corticolous and the spore isthmus more than 1/3 the length of the spore.

51. Thallus corticolous or lignicolous, immersed, or surficial and K-, or with scattered K+ areoles.
 Thallus white or sordid, more or less continuous
 BLASTENIA
 Thallus absent, inconspicuous, or with scattered yellowish areoles ATHALLIA
51. Thallus saxicolous, continuous or discontinuous, or if corticolous, then pale yellow, K+, and continuous.
52. Thallus K- RUFOPLACA
52. Thallus yellow or orange, distinctly present at least near many of the apothecia, K+ purple.
53. Thallus distinctly orange-tinged, paler than to concolorous with the apothecia
 SQUAMULEA
53. Thallus distinctly yellow, notably paler than the orange or brownish apothecia.
54. Apothecia distinctly bicolored, the rims much paler than the disk
 GYALOLECHIA
54. Apothecia similarly colored throughout.
 Thallus more or less squamulose, usually loosely appressed to the substrate; apothecia less than 0.4 mm across ATHALLIA
 Thallus scant to continuous, strongly meshed with the substrate; apothecia commonly more than 0.4 mm across
 GYALOLECHIA
42. Spores nonseptate.
55. Apothecia immersed in thalloid warts or in heaps of powdery soredia; spores very large.
 Thallus areolate; discs black, pruinose, the ostiole white-bordered and often opening wide CIRCINARIA
 Thallus continuous; ascumata not as above VARIOLARIA
55. Apothecia adnate or immersed, but not as above; spores of various sizes.
56. Thallus or apothecia or both yellow.
 Thallus usually evident, at least around the disc-shaped apothecia; spores up to 32 per ascus CANDELARIELLA
 Thallus absent; apothecia globose, opening by a tiny pore; spores numerous THELOCARPON
56. Neither the thallus nor the apothecia yellow.
57. Spores numerous, asci always bearing more than 32 spores.
 Apothecia small, to 0.5 mm, with greenish pruina . CAERULEUM
 Apothecia usually larger, epruinose or with white pruina
 ACAROSPORA
57. Spores few to 16 per ascus, rarely a few asci with more than 16.
58. Spore walls thick.
 Thallus saxicolous; medulla C+ red VARICELLARIA
 Thallus corticolous; medulla C- PERTUSARIA
58. Spore walls thin.

59. Apothecia adnate, the discs orange, some of them 2 mm or more across; thallus saxicolous, of scattered to aggregated, smooth, convex areoles RHIZOPLACA
59. Apothecia and thalli various, but not as above.
60. Thallus absent or scarcely evident near the apothecium MYRIOLECIS
60. Thallus thick or thin but generally evident.
61. Thallus or apothecia corticolous, or if saxicolous, then with spores less than 14 μm long LECANORA
61. Thallus or apothecia saxicolous and the spores more than 14 μm long.
62. Apothecial disc distinctly adnate, the surface elevated well above the surface of the thallus TRAPELIA
62. Apothecial disc flat or concave, the surface at or below the surface of the thallus
Thallus K+ yellow or yellow turning red ASPICILIA
Thallus K- CIRCINARIA
41. Exciple without algae, or exciple absent; apothecia K-
63. Spores minute and numerous, more than 16 per ascus.
64. Thallus corticolous.
Spores simple, more than 32 per ascus BIATORELLA
Spores septate, 16-32 per ascus AMANDINEA
64. Thallus saxicolous.
Disc notably beset with carbonaceous ridges and lumps . . . POLYSPORINA
Disc nearly or quite without carbonaceous intrusions SARCOGYNE
63. Spores few to 16 per ascus.
65. Spores septate.
66. Spores brown, or muriform, or both.
67. Spores at muriform, at least in one cell of many spores.
Thallus brown or grayish; spores mostly more than 17 μm long RHIZOCARPON
Thallus white; spores prevailing less than 17 μm long DILOTOMMA
67. Spores not muriform.
Thallus absent or very thin; conidia curved-filiform [if from bark in a bog, see also *Buellia schaeereri* AMANDINEA
Thallus thin to thick, but well developed; conidia short-ellipsoid BUELLIA
66. Spores hyaline, never muriform.
68. Paraphyses indistinct or absent.
Thallus leprose; apothecia densely pruinose CHRYSOTHRIX
Thallus not leprose; apothecia nor or only weakly pruinose ARTHONIA
68. Paraphyses evident, distinct or intertwined.
69. Spores 2-celled.
70. Paraphyses intertwined and anastomosed MICAREA
70. Paraphyses distinct.
Apothecia dark, the paraphyses nigrescent at the tip

- CATILLARIA
 Apothecia pale, flesh-colored, the paraphyses hyaline
 COENOGONIUM
69. Spores 4- to many-celled.
71. Thallus terricolous or muscicolous.
72. Spores acicular, less than 4 μm wide, more than 30 μm long
 BACIDIA
72. Spores fusiform, prevailingly more than 4 μm wide, up to 30
 μm long.
 Axial portion of the ascus apex strongly amyloid,
 notably more so than the tholus MICAREA
 Axial portion of the ascus apex concolorous with the
 tholus in IKI BILIMBIA
71. Thallus saxicolous or corticolous.
73. Ascomata with elevated rims and deeply sunken hymenia
 CONOTREMA
73. Ascomata with exposed, surficial hymenia.
74. Spores more than 5 μm wide
 Thallus muscicolous BILIMBIA
 Thallus corticolous LECANIA
74. Spores to 5 μm wide.
75. Spores more than 35 μm long BACIDIA
75. Spores less than 35 μm long.
76. Thallus saxicolous; spores not coiled in the
 ascus BACIDIA
76. Thallus not saxicolous; spores coiled or not in
 the ascus.
 Spores notably coiled in the ascus
 SCOLICIOSPORUM
 Spores not coiled in the ascus
 FELLHANERA
65. Spores prevailingly non-septate, though sometimes with 2 large polar vacuoles.
77. Thallus C+ pink, gyrophoric acid present.
78. Thallus saxicolous TRAPELIA
78. Thallus terricolous or lignicolous.
 Thallus greenish gray or grayish, soredia erupting from verrucae . .
 TRAPELIOPSIS
 Thallus dark brown or blackish, without verrucae and cortical tissues
 PLACYNTHIELLA
77. Thallus C-, gyrophoric acid absent.
79. Thallus granules often more than 0.5 mm across, diffuse, greenish to
 brown when dry and greener when wet, or thallus terricolous, or both
 PLACYNTHIELLA
79. Thallus not granular, or granules up to 0.5 mm across, dense, dark brown
 to black when wet, never terricolous.
80. Thallus wholly saxicolous.
81. Larger apothecia more than 0.5 mm across; spores mostly more
 than 12 μm long
 Axis of ascus apex strongly amyloid; apothecial margin
 black, contrasting with the disk, or if concolorous then stictic

- acid present PORPIDIA
 Axis of ascus apex not strongly amyloid; apothecial margin
 and disk concolorous; stictic acid absent
 LECIDELLA
81. Apothecia nearly all less than 0.5 mm across; spores less than 12
 μ long.
82. Apothecia bright yellow PSILOLECHIA
82. Apothecia not yellow.
 Apothecia with a thin but evident margin; hypothecium
 brown LEIMONIS
 Apothecia without any evident margin; hypothecium
 greenish black BRIANARIA
80. Thallus not wholly saxicolous.
83. Thallus on moss or plant detritus over rock .. BRYOBILIMBIA
83. Thallus lignicolous or corticolous.
84. Apothecia flesh-colored to darkening, usually irregular in
 shape, with a difficult-to-define margin LECANORA
84. Apothecia pale to nigrescent, the margin prevailingly
 roundnot particularly irregular.
85. Apothecia nearly all less than 0.4 mm across.
 PYRRHOSPORA
85. Many of the apothecia more than 0.4 mm across
 Axis of ascus apex strongly amyloid; thallus on the
 lignin of conifers LECIDEA
 Axis of ascus apex not strongly amyloid; thallus on
 the lignin or cortex of hardwoods
 LECIDELLA

ACAROSPORA A. Massal. ACAROSPORACEAE [Photobiont: chlorococcoid. Gr. *akari*, mite + *spora*, seed, evoking the image of the numerous, tiny, mit-like spores. This genus bewilders me; do not presume that the names used below surely apply to your specimen. Spores minute, hyaline, numerous, simple]

1. Thallus yellow or yellow green A. TUCKERAE
1. Thallus without yellowish tints.
 2. Substrate HCl+; apothecia usually greater than 0.8 mm across.
 3. Spores fewer than 100 per ascus, more than 6 µm long A. OLIGOSPORA
 3. Spores more than 100 per ascus, less than 6 µm long.
 - Thallus deep brown, without pruina A. VERONENSIS
 - At least portions of the thallus white pruinose A. STRIGATA
 2. Substrate HCl-; apothecia to 0.8 mm across.
 4. Gyrophoric acid present (most reliably determined through TLC) A. FUSCATA
 4. Gyrophoric acid absent.
 - Apothecia sessile, their rims elevated above the thallus; thallus not epruinose A. BADIOFUSCA
 - Apothecia immersed, the rims not evident; thallus pruinose or not A. AMERICANA

Acarospora americana H. Magn. (of America) This species is known locally only from igneous erratics on kames. The type specimen (Fink, MIN) was collected in 1895 in Kane County. Knudsen et al. (2011) explain why *Acarospora cinereoalba* (Fink) H. Magn., which was described from the same type specimen as *A. americana*, is conspecific with it and why the name *A. americana* has priority. Magnusson (1929) described the habitat of this as "granitic rocks."

DuPage-MOR, Kane-ILL, MICH, MIN, MOR, NY, Lake II-MOR, McHenry-MOR

Acarospora badiofusca (Nyl.) Th. Fr. (*L. badius*, chestnut-colored + *fuscus*, brown; from the color of the thallus) The only Southern Lake Michigan region specimens are from a basaltic and granitic boulders.

Kendall-MOR, Ogle-MOR

Acarospora fuscata (Schrader) Arnold (*L. fuscatus*, brownish; from the color of the thallus) Our only records for this species are from igneous boulders and sandstone outcrops. [gyrophoric acid]

Kane-UC, US, Kenosha-MOR, LaSalle-MOR, Lee-MOR, McHenry-MOR, Ogle-OMOR, Waukesha-WIS

Acarospora oligospora (Nyl.) Arnold (Gr. *oligos*, few, small + *spora*, seed; from the relatively few number of spores) This rare species is known locally only from a calcareous hill prairie in McHenry County, where it grows on gravel with *Verrucaria calkinsiana* and *V. nigrescens*, the gravels nested in soils inhabited by *Placidium lachneum*, *Heppia conchiloba*, and *Psora decipiens*.

McHenry-MOR

Acarospora strigata (Nyl.) Jatta (*L. striga*, swath, windrow, bristly; + *-atus*, adjective ending; perhaps from the white pruina evocative of an unshaven face) = *A. cervina* of some local authors. Most of our material is from carbonate rock or concrete, but the Grundy County specimen was from an HCl- boulder along a country road west of Aux Sable; the Kenosha and De Kalb county collections are from weathered concrete, and there is a specimen from weathered wood near Lockport, in Will County. The Grundy County specimen would key to *A. americana*, because it is from HCl- rock, but it is morphologically indistinct from what we are calling *A. strigata*. Hyerczyk's

(2008) report of *Acarospora glaucocarpa* is referable here; it has cylindrical rather than ellipsoid spores and dispersed reddish brown squamules.

DeKalb-MOR, Grundy-MOR, Kane-FH, Kenosha-MOR, Lake II-MOR, Lee-MOR, McHenry-MOR, Will-MOR

Acarospora tuckerae K. Knudsen (in honor of the American botanist, Shirley Cotter Tucker, 1927–, much beloved professor and student of lichens at Louisiana State University) The only record for this species in the Southern Lake Michigan region is as an associate of *A. americana*, the Fink, 1895, specimen from Kane County. It was taken from what appears to have been a granitic erratic. [acaranonic acid, gyrophoric acid, rhizocarpic acid, lecanoric acid]

Kane-ILL

Acarospora veronensis A. Massal. (after Verona, Italy, wherein resided several Italian lichenologists at the Verona Lyceum) Our only local specimens are from weathered concrete. Armstrong (1977) reported a "brown *Acarospora*" from carbonate rock; if it was an *Acarospora*, it may be referable to this species. *Acarospora fuscata* is brown, but it inhabits non-carbonate rock and is distinctive in containing gyrophoric acid.

DeKalb-MOR, Kane-FH, Kenosha-MOR

ACAROSPORACEAE

- A. Apothecial margins black, carbonized.
 Disc notably beset with carbonaceous ridges or bumps **Polysporina**
 Disc free of carbonaceous intrusions **Sarcogyne**
- A. Apothecial margins neither black nor carbonized.
 Apothecia with greenish pruina **Caeruleum**
 Apothecia epruinose or with white pruina **Acarospora**

ACROCORDIA A. Massal. MONOBLASTIACEAE [Photobiont: *Trentepohlia*. Gr. *akrochordon*, a wart; from the relatively large perithecia evocative of warts or blisters. Spores large, 8, hyaline with granular ornamentation, 1-septate, broadly fusiform]

Acrocordia megalospora (Fink) R. C. Harris (Gr. *me-gas*, large, great + *spora*, seed; from the large spores) = *Arthopyrenia finkii* Zahlbr. According to Harris (1973), this species ranges throughout Illinois and the Southern Lake Michigan region, although the only specimen we can locate is from *Quercus alba* in Kalamazoo County. It evidently prefers elms and white oaks. Wetmore (1988) recognizes Calkins's report of *Arthopyrenia gemmata* as *Acrocordia gemmata* (Ach.) A. Massal., which Calkins reported it from "oaks and hickories at River Forest and in all our territory." Another Calkins specimen at NY, however, named *Acrocordia gemmata*, is a nonlichenized pyrenomycete with muriform spores.

Kalamazoo-MS

AGONIMIA Zahlbr. VERRUCARIACEAE [Photobiont: ? Perhaps from an Urdu name or place. Perithecia not seen locally; spores 2, muriform, brownish in age]

Agonimia opuntiella (Buschardt & Poelt) A. Vězda (L. *Opuntia* + *-ella*; from its appearance as a tiny *Opuntia* cactus) Our only record for this species is from a sandy soil over dolomite at the

Flora Prairie. This lichen, with its tiny, brown, bud-like scales evocative of an *Opuntia* with its cortical hairs is quite distinctive.

Boone-MOR

ALYXORIA Ach. LECANOGRAPHACEAE [Photobiont: *Trentepohlia*. Gr. *alyxos*, an eye disfigurement = *-oria*, evocative of or belonging to; perhaps from the nigrescent eye-like apothecium. Apothecial disc exposed, often pruinose; spores mostly 8, hyaline to brown, mostly 4-6 septate]

Alxyoria varia (Pers.) Ertz & Tehler (L. *varius*, different; probably from the variability in the openness of the apothecia) = *Opegrapha varia* Pers., *O. pulicaris* (Hoffm.) Schrad. Calkins reported it simply from "various trees." Our only modern records are from *Acer saccharum*, *Populus deltoides*, *Quercus alba*, *Quercus macrocarpa*, *Quercus rubra*, and punky lignin from a fallen branch.

Cook-F,MOR,NY, DuPage-MOR, LaSalle-MOR, Lee-MOR, Milwaukee-MOR, Will, Winnebago-MOR

AMANDINEA Scheid. & H. Mayrh. CALICIACEAE [Photobiont: *Trebouxia*. In honor of one A. Maniere, evidently known to Choisy, "*Dedie a Madame A. Maniere (1937) en gage d'amitie.*" Her name, we assume, was Amandine, a diminutive of Amanda. Spores 8-32, brown, 1-septate, the walls not notably thickened]

- 1. Asci 16+ spored A. POLYSPORA
- 1. Asci 4-8 spored.
 - Spores constricted at the septum, the walls not ornamented; at least the young ascomata with a gray lecanorine rim A. DAKOTENSIS
 - Spores not constricted at the septum, the walls at least weakly ornamented; ascomata with a lecideine rim colored like the disc A. PUNCTATA

Amandinea dakotensis (H. Magn.) P. May & Sheard (after the state of North Dakota) Common southward, this lichen is relatively frequent locally. We have specimens from the branches and branchlets of *Quercus alba*, *Quercus macrocarpa*, *Pinus strobus*, *Prunus serotina*, *Rhamnus cathartica*, *Rhus typhina* and *Tilia americana*. Associates include *Amandinea punctata*, *Arthonia caesia*, *Phaeophyscia ciliata*, *Physcia millegrana*, and *Physcia stellaris*. Although this lichen is common south of our region, particularly on *Carya*, our only contemporary local record is from Jasper County, where it was collected on a fallen branch along Carpenter Creek. There is a Calkins specimen (#167, NY) of this species from Cook County, which he called *B. alboatra*.

Cook-NY, DuPage-MOR, Ford-MOR, Jasper-MOR, Kenosha-MOR, McHenry-MOR, Ottawa-MSC, Will-MOR, Winnebago-MOR

Amandinea polyspora (Willey) E. Lay & P. May (Gr. *poly*, many + *spora*, seed; from the many-spored asci) Frequent to common just to the west and south of the Southern Lake Michigan region, where it grows on twigs and branches of open-grown trees. Infrequent with us, our specimens are from *Alnus glutinosa*, *Carya cordiformis*, *Malus pumila* and *Prunus serotina*. Associates include *Amandinea punctata*, *Arthonia caesia*, and *Physcia millegrana*.

Allegan-MSc, Cook-F,MOR, DuPage-MOR, Walworth-WIS, Winnebago-MOR

Amandinea punctata (Hoffm.) Coppins & Scheid. (*L. punctatus*, bespeckled, dotted; perhaps from the appearance of numerous tiny black apothecia) *Amandinea punctata* is characteristic of weathered lignin, where it often grows with *Arthonia caesia*, *Caloplaca microphyllina*, *Candelaria concolor*, *Physcia adscendens*, and *Physcia millegrana*. There are also specimens from *Acer negundo*, *Acer saccharinum*, *Juniperus horizontalis*, *Quercus macrocarpa*, *Quercus rubra*, *Salix fragilis*, and *Ulmus americana*. *Buellia schaeereri* and *B. parasema* (in part) of Calkins, who reported it from Cook and Grundy counties, noting that it grew on weathered rails and once on an old stump. He does not mention *Buellia punctata*. The fact that Imshaug (1951) cited specimens from Cook and Grundy counties suggests strongly that Calkins's reports are referable here. See also the notes under *Buellia schaeereri*.

Cook-MOR,NY, DeKalb-MOR, DuPage-MOR, Grundy-F,MOR,WIS, Jefferson-WIS, Kankakee-MOR, Kendall-MOR, Kenosha-MOR, Lake IL-MOR, Lake In-MOR, Livingston-MOR, McHenry-MOR, Newton-MOR, Porter-INDU,MIN, Rock-WIS, Starke-MOR, Will-MOR.

ANAPTYCHIA Körb. PHYSCIACEAE [Photobiont: *Trebouxia*. Gr. *ana*- throughout + *ptychia*, fold or layer; probably from the interwoven hyphae of the algal and medullary layers of the upper cortex. Spores 8, brown, 1-septate]

Anaptychia palmulata (Michx.) Vain. (*L. palma*, the palm of the hand + *-ulatus*, diminutive adjective ending; from the small fingerlike lobules) Includes Thomson's (1963) report of *Physcia pulverulenta* (Schreb.) Hampe from Wauconda [1908, Wright (BSAL)]. Hale (1979) restricts *P. pulverulenta* [now known as *Physconia distorta* (With.) J. R. Laundon] to the western United States. He refers all the eastern material to *Anaptychia "palmatula"* (Michx.) Vain. Thomson referred the Lake County, Illinois, specimen to the forma *pulverulenta*, and the St. Joseph County, Indiana, specimen to the forma *venusta* (Ach.) Sandst. The St. Joseph County, Indiana, specimen is from the base of a hardwood in a swamp. Some early reports of this species are referable to *Physconia leucoleiptes*, which see, so it is possible or even probable that these reports are referable to *A. palmulata* as well. In southern Illinois and Missouri, where this species is occasional, it grows on shaded sandstone and at the bases of old-growth trees in natural areas. [zeorin, ± atranorin]

Lake IL-BSAL, St. Joseph IN-MICH, Waukesha-WIS

ANISOMERIDIUM (Müll. Arg.) Choisy MONOBLASTIACEAE [Photobiont: *Trentepohlia*. Gr. *an-*, not, + *isos*, equal + *meridos*, part or portion, from the unequal cells in some species. Spores 8, hyaline, 1–3 septate. According to Harris (1990), this is the oldest name for this genus]

1. Asci ovate to obovate; spores about 3 times as long as wide, sometimes becoming 4-celled; microconidia elliptical A. POLYPORI
1. Asci slenderly cylindrical to clavate; spores about twice as long as wide, remaining 2-celled; microconidia globose. Spores to 5 µm wide, some usually bent A. LEUCCOCHLORUM
- Spores mostly more than 5 µm wide, symmetrical A. BIFORME

Anisomeridium biforme (Borrer) R. C. Harris (*L. biformis*, of two forms; from the two unequal cells of the spores) = *Arthopyrenia gemmata* of North American authors, not (Ach.) A. Massal., but see also *Eopyrenula intermedia* and *Acrocordia megalospora*; *Ditremsis biformis* (Borrer) R. C. Harris. Infrequent, our only specimens are from the bark of *Populus deltoides*, *Quercus alba*, *Quercus rubra*, and *Tilia americana*. Harris (1973) says that this species is rare in the Great Lakes region.

Cook-FH,MICH,MIN,NY,WIS, DuPage-MOR, McHenry-MOR, Porter-INDU,MIN,US

Anisomeridium leucochlorum (Müll. Arg) R. C. Harris (Gr. *leukos*, white + *chloros*, green, greenish yellow; probably an allusion to the color of the thallus) This species is known from as nearby as McLean County, Illinois, where it was collected on *Juglans nigra* at Funk's Grove.

Anisomeridium polypori (Ell. & Everh.) M. E. Barr (*Nyssa*, a genus of tree + *L. genus*, a race, origin, offspring; apparently meaning "an inhabitant of or arising on Black Gum trees") = *Arthopyrenia willeyana* R. C. Harris; *Anisomeridium willeyanum* (R. C. Harris) R. C. Harris; *A. juistense* (Erichs.) R. C. Harris; *A. nyssaegenum* (Ell. & Ev.) R. C. Harris, *Ditremsis nyssaegenum* (Ell. & Ev.) R. C. Harris. Very common on the bark of *Crataegus* spp., *Juglans nigra*, *Quercus alba*, *Q. macrocarpa*, *Populus deltoides*, *Tilia americana*, and *Ulmus americana*. There are several Cook County records from *Crataegus* that represent, according to Richard Harris (pers. comm.), the conidial state of this lichen. The macroconidia are held together by a colorless mucilage in packets that resemble polysporous asci filled with 1-septate spores. This has been called *Sarcinulella banksiae* Sutton & Alcorn, an anamorphic form known from Australia.

Berrien-MSC, Cass-MSC, Cook-F,MOR,NY, DeKalb-MOR, DuPage-MOR, Ford-MOR, Kalamazoo-F,MSC, Kane-MOR, Kankakee-MOR, Kenosha-MOR,WIS, LaSalle-MOR, Livingston-MOR, McHenry-MOR, Rock-WIS, Will-MOR, Winnebago-MOR

ANZIA Stizenb. PARMELIACEAE [Photobiont: *Trebouxia*. In honor of Martino Anzi, 1812–1883, an Italian cryptogamist. Spores numerous, minute, curved, hyaline, simple]

Anzia colpodes (Ach.) Stizenb. (Gr. *kolpos*, bosom, breast, womb + *-ode*, like, resembling; only Acharius knows for sure, but the small, sessile, brown apothecia may have reminded him of nipples) = *Parmelia colopodes* of Calkins (1896), who reported it from "oaks near Lemont and there is a specimen at CASC from LaSalle County [Calkins #6011] from "various trees." In the Missouri Ozarks, this species is usually found on *Quercus velutina* in natural areas. [atranorin, divaricatic acid]

Cook

ARTHONIA Ach. ARTHONIACEAE [Photobiont: *Trentepohlia* or protococcoid, or absent. Perhaps from Gr. *arthron*, a joint + *onos*, diminutive; after the tiny, irregularly rayed, jointed-looking apothecia of some species. The species names presented here must be regarded as provisional placeholders until the genus is much better understood in North America. An even less than casual glance at the treatment in Harris & Ladd (2005) is enough to humble anyone who pretends authority here. Spores 8, hyaline or brownish, 1–several septate, often clavate]

1. Ascocarps with distinct tinctures of red; ascospores 4-7 septate A. CINNABARINA
1. Ascocarps brown to nigrescent, often with fewer than 4 septa.
 2. Spores muriform A. SUSA
 2. Spores not muriform.
 3. Ascomata with thick, carbonized walls, opening by a narrow slit A. ATRA
 3. Ascomata without thickened wall, not opening by a narrow slit.
 4. Many apothecia more than 0.8 across, irregular, elongated to branched.
 - Apothecia reddish brown to nigrescent; thallus white A. PYRRHULIZA
 - Apothecia dark brown to black; thallus whitish to sordid or greenish gray A. RADIATA
 4. Apothecia to 0.8 mm across, round or nearly so.
 5. Thallus obscure to silvery-gray; photobiont absent; spores 3-septate, but usually undeveloped A. QUINTARIA
 5. Thallus pale or yellowish, forming a distinctive patch; photobiont usually evident.
 - Spores 1-septate A. DISPERSA
 - Spores mostly 2-septate A. DIFFUSA

Arthonia atra (Pers.) A. Schneider (*L. atra*, black; from the color of the apothecia) = *Opegrapha atra* Pers. Infrequent, we have a specimen from *Quercus macrocarpa* and another from a fallen branch in upland woods, but the most common substrate is *Ulmus*.

Cook-MOR, Ford-MOR, Grundy-MOR, Jasper-MOR, Kane-MOR, Livingston-MOR, McHenry-MOR, Will-MOR

Arthonia cinnabarina (DC.) Wallr. (*L. cinnabarina*, vermilion, from the color of the ascocarp) = *A. gregaria* (Weigel) Körb. ; *A. tumidula* (Ach.) Ach. There is a Calkins specimen (F) from "Illinois" that, presumably, is the Southern Lake Michigan region. It is similar to *A. pyrrhuliza* and *A. radiata*, but the apothecia are notably pruinose and dark reddish brown; the spores are 4-celled and about 12 µm long. There are two Hall specimens (F) from downstate that are similar, though the older spores are tinted gray or brown.

Arthonia diffusa Nyl. (*L. diffusus*, spread out, extensive; for reasons known only to Nylander) There is a Calkins specimen (#307) from "Illinois," presumably from in or near the Southern Lake Michigan region, which has 2-4 celled spores 15-22 µm long and 6-10 µm wide, distinct paraphyses, round black apothecia that are somewhat pruinose, and a rather thick thallus. It has been annotated as *A. polymorpha* Ach. Until disabused of the idea, we are including here the report (Thomson 2003) of *A. willeyi* Tuck from Rock County.

Rock, Will

Arthonia dispersa (Schrad.) Nyl. (*L. dispersus*, scattered; perhaps for its general distribution) Frequent, our specimens are from well lit branches and on the trunk of *Fraxinus americana*, *Pinus strobus*, *Populus deltoides*, *Quercus rubra*, *Quercus velutina* and *Tilia americana*.

Berrien-MIN, DuPage-MOR, Kenosha-MOR, Lake Il-MOR, Will-MOR

Arthonia pyrrhuliza Nyl. (*Gr. pyrrhos*, purplish + *L. -iza*, finch; perhaps the dark red apothecia reminded Nylander of the color of the purple finch) Calkins described his specimen as "*Thallus white, thin; apothecia reddish, slender, much divided, ramose.*" There is such a specimen from La Salle County (F); its spores, about 15 µm long, are 4-celled, with one of the end cells notably enlarged. Fink (1935) doubts Illinois reports, but the La Salle County specimen fits well enough his own description for this plant. Calkins noted that it was rare on oaks in Will County. This species may

be locally confounded with *A. quintaria*, with 5-septate, macrocephalic

Will

Arthonia quintaria Nyl. (L. *quintaria*, of or relating to five) Frequently there are specimens with silver-gray thalli, globose but sporeless asci, and without a photobiont, but we have yet to find a fertile specimen that can support the unquestioned presence of this species in the region. There is a Calkins specimen of this species at the Field Museum from "Illinois, on oaks"; presumably this is from the Southern Lake Michigan region. In his book he listed hickories and maples as the substrates. There is a recent record for Champaign County, Illinois (Ladd #23767, NY). This lichen has long been called *A. punctiformis*. See also the notes under *A. pyrrhuliza*.

Arthonia radiata (Pers.) Ach. (L. *radiatus*, rayed; from the branched apothecia) The Walworth and Winnebago county specimens were collected on *Tilia americana*, the Berrien on *Quercus rubra*. The Kendall and Racine county specimens were from *Carya ovata* and the DuPage County specimen was collection on open-grown *Gleditsia triacanthos*. Calkins reported having found it "on oaks near Elgin and elsewhere."

Allegan-MS, Berrien-MIN, Cook-F, DuPage-MOR, Kendall-MOR, Racine-MOR, Walworth-MOR, Winnebago-WIS

Arthonia susa R. Harris & Lendemer (L. designation of the region of the type locality, the Southeastern United States [of] America) = *Arthonia taediosa* of Calkins, who reported it from "maples in the Des Plaines valley; also found on oaks." Our only record for this species is provisional in that the longitudinal septa are rarely more than 2 per cell. The photobiont is protococcoid.

Cook-F, DuPage-MOR

ARTHONIACEAE

- A. Ascoma circular to misshapen, but with the epithecium continuous; spores muriform **Arthothelium**
 A. Ascoma indistinctly shaped, with portions of the epithecium incompletely exposed at the surface; spore septate to muriform **Arthonia**

ARTHOPYRENIA A. Massal. ARTHOPYRENIACEAE [Photobiont: *Trentepohlia* or absent. Perhaps from Gr. *arthron*, a joint + *pyren*, kernel; presumably after the kernel-like perithecia, in a lichen that otherwise resembles a thallus of *Arthonia*. Spores typically 8, hyaline, 1-septate]

Arthopyrenia cinchonae (Ach.) Müll. Arg. (from the host of the type collection, *Cinchona officinalis*) = *Constrictolumina cinchonae* (Ach.) Lücking, M. P. Nelsen & Aptroot. Our only record of this Southeastern species is based upon a specimen at US (#6623) that was said by Calkins, who collected it in 1890, to have grown in "Illinois, Kane County, Elgin." He had called it *Pyrenula glabrata*. This is otherwise a species of the southeastern states and the Atlantic coast up to New Jersey. One cannot help but suspect the validity of the label data. A related species, *Arthopyrenia analepta* (Ach.) A. Massal., with ascospores prevalingly less than 20 µm long, has been reported from nearby Grant county, Wisconsin, on *Betula papyrifera*.

Kane-US

ARTHOPYRENIACEAE

One local genus **Arthopyrenia**

ARTHOTHELIUM A. Massal. ARTHONIACEAE [Photobiont: *Trentepohlia*, or some protococcoid, or absent. Perhaps from Gr. *arthron*, a joint + *thele*, nipple; after the apothecia, which superficially resemble pyrenocarps, but are actually like those of *Arthonia*. *Arthothelium* is no better known. Spores 8, hyaline or brownish, muriform]

1. Spores 1-septate longitudinally A. HALLII
 1. Spores 2-5 septate longitudinally A. SPECTABILE

Arthothelium hallii (Tuck.) Zahlbr. (after Elihu Hall, 1822-1882, American botanist from Athens, Illinois, and one of the organizers of the Illinois Natural History Society at Bloomington) This species is occasional on trees in central Illinois, but our only specimen is from DuPage County, where it grew on the bark of *Prunus serotina* in partial shade. This species may be what Harris & Ladd (2005) called *Arthothelium ruanum* (A. Massal.) Körb., the type of which was collected on beech trees that crowned the summit of Mount. Rua near Toreglia in the Euganean Hills of Italy.

DuPage-MOR

Arthothelium spectabile (Flotow) A. Massal. (*L. spectabilis*, remarkable, visible; probably from the fact that its apothecia are much larger than those of its relatives) = *Arthonia spectabilis* of Calkins (1896), who noted that it grew on "maples at Glencoe, Riverside and elsewhere." The Berrien County record is from *Acer saccharum* at Warren Woods State Park.

Berrien-MS, Cook-F,NY

ASPICILIA A. Massal. MEGASPORACEAE [Photobiont: chlorococcoid. *L. aspicilia*, "eyes of the viper"; probably from the round, lidless "eyes" or apothecia. Spores 2-8, hyaline, simple, large, ovoid]

1. Thallus K+ yellow turning red, norstictic acid A. CINEREA
 1. Thallus K+ persistent yellow, stictic acid A. LAEVATA

Aspicilia cinerea (L.) Körb. (*L. cinereus*, ash-colored; from the color of the thallus) This species occurs frequently on granitic boulders in our western sector. [norstictic acid, ± atranorin]

DuPage-MOR, Lee-MOR, Winnebago-MOR

Aspicilia laevata (Ach.) Arnold (*L. laevis*, smooth + *-atus*, provided with; from the smooth cortex) Our only record for this species is from a granite boulder in an open pasture along the western bluff of the Fox River near Sheridan. [stictic acid, ± norstictic acid, ± some terpenoid]

LaSalle-MOR

ATHALLIA Arup, Frödén, & Søchting TELOSCHISTACEAE [Photobiont: mostly

"*Pseudotrebouxia*." Gr. *a-*, without + *thallos*, green shoot, or originally the vegetative portion of a plant. Spores 8, hyaline, polaribilocular, the isthmus more than 1/3 the length of the spore. Anthraquinones, particularly parietin]

1. Thallus saxicolous A. VITELLINULA
1. Thallus corticolous or lignicolous.
 - Apothecia orange, the rims often with an outer ring suggestive of thallus A. PYRACEA
 - Apothecia yellow, the rims simple, nearly or quite concolorous with the disk A. HOLOCARPA

Athallia holocarpa (Hoffm.) Arup, Frödén, & Söchting (Gr. *holos*, whole, all + *karpos*, fruit; possibly from scant or often absent thallus) = *Caloplaca holocarpa* (Hoffm.) Wade. Our only records for this species, as we understand it, are from *Populus* and weathered wood.

Allegan-MSC, DuPage-MOR, Ford-MOR, Livingston-MOR

Athallia pyracea (Ach.) Arup, Frödén, & Söchting (Gr. *pyr-*, fiery + *-aceus*, having a resemblance to, from the fiery orange apothecia. = *Caloplaca pyracea* (Ach.) Zwackh. Frequent on the bark of *Populus* and on lignin, sometimes with *A. holocarpa*. There are also local specimens on the bark of *Quercus velutina*, a young *Fraxinus lanceolata*, and even *Pinus resinosa*.

Berrien-MOR, Cook-MOR, DuPage-MOR, Grundy-MOR, Jefferson-WIS, Kane-MOR, Kenosha-MOR, Lake II-MOR, Lake In-MOR, LaSalle-MOR, Livingston-MOR, McHenry-MOR, Porter-MOR, Racine-MOR, Will-MOR

Athallia vitellinula (Nyl.) Arup, Frödén, & Söchting (L. *vitellus*, egg yolk + *-inus*, pertaining to, *-ulus*, diminutive.) = *Caloplaca vitellinula* (Nyl.) H. Olivier. We have one record from a granitic boulder; all others are from limestone or concrete.

Boone-MOR, DuPage-MOR, Kane-MOR, LaSalle-MOR, Ogle-MOR, Winnebago-MOR

BACIDIA De Not. RAMALINACEAE [Photobiont: green. *L. bacidium*, little rod; from the elongate spores. We are including here species that have been placed in the Genus *Bacidina* Vězda, which differs from *Bacidia* in having a paraplectenchymatous exciple and a rounded axial mass in the ascus tip, rather than conic as is seen in *Bacidia*. Spores narrowly elliptic to acicular, 8, hyaline, 3–several septate, needle-like; tholus uniformly weakly amyloid; *Bacidia*-type]

1. Thallus terricolous or muscicolous B. BAGLIETTOANA
1. Thallus saxicolous or corticolous.
 2. Apothecia pale, reddish, or pruinose.
 3. Apothecia pruinose throughout B. SUFFUSA
 3. Apothecia epruinose or with pruina only marginal.
 4. Apothecia pale to flesh-colored; hypothecium colorless B. DELICATA
 4. Apothecia darker, hypothecium yellowish to brown.
 - Thallus granular; exciple and hypothecium hyaline to yellowish in KOH B. RUBELLA
 - Thallus continuous to warty but not granular; exciple and hypothecium deep pink to red brown in KOH B. POLYCHROA
 2. Apothecia jet black.
 4. Thallus corticolous.
 - Spores acicular B. SCHWEINITZII
 - Spores fusiform B. CIRCUMSPECTA

4. Thallus saxicolous.
 Spores fusiform B. GRANOSA
 Spores acicular B. EGENULA

Bacidia bagliettoana (A. Massal. & De Not.) Jatta (after Francesco Baglietto, 1826–1916, Italian physician and lichenologist) = *Bacidia muscorum* (Sw.) Mudd. Muscicolous or terricolous; infrequent, one record is from thin soil over dolomite with *Placidium squamulosum*; another is from landscape fabric over soil. The Kane County specimen was reported by Fink (1906)

DuPage-MOR, Kane, Will-MOR

Bacidia circumspecta (Vainio) Malme (L. *circum*, near, around + *specto*, seen or noted, perhaps noted in the neighborhood) Infrequent, our records are from *Populus tremuloides* and *Ulmus americana*.

Lake II-MOR, McHenry-MOR

Bacidia delicata (Leight.) Coppins (L. *delicatus*, dainty) = *Bacidina delicata* (Leight.) V. Wirth & Vězda Our only record is from the base of *Quercus alba*. We are using this name provisionally to apply to Bacidiae with acicular spores, colorless apothecial tissues, and pycnidia with filiform conidia.

Kane-MOR

Bacidia egenula (Nyl.) Arnold (L. *egenus*, needy or destitute + *-ulus*, diminutive; perhaps from a perception that it appears depauperate, as tiny black dots, often on small rocks) = *Bacidina egenula* (Nyl.) Vězda. Frequent on calcareous and noncalcareous rocks, this species has been misidentified routinely in North America as *Bacidia inundata* (Fr.) Körb. or *Biatora inundata* Fr. It differs in having a K+ green epithecium. Richard C. Harris has been struggling with the taxonomic disposition of this lichen, and recently has concluded that our material probably is *B. egenula*, a European species. He would be willing to call it *Bacidina egenula* (Nyl.) Vězda, inasmuch as its algae (gonidia) are in goniocysts. Whatever its name, it is a frequent species of dolomitic outcrops, glacial erratics, flagstone, and concrete; there is one specimen from rusty metal. Calkins wrote that it was "in all our territory on detached rocks or stones along streams," and that the thalli were "best shown on sandstones." Some specimens Calkins called "*Verrucaria aethiobola*" are referable here.

Boone-MOR, Cook-MOR, DuPage-MOR, Kane-MOR, Lake-II-MOR, Lake-In-MOR, LaSalle-MOR, Livingston-MOR, McHenry-MOR, Ogle-MOR, Porter-MOR, Starke-MOR, Will-MOR

Bacidia granosa (Tuck.) Zahlbr. (L. *granosus*, full of seeds; from the granulose thallus) This species is infrequent on dolomitic outcrops and HCl+ boulders. Many local specimens recently have been named *Bacidia coprodes* (Körb.) Lett., but Ekman (2014) excludes that species from the western Great Lakes and most of North America, referring our material to *B. granosa*, but leaves room for the possibility that it has been overlooked in North America. The hypothecium of *B. granosa* is lighter in color than the exciple, usually with tinctures of orange or red, while that of *B. coprodes* is darker, almost black and concolorous with the exciple. A similar species, *B. cupreorosella* (Nyl.) A. Schneid., grows on limestone farther south; it has a hyaline hypothecium, while the hypothecium of *B. granosa* is dark. This species also has been called *B. trachona* (Ach.) Lettau by many North American authors. According to Richard Harris (pers. comm.), that is a European species, and our material is referable here.

Boone-MOR, Cook-MOR, DuPage-MOR, Grundy-MOR, Will-MOR

Bacidia polychroa (Th. Fr.) Körb. (Gr. *poly*, many + *chroa*, superficial color; probably from the apothecia that may vary from pale to reddish or blackish) = *B. fuscorubella* (Hoffm.) Bausch; *Biatora fusco-rubella* of Calkins. Calkins (1896) stated that this species grew on substrates similar to those of *Bacidia rubella*, which see. Actually, all of the Calkins material we have seen that he called *B. rubella* is referable to *B. polychroa*. Generally said to be a corticolous species, the only two local specimens we have seen are from *Tilia americana* and shaded limestone at the base of a cliff.

Cook, LaSalle-MOR

Bacidia rubella (Hoffm.) A. Massal. (L. *rubeo*, to be red, *-ellus*, diminutive; from the tiny reddish apothecia) = *Biatora rubella* of Calkins; *Bacidia luteola* (Schrad.) Mudd. Calkins reported that "This widely diffused species occurs in our county on hickories and oaks. It is variable, and a number of varieties, fourteen or more, have been created species." Generally said to be a corticolous species, the only local contemporary specimen we have seen is from partly shaded limestone with an eastern exposure.

Cook-F, Ogle-MOR

Bacidia schweinitzii (E. Michene) A. Schneid. (after Ludwig David von Schweinitz, 1780–1834, the German botanist) Known from all around the Southern Lake Michigan region, this species of shaded corticolous habitats has yet to be discovered locally.

Bacidia suffusa (Fr.) A. Schneid. (L. *suffundere*, to pour into or under; perhaps from apothecia suffused with pruina) = *Biatora suffusa* Fr. In southern Illinois, this species is rare on *Carya* and *Liquidambar*. Calkins (1896) noted it from *Carya* in Will County.

Cook-F, MOR, Will

BAGLIETTOA A. Massal. VERRUCARIACEAE [Photobiont: chlorococcoid. In honor of the Italian lichenologist Franseco baglietto 1826-1919. Spores 8, simple, hyaline or nearly so; hamathecium gelatinized]

1. Purlieu of perithecia stained violet B. MARMOREA
1. Violet stains absent.
 - Exciple hyaline to brownish around the perithecium, the perithecium capped by a flat involucrellum marked by distinct, radiate fissures around the ostiole B. BALDENSIS
 - Exciple black all around the perithecium; ostiole not or only inconspicuously radiate-fissured . B. CALCISEDA

Bagliettoa baldensis (A. Massal.) Vězda (Perhaps after Castelbaldo, Padua, Italy) = *Verrucaria baldensis*. Farther south, this species is rare on hard limestones in glades and along bluffs.

Bagliettoa calciseda (DC.) Gueidan & Cl. Roux (L. *calx*, lime + *sedeo*, to sit; probably from the tendency of the perithecia to seat themselves in depressions in limey rock) = *Verrucaria calciseda*. Rare locally, our only specimens are from dolomite exposures. There are several specimens from calcareous rock in La Salle County at the Field Museum and the New York Botanical Garden; most of them were called *V. integrella*, one was annotated *V. submuralis* by Fink, and another was called *Staurothele diffractella*.

DuPage-MOR, LaSalle-F, Will-MOR

Bagliettoa marmorea (Scop.) Gueidan & Cl. Roux (L. *marmor*, marble; probably from the

substrate of type collections) = *Verrucaria marmorea*. An interesting and uncommonly distinct species yet unknown from the Southern Lake Michigan region, but a characteristic species of limestone glades farther south.

BIATORELLA De Not. BIATORELLACEAE [Photobiont: chlorococcoid. Perhaps from Gr. *biator*, small + L. *-ellus*, diminutive; after the minute, numerous spores. Spores numerous, hyaline, simple]

Biatorella cyphalea (Tuck.) Zahlbr. (Perhaps from Gr. *kyphos*, humped, curved + *aleo*, exposed to the sun; perhaps after the tiny convex apothecia on open-grown trees) = *Biatora cyphalea* Tuck. Fink (1935) restricted this species to Illinois. Magnusson (1934) cited a Wolf specimen from elm bark, and he also cited a Calkins specimen from elms, "Chicago: Fox River." Actually, Calkins (1896) reported it as "rare on elms near the Fox River," a location that is more likely in Kane County.

Cook, Kane

BIATORELLACEAE

One local genus **Biatorella**

BILIMBIA De Not. RAMALINACEAE [Photobiont: green. L. *bi*, double + *limbus*, in reference to the perispore. Spores 8, hyaline, (1)3–7 septate; tholus uniformly weakly amyloid; *Bacidia*-type]

Bilimbia sabuletorum (Schreber) Arnold (L. *sabulum*, sandy; from its supposed frequent occurrence in sandy habitats) = *Bacidia sabuletorum* (Schreb.) Lettau; *Mycobilimbia sabuletorum* (Schreb.) Hafellner. All of the specimens we have are from shaded ravines with dolomitic outcrops, usually growing on mosses over the rock.

Cass-MIN, MSC, DuPage-MOR, Kankakee-MOR, Walworth-MOR, Winnebago-MOR

BLASTENIA Th. Fr. TELOSCHISTACEAE [Photobiont: mostly "*Pseudotrebouxia*." Gr. + *blastos*, a germ, bud, shoot + *-enos*, pertaining to. Apothecia dome-shaped, without a rim; spores polaribilocular. Anthraquinones]

Blastenia ferruginea (Huds.) Th. Fr. (L. *ferrugo*, rust + *-ineus*, denotes a similar color or material; from the reddish brown apothecia, evocative of the color of rust) = *Caloplaca ferruginea* (Huds.) Th. Fr. *Placodium ferrugineum* (Huds.) Hepp. Our only contemporary record is from the wood of a rail fence. Calkins noted this species from "oaks along the Des Plaines river and near Elgin on hickories . . . plentiful." We have seen a specimen, properly identified (Calkins #318, NY) from "oaks, Illinois." This specimen was later annotated *C. pollinii* by Rudolph, we believe erroneously.

Cook-ILL, MOR, Will-ILL

BOTRYOLEPRARIA Canals VERRUCARIACEAE [*Trebouxia* and *Stichococcus*.

Gr. *botry*, a bunch or cluster, as in grapes + *lepra*, leprosy + *-arius*, like or connected with; from the shrubby clusters of hyphae and algal cells said to resemble a cluster of grapes. Spores not seen]

Botryolepraria lesdainii (Hue) Canals (after Maurice Bouly de Lesdain, 1869–1965, French lichenologist) = *Lepraria lesdainii* (Hue) R. C. Harris. Our specimens are from shaded dolomitic cliff faces, in areas sheltered from direct wetting, as are all of our Illinois collections. [terpene with RF value just above zeorin]

Cook-MOR, DuPage-MOR, Kankakee-MOR, LaSalle-MOR, Lee-MOR, Winnebago-MOR

BRIANARIA S. Ekman & M. Svensson PILOCARPACEAE [Photobiont: green. In honor of Brian J. Coppins, 1949- , of the Royal Botanic Garden in Edinburgh, for his enormous contribution to lichenology, especially the taxonomy of the Micareaeous genera. Spores 8, hyaline, simple or septate, ascus apex strongly amyloid]

Brianaria sylvicola (Flot.) S. Ekman & M. Svensson (L. = *sylva*, forest + *-cola*, inhabitant) Our only record is from a sandstone boulder west of South Bend. Local reports of *Lecidea erratica* Körb. from St. Joseph County, Indiana, are referred here. The Calkins & Huett (1898) report of *Lecidea cyrtidia* Tuck. from rocks in LaSalle County is probably referable here.

St. Joseph IN-MOR

BRYOBILIMBIA Fryday, Printzen, & Ekman LECIDIACEAE [Photobiont: *Trebouxia*-like. Gr. *bryon*, moss + the genus *Bilimbia*, which see; an allusion to its mossy substrate and affinity to *Bilimbia*. Spores 8, hyaline, simple or occasionally 1-septate; axis of ascus apex strongly amyloid, *Porpidia*-type]

Bryobilimbia hypnorum (Lib.) Fryday, Printzen, & Ekman. (Gr. *hypnon*, a term for certain mosses among the Classical Greeks, Latinized to *Hypnum*, a contemporary genus of moss, + the genitive plural, of the mosses; an allusion to its substrate) = *Mycobilimbia hypnorum* (Lib.) Kalb & Hafellner. Our only record for this species is from LaSalle County where it grew among mosses over rock.

LaSalle-F,MOR

BRYORIA Brodo & D. Hawksw. PARMELIACEAE [Photobiont: *Trebouxia*. A syncopation of the two genera: *BRY*o

ogon and *Alect*ORIA. Spores 2–8, hyaline to brownish, simple]

Bryoria furcellata (Fr.) Brodo & D. Hawksw. (L. *furca*, fork + *-ella*, diminutive, + *-atus*, adjective ending; meaning minutely forked) Corticolous, Brodo & Hawksworth (1977) report it from St. Joseph County, Indiana,. [fumarprotocetraric acid]

St. Joseph-In

BUELLIA De Not. CALICIACEAE [Photobiont: *Chlorococcoid*. After Esuperanzo
Buelli (d. 1840), friend of De Notaris. Spores 8, brown, 1(3)-septate]

1. Apothecia and thallus K–
 Thallus saxicolous B. BADIA
 Thallus corticolous B. SHAERERI
1. Apothecia and thallus notably K+ yellow to red.
 Thallus corticolous B. ERUBESCENS
 Thallus saxicolous B. MACULATA

Buellia badia (Fr.) A. Massal. (*L. badius*, bay, reddish or dull brown,) This species resembles the tumescent *B. maculata*, but it reacts K– instead of K+ red. Infrequent, we have one specimen from weathered wood and two from an HCl– boulders in full sun. Local reports of *Buellia turgescens* are referred here.

McHenry-MOR, Will-MOR

Buellia erubescens Arnold (*L. erubescens*, blushing, reddening, as if from shame, perhaps from its reaction to the K spot test) = *Buellia stillingiana* J. Steiner. This is a frequent lichen on corticolous substrates just south of the Southern Lake Michigan region, but it is infrequent locally. Our contemporary specimens are from *Gleditsia triacanthos* and *Rhamnus carthartica*. Richard Harris (pers. comm.) believes that Calkins's report of *B. disciformis* is likely to be based upon material of *B. erubescens*, a theory reinforced by the fact that Imshaug (1951) cited a Cook County specimen of *B. stillingiana* and excluded *B. disciformis* from the Southern Lake Michigan region. [norstictic acid, ± atranorin]

Cook, DuPage-MOR, Jefferson-WIS, Ogle-MOR

Buellia maculata Bungartz (*L. maculatus*, spotted; perhaps from the appearance of numerous tiny black apothecia) = *Buellia stigmaea* Tuck. Our only record for this species is from a sandstone cliff at Castle Rock State Park. [norstictic acid, atranorin]

Ogle-MOR

Buellia schaeferi De Not. (in honor of Swiss cryptogamist, Ludwig Emanuel Shaerer, 1785-1853) Most frequent on *Larix laricina* in bogs, our only records are from *Salix* bark in a bog southwest of Dousman and a decorticate fence rail in DuPage County. Similar in many respects to *Amandinea punctata* but with a paler thallus and with spores prevailingly less than 10 µm; those of the latter run mostly 11-16 µm.

DuPage-MOR; Waukesha-WIS

CAERULEUM A. Massal. ACAROSPORACEAE [Photobiont: Chlorococcoid. *L. caeruleus*; pertaining to the sea or sky, especially with the blended tinctures of blue and green; probably from the greenish pruina. Spores minute, numerous, simple]

Caeruleum immersum (Fink) K. Knudsen & L. Arcadia (*L. immersus*, immersed; from the apothecia immersed in the thallus) = *Acarospora immersa* Fink. The Porter County specimen was

collected at Howes Prairie, on HCl+ rock in open oak woodland.

Porter-MIN

CALICIACEAE

- A. Ascospores numerous
 - Apothecia stalked **Calicium**
 - Apothecia sessile **Cyphelium**
- A. Ascospores no more than 64 per ascus.
 - B. Thallus foliose **Pyxine**
 - B. Thallus crustose.
 - D. Thallus yellow or white, more or less placodioid.
 - Thallus white; spores submuriform **Diplotomma**
 - Thallus yellow; spores 1-septate **Dimelaena**
 - D. Thallus neither yellow nor white, not placodioid.
 - Thallus well-developed, usually with secondary metabolites; apothecia lacking a thalline margin concolorous with the rim **Buellia**
 - Thallus scant, with a thalline rim, or if without, then with a very thin thallus **Amandinea**

CALICIUM Pers. CALICIACEAE [Photobiont absent. Gr. *kalyx*, a cup; from the cup-shaped apothecia. Spores numerous, the asci disintegrating into a mazaedium, 1-septate, brown, ornamented]

- 1. Apothecial capitulum at least sparsely white pruinose on the exciple C. GLAUCELLUM
- 1. Apothecial capitulum without pruina C. ABIETINUM

Calicium abietinum Pers. (L. inhabiting the fir tree, *Abies*) Our only record is from a "dead tree" at Hope Lake Bog. Spores brown, 1-septate, 6×13 µm.

Jefferson-WIS

Calicium glaucellum Ach. (L. *glaucus*, pale blue or whitish + *-ellum*, diminutive) Our only record for this species is from a white oak in "Waldron, Illinois," which village is now known as Aroma Park.

Kankakee-F

CALOPLACA Th. Fr. TELOSCHISTACEAE [Photobiont: mostly "*Pseudotrebouxia*." Gr. *kalos*, beautiful + *plax*, a flat round plate, dish; from the attractive, round, yellow apothecia, resembling plates, of some species. This is a genus, along with related genera in the Teloschistaceae, in which it can be distinctly ungratifying to name specimens. Much of the contemporary literature is at variance in interpretation and there is no comprehensive monograph for North America. With a few exceptions, most of the following names should be regarded as provisional. Apothecia with a proper margin and many species with a thalline margin as well; spores 8, hyaline, polaribilocular. Most species contain anthraquinones, particularly parietin]

- 1. Thallus soresiate C. MICROPHYLLINA
- 1. Thallus esoresiate.

2. Apothecial disks black
 3. Discs distinctly K+ violet red; thallus corticolous or lignicolous, usually on *Juniperus*. C. POLLINII
 3. Discs K- or K+ pale violet; substrate various.
 4. Thallus saxicolous. C. ATROALBA
 4. Thallus corticolous.
 - Discs buff to brownish, pruinose C. CAMPTIDIA
 - Discs black or brownish black, epruinose C. BRUNNEOLA
2. Apothecial disks yellow or orange.
 5. Thallus lignicolous or corticolous
 - Apothecial disks at least thinly yellow pruinose C. ULMORUM
 - Apothecial disks not pruinose C. CERINA
 5. Thallus saxicolous.
 6. Thallus sordid to gray or nigrescent, K- C. SIDERITIS
 6. Thallus orange or buff, often pruinose, K+purple.
 - Marginal lobes convex, many more than 0.6 mm wide and 2.5 mm long C. TRACHYPHYLLA
 - Marginal lobes flat, all less than 0.6 mm wide and less than 2.5 mm long C. SAXICOLA

Caloplaca atroalba (Tuck.) Zahlbr. (*L. ater*, black + *albus*, white; probably from the dark discs and pale-colored rims) This species was first discovered from Illinois by Richard Harris, who found it mixed with Calkins's specimen of *Lecania perproxima* at the New York Botanical Garden. There are contemporary records from the Southern Lake Michigan region, in LaSalle, Livingston, and Will Counties, where it grows on bedrock, often within the zone of fluctuation. A Calkins specimen (#1752 NY) from Will County was originally named *Lecanora aipospila*.

Cook-NY, LaSalle-MOR, Livingston-MOR, Will-MOR, NY

Caloplaca brunneola Wetmore (*L. brunneus*, dark brown + *-olus*, diminutive; from the color of the apothecial discs) Yet unknown from the Southern Lake Michigan region, this species is occasional farther south on a wide variety of deciduous trees and on *Juniperus virginiana*.

Caloplaca camptidia (Tuck.) Zahlbr. (*Gr. kampto*, to bend + *L. -idus*, diminutive; perhaps from the sometimes flexuous margins) Yet unknown from the Southern Lake Michigan region, this species occurs farther south, where it is rare on both hardwoods and junipers.

Caloplaca cerina (Hedwig) Th. Fr. (*L. cerinus*, yellowish, the color of yellow wax; from the color of the apothecia) Occasional on weathered wood and the bark of *Populus*. An early Cook County specimen at ILL was named *Placodium ferrugineum* by Calkins. There is a modern Cook County record from a wooden fence rail.

Allegan-MS, Berrien-MIN, Cook-ILL, MOR, Kane-MOR, Lake II-MOR, LaSalle-MOR, McHenry-MOR, Porter-MIN.

Caloplaca microphyllina (Tuck.) Hasse (*Gr. mikros*, small + *phyllon*, leaf + *L. -inus*, pertaining to; perhaps from the occasional, tiny, flattened, areoles) = *Placodium microphyllum* of Calkins. Fink (1935) spells the epithet "*microphyllina*." Rudolph (1955) placed this species in the genus *Gasparinia*. That orange swatch that appears on farm wood and fences in the agricultural districts is either rust leached from barbed wire or *C. microphyllina*. It often grows with *Physcia millegrana* and *Amandinea punctata*.

Cook-MOR, DeKalb-MOR, DuPage-MOR, Ford-MOR, Grundy-MOR, Jasper-MOR, Kalamazoo-NY, Kane-MOR, Kendall-MOR, Lake II-MOR, Lake In-MOR, LaSalle-CUP, Lee-MOR, Livingston-MOR, McHenry-MOR, Newton-MOR, Ogle-MOR, Racine-MOR, Starke-MOR, Walworth-MOR, Waukesha-WIS, Will-MOR, Winnebago-MOR

Caloplaca pollinii (A. Massal.) Jatta (after Ciro Pollini, 1782–1833, Italian physician and

botanist) Farther south, this species grows on *Juniperus virginiana* in natural areas. The Cook (Calkins #53, MICH) and Kane (Fink, July 1895, MICH) county specimens were confirmed by Wetmore (1994). The Rock County record is reported by Thomson (2003).

Cook-MICH, Kane-MICH, LaSalle-MOR, Rock

Caloplaca saxicola (Hoffm.) Nordin (L. *saxum*, stone + *colo*, to inhabit; from its inhabitancy of rocks) Our only local record for this species is from a dolomitic outcrop above the Des Plaines River, in DuPage County. The next nearest known record is from a limestone outcrop in Stephenson County, Illinois.

DuPage-MOR

Caloplaca sideritis (Tuck.) Zahlbr. (Gr. *sideros*, iron or things made from iron + *-ites*, belonging to or having to do with; from the iron to greenish gray thallus) This species is occasional on granitic and dolomitic erratics, and on dolomitic outcrops and cliff faces. It is a variable species locally, particularly with respect to spore size; a few of our specimens have spores ranging from 16 to 22 μm , but are alike in all other respects.

Boone-MOR, Cook-MOR, DuPage-MOR, Grundy-MOR, Kane-MOR, Kendall-MOR, LaSalle-MIN, MOR, Lee-MOR, McHenry-MOR, Milwaukee-WIS, Ogle-MOR, Will-MOR, Winnebago-MOR

Caloplaca trachyphylla (Tuck.) Zahlbr. (Gr. *trachys*, rough + *phyllon*, leaf; from the rough surface of the thallus lobes) Yet unknown from the Southern Lake Michigan region, this species occurs regularly on dolomitic outcrops in hill prairies farther west and south, particularly along the Mississippi and Illinois rivers.

Caloplaca ulmorum (Fink) Fink (L. *ulmus*, the elm; of elm trees) Our only contemporary local records are from the bark of *Populus*. There is a specimen from just west of the Southern Lake Michigan region, which grew on the trunk of *Juglans nigra* in a partly open mowed area. There are several Calkins specimens of this species at the New York Botanical Garden, all of which Calkins had called *Placodium aurantiacum*. The Ford County record is from a dolomite headstone.

Cook-NY, Ford-MOR, Kane-MICH, Lake II-MOR, McHenry-MOR

CANDELARIA A. Massal. CANDELARIAACEAE [Photobiont: Chlorococcoid. L. *candela*, candle + *-arius*, belonging to; from the yellow color, like the glow of a candle. Spores small, 16–32, hyaline, simple or rarely 1-septate; all species contain calycin and pulvinic dilactone]

1. Thallus esorediate C. FIBROSA
1. Thallus soorediate C. CONCOLOR

Candelaria concolor (Dicks.) Stein (L. *concolor*, the same color; from the fact that the apothecia and, perhaps, the soredia, are the same color as the thallus) = *Theloschistes concolor* of Calkins. This species, with the possible exception of *Physcia millegrana*, is the most common lichen in the Southern Lake Michigan region. It accounts for most of the yellow swatches that are so characteristic of suburban trees such as *Acer negundo*, *Fraxinus lanceolata*, *Populus deltoides*, and *Ulmus americana*. Other trees from which we have local specimens include *Aesculus sylvatica*, *Betula papyrifera*, *Carya cordiformis*, *Carya ovata*, *Celtis occidentalis*, *Crataegus* spp., *Fraxinus americana*, *Juglans nigra*, *Juniperus*

virginiana, *Maclura pomifera*, *Populus alba*, *Populus deltoides*, *Prunus serotina*, *Quercus alba*, *Quercus velutina*, *Salix nigra*, and *Ulmus pumila*. It also grows on fence posts and rails, concrete, dolomitic erratics and outcrops, and tombstones. It commonly produces small thalli on *Phaeophyscia ciliata*, *Phaeophyscia pusilloides*, and *Physcia stellaris*. Some thalli are so profusely covered by soredia that it is nearly concealed. Such lichens have been cal var “*effusa*,” and are perhaps distinct at the varietal level, but the type of var. *effusa* is a *Candelariella*, so there is no legitimate name for the variety. See also the discussion in Lendemer & Westberg (2011).

Allegan-MSC, Berrien-MOR, Boone-MOR, Cook-MOR, DeKalb-MOR, DuPage-MOR, Ford-MOR, Grundy-MOR, Iroquois-MOR, Jasper-MOR, Jefferson-WIS, Kane-MOR, Kankakee-MOR, Kendall-MOR, Kenosha-MOR, Kosciusko-NY, MICH, Lake IL-MOR, Lake In-MIN, LaPorte-MOR, LaSalle-MOR, Lee-MOR, Livingston-MOR, McHenry-MOR-NY, Milwaukee-MOR, Newton-MOR, Porter-INDU-MOR, Pulaski-MOR, Racine-MOR, Rock-WIS, St. Joseph In-MOR, Starke-MOR, Walworth-MOR, Waukesha-WIS, Will-MOR, Winnebago-MOR

Candelaria fibrosa (Fr.) Müll. Arg. (L. *fibra*, a fiber or filament + *-osus*, denotes abundance or fullness; probably from the dense ring of white fibers that invests many apothecia) Rather abundant on canopy branches farther west; until its recent appearance on *Acer negundo* and *Gleditsia triacanthos* in DuPage County, it had not been collected in Illinois since the 1800's. There are specimens from Glencoe, in Cook County.

Cook-F, FH, NY, DuPage-MOR

CANDELARIACEAE

- A. Thallus crustose; spores usually simple ***Candelariella***
 A. Thallus foliose; spores 1-septate ***Candelaria***

CANDELARIELLA Müll. Arg. CANDELARIACEAE [Photobiont: Chlorococcoid.
 Diminutive of *Candelaria*. Spores 8–32, hyaline, simple or rarely 1-septate; all species contain calycin, pulvinic dilactone, and pulvinic acid]

1. Thallus notably sorediate or of corticate granules; apothecia rare; corticolous.
 Thallus of scattered, globose, distinctly corticate, more or less evenly distributed granules C. XANTHOSTIGMA
 Thallus sorediate, with ecorticate granules more or less clustered into soralia C. EFFLORESCENS
1. Thallus of small squamules or areolae, or absent; apothecia usually present; corticolous or saxicolous.
 Areoles generally scattered; spores 8 per ascus C. AURELLA
 Areoles densely clustered, often with slight effigurate margins; spores 16–32 C. VITELLINA

Candelariella aurella (Hoffm.) Zahlbr. (L. *aurum*, gold + *-ella*, diminutive; from the tiny yellow apothecia) = *Placodium vitellinum* var. *aurellum* of Fink (1906). Most of our specimens are from weathered concrete or some other allochthonous HCl+ substrate, commonly in association with *Myriolecis dispersa*. There are two specimens from lignin that are evocative of *Candelariella antennaria* Räsänen, but the thallus consists of gray, convex areoles. See the article by Yakovchenko *et al.* (2017).

DeKalb-MOR, DuPage-MOR, Grundy-MOR, Kane-MOR, Kenosha-MOR, Lake Il-MOR, Lee-MOR, Livingston-MOR, Ottawa-MSC, Racine-MOR, Will-MOR, Winnebago-MOR

Candelariella efflorescens R. C. Harris & Buck (L. *efflorescens*, very rarely flowering) More

than half of the Southern Lake Michigan region specimens are from the bark of *Crataegus* species and *Quercus velutina*, though we also have it from *Q. macrocarpa*, *Juglans nigra*, *Prunus serotina*, *Tilia americana*, and weathered fence rails. The only Southern Lake Michigan region specimen that we have seen with apothecia was from a Bur Oak; it bore asci with 32 spores. Harris & Buck (1978) map it from areas all around the Southern Lake Michigan region, particularly north and east of us. Our lower Midwestern specimens infrequently produce apothecia, but all that we have seen have 8-spored asci and are referable to *C. xanthostigmoides* (Muell. Arg.) R. W. Rogers, which locally also has been called *C. efflorescens* (Nyl.) Lettau. All local reports of “*C. reflexa*” are referred here. For a discussion on these two taxa see Lendemer & Westberg (2010)

Allegan-MSC, Berrien-MOR, Boone-MOR, Cook-MOR, DuPage-MOR, Grundy-MOR, Jasper-MOR, Kane-MOR, Kankakee-MOR, Kenosha-MOR, Lake Il-MOR, Lake In-MOR, LaSalle-MOR, Lee-MOR, Livingston-MOR, Milwaukee-MOR, Newton-MOR, Ogle-MOR, Porter-INDU,MIN, Pulaski-MOR, Racine-MOR, St. Joseph IN-MOR, Starke-MOR, Walworth-MOR

Candelariella vitellina (Hoffm.) Müll. Arg. (*L. vitellus*, egg yolk + *-inus*, pertaining to; from the tiny yellow apothecia) = *Placodium vitellinum* of Calkins. Most northern Illinois specimens are from sandstone exposures, but the only Southern Lake Michigan region saxicolous specimens we have seen are from igneous boulders. It is also occasional on lignin, such as old fence rails and wood, from which substrate it is reported by Calkins. We also have specimens from *Quercus alba* and *Q. macrocarpa*. On wood or bark it could be mistaken for *C. xanthostigma*, but the thallus granules of *C. xanthostigma* are smaller, more spherical, and not as coalesced.

Cook-CASC, DuPage-MOR, Ford-MOR, Jasper-MOR, Jefferson-WIS, Kane-MOR, LaSalle-MOR, Lee-MOR, McHenry-MOR, Ogle-MOR, Racine-MOR, Rock-WIS, Will-MOR, Winnebago-MOR

Candelariella xanthostigma (Ach.) Lettau (Gr. *xanthos*, the various shades of yellow + *stigma*, point, dot, or tattoo; from the scattered, corticate, yellow, spherical granules) Seventy-five percent of Southern Lake Michigan region specimens are from species of *Quercus*, but there are also specimens from *Tilia americana*, *Juglans nigra*, *Carya ovata*, *Populus grandidentata*, and weathered fence rails.

Berrien-MIN, Cook-MOR, DeKalb-MOR, DuPage-MOR, Ford-MOR, Grundy-MOR, Iroquois-MOR, Jasper-MOR, Kane-MOR, Kankakee-MOR, Kendall-MOR, Kenosha-MOR, Lake Il-MOR, Lake In-MIN, La Porte-MIN,MOR, LaSalle-ILL,MOR, Lee-MOR, Livingston-MOR, McHenry-MOR, Newton-MOR, Ogle-MOR, Porter-INDU,MIN, Pulaski-MOR, Racine-MOR, Starke-MOR, Walworth-MOR, Waukesha-WIS, Will-MOR

CANOPARMELIA Elix & Hale PARMELIACEAE [Photobiont: *Trebouxia*. *L. canus*, gray; a gray *Parmelia*, which see. Spores 8, hyaline, simple]

Canoparmelia texana (Tuck.) Elix & Hale (of Texas) = *Pseudoparmelia texana* (Tuck.) Hale. The earliest record for this southern species locally is based upon two collection made in Jefferson County, on *Larix laricina* at Hope Lake Bog. The DuPage County collections were made in 2013, one on the serotinous cone of a planted specimen of *Pinus banksiana*, the other on the bark of *Prunus serotina*. [Divaricatic acid].

DuPage-MOR, Jefferson-WIS

CATILLARIA A. Massal. CATILLARIACEAE [Photobiont: Chlorococcoid. L.

catillus, a small dish or plate + *-arius*, belonging to or resembling; possibly from the small dishlike apothecia. Spores 8, hyaline, 1-septate]

1. Thallus saxicolous; apothecia brown C. LENTICULARIS
1. Thallus corticolous; apothecia nigrescent C. NIGROCLAVATA

Catillaria lenticularis (Ach.) Th. Fr. (L. *lenticularis*, lens-shaped) Our only record is from Galena dolomite along the Fox River, growing with *Lecania perproxima* (Wilhelm & Young #16708 MOR).

Kendall-MOR

Catillaria nigroclavata (Nyl.) Schuler (L. *niger*, black + *clavatus*, club-shaped; probably from the dark-pigmented club-shaped paraphyses tips and the dark epithecium) The Berrien County specimen was collected on *Populus deltoides* at Warren Dunes State Park; the DuPage from an open-grown *Prunus serotina*.

Berrien-MIN, DuPage-MOR

CATILLARIACEAE

One local genus **Catillaria**

CETRARIA Ach. PARMELIACEAE [Photobiont: *Trebouxia*. L. *caetra*, a leather shield + *-arius*, like or connected with; from the shape and texture of the thallus. Spores 8, hyaline, simple]

Cetraria arenaria Kärnefelt (L. *arena*, sand + *-arius*, like or connected with; from its sandy soil habitat) The only record for this boreal species in the region of southern Lake Michigan is at Illinois Beach State Park, where it grows in sand prairie near the lake, with *Helianthus occidentalis*, *Andropogon scoparius*, *Arctostaphylos uva-ursi coactilis*, *Arabis lyrata*, *Juniperus horizontalis*, *Solidago speciosa*, *Smilacina stellata*, *Opuntia humifusa*, *Carex umbellata*, *C. richardsonii*, *Sorghastrum nutans*, *Draba reptans*, and *Arenaria stricta*. [fatty acids]

Lake II-ILL,LSU,MOR

CHRYSOTHRICACEAE

One local genus **Chrysothrix**

CHRYSOTHRIX Mont. CHRYSOTHRICACEAE [Photobiont: *Chlorella*. Gr. *chrysos*, gold + *thrix*, the hair; perhaps from the tangled yellow hyphae. Spores not seen]

1. Thallus bright yellowish; apothecia absent C. XANTHINA
1. Thallus without significant tinctures of yellow; apothecia present, pruinose C. CAESIA

Chrysothrix caesia (Flotow) Ertz & Tehler (L. *caesius*, bluish gray; from the pruinose apothecia) = *Arthonia caesia* (Flotow) Körb., *A. lecideella* Willey This is a very distinctive lichen, characterized

by a protococcoid photobiont and a sub-leprose, yellowish green thallus bespeckled with whitish or bluish frosted [triterpenoid crystals] apothecia. This species is common on a wide variety of corticolous substrates, particularly *Carya ovata*, *Populus deltoides*, *Quercus alba*, *Q. velutina*, *Tilia americana*, and the smooth bark of young saplings. It is occasional on old wood. Most of the thalli in the metropolitan Chicago area lack apothecia, which are most evident in the more remote rural areas. Some specimens labeled "*Arthonia lecideela*" are referable here. [triterpenes, usnic acid]

Allegan-MOR, Berrien-MOR, Boone-MOR, Cook-F,ILL,MOR,NY, DeKalb-MOR, DuPage-MOR, Ford-MOR, Grundy-MOR, Iroquois-MOR, Jasper-MOR, Jefferson-WIS, Kane-MOR, Kankakee-MOR, Kendall-MOR, Kenosha-MOR, Lake Il-MOR, Lake In-MOR, LaPorte-MOR, LaSalle-MOR, Lee-MOR, Livingston-MOR, McHenry-MOR,NY, Milwaukee-MOR, Newton-MOR, Ogle-MOR, Ottawa-MSC, Porter-MIN,MOR, Racine-MOR, Rock-WIS, St. Joseph In-MOR, Starke-MOR, Walworth-MOR, Waukesha-WIS, Will-MOR, Winnebago-MOR

Chrysothrix xanthina (Vain.) Kalb (Gr. *xanthos*, the various shades of yellow + *-inus*, pertaining to; an obvious allusion to the yellow granular thallus) = *Chrysothrix candelaris* of local authors, but Harris and Ladd (2008), which see, finally realizing that size matters, exclude this species from North America. *Chrysothrix xanthina* is known from as nearby as Stephenson County, Illinois, where it grew at the base of an open-grown *Quercus alba*. Elsewhere, it also grows on siliceous rocks. A similar saxicolous species, *C. chlorina* (Ach.) J.R. Laundon (Gr. *chloros*, green, greenish yellow + *-inus*, pertaining to), differs in that the thallus is easily separated from the substrate, *C. xanthina* too firmly attached to be peeled away. [pinastric acid only]

CIRCINARIA Link MEGASPORACEAE [Photobiont: Chlorococcoid. *L. circinatus*, of or relating to a coil + *arius*, like or connected with. Spores 4–8, hyaline, simple]

1. Thallus areolate or not, but without heavily pruinose thalline rims around sunken apothecia; on HCl- rock C. CAESIOCINEREA
1. Thallus areolate, many areoles with deeply seated apothecia surrounded by heavily pruinose thalline rims; on dolomite.
 - Thallus white or pale greenish white or gray, the areoles more or less contiguous; spores 8 . . . C. CALCAREA
 - Thallus grayish, the areoles discontinuous or scattered; spores 4–6 C. CONTORTA

Circinaria caesiocinerea (Malbr.) A. Nordin, Savić, & Tibell (*L. caesius*, bluish gray + *cinereus*, ash-colored; from the color of the thallus) Infrequent locally on weathered granite boulders, this species is not uncommon just to the west of the Southern Lake Michigan region, where it occurs on sandstone in Lee and Ogle counties. [aspicilin]

Cook-MOR, DuPage-MOR, Kane-MOR, Kendall-MOR, Lee-MOR, McHenry-MOR, Ogle-MOR, Will-MOR

Circinaria calcarea (L.) A. Nordin, Savić, & Tibell (*L. calcarius*, pertaining to or of lime; from the carbonate-rich substrate) = *Lecanora calcarea* of Calkins (1896), who reported this species from "calcareous rocks at Joliet." One cannot help but wonder if the report is based upon the much more locally frequent, *Circinaria contorta*, although he made a distinction by reporting "var. *contorta*" as well. [aspicilin]

Will

Circinaria contorta (Hoffm.) A. Nordin, Savić, & Tibell (*L. contortus*, full of twists and turns; perhaps from the irregular, centrally elevated and marginally depressed areoles) = *Lecanora contorta*

(Hoffm.) J. Steiner; *L. calcarea* var. *contorta* of Calkins. Our only specimens of this species are from dolomitic outcrops in dry prairie. [aspicilin]

Boone-MOR, Kane-MOR, Will-F,ILL,MOR,NY, Winnebago-MOR

CLADINA (Nyl.) Harm. CLADONIACEAE [Photobiont: *Trebouxia*. Gr. *kladion*, a small branch; from the finely branched podetia. Some authorities have placed *Cladina* back into *Cladonia*, but the squamule-free and completely decorticate, much-branched thallus are too consistent and morphologically foundational to ignore its generic distinction. For an alternative view one may wish to consult Stenroos *et al.* (2002), who admit that, in spite of their cladistic work, the placement of *Cladina* remains unsolved. Spores 8, hyaline, simple]

- 1. Podetia white, usnic acid absent, K+ yellow C. RANGIFERINA
- 1. Podetia yellow green or grayish, usnic acid present, K-.
 - 2. Fumarprotocetraric acid absent (P-) C. MITIS
 - 2. Fumarprotocetraric acid present (P+ red).
 - Ultimate branches with a strong tendency to be swept in one direction C. ARBUSCULA
 - Ultimate branches not notably oriented in one direction C. SUBTENUIS

Cladina arbuscula (Wallr.) Hale & Culb. (*L. arbuscula*, a small tree, from the many-branched thallus) = *Cladonia arbuscula* (Wallr.) Rabenh. Our only records for this species are from an open to partly shaded sandy savannas and pastures. [usnic acid, fumarprotocetraric acid]

Kalamazoo-MSC, Kankakee-MOR, Pulaski-MOR, White-FH

Cladina mitis (Sandst.) Hustich (*L. mitis*, harmless, without spines; probably from the softness of moistened thalli) = *Cladonia arbuscula* subsp. *mitis* (Sandst.) Ruoss. The Berrien County specimen was from soil in open sandy scrub at the Robinson Preserve, where it is common; the Porter County specimen was from sand prairie southwest of the visitor center of the Indiana Dunes National Lakeshore, along the horse trail. [usnic acid]

Allegan-MSC, Berrien-MOR,MS, Kalamazoo-MIN,MS, Porter-MIN

Cladina rangiferina (L.) Nyl. (*L. rangifer*, a reindeer + *-inus*, pertaining to; from the branched thallus reminiscent of reindeer) = *Cladonia rangiferina* (L.) F. H. Wigg. Our Porter County specimen was from behind the visitor center of the Indiana Dunes National Lakeshore. The Berrien and St. Joseph County, Indiana, specimens were from open sand scrub. Thomson (1943) reports it from Walworth County based upon a specimen collected in 1893. The Milwaukee County record is reported by Thomson (2003). [atranorin, fumarprotocetraric acid]

Allegan-MSC, Berrien-MOR, Milwaukee, Porter-MIN, Pulaski-MOR, St. Joseph IN-MOR, Walworth-WIS

Cladina subtenuis (Abbayes) Hale & W. Culb. (*L. sub-* below, slightly, imperfectly, nearly; from its strong resemblance to *Cladina tenuis*) Probably = *Cladonia subtenuis* (Abbayes) Mattick, *Cladonia rangiferina* var. *sylvatica* of Calkins; note that Calkins did not mention any other *Cladina*. Locally, this species is rare on sandy open soil, or on eroded, well leached clayey till or loess, typically with other terricolous lichens and *Danthonia spicata*. The Rock County record is reported by Thomson (2003). [usnic acid, fumarprotocetraric acid]

DuPage-MOR, Jefferson, Kankakee-MOR, LaSalle-MOR, Lee-MOR, Ogle-MOR, Porter-MOR, St Joseph-MOR, Will-

CLADONIA P. Browne CLADONIACEAE [Photobiont: *Trebouxia*. Gr. *kladion*, a small branch; from shape of the podetia. Spores 8, hyaline, simple]

1. Thallus UV+ bright white, squamatic acid present.
 2. Thallus greenish or yellowish gray; squamule margins soresciate; usnic acid present C. INCRASSATA
 2. Thallus without greenish or yellowish tinctures; squamules esoresciate; usnic acid absent.
 - Squamatic acid only present C. SQUAMOSA
 - Squamatic acid with either baomycesic acid and/or barbatic acids present C. BEAUMONTII
1. Thallus UV-; squamatic acid absent.
 3. Podetia forming cups that flare distally, their diameter larger than that of the podetia.
 4. Podetia and cups esoresciate.
 5. Central portions of the cups proliferating, producing secondary and tertiary cups C. VERTICILLATA
 5. Cups not proliferating, or proliferating from their margins only.
 6. Cups with membranes irregularly perforated C. MULTIFORMIS
 6. Cups without perforations.
 7. Podetia tall, olive green, with the cups usually proliferating at their margins.
 - Cortex dull, areolate distally, the podetia often nigrescent proximally C. PHYLLOPHORA
 - Cortex shiny, not areolate, podetia not nigrescent proximally C. GRACILIS SSP. TURBINATA
 7. Podetia short, gray green, the cups not or only rarely proliferating.
 - Homosekikaic acid present C. HOMOSEKIKAIKA
 - Homosekikaic acid absent C. PYXIDATA
 4. Podetia and or cups nearly or quite covered by fine to coarse soresdia.
 8. Podetia very elongate, terminated by small cups, finely soresciate, nearly or quite to the base.
 - Cups usually poorly developed and on only a few podetia; grayanic acid present C. CYLINDRICA
 - Most or all of the podetia with well developed cups; grayanic acid absent C. FIMBRIATA
 8. Podetia stout, the cups often deep and flaring, sometimes partly corticate.
 9. Apothecia and/or pycnidia red; thallus yellowish green; usnic acid present C. PLEUROTA
 9. Apothecia and/or pycnidia brown; thallus grayish or whitish; usnic acid absent.
 10. Grayanic acid present C. GRAYI
 10. Grayanic acid absent.
 11. Cryptochlorophaeic or merochlorophaeic acid present
 - Cryptochlorophaeic acid present C. CRYPTOCHLOROPHAEA
 - Cryptochlorophaeic acid absent C. MEROCHLOROPHAEA
 11. Cryptochlorophaeic acid and merochlorophaeic acid absent.
 - Soresdia coarse and granular; cups stout; bourgeanic acid absent C. CHLOROPHAEA
 - Soresdia fine; cups thin, deep and expanded; bourgeanic acid present C. CONISTA
 3. Podetia not forming cups, or podetia absent, or with very shallow cups no wider than the podetia.
 12. Podetia chronically absent or less than 4 mm long.
 13. Apothecia manifest, the podetia nearly or quite sessile; squamules notably incised.
 - Squamules K- (fumarprotocetraric acid); C. CAESPITICIA
 - Squamules K+ instantly deep yellow (thamnolic acid) C. PARASITICA
 13. Apothecia rare, the podetia minute and pointed or absent; squamules various.
 14. All squamules less than 2 mm long.
 15. Squamules P- or P+ yellow, fumarprotocetraric acid absent.
 - Lower surface of squamules C+ green C. STREPSILIS

- Lower surface of squamules C- C. MACILLENIA BACILLARIS
15. Squamules P+ red (fumarprotocetraric acid).
16. Grayanic acid present C. CYLINDRICA
16. Grayanic acid absent.
- Sphaerophorin present C. PETROPHILA
- Sphaerophorin absent C. RAMULOSA
14. Many squamules (2)3 mm or more long.
17. Squamules yellowish green; usnic acid present C. ROBBINSII
17. Squamules grayish green or gray; usnic acid absent.
18. Squamules K+ yellow turning red (norstictic acid).
- Atranorin present C. SYMPHYCARPA
- Atranorin absent C. SUBCARIOSIA
18. Squamules K- or K+ yellow; norstictic acid absent.
19. Squamules UV-, squamatic acid absent.
20. Lower surface of squamules C+ green C. STREPSILIS
20. Lower surface of squamules C-.
- Atranorin present C. APODOCARPA
- Atranorin absent C. SOBOLESCENS
12. Podetia manifest, 4 mm or more long.
21. Podetia esorediate.
22. Podetia much branched and elongated; basal squamules few or absent; apothecia absent.
23. Podetia gray green, UV-, P+ red (fumarprotocetraric acid) C. FURCATA
23. Podetia yellow green, UV+/-, P- or P+ yellow (usnic acid).
- Ends of the branches lustrous, obviously areolate; squamatic acid present
 C. UNCIALIS
- Branches more or less dull throughout, areoles obscure or absent; squamatic acid absent
 C. DIMORPHORCLADA
22. Podetia simple or only sparingly branched; basal squamules well developed; apothecia
conspicuous.
24. Apothecia red (rarely black); barbatic acid present C. CRISTATELLA
24. Apothecia tan or brown to nigrescent; barbatic acid absent.
25. Podetia K+ yellow turning red (norstictic acid).
- Atranorin present C. SYMPHYCARPA
- Atranorin absent C. SUBCARIOSIA
25. Podetia K- or K+ yellow; norstictic acid absent.
26. Podetia K+ yellow (atranorin) C. CARIOSIA
26. Podetia K-; atranorin absent.
27. Thallus yellowish green; usnic acid present C. PIEDMONTENSIS
27. Thallus grayish green or gray; usnic acid absent.
28. Apothecia tan; squamules less than 1.5 mm long C. PEZIZIFORMIS
28. Apothecia brown; many squamules more than 1.5 mm long
..... C. SOBOLESCENS
21. Podetia sorediate, at least in part.
29. Apothecia and/or pycnidia red and/or barbatic acid present.
30. Squamules incised, esorediate; podetia scarcely sorediate, beset with granular or isidioid
squamules except in ecorticate areas that turn brown and translucent C. DIDYMA
30. Squamules occasionally lobed but not incised, sorediate; podetia with patches of fine soredia
- Pycnidia red C. MACILLENIA VAR. BACILLARIS
- Pycnidia brown C. BACILLIFORMIS
29. Apothecia and pycnidia brown; barbatic acid absent.

31. Homosekikaic acid present C. REI
 31. Homosekikaic acid present.
 32. Grayanic acid present C. CYLINDRICA
 32. Grayanic acid absent.
 33. Podetia K+ yellow turning red (norstictic acid), esorediate.
 Atranorin present C. SYMPHYCARPA
 Atranorin absent C. SUBCARIOSA
 33. Podetia K-, norstictic acid absent, usually sorediate.
 34. Podetia wholly and evenly farinose-sorediate C. CONIOCRAEA
 34. Podetia variously granulose, corticate, sorediate, or corticate.
 Podetia granulose to minutely squamulose or isidiate; primary squamules
 scarcely discernable among the granules C. RAMULOSA
 Podetia partly corticated, particularly below the middle, otherwise
 sorediate or sorediate with ecorticate areas C. OCHROCHLORA

Cladonia apodocarpa Robbins (Gr. *a-*, without, absent, away + *podos*, foot + *karpos*, fruit; from the typically sessile apothecia) Our only record for this species is from a bluff top and the Seneca Hill Prairie. [fumarprotocetraric acid, atranorin]

LaSalle-MOR

Cladonia atlantica A. Evans (after the Atlantic Ocean, presumably because of its affinities to the districts ambient to its western shores) Most of our specimens are all from sandstone exposures or stable sandy open areas. The Kane County material was collected on a decorticate log in open woods. All of our specimens, like so much Midwestern material, contain what appears to be barbatic acid rather than baeomycesic acid, and perhaps should be treated as a chemical race of *C. squamosa* or perhaps *C. beaumontii* (Tuck.) Vain (in honor of the Alabama naturalist John F. Beaumont (1825-1865). Frankly the morphological differences, as articulated in the literature are difficult in which to find consistent strength of identity among these three taxa. We are using the name *C. atlantica* simply because it is the only described species from which barbatic acid may be attributed (substance f?), but even there it is considered accessory to baeomycesic acid. All of the Midwestern species we have seen have either barbatic or baeomycesic acids. Dick Harris (personal communication) calls all the squamatic acid specimens with either barbatic or baeomycesic acids in the Missouri Ozarks *C. beaumontii*. It would seem to us that this complex could use some serious evaluation. [squamatic acid, baeomycesic acid, or barbatic]

Berrien-MOR, Jasper-MOR, Kane-MOR, Ogle

Cladonia bacilliformis (Nyl.) Glück (L. *baculus*, staff, rod + *forma*, shape, appearance; from the resemblance of the podetia to little rods) The Porter County specimen, reported by Wetmore (1988), was collected on a log behind the visitor center of the Indiana Dunes National Lakeshore at Kemil Road. The label reads P-, K-, KC+R; the specimen did not appear yellowish and does not appear to have been chromatographed. [barbatic acid, usnic acid]

Porter-MIN

Cladonia caespiticia (Pers.) Flörke (L. *caespiticius*, forming a turf; from the turflike development of the squamules) The substrate is quite variable, though this species is most often found at the bases of *Quercus velutina* or *Q. palustris*. There is a specimen from the base of *Tsuga canadensis*, one from HCl+ rock, one from a decorticate log, and one from shaded stable sands along the foredunes

at Indiana Dunes State Park. Fink's Kane County specimen (ILL) is from an old cedar log in the *Thuja* swamp at Elgin. [fumarprotocetraric acid]

Allegan-MIN, Berrien-MOR,MSC, Cook-MOR, DuPage-MOR, Jasper-MOR, Kane-ILL,NY,US, LaPorte-MOR, Newton-MOR, Ogle-MOR, Porter-MIN,MOR,MSC

Cladonia cariosa (Ach.) Spreng. (*L. cariosus*, much decayed; perhaps from the often nigrescent or brownish tinge of older, typically persistent squamules) = *C. "cariota"* of some authors. Rather frequent a little farther north, Calkins & Huett (1898) report this species from La Salle County; the only Illinois specimens we have seen are from southern Illinois. It is probable that this local report is based upon some other species. [atranorin]

LaSalle

Cladonia chlorophaea (Sommerf.) Spreng. (Gr. *chloros*, green, greenish yellow + *phaios*, dusky, dark, gray; from the greenish gray color of the podetia and squamules) Probably = *C. pyxidata* and *C. pyxidata* var. *pocillum* of Calkins. Including *C. chlorophaea* f. *carpophora* (Flörke) Anders.; *C. chlorophaea* f. *simplex* (Hoffm.) Arnold. Usually, this species grows on weathered clayey till or spoil, or weathered sandy fields, sand prairies, and black oak savannas. It is occasional at the bases of trees, particularly *Quercus*, but there are also specimens from burnt wood, decorticate logs, and stumps. It is far more frequent in our western sector than *C. grayi*. A Calkins specimen from Cook County (#1891 NY) was originally named *C. fimbriata simplex*. Note that Calkins did not mention this species and, of course, was unaware of the importance of secondary metabolites in species segregation. [fumarprotocetraric acid]

Allegan-ASU,BYU,MICH,MSC, Berrien-MOR, Cook-ILL,NY, DuPage-MOR, Grundy-MOR, Jasper-MOR, Kalamazoo-MSC, Kane-MOR, Kendall-MOR, LaGrange-MOR, Lake II-MOR,NY, Lake In-MOR, LaSalle-MOR, Lee-MOR, McHenry-ILL,MOR, Ogle-MOR, Porter-MOR, Racine-MOR, St. Joseph In-MOR, Starke-MOR, Walworth-MOR, Waukesha-WIS, Winnebago-MOR

Cladonia coniocraea (Flörke) Sprengel (Gr. *konios*, point, top + *craer*, dusty; perhaps from the sorediate podetia) Including *C. coniocraea* f. *ceratodes* (Flörke) Dalla Torre. *Cladonia coniocraea* is characteristic of corticate and decorticate logs in shaded woods, often with *C. macillenta bacillaris*, but it is occasional at the bases and along the lower trunks of trees, particularly *Quercus*. There is one specimen from a stable, partly shaded foredune at Indiana Dunes State Park. Herre (1934) reports it from LaPorte and Porter counties; Thomson (1942) reports it from Walworth County. Also included here are previous local reports for *C. subulata*. See also notes under *C. ochrochlora*. There is a possibility that our interpretation of this species is not congruent with that of Flörke or even other American authors. It is our opinion, for example, that the photograph in Brodo *et al.* (2001) said to be this species is *C. ochrochlora*; rarely do any of our specimens have primary squamules 2-5 mm long as presented in Hale (1979). Our specimens, whatever they are, have evenly sorediate, elongate conic to slender podetia, and fumarprotocetraric acid. [fumarprotocetraric acid]

Berrien-MOR, Cook-MOR, DuPage-MOR, Ford-MOR, Kane-MOR, Kendall-MOR, LaGrange-MOR, Lake In-MOR, LaSalle-MOR, Livingston-MOR, Newton-MOR, Porter-MOR, Starke-MOR, Will-MOR, Winnebago-MOR

Cladonia conista (Nyl.) Robbins (*L. humilis*, small, dwarfish, on the ground; probably from its low habit) = Including *C. conista* f. *simplex* Robbins. This species is infrequent with us, known from just a few sandy prairies and savannas. A Calkins specimen from Cook County (#1991) was originally called *C. fimbriata simplex*. Thomson (1942) reports it from Walworth County. Some authorities (e.g. Nash *et al.*) consider this species a bourgeanic acid chemotype of *C. humilis* (With.)

J. R. Laundon. [fumarprotocetraric acid, bourgeanic acid]

Allegan-ASU,BYU,MICH,MSC, Cook-MOR,NY, DuPage-MOR, Kane-MOR, Lake II-MOR, Lake In-MOR, Porter-US, Will-MOR

Cladonia cristatella Tuck. (L. *crista*, a crest + *tellus*, earth; from the soil-inhabiting, red-crested podetia, or perhaps from the diminutive of *cristatus*, crested) This is the common "British Soldiers" lichen. It grows on just about any substrate that will support *Cladonia*, though it is most frequent on decorticate logs and old wood; it is also frequent as a terricolous species in black oak savannas and in sandy prairies. Occasionally it is found on shingled roofs, fence posts, and even on weathered cinders along railroads. This species is characterized by red apothecia and non-sorediate corticate podetia; otherwise it varies markedly in squamule development on the podetia and the podetia rarely can be tan or orange. [barbatic acid, didymic acid, ± usnic acid]

Allegan-ASU,F,MICH,MSC, Berrien-MOR, Boone-MOR, Cass-MICH, Cook-MOR,NY, DuPage-MOR, Grundy-MOR, Iroquois-MOR, Jasper-MOR, Kalamazoo-MSC, Kane-MOR, Kankakee-MOR, Kendall-MOR, Kenosha-MOR, LaGrange-MOR, Lake II-MOR,NY, Lake In-MOR, LaPorte-MOR, LaSalle-MOR, Lee-MOR, McHenry-ILL, Milwaukee-FH, Newton-MOR, Ogle-MOR, Ottawa-MSC, Porter-INDU,MOR, Pulaski-MOR, Racine-UWSP, St. Joseph In-MOR, Starke-MOR, VanBuren-FLAS, Walworth-MOR, Will-MOR, Winnebago-MOR

Cladonia cryptochlorophaea Asah. (Gr. *kruptos*, hidden; from its hidden, chemical, distinction from *C. chlorophaea*) Thomson (1984) mapped this species from extreme southeastern Wisconsin. It grows in habitats similar to those of *C. chlorophaea*, though it is less common. A Calkins specimen from Cook County (#1991) was originally called *C. fimbriata simplex*. Wilcer (1984) reports it from Starke County. [cryptochlorophaeic acid, ± fumarprotocetraric acid, ± atranorin]

Allegan-MIN, Berrien-MOR, Boone-MOR, Cass-MICH, Cook-MOR,NY, DuPage-MOR, Jasper-MOR, Kankakee-MOR, Lake II-MOR, LaPorte-MIN, LaSalle-MOR, Lee-MOR, Livingston-MOR, Newton-MOR, Ogle-MOR, Porter-MIN, Pulaski-MOR, Winnebago-MOR

Cladonia cylindrica (A. Evans) A. Evans (Gr. *kylindros*, a cylinder; from the somewhat cylindrical shape of the podetia) = *C. borbonica* (Del.) Nyl. f. *cylindrica* Evans. Except for one specimen that grew on humus over sand at Illinois Beach State Park, all Southern Lake Michigan region material is from shaded decorticate logs and old stumps. Calkins's specimens from Cook County (#1849 and #1991) were originally called *C. fimbriata simplex*. [grayanic acid, fumarprotocetraric acid]

Cook-MOR,NY, DuPage-MOR, Lake II-MOR, LaPorte-MOR,US, LaSalle-MOR, Newton-MOR, Porter-MOR, St. Joseph In-MOR, Will-MOR, Winnebago-MOR

Cladonia didyma (Fée) Vain. (Gr. *didymos*, double, twofold; only Fée knows why he named it thus) Including *C. didyma* f. *subulata* Sandst.; *C. pulchella* Schwein. Infrequent locally, this species is confined to decorticate logs. [barbatic acid, didymic acid]

Berrien-MOR, Cook-MOR, DuPage-MOR, LaPorte-MOR, Livingston-MOR, McHenry-MOR, Newton-MOR, Walworth-US

Cladonia dimorphoclada Robbins (Gr. *di*, twice + *morphe* + form or shape, *kladion*, a small branch) Our only records for this species are from partly shaded sandstone exposures. Most Illinois material has podetia less than 3 mm in diameter, which could place them within *C. dimorphoclada* Robbins. Many of our specimens display a fine cloud of needle-like crystals at the distal portions of the podetia (triterpenes), a feature never supposed to occur in *C. uncialis*, which see. All local reports of *Cladonia caroliniana* Tuck. are referable here. [triterpenes, usnic acid]

Lee-MOR, Ogle-MOR

Cladonia fimbriata (L.) Fr. (*L. fimbriatus*, fibrous, fringed with hairs; from the fringed appearance of the evenly spaced podetia on decorticate logs) This species is occasional on decorticate logs and stumps, rare on weathered till. Calkins (1896) reports it from Will County. [fumarprotocetraric acid]

Cook-MOR, DeKalb-MOR, DuPage-MOR, Jasper-MOR, Kane-MOR, Kendall-MOR, Kenosha-MOR, Lake II-MOR, Lake In-INDU, Newton-MOR, Porter-MOR

Cladonia furcata (Huds.) Schrad. (*L. furcatus*, forked; from the branched podetia tips) Locally, weathered till in natural areas is the most common habitat, but there is one record from black oak savanna on sand, and another from high, stable mesophytic dune forest in Berrien County. The Waukesha County record is reported by Thomson (2003). [fumarprotocetraric acid]

Berrien-MOR, Cass-MICH, Cook-MOR, DuPage-MOR, Jasper-MOR, Kane-MOR, Lake II-MOR, LaSalle-MOR, Livingston-MOR, McHenry-MOR, Ogle-MOR, Racine-MOR, St. Joseph In-MOR, Walworth-MOR, Waukesha, Will-MOR, Winnebago-MOR

Cladonia gracilis (L.) Willd. ssp. **turbinata** (Ach.) Ahti (*L. gracilis*, slender, simple; from the slender podetia; *L. turbinatus*, cone- or top-shaped; from the shape of the podetia that typically flare distally) = *C. gracilis* of Calkins. It is likely that his report is referable to some other species. *C. gracilis* var. *verticillata* of Calkins may be referable here, because at least one specimen with that name, in his bound *Lichenes Exsiccati* at ILL, is this species. [fumarprotocetraric acid]

Cook-ILL

Cladonia grayi Sandst. (after Rev. Fred Gray, of West Virginia, an amateur botanist) Including *C. grayi* f. *aberrans* Asah. Some of Calkins's reports of *C. pyxidata* may be referable here. This species is probably the commonest cup lichen in the eastern sector of our region, growing on weathered till, decorticate logs, tree bases, and in sandy prairies and savannas. Wilcer (1984) reports it from Starke County. [grayanic acid, ± fumarprotocetraric acid]

Allegan-MS, Berrien-MOR, Cass-MICH, Cook-MOR, DuPage-MOR, Iroquois-MOR, Jasper-MOR, Kalamazoo-MS, Kankakee-MOR, Lake II-MOR, Lake In-MOR, LaPorte-MOR,US, LaSalle-MOR, Lee-MOR, Newton-MOR, Ogle-MOR, Ottawa-MS, Porter-INDU,MOR, Pulaski-MOR, St. Joseph IN-MOR, Starke-MOR, Walworth-US, White-FH, Will-MOR, Winnebago-MOR

Cladonia homosekikaica Nuno (A chemical species related to *C. pyxidata*, identified by the presence of homosekikaic acid) This species is confined to the antedunal lake plain prairies of Illinois Beach State Park, where even there it is rare. Elsewhere in North America there are records from Alaska, British Columbia, and Mexico. Stenroos *et al.* (2002) suggest that the *C. pyxidata* group is still in need of better understanding. [homosekikaic acid, atranorin, fumarprotocetraric acid]

Lake II-MOR

Cladonia incrassata Flörke (*L. incrassatus*, thickened, stout; probably from the relatively thickened squamules) In the Southern Lake Michigan region, this species is confined to ombrotrophic bogs, where it grows at the bases of *Larix laricina* or on the old stumps. Thomson (1942) reports it from Walworth county. [squamic acid, usnic acid, rhodocladonic acid]

Berrien-MOR, LaPorte-MOR

Cladonia macilenta Hoffm. var. **bacillaris** (Genth.) Schaer. (*L. baculus*, staff, rod + *-aris*, pertaining to; from the resemblance of the podetia to little rods) Including *C. bacillaris* f. *clavata* (Ach.) Vain. It is probable that Calkins's (1896) report of *C. macilenta* is referable here inasmuch as

he did not list *C. bacillaris*, and noted that *C. macilenta* and *C. cristatella* were easily told by their scarlet apothecia. This species is characteristic of decorticate logs, stumps, and weathered farm wood, where it often covers large areas and sometimes, especially on corticate logs, grows with mosses such as *Platygyrium repens* and *Entodon seductrix*. Lichen associates often include *Cladonia coniocraea*, *C. cylindrica* and *C. cristatella*. There are also specimens from the bases of *Pinus*, *Prunus serotina*, and *Quercus velutina*. In our eastern sector, it sometimes grows on stable sandy soil, and there is one specimen from a shaded vertical sandstone cliff. Calkins & Huett (1898) reported *C. floerkeana* from La Salle County, and Mueller (1989) reported it from Lake County, Indiana; we are referring reports of that eastern species here pending examination of voucher material. Typical *C. macilenta* has thamnolic acid (K+ deep) yellow, which we have yet to discover locally. In rare specimens with usnic acid, if the pycnidia are absent this species can be difficult to separate from *C. bacilliformis*. [barbatic acid, ± didymic, ± usnic]

Allegan-MSC, Berrien-MOR, Cook-MOR, NY, US, DuPage-MOR, Grundy-MOR, Iroquois-MOR, Jasper-MOR, Kane-ILL, MOR, Kankakee-MOR, Lake Il-MOR, LaPorte-MOR, LaSalle-MOR, Lee-MOR, Livingston-MOR, McHenry-ILL, MOR, Newton-MOR, Ogle-MOR, Ottawa-MSC, Porter-INDU, MOR, Racine-MOR, St. Joseph IN-MOR, Starke-MOR, Walworth-MOR, US, Will-MOR, Winnebago-MOR

Cladonia merochlorophaea Asah. (Gr. *meros*, a part of; a variant of *C. chlorophaea*) Our only record for this northern species is one collected at Mount Baldhead near Saugatuck. [merochlorophaeic acid, fumarprotocetraric acid.]

Allegan-MSC

Cladonia multiformis G. Merr. (L. *multus*, many + *forma*, shape, appearance) Our only records of this northern species are from weathered till, where it grows with *C. peziziformis*. [fumarprotocetraric acid]

DuPage-MOR, Will-MOR

Cladonia ochrochlora Flörke (Gr. *okhros*, pale yellow + *khloros*, green) Frequent on lignin, often in shaded, or most areas. There is a specimen from from Cook County (Calkins #1897 NY) that Calkins labeled *C. fimbriata* var. *coniocraea* and indicated that it had grown on an exposed "cedar" root [probably *Thuja occidentalis*] near Glencoe. Virtually none of our specimens display cups at the ends of the poditia. [fumarprotocetraric acid]

Cook-MOR, NY, DuPage-MOR, Iroquois-MOR, Jasper-MOR, Lake Il-MOR, LaPorte-MOR, LaSalle-MOR, Livingston-MOR, McHenry-MOR, Newton-MOR, Porter-MOR, Winnebago-MOR

Cladonia parasitica (Hoffm.) Hoffm. (Gr. *para*, beside, near + *sition*, grain, food; from its presumed habitat on its nutrient source) = *C. delicata* of Calkins, who noted that was "found near Elgin on old stumps, near Lemont, and elsewhere." [thamnolic acid, decarboxythamnolic acid]

Cook-NY

Cladonia petrophila R. C. Harris (Gr. *petra*, a rock, particularly a rock ledge + *philos*, loving, having an affinity for; from its fidelity to rock substrates) Yet unknown from the Southern Lake Michigan region, this species is known from nearby Marshall County, Illinois, where it grows on shaded sandstone in a mesophytic ravine along Tomahawk Bluff. This species was called *C. subapodocarpa* by Hale (1979). [sphaerophorin, atranorin, fumarprotocetraric acid]

Cladonia peziziformis (With.) J. R. Laundon (L. *pezica*, a sessile mushroom + *forma*, shape, appearance; from the supposed mushroomlike appearance of the small, flesh-colored apothecia

atop stipelike podetia) = *C. capitata* (Michx.) Spreng.; *C. mitrula* Tuck. Including *C. mitrula* f. *squamulosa* G. Merr. With the possible exception of *C. subcariosa*, this species is the weediest of our *Cladoniae*. It is characteristic of weathered clay tills and bluffs, often along worn paths and compacted soils, particularly where *Danthonia spicata* grows. It also grows in sandy prairies and savannas, and we even have a specimen from an old rag. [fumarprotocetraric acid]

Allegan-MSC, Berrien-MIN,MOR, Cook-MOR,NY, DuPage-MOR, Grundy-MOR, Jasper-MOR, Kane-MOR, Kankakee-MOR, Kendall-MOR, Kenosha-MOR, Lake II-MOR, Lake In-INDU,MOR, LaSalle-ILL,MOR, Livingston-MOR, McHenry-ILL, Newton-MOR, Ogle-MOR, Porter-MOR, St. Joseph In-MOR, Walworth-US,WIS, Will-MOR, Winnebago-MOR

Cladonia phyllophora Hoffm. (Gr. *phyllos*, leaf + *phoros*, a bearing; probably from the scaly podetia) Our only records for this largely northern species are from DuPage County, where it was collected on partly shaded clayey soil. [fumarprotocetraric acid]

DuPage-MOR

Cladonia piedmontensis G. Merr. (of the Piedmont) Although we have a couple of specimens from weathered clay till, most of the Southern Lake Michigan region material comes from our eastern sector, where it grows in sandy prairies and black oak savannas. [usnic acid; the Will County specimen (Wilhelm & Wetstein #20353 MOR) contains fumarprotocetraric acid, as do a couple of specimens from the Florida panhandle]

Berrien-MOR, Cass-MICH, Cook-MOR, DuPage-MOR, LaSalle-MOR, Newton-MOR, Ogle-MOR, Porter-MOR, St. Joseph In-MOR, Will-MOR

Cladonia pleurota (Flörke) Schaer. (Gr. *pleuron*, a rib, the side + *ota*, the ear; perhaps from the often imperfectly shaped cups evocative of the ear) Although we have a couple of specimens from weathered clay till, most of the Southern Lake Michigan region material comes from our eastern sector, where it grows in sandy prairies, black oak savannas, and even on long-stabilized sand in old sand pits and along road shoulders. One specimen is from a decorticate log. [usnic acid, zeorin]

Berrien-MOR, Cook-MOR, DuPage-MOR, Kankakee-MOR, LaPorte-MOR, LaSalle-MOR, Lee-MOR, Newton-MOR, Ogle-MOR, Porter-INDU,MOR,MIN, St. Joseph In-MOR

Cladonia pyxidata (L.) Hoffm. (*L. pyxidatus*, boxlike, cubical; presumably from the boxlike depressions formed by the cupped podetia) Thomson (1984) mapped this species from extreme southeastern Wisconsin. A rare species here, the Lake County, Illinois, specimen is from weathered clay till on the south face of a pastured slope. The Lake County, Indiana, specimen was collected from "Miller Woods," where it no doubt grew in sandy black oak savanna. The Milwaukee County record is reported by Thomson (2003). [fumarprotocetraric acid]

Allegan-MIN,MICH,MSC, Berrien-BYU,MIN, Cook-ILL,F, Lake II-MOR, Lake In-ILL,MOR, McHenry-ILL, Milwaukee, Porter-INDU,MIN

Cladonia ramulosa (With.) J. R. Laundon (*L. ramulus*, a little branch + *-osus*, denoting full of or prone toward; from the occasional small branchlets at the tips of the podetia) = *C. pityrea* (Flörke) Fr. Including *C. pityrea* var. *zwackhii* Vain. f. *squamulifera* Vain.; *C. pityrea* var. *zwackhii* f. *subacuta* Vain. Some recent authors have used the name *C. anomaea* (Ach.) Ahti & P. James. This species is characteristic of corticate and decorticate fallen logs in partly shaded areas, where it often grows with *C. bacillaris*. It also grows at the bases of trees in oak woodlands. There is a common squamulose, epodetiate, fumarprotocetraric acid-producing species that occurs at the bases of trees

throughout the Midwest; it may be referable here. [fumarprotocetraric acid]

Cook-MOR, DuPage-MOR, Jasper-MOR, Lake Il-MOR, LaSalle-MOR, Livingston-MOR, Newton-MOR, Porter-MIN, Starke-MOR, Walworth-US,WIS

Cladonia rei Schaer. (after Giovanni Re, 1773–1833, Italian botanist and physician) Skorepa's (1970) report of *C. decorticata* (Flörke) Spreng. [Skorepa & Vermoch #5225 (SIU)] is referable here. This species occupies a wide variety of substrates, in waste ground and in natural areas. It grows on such things as charcoal, burnt wood, corticate and decorticate logs, tree bases, humus, weathered till, sand, and spoil banks. [homosekikaic acid ± fumarprotocetraric acid]

Allegan-ASU,MSC, Berrien-MOR, Cass-MICH, Cook-MOR, DuPage-MOR, Grundy-MOR, Iroquois-MOR, Jasper-MOR, Kane-MOR, Kankakee-MOR, Kendall-MOR, Kenosha-MOR, Lake IL-MOR, Lake In-MOR, LaPorte-MOR, LaSalle-MOR, Lee-MOR, McHenry-ILL,MOR, Newton-MOR, Ogle-MOR, Porter-INDU,MOR, Pulaski-MOR, St. Joseph In-MOR, Starke-MOR, Walworth-MOR, Will-MOR, Winnebago-MOR

Cladonia robbinsii A. Evans (after William Jacob Robbins, 1890–1978, American botanist) Infrequent, evidently confined to the moist stable sands of the antedunal region of Illinois Beach State Park, stable dunes and black oak savannas near Lake Michigan, and sandy soil generally in our western sector; the Lee County and Winnebago county records are from poor prairie on a gravel hill. [usnic acid, barbatic acid]

Allegan-MSC, Lake Il-MOR, LaSalle-MOR, Lee-MOR, Porter-MOR

Cladonia sobolescens (Nyl.) Vain. (*L. soboles*, sprout, shoot + *-escens*, beginning, becoming, slightly; from appearance of the podetia as sprouts) = *C. clavulifera* Vain. This species is occasional on disturbed but stable sands in power line rights-of-way and roadsides. Some authorities consider this element a mere chemical variant of *C. subcariosa*. [fumarprotocetraric acid]

DuPage-MOR, Kankakee-MOR, Porter-MOR, St. Joseph IN-MOR

Cladonia squamosa (Scop.) Hoffm. (*L. squamosus*, scaly; from the squamulose podetia) Calkins (1896) reported it from "earth and rotten logs in Will County and the western part of Cook." See also the comments under *C. atlantica*. All of our Illinois specimens are from southern Illinois. There are extant populations in Ogle County, where it grows on both partly shaded lignin and sandstone. [squamatic acid]

Cook, Ogle-MOR, Will

Cladonia strepsilis (Ach.) Vain. (Gr. *strepsis*, a twist + *-ilis*, denoting a quality or capacity; from what aspect we have yet to imagine) Our only specimens are from stable sandy soil. [strepsilin, baeomysic acid]

Lee-MOR, Ottawa-MSC, Porter-MIN,MOR

Cladonia subcariosa Nyl. (*L. sub-* below, slightly, imperfectly, nearly; from its resemblance to *P. cariosa*) = *C. polycarpoides* Nyl. Most local reports of *C. symphycarpa* probably should be referred here; it reacts K+ red, but also has atranorin. Though not quite as "weedy" as *C. peziziformis*, *C. subcariosa* is as widespread and will grow here on almost any terricolous substrate suitable for lichens. [norstictic acid]

Allegan-MSC, Berrien-MOR, Cook-MOR, DuPage-MOR, Iroquois-MOR, Kane-MOR, Kendall-MOR, Lake Il-MOR, LakeIn-MOR, LaPorte-MOR, LaSalle-MOR, Lee-MOR, Newton-MOR, Ogle-MOR, Porter-INDU,MOR, St. Joseph In-MOR, Starke-MOR, Walworth-MOR, Will-MOR, Winnebago-MOR

Cladonia symphycarpa (Ach.) Fr. (Gr. *symphyo*, to glue together + *karpos*, fruit; from the often united or coalesced apothecia atop a podetium) The few specimens we have are from sandy

prairies and black oak savannas. [atranorin, norstictic acid]

Allegan-MSC, Berrien-MOR, DuPage-MOR, Iroquois-MOR, Jasper-MOR, Kankakee-MOR, Porter-MOR, Pulaski-MOR

Cladonia uncialis (L.) F. H. Wigg. (*L. uncialis*, the twelfth part of anything; from what we have no idea) Calkins & Huett (1898) reported this species from La Salle County, and we have a modern record from Ogle County, where it grows in prairie at the mouth of Anne's Canyon, at Castle Rock State Park. According to Brodo (2016) this species may or may not possess squamatic acid; such specimens may be difficult to distinguish from *C. dimorphoclada*—see notes under *C. caroliniana*. *Cladonia uncialis* is said to have the inner podetial wall smooth, without striations; *C. dimorphoclada* has the inner walls marked by striations or cartilaginous thickenings. [squamatic acid, usnic acid]

Ogle-MOR

Cladonia verticillata (Hoffm.) Schaer. (*L. verticillatus*, whorled; presumably from the position of the apothecia along the rims of the flares at the tips of the podetia) = *C. gracilis* var. *verticillata* of Calkins; *C. cervicornis* (Ach.) Flot. ssp. *verticillata* (Hoffm.) Ahti. Some of our specimens are from weathered clayey till, often with *C. cristatella*, *C. peziziformis*, and *Danthonia spicata*; most are from sand prairies or black oak savannas, others from sandstone exposures, but one is from cinders in a railroad yard! [fumarprotocetraric acid]

Allegan-ASU, MSC, USU, Berrien-MOR, MSC, Cass-MICH, MSC, Cook-MOR, DuPage-MOR, Lake II-MOR, LaPorte-MOR, LaSalle-MOR, McHenry-ILL, Ogle-MOR, Porter-INDU, MIN, MOR, Pulaski-MOR, St. Joseph In-MOR, Will-ILL, MOR

CLADONIACEAE

- A. Podetia with a fibrous, dull surface **Cladonia**
 A. Podetia with a corticate, smooth, lustrous surface.
 Squamules well developed **Cladonia**
 Squamules reduced to crustose granules **Pycnothelia**

COCCOCARPIACEAE

- One local genus **Spilonema**

COENOGONIACEAE

- One local genus **Coenogonium**

COENOGONIUM Ehrenb. COENOGONIACEAE [Photobiont: *Trentepohlia*. Gr. *koinos*, shared, in common, + *gonio*, angle; perhaps from the tiny 2-celled spores. Spores 8, hyaline, 1-septate.]

Coenogonium pineti (Ach.) Lücking & Lumbsch (*L. pineti*, grown on pines) = *Dimerella pineti* (Ach.) Vězda This is a rare species in Illinois; our only local record is from a shaded, charred log, growing on moss, at the Danada Forest Preserve.

DuPage-MOR

COLLEMA F. H. Wigg. COLLEMATACEAE [Photobiont: *Nostoc*. Gr. *kollema*, that which is glued; from the gelatinous thallus. Spores 8, hyaline, septate, hamathecium gelatinized]

- 1. Apothecia abundant; isidia absent C. NIGRESCENS
- 1. Apothecia rare; isidia present.
 - 2. Thallus saxicolous C. FLACCIDUM
 - 2. Thallus corticolous.
 - Lobe surfaces dull, subtly but distinctly pustular; spores 5–6 celled, 40–80 μm long, elongate fusiform ..
..... C. FURFURACEUM
 - Lobe surfaces smooth and sublustrous; spores 3–5 celled, 26–45 μm long, short fusiform
..... C. SUBFLACCIDUM

Collema flaccidum (Ach.) Ach. (L. *flaccidus*, relaxed, flaccid; from the limber thallus) Our only record for this species is one known from Lee County, on an exposed limestone cliff in a pasture off Grand Detour Road. See comments under *C. subflaccidum*.

Lee-MOR

Collema furfuraceum (Arnold) Du Rietz (L. *furfur*, bran + *-aceus*, of or pertaining to; perhaps from the scaly appearance of the dried thallus) Yet unknown from the Southern Lake Michigan region, it has been collected from nearby Montgomery County, Indiana, where it grew on *Carya cordiformis*. Farther south in Illinois it is frequent on partly shaded oak trunks.

Collema nigrescens (Huds.) DC. (L. *nigrescens*, blackening; from the dark thallus) Calkins & Huett (1898) reported this species from "elms and limestones" in La Salle County.

Collema subflaccidum Degel. (L. *sub-* below, slightly, imperfectly, nearly; from its close relationship to *C. flaccidum*) Calkins (1896) reported "*C. flaccidum*" from oaks and elms, and stated that it was rare locally. He noted also that *C. flaccidum* grew on rocks, but such reports are best referred to *C. flaccidum*, which see. In Calkins's bound volumes of *Lichenes Exsiccati*, a specimen from La Salle County labeled *C. flaccidum* is referable here.

Cook, LaSalle-ILL, Will

COLLEMATACEAE

- A. Thallus with a layer of more or less isodiametric cortical cells; upper surfaces usually smooth to sub-lustrous, slate gray to brown.
 - Thallus lobes less than 2.5 mm across, gray or brown **Scytinium**
 - Thallus lobes broader, gray **Leptogium**
- A. Thallus lacking an organized cortex, the hyphae interwoven; upper surfaces dull, usually olivaceous to black.
 - B. Thallus lobes large, flat, neither thickened nor wrinkled, the larger more than 4 mm long **Collema**
 - B. Thallus lobes small, thickened, wrinkled, or, warty isidiate, less than 4 mm long.
 - C. Apothecia rare; thallus gray, finely wrinkled, saxicolous **Lathagrium**
 - C.. Apothecia common; thallus gray to olivaceous or nigrescens, but not finely wrinkled, saxicolous, terricolous, or corticolous.
 - Spores simple; apothecia rare **Lempholemma**
 - Spores septate or muriform; apothecia usually present **Enchylium**

CONIOCYBACEAE

One local genus **Sclerophora**

CONOTREMA Tuck. STICTIDACEAE [Photobiont: *Trebouxia*. Gr. *konos*, a cone + *trema*, a hole, especially the female pudendum; from the concave, immersed apothecia. Spores large, acicular, 8, hyaline, more than 25-septate]

Conotrema urceolatum (Ach.) Tuck. (L. *urceolus*, a pitcher + *-atus*, adjective ending; from the appearance of the apothecium) = *Stictis urceolatum* (Ach.) Gilenstam. Calkins (1896) stated that this species was found on "maples and poplars in Cook and Will counties," And we have an old specimen (Calkins *s.n.* MOR) from LaSalle County. Farther east, this species forms characteristic white patches on *Acer saccharum* in old growth forests (Wong & Brodo, 1992). The few specimens we have seen near our region appear to be non-lichenized. The reader may wish to consult Wedin *et al.* (2005).

Cook, LaSalle-ILL,MOR, Will

CRESPOA (D. Hawksw.) Lendemer & Hodkinson PARMELIACEAE [Photobiont: *Trebouxia*. In honor of the Spanish lichenologist, Ana Crespo, 1948- , student of the lichens of the Mediterranean region. Spores 8, hyaline, simple]

Crespoa crozalsiana (Harm.) Lendemer & Hodkinson (in honor of the French mycologist, André de Crozals, 1861-1932) = *Canoparmelia crozalsiana* (Harm.) Eliz & Hale; *Pseudoparmelia crozalsiana* (Harm.) Hale. Frequent in southern Illinois, our only northern record is from the bark of *Crataegus mollis* in open prairie. [atranorin, stictic acid]

DuPage-MOR

CRYPTOTHELE Th. Fr. LICHINACEAE [Photobiont: Cyanobacterial with a reddish sheath. Gr. *kryptos*, hidden, secret + *thele*, nipple. Spores 8, hyaline, simple]

Cryptothele permiscens (Nyl.) Th. Fr. (L. *permisceo*, to mix up or throw into confusion — an easy condition to occupy when studying the Lichinaceae) Our only record for this species locally is from a specimen collected on "calcareous and arenaceous rock" in LaSalle County (Calkins #67, WIS). Evidently this is the lichen that was called "*Pyrenopsis phylliscina* Tuck." by Fink (1935). Calkins himself used the name "*Pannaria nigra*," a name which he has also used locally for *Placynthium nigrum* and *Rhizocarpon reductum*. Aino Hensson annotated the specimen in 1963, but demurred a specific epithet.

LaSalle-MOR

CYPHELIUM Ach. CALICIACEAE [Photobiont: *Trebouxia*. Possibly from Gr. *kypellon*, beaker, goblet, or perhaps *kypHELLA*, the hollow of the ears; from its hymenium sunken into the warty thallus, resembling a cup; we wonder if it should

be spelled with two *ls*?. Spores numerous, brown, 1-septate]

Cyphelium tigillare (Ach.) Ach. (*L. tigillaris*, pertaining to a bit or tuft of wool; probably from the fact that the warts appear to be stuffed with soot or wool) This species is occasional on old fence posts and rails, but we have one specimen from a decorticate stump of *Larix laricina*, one from the bark of *Prunus serotina*, and another from *Gleditsia triacanthos*. [rhizocarpic acid, epanorin, + two unknowns]

Cook-F-MOR, DeKalb-MOR, DuPage-MOR, Ford-MOR, Grundy-MOR, Jasper-MOR, Jefferson-WIS, Kane-MOR, Kendall-MOR, Kenosha-MOR, LaGrange-MOR, Lake Il-MOR, Lake In-MOR, LaSalle-MOR, Lee-MOR, Livingston-MOR, McHenry-MOR, Newton-MOR, Ogle-MOR, Porter-MOR, St. Joseph In-MOR, Waukesha-WIS, Will-MOR, Winnebago-MOR

DECAMPIACEAE

One local genus **Eopyrenula**

DERMATOCARPON Eschw. VERRUCARIACEAE [Photobiont: Chlorococcoid, with *Protococcus* and *Hyalococcus*. Gr. *dermatos*, of skin or leather + *karpos*, fruit; from the leathery-looking thallus with its interspersed perithecia. Spores 8, hyaline, simple; hamathecium gelatinous]

1. Thallus on HCl- rock.

Lower cortex yellow-gold and foveolate reticulate, the lobes generally attached by more than 1 holdfast

..... D. ARENOSAXI

Lower cortex with various tinctures of brown, but not regularly yellow-gold and foveolate reticulate, the thallus units umbilicate, with a single holdfast D. MUHLENBERGII

1. Thallus on HCl+ rock.

2. Thallus lobes nearly all less than 1 cm across, the margins with a well defined, black, raised margin; thallus lobes commonly with more than one holdfast; lower cortex usually smooth and tan D. MULTIFOLIA

2. Thallus lobes variously sized, but the margins, though sometimes dark, not distinctly raised and well defined, or if so then the some of the lobes more than 1 cm long or across; principal thallus units with a single holdfast; lower cortex various.

Thallus brittle, distinctly chocolate brown, at least in the non-pruinose margins; perithecia wholly contained within the medulla, not producing bulges on the lower cortex, the ostioles of black; lower cortex regularly foveolate-ridged or verrucose D. DOLOMITICUM

Thallus leathery, pale brown to silvery gray; ostioles of perithecia brown, at least in part; perithecia, being rather large, with a tendency to push out bulges on the lower cortex, the ostioles brown, at least in part; lower cortex various but often smooth and not usually foveolate D. MUHLENBERGII

Dermatocarpon arenosaxi Amtoft (*L. arena*, sand + *saxum*, rock, from its regular occurrence on sandstone) Yet unknown from our region, this species is known from districts all around us, where it grows on HCl- rocks.

Dermatocarpon dolomiticum Amtoft (NL. *dolomiticus*, an unambiguous allusion to its carbonate-rich substrate, the word originally from the French geologist, Déodat de Dolomieu, 1750-1891, who discovered this form of limestone) Our only records are from dolomite prairies in Boone and Will County, where it grows fully exposed to the sun.

Boone-MOR, Will-MOR

Dermatocarpon muhlenbergii (Ach.) Müll. Arg. (in honor of Gotthilf Henry Ernest Mühlenberg, American botanist and clergyman) = *Dermatocarpon miniatum*, *Endocarpon miniatum*, including *E. m. var. complicatum* and *E. m. var. muhlenbergii* of Calkins. This species is occasional on exposed or shaded basalt, sandstone, or dolomite, often in canyons or on rocky cobbles in woodland streams. Until specimens are discovered, it is presumed that the records of *D. miniatum* reported from Jasper County by Herre (1943) and Harris (1988) are referable here. See also the notes under *Toninia tecta*.

Cook-MOR, DuPage-MOR, Grundy-MOR, Kankakee-MOR, Kendall-MOR, LaSalle-MOR, Lee-MOR, Ogle-MOR, Will-DUKE,ILL,MOR, Winnebago-MOR

Dermatocarpon multifolium Amtoft (L. *multa*, many + *folium*, leaf; an allusion to the clustered array of small squamules form a rosette or matt) This species is infrequent on dolomitic erratics, cliff faces, and HCl+ rocks, often where moist and usually partly shaded.

Boone-MOR, Kane-MOR, Kendall-MOR, LaSalle-MOR, Will-MOR, Winnebago-MOR

DIDYMOSPHAERIA Fuckel DIDYMOSPHAERIACEAE [Photobiont: absent. Gr. *didymos*, double, twofold+ *sphaera*, ball or globek; probably from the constricted septate spores of some species. Spores ellipsoid to fusiform in a single series in the ascus, 8, brown, 1-septate]

Didymosphaeria oblitescens (Berk. & Broome) Sacc. (L. *oblitero*, blot out + *-escens*, becoming; disappearing) Our only record is from the bark of *Carya ovata* on the bluff top at Severson Dells Forest Preserve.

Winnebago-MOR

DIDYMOSPHAERIACEAE

One local genus **Didymosphaeria**

DIMELAENA Norman CALICIACEAE [Photobiont: *Trebouxia*. Gr. *di-*, two, double + *melaina*, black; probably from the presence of black apothecia and a black margin on the squamules. Spores 8, brown, 1-septate]

Dimelaena oreina (Ach.) Norman (Gr. *oreinos*, hilly, mountainous; perhaps from its frequency in rocky, hilly areas) Hale (1952) mapped a P-, C- record for extreme southeastern Wisconsin, though we have seen no supporting vouchers. Most of our specimens have gyrophoric acid and present at least weakly positive C reactions on the cortex. See also Hale (1979). Locally, it is infrequent on granitic boulders in pastures or prairie remnants, commonly with *Candelariella vitellina*. [usnic acid, ± gyrophoric acid]

Cook-MOR, Grundy-MOR, Kane-MOR, Lee-MOR, McHenry-MOR, Ogle-MOR, Will-MOR

DIPLOSCHISTES Norman THELOTREMATAACEAE [Photobiont: *Trebouxia*. Gr. *diploos*, double + *schistos*, divided, cleft; from the muriform spores. Spores 4–8,

brown, muriform]

1. Thallus saxicolous; spores commonly more than 8 per ascus D. SCRUPOSUS
1. Thallus terricolous, muscicolous, or lichenicolous; spores 4 per ascus D. MUSCORUM

Diploschistes muscorum (Scop.) R. Sant. (*L. muscus*, moss; from its common inhabitancy over mosses) = *Urceolaria scruposa*, in part, of Calkins. This species is locally frequent on mosses and lichens over sand at Illinois Beach State Park and Sand Ridge Savanna. The Porter County material, evidently lumped with *Diploschistes scruposus* by Wetmore, was lichenicolous on *Cladonia*, growing in oak woodland at West Beach. Calkins (1896) described the habitat as "calcareous earth" in Will County. The Berrien County specimen was on stabilized dunes at Warren Dunes State Park. A Calkins specimen from La Salle County was collected on the lignin of *Juniperus virginiana*. [lecanoric acid, diploschistesic acids]

Berrien-MIN, Lake Il-MOR, LaSalle-F,ILL,MOR, Ogle-MOR, Porter-INDU,MIN, Will-MOR

Diploschistes scruposus (Schreb.) Norman (*L. scruposus*, rough, stony; from its gray, unevenly wartlike thallus) This species is infrequent on sandstone exposures in our western sector.

Lee-MOR, Ogle-MOR, Rock-WIS

DIPLATOMMA (Hoffm.) Flotow CALICIACEAE [Photobiont: Chlorococcoid. Gr. *diploos*, two-fold + *omma*, eye. Spores 8, sordid to brown, submuriform]

Diplotoma alboatrum (Hoffm.) Flotow (*L. albus*, white + *atrus*, **black**; perhaps from the white thallus in contrast to the black apothecia) Our only record for this species locally is from a specimen (Calkins #307, F) that may well have been collected locally or in nearby LaSalle County. [± connorstictic acid ± norstictic acid]

LaSalle-MOR

ENCHYLIUM (Ach.) Gray COLLEMATACEAE [Photobiont: *Nostoc*. Etymology known only to Acharius. Spores 4 or 8, hyaline, 1-7 septate, 0-3 muriform]

1. Thallus isidiate or warty-papillose E. CONGLOMERATUM
1. Thallus without isidia or warty papules.
 2. Spores 4 per ascus, 3-5 septate, 1-3 muriform; lichen of leached clayey soils E. LIMOSUM
 2. Spores 8 per ascus, 3-septate, 0-1 muriform; lichens of carbonate-rich soils or rock, often among mosses.
 - Thallus on bare rock; spores simply 4-celled E. POLYCARPON
 - Thallus on rock among mosses; spores muriform E. BACHMANIANUM

Enchylium bachmanianum (Fink) Otálora, P. M. Jørg. & Wedin (in honor of the German medical practitioner and naturalist, Franz Ewald Theodor Bachmann, 1850-1937) = *Collema bachmanianum* Fink Our only records are from the vertical faces of dolomitic canyons.

Cook-MOR, DuPage-MOR, Kankakee-MOR, LaSalle-MOR, Winnebago-MOR

Enchylium conglomeratum (Hoffm.) Otálora, P. M. Jørg. & Wedin (*L. con-*, with + *glomeratus*, wound up; from the appearance of the apothecia all wound up together) = *Collema conglomeratum*

Hoffm.; *C. pycnocarpum* of Calkins (1896), who noted it from "elms and shrubs in Will County," and regarded it as rare.

LaSalle-ILL, Will

Enchylium limosum (Ach.) Otálora, P. M. Jørg. & Wedin (*L. limosus*, full of mud, slime; from the dark wet thallus) = *Collema limosum* (Ach.) Ach. Calkins (1896) reported this species as rare on clay soil in Will County.

Will

Enchylium polycarpon (Hoffm.) Otálora, P. M. Jørg. & Wedin (*Gr. poly*, many + *karpos*, fruit; from the numerous apothecia) = *Collema polycarpon* Hoffm. Our only record for this species is from sandstone (imported) near a dam on the DuPage River, in DuPage County.

DuPage-MOR

ENDOCARPON Hedwig VERRUCARIACEAE [Photobiont: *Stichococcus*. *Gr. endon*, within, inside + *karpos*, fruit; from the immersed perithecia. Spores 2, 4, or 8, hyaline to brownish, muriform, hamathecium gelatinous]

1. Thallus prevailing of aggregate areoles, often somewhat lobed with or overlapping lobules; lower surface black E. PALLIDULUM
1. Thallus largely of dispersed or scarcely aggregated areoles, the margins neither lobulate nor overlapping, the lower surface pale E. PETROLEPIDIUM

Endocarpon pallidulum (Nyl.) Nyl. (*L. pallida*, pale + *-ula*, diminutive; presumably from the tiny squamules) Much less frequent than the following species, an most commonly on weathered carbonate or siliceous rock.

Boone-MOR, DuPage-MOR

Endocarpon petrolepidium (Nyl.) Nyl. (*Gr. petros*, stone or rock + *lepidion*, diminutive for scale or flake; an allusion to the dispersed, scale-like areoles) Most previous local reports of *Endocarpon pusillum* Hedwig, including *E. pusillum* Hedwig var. *garovaglii* Kemp., as rendered by Fink (1900) or of *Dermatocarpon pusillum* of Fink (1906), are referable here. This is a ubiquitous species, growing with *Myriolecis dispersa*, *M. hagenii*, *Verrucaria calkinsiana*, *V. nigrescens*, and *Xanthocarpia feracissima* on weathered concrete and flagstone. It also grows on gravel and on both granitic and dolomitic erratics, weathered bricks, mosses over dolomite, and even on weathered lignin and rusty metal.

Cook-MOR, DeKalb-MOR, DuPage-MOR, Ford-MOR, Grundy-MOR, Jasper-MOR, Kane-ILL-MOR, Lake II-MOR, LakeIn-MOR, LaSalle-MOR, Livingston-MOR, Newton-MOR, Ogle-MOR, Starke-MOR, Walworth-MOR, Will-MOR, Winnebago-MOR

EOPYRENULA R. C. Harris DECAMPIACEAE [Photobiont: *Trentepohlia*. *Gr. eos*, dawn, early; meaning a primitive or inchoate relative of the genus *Pyrenula*, which see. Spores 8, brown, 3–6 septate, the central cell the larger]

Eopyrenula intermedia Aptroot (*L. inter*, between, among + *medius*, middle; from its equivalent similarities to two related species) The Cook County specimen was identified as *Pyrenula gemmata* by Calkins. See also *Anisomeridium biforme*.

Cook-F

EVERNIA Ach. PARMELIACEAE [Photobiont: Chlorococcoid. Gr. *evernes*, sprouting well; probably from its often sumptuous, branched thalli. Spores small, 8, hyaline, simple]

Evernia mesomorpha Nyl. (Gr. *mesos*, middle, intermediate + *morphe*, form, shape; perhaps from a supposed appearance intermediate between related genera) Some of our material appears to be adventive in that it is found on planted trees, and commonly is represented only by tiny thalli. It grows commonly, however, on *Larix laricina* in Walworth County, and we have one specimen, possibly native, from *Juniperus horizontalis* at Illinois Beach State Park. [divaricatic acid, usnic acid]

Allegan-MSC, Berrien-DUKE, Cook-MOR, DuPage-MOR, Kalamazoo-MSC, LakeIll-MOR, McHenry-MOR, Milwaukee-MOR, Ottawa-MSC, Porter-MIN, Walworth-MOR, Waukesha-WIS, Will-MOR

FELLHANERA Vězda PILOCARPACEAE [Photobiont: Chlorococcoid. Vězda coined the name *Fellhanera* as an anagram of Hafellner. He wrote "*Anagramm zu Hafellner. Die Neue Gattung ist Herrn Dr. J. Hafellner gewidmet in Anerkennung seiner Verdienste in der Systematik der Flechten.*" Usually foliicolous, pycnidia common, spores small, 8, hyaline, 1-3 septate]

Fellhanera minnisinkorum R. C. Harris & Lendemer (in remembrance of the Minnisink people, a group of Native Americans whose territory included the type locality and surrounding Delaware Water Gap National Recreation Area) Our only record for this species is a specimen collected at Glencoe, Cook County, (Calkins #173) on a "clay bluff" in 1905. Calkins had named this specimen *Lecidea flavidolivens*.

Cook-NY

FLAVOPARMELIA Hale PARMELIACEAE [Photobiont: *Trebouxia*. L. *flavus*, yellow; a yellow *Parmelia*, which see. Spores 8, hyaline, simple]

1. Thallus with finely granular soredia in rather evenly dispersed soralia F. CAPERATA
1. Thallus with largely corticate, isidioid pustules, without finely granular soredia F. BALTIMORENSIS

Flavoparmelia baltimorensis (Gyeln. & Főriss) Hale (after Baltimore, Maryland) = *Pseudoparmelia baltimorensis* (Gyteln. & Főriss) Hale. Southward this species is characteristic on exposed to partly shaded rocks, but our only local specimen is from an exposed sandstone break along the Rock River; it does not have gyrophoric acid. [protocetraric acid, usnic acid, caperatic acid, ± gyrophoric acid]

Ogle-MOR

Flavoparmelia caperata (L.) Hale (L. *caperatus*, wrinkled, drawn into folds; probably from the more or less wrinkled upper cortex) = *Parmelia caperata* (L.) Ach.; *Pseudoparmelia caperata* (L.) Hale. Although this species is nowhere near as common as it appears to have been in Calkins's day, it

grows on a wide variety of corticolous substrates, including fallen logs and old stumps. It is most frequent locally on *Quercus alba* and *Q. velutina*, probably because these species are more likely to be found in open woods. As woods close in from fire suppression, most of our regional broad-lobed lichens disappear, so it is rare on *Q. rubra*, *Tilia americana*, and *Fraxinus americana*. We also have specimens from *Carya ovata*, *C. cordiformis*, *Q. palustris*, *Q. macrocarpa*, and *Populus deltoides*. It is rare on granitic erratics and weathered wood. [protocetraric acid, usnic acid, caperatic acid]

Allegan-MSC, Berrien-MOR, Boone-MOR, Cook-ILL,MOR,NY, DeKalb-MOR, DuPage-MOR, Ford-MOR, Grundy-MOR, Iroquois-MOR, Jasper-MOR, Kalamazoo-MSC, Kane-MOR, Kankakee-MOR, Kendall-MOR, Kenosha-MOR, LaGrange-MOR, Lake II-MOR, Lake In-MIN, LaSalle-MOR, Lee-MOR, Livingston-MOR, McHenry-MOR, Milwaukee-MOR,WIS, Newton-MOR, Ogle-MOR, Ottawa-MICH,MSC, Porter-MIN,MOR, Pulaski-MOR, Racine-MOR, St. Joseph IN-MOR, Starke-MOR,US, Walworth-MOR, Waukesha-WIS, Will-ILL,MOR, Winnebago-MOR

FLAVOPLACA Arup, Søchting & Frödén TELOSCHISTACEAE [Photobiont: mostly "*Pseudotrebouxia*." *L. flavus*, pale yellow + Gr. *plax*, a flat round plate, dish; a disconcerting mixture of Greek and Latin root words. Spores not seen. Anthraquinones]

Flavoplaca citrina (Hoffm.) Arup, Frödén & Søchting (*L. citrinus*, lemon-colored; from the color of the soredia) = *Caloplaca citrina* (Hoffm.) Th. Fr. This species is typically found on dolomitic cliff faces or weathered quarry walls. It is characterized by isidiate or sorediate granules scattered over the surface. Occasional forms in which corticate areolae are sorediate on the edges have been segregated as *Flavoplaca flavocitrina* (Nyl.) Arup, Frödén & Søchting.

Cook-MOR, DuPage-MOR, Kane-MOR, Kankakee-MOR, Kendall-MOR, LaSalle-MOR, Milwaukee-MOR, Ogle-MOR, Racine-MOR, Rock-WIS, Will-MOR, Winnebago-MOR

FLAVOPUNCTELIA (Krog) Hale PARMELIACEAE [Photobiont: *Trebouxia*. *L. flavus*, yellow; a yellow *Punctelia*, which see. Spores 8, hyaline, simple]

1. Soredia coarse, subsidiod, in largely laminal soralia; thallus with white, conspicuous pores and maculae on the upper surface F. FLAVENTIOR
1. Soredia in fine, marginal, crescent-shaped soralia; thallus without white pores, maculae infrequent on the upper cortex F. SOREDICA

Flavopunctelia flaventior (Stirton) Hale (*L. flaventior*, yellow) = *Parmelia flaventior* Stirton; *P. andreana* Müll. Arg.; *Punctelia flaventior* (Stirton) Krog. This is a northern species that may have extended its range southward into the Midwest with the immense increase in corticolous substrate that has occurred since settlement. It is difficult to describe a habitat for it other than to note that it grows on trees in parks and pastures throughout the area. We have specimens fairly evenly distributed among the following trees: *Acer negundo*, *A. Sacharinum*, *Fraxinus*, *Juglans nigra*, *Larix laricina*, *Quercus macrocarpa*, *Q. palustris*, *Q. Rubra*, *Q. velutina*, and *Salix* spp. It is infrequent on lignin. Both this species and the next commonly grow together, particularly on *Populus deltoides*, just north of our region. [lecanoric acid, usnic acid]

Allegan-MSC, Berrien-MOR, Boone-MOR, Cass-MSC, Cook-MOR, DuPage-MOR, Grundy-MOR, Jasper-MOR, Kane-

MOR, Kendall-MOR, Kenosha-MOR, WIS, Lake II-MOR, Lake In-MIN, MOR, LaSalle-MOR, McHenry-MOR, Milwaukee-MOR, Porter-MIN, MOR, Racine-WIS, St. Joseph IN-MOR, Starke-MOR, Walworth-MOR, Waukesha-WIS, Will-MOR, Winnebago-MOR

Flavopunctelia soledica (Nyl.) Hale (Gr. *soredion*, a little heap (soredium) L + *-icus*, belonging to, or emphasis on a certain character; from its production of soredia) = *Parmelia ulophyllodes* (Vain.) Sav.; *P. soledica* Nyl.; *Punctelia soledica* (Nyl.) Krog. This species appears to have an autecology similar to that of *F. flaventior*, though it is less frequent. We have specimens evenly distributed among the following species: *Acer rubrum*, *Acer saccharum*, *Carya cordiformis*, *Crataegus mollis*, *Fraxinus americana*, *F. lanceolata*, *Gleditsia triacanthos*, *Populus deltoides*, *Prunus americana*, *Quercus macrocarpa*, *Q. palustris*, *Q. rubra*, *Q. velutina*, and *Salix nigra*. [lecanoric acid, usnic acid]

Cook-F, MOR, DeKalb-MOR, DuPage-MOR, Ford-MOR, Iroquois-MOR, Jasper-MOR, Jefferson-WIS, Kane-MOR, LaGrange-MOR, Lake II-MOR, LaPorte-MOR, Livingston-MOR, McHenry-MOR, Milwaukee-MOR, Ottawa-MSC, Racine-MOR, St. Joseph In-MOR, Starke-MOR, Walworth-MOR, WIS, Will-MOR, Winnebago-MOR

GRAPHIDACEAE

One local genus **Graphis**

GRAPHIS Adans. GRAPHIDACEAE [Photobiont: *Trentepohlia*. Gr. *graphis*, of line drawings; from the elongate, often branched apothecia that resemble written markings. Spores 4–8, hyaline to brownish, 3-many septate with lenticular cells]

1. Ascoma largely unbranched and vermiform, the rims remaining closed; pruina absent G. LINEOLA
1. Ascoma simple or branched, linear to ovate, the rims soon relaxed to expose the epithecium; pruina scant to abundant G. SCRIPTA

Graphis lineola Ach. (*L. linea*, line + *-olus*, diminutive) = *G. comma* Ach, of Calkins, which some authorities regard as a variant of *G. lineola*. R. C. Harris annotated a specimen (Calkins #195, NY) of this species which had been collected in 1900 on *Acer saccharum* at Glencoe, in Cook County. One might have suspected that the Calkins specimen was mislabeled except that we have seen similar specimens, one from *Acer saccharum*, another from *Carya ovata*, in natural landscapes in Lake County, Illinois.

Cook-NY, Lake II-MOR

Graphis scripta (L.) Ach. (*L. scriptus*, written; from the appearance of the apothecia) According to Calkins, this species was common in the region, but it is now only occasional on the smooth plates of *Quercus* species, particularly in the red oak group, but there are also specimens from *Acer saccharum*, *Carya cordiformis*, *Carya ovata*, *Celtis occidentalis*, *Quercus alba*, *Quercus rubra*, *Quercus velutina*, and *Tilia americana*. Calkins's report of *Graphis* (*Phaeographis*) *dendritica* is almost certainly referable here inasmuch as specimens of his at the Field Museum and at the Chicago Academy of Sciences that he called *G. dendritica* are actually *G. scripta*. *G. scripta* is quite similar to *G. elegans*, except that the latter contains norstictic acid in the thallus and typically has furrowed apothecial margins; both species vary tremendously in their appearance, from small aster-like forms to simple or branched, or even long connecting semicircular lirellae. There is a *Phaeographis* specimen of Calkins's from Cook County at the New York Botanical Garden, but the associated species, *Graphina*

abaphoides, on the same chink suggests that the specimen came from Florida.

Allegan-MICH, MSC, Berrien-MOR, Cook-F, MOR, NY, DeKalb-MOR, DuPage-MOR, Ford-MOR, Jasper-MOR, Jefferson-WIS, Kane-MOR, Kendall-MOR, Kenosha-MOR, LaGrange-MOR, Lake Il-MOR, LaPorte-MOR, LaSalle-MOR, Lee-MOR, Livingston-MOR, McHenry-MOR, Ogle-MOR, Porter-MOR, Racine-MOR, Walworth-MOR, Waukesha-WIS, Will-MOR, Winnebago-MOR

GYALOLECHIA A. Massal. TELOSCHISTACEAE [Photobiont: mostly "*Pseudotrebouxia*." Gr. *gyalo*-, brushed, polished, sanded + *lechos*, couch, bed, nest. Orange apothecia associated with a pale yellow thallus; spores polaribilocular, the isthmus more than a third of the length of the spore. Anthraquinones, particularly parietin]

1. Thallus corticolous G. FLAVORUBESCENS
1. Thallus saxicolous.
 2. Apothecia similarly colored throughout.
 3. Thallus more or less continuous, without a black hypothallus G. FLAVOVIRESCENS
 3. Thallus squamulose, with a distinct black hypothallus.
 - Apothecia pale orange; squamules abundant and not note wholly associated with the apothecia Unk. L#15100
 - Apothecia orange, the squamules scant and associated with the apothecia Unk. W#19699
 2. Apothecia distinctly bicolored, the rims much paler yellow than the disk.
 4. Thallus pulvinate-thickened around the apothecia Unk. W#13839
 4. Thallus thin to squamulose, but not pulvinate-thickened.
 - Thallus with discrete squamules Unk. H#1877
 - Thallus more or less continuous Unk. L#16204

Gyalolechia flavorubescens (Huds.) Søchting, Frödén & Arup (L. *flavus*, yellow + *rubescens*, becoming red; perhaps from the emergence of orange apothecia from a yellow thallus) = *Caloplaca aurantiaca* of American authors, not (Lightf.) Th. Fr.; *Placodium aurantiacum* of Calkins. The Newton County specimen is from *Quercus velutina* in black oak savanna; the DuPage County record is from *Populus alba* in an old field. Calkins (1896) listed it from "elms and poplars at Glencoe; on hickories and other trees along the Des Plaines River." The Allegan County records are from *Tilia americana* at Mount Baldhead near Saugatuck. Curiously, he said it grew on rocks at Lemont and elsewhere; we wonder if these latter reports might have referred to what is now known as *Gyalolechia flavovirescens*.

Allegan-MSC, Cook-MIN, DuPage-MOR, Kane-MOR, Newton-MOR, Winnebago-MOR

Gyalolechia flavovirescens (Wulfen) Søchting, Frödén & Arup (L. *flavus*, yellow + *virescens*, becoming green or flourishing; perhaps from the fecundity and tumescence of the apothecia) = *Caloplaca flavovirescens* (Wulfen) Dalla Torre & Sarnth. Locally this species is infrequent on dolomitic erratics, canyon walls, old quarries, and less frequently on weathered concrete; it is much more common away from the region. Occasional specimens of this species (e.g. Calhoun and Carroll counties, Illinois) have in their hymenia parasitic, polysporous asci with brown, septate spores mostly 4–6 µm long. These may be *Muellerella lichenicola* (Fr.) D. Hawksw.

Cook-MOR, DuPage-MOR, Kankakee-MOR, Kendall-MOR, Kenosha-MOR, Lake In-MIN, LaSalle-MOR, Racine-MOR, Will-MOR

Gyalolechia sp. H#1877. The apothecia are evocative of *Xanthocarpia feracissima*, but the spores have a broad isthmus and the thallus is decidedly squamulose. The records are all from weathered concrete in Kendall and Will Counties. A Boone County record, from a dolomite prairie, is too scant to be certain of its placement.

Kendall-MOR, Will-MOR

Gyalolechia sp. L#15100. Actually more evocative of an *Athallia* with regard to the apothecia, but the apothecia are abundantly provided with bright yellow squamules over a black hypothallus. Known from a dolomite bluff, in full sun, overlooking the Des Plaines River.

DuPage-MOR

Gyalolechia sp. L#16204. Aside from the fact of its saxicolous habitat, it is evocative of *Gyalolechia flavorubescens*. There are specimens from DuPage and Lake counties in Illinois.

DuPage-MOR, Lake Il-MOR

Gyalolechia sp. W#13839. Rather like *Gyalolechia flavovirescens*, but the apothecia are characterized as having a yellow thalline margin outside the proper margin and the thallus is quite inflated. Our only specimen is from weathered concrete at Illinois Beach State Park, in Lake County, Illinois.

Lake Il-MOR

Gyalolechia sp. W#19699. The apothecia are bright orange with a proper rim, the thallus scant and yellow with a black hypothallus. Our only record is from weathered concrete in Nearby Henderson County, Illinois.

HEPPIA Naeg. in A. Massal. HEPPIACEAE [Photobiont: *Nostoc* and *Scytonema*. After Johann Adam Philipp Hepp, 1797–1867, German physician, lichenologist, and political activist, exiled in Switzerland. Spores 8, hyaline, simple]

Heppia conchiloba Zahlbr. (*L. concha*, shell, or shell cavity + *lobus*, lobe, evidently from the deeply hollowed lobes bearing an apothecium) = *H. despreauxii* of Calkins; *H. lutosus auct., non* (Ach.) Nyl. Our specimens of this species are from dry gravelly hill prairies, where it grows on thin soil among carbonate pebbles where vascular vegetation is spare. Consistent lichen associates are *Placidium squamulosum* and *Psora decipiens*. Vascular vegetation is characterized by *Andropogon gerardii*, *A. scoparius*, *Arenaria stricta*, *Artemisia caudata*, *Bouteloua curtipendula*, *Comandra richardsiana*, *Euphorbia corollata*, *Liatris cylindracea*, *Lithospermum incisum*, *Petalostemum purpureum*, *Scutellaria parvula* var. *leonardii*, *Silphium terebinthinaceum*, and *Solidago nemoralis*. It also grows in shallow soil over dolomite with *Bacidia bagliettoana*, *Placidium squamulosum*, and *Placynthium nigrum*. Previous reports of *H. adglutinata* (Kremp.) A. Massal. (*L. ad*, to or toward + *gluten*, glue + *-atus*, adjective ending) are referable here; its hymenium is IKI- throughout, whereas our specimens bear hymenia that are at least partially IKI+ blue.

Cook-MOR, Kane-MOR, McHenry-MOR, Will-DUKE, MOR, WIS

HETERODERMIA Trevis. PHYSCIACEAE [Photobiont: *Trebouxia*. Gr. *heteros*, other, different + *derma*, skin, leather; from the complex algal and medullary layers

in the upper cortex. Spores 8, brown, 1-septate]

- 1. Thallus loosely ascending, the margins long-ciliate H. ECHINATA
- 1. Thallus appressed, the margins not long-ciliate.
 - 2. Thallus beset with granular isidia over the surface; medulla K+ yellow turning red H. GRANULIFERA
 - 2. Thallus sorediate with fine, marginal soralia; medulla K+ yellow or K-.
 - Lower surface with distinct yellowish, K+ purple tinges H. OBSCURATA
 - Lower surface white, K- H. SPECIOSA

Heterodermia echinata (Tayl.) W. Culb. (*L. echinatus*, prickly; from the stiff marginal cilia) Calkins & Huett (1898) cited this species from *Juniperus* in nearby La Salle County, Illinois, under the name *Physcia comosa*, which report may be referable here. We have seen specimens as far north as Union County, Illinois, where it does indeed grow on *Juniperus*, but it is hard to imagine what other species Calkins & Huett may have had in hand. Sterile specimens of *Physcia adscendens* with projecting rhizines might key here, but it has a smooth lower cortex, and the upper cortex is duller than *H. echinata* and usually more scabrid. [atranorin, zeorin]

Heterodermia granulifera (Ach.) W. Culb. (*L. granulus*, a small grain + *fero*, to bear, carry; from the numerous granulose isidia borne on the thallus) = *Physcia granulifera* of Calkins (1896), who reported this species from "hickories near Elgin and at Lemont." [salazinic acid, atranorin, ± zeorin]
Cook

Heterodermia obscurata (Nyl.) Trev. (*L. obscura*, dark, shady, indistinct + *-atus*, likeness; perhaps from its surficial similarities to other sorediate species.) Our only record was collected in 2015 on the bark of *Prunus serotina*.

DuPage-MOR

Heterodermia speciosa (Wulf.) Trevis. (*L. speciosus*, showy, beautiful; from the attractive thallus) = *Physcia speciosa* of Calkins (1896), who reported it from Cook County. Our only contemporary record of this species is from the base of *Quercus alba* on a grazed kame near LaFox in Kane County. The LaSalle County record is from shaded mossy sandstone. There is a record from 1945 collected on *Acer saccharum* in Waukesha County. [atranorin, zeorin]

Cook, Kane-MOR, Lake IL-ILL,MIN, LaSalle-MOR, McHenry-ILL, Waukesha-WIS

HYPERPHYSICIA Müll. Arg. PHYSCIACEAE [Photobiont: *Trebouxia*. Gr. *hyper*, beyond, over, very; evidently meaning quite a *Physcia*, which see. Spores 8, brown, 1-septate]

- 1. Thallus esorediate; lobes confluent H. SYNCOLLA
- 1. Thallus sorediate; lobes somewhat discrete.
 - Soralia prevailingly marginal, labriform or irregular H. CONFUSA
 - Soralia nearly all surficial on the lamina, largely circular H. ADGLUTINATA

Hyperphyscia adglutinata (Flörke) Mayrh. & Poelt (*L. ad*, to or toward + *gluten*, glue + *-atus*, adjective ending; from the thallus lobes that appear glued to the bark) = *Physcia adglutinata* of Calkins; *Physciopsis adglutinata* (Flörke) M. Choisy. Small and inconspicuous, this species is ubiquitous on all manner of trees growing in open settings or in parks and landscaped areas; it is

occasional on weathered lignin.

Cook-MOR, DeKalb-MOR, DuPage-MOR, Ford-MOR, Grundy-MOR, Jasper-MOR, Kane-MOR, Kendall-MOR, Kenosha-MOR, LaGrange-MOR, Lake Il-MOR, Lake In-MOR, LaPorte-MOR, Lee-MOR, Livingston-MOR, McHenry-MOR, Milwaukee-MOR, Racine-MOR, St. Joseph In-MOR, Starke-MOR, Walworth-MOR, Will-MOR, Winnebago-MOR

Hyperphyscia confusa Essl., Morse, & Leavitt (L. *confusus*, with mixed up thoughts; probably from its long over-looked status in *H. adglutinata*, where one might be seduced into thinking it was a depauperate *Physciella chloantha*) Though a little more frequent in central Illinois, our only record local records for this western species corticolous substrates, to wit *Celtis occidentalis*, *Juglans nigra*, and *Tilia cordifolia*. A specimen at the Field Museum (Leavitt #11-356, F), is said to have been collected in DuPage County, in Aurora, which city is wholly within Kane County.

DuPage-F-MOR, LaSalle-MOR, Winnebago-MOR

Hyperphyscia syncolla (Nyl.) Kalb (Gr. *syn-*, combined + *kolla*, glue; from the thallus lobes that appear stuck together) = *Physciopsis syncolla* (Nyl.) Poelt. Much commoner from farther south. Our specimens are from *Carya ovata*, *Morus alba*, *Populus deltoides*, and *Salix nigra*.

Cook-NY, DuPage-MOR, Grundy-MOR, Kane-MOR, Lee-MOR, McHenry-MOR, Racine-MOR, Rock-WIS

HYPOCENOMYCE M. Choisy OPHIOPARMACEAE [Photobiont: Chlorococcoid.

Gr. *hypo*, under, beneath, less than usual + *Cenomyce*, an old generic name; from its apparent resemblance to *Cenomyce*. Spores 8, hyaline, simple]

Hypocenomyce scalaris (Lilj.) M. Choisy (L. *scalaris*, pertaining to a ladder; perhaps from the imbricate lobes evocative of ladder rungs) = *Psora scalaris* (Ach.) Hook. f. Our only two records of this northern species are from the trunk and lower limbs of a large *Quercus macrocarpa* at the Middle Fork Savanna, in Lake County, Illinois, and on *Larix laricina* in a bog northwest of East Troy, Walworth County. [lecanoric acid]

Lake Il-MOR, Porter-DUKE, Walworth-MOR

HYPOGYMNIA (Nyl.) Nyl. PARMELIACEAE [Photobiont: *Trebouxia*. Gr. *hypo*, under, beneath, less than usual + *gymnos*, naked, lightly clad; from the smooth, rhizine-free lower cortex. Spores 8, hyaline, simple]

Hypogymnia physodes (L.) Nyl. (Gr. *physis*, an air bladder, bubble + *-ode*, like, resembling; from the inflated appearance of the thallus) = *Parmelia physodes* (L.) Ach. Rare, our few specimens of this common northern species are represented by small thalli about 2 cm in diameter. The Walworth County specimen is from *Larix laricina* in a bog northwest of East Troy; the La Porte County material is from *Fraxinus pennsylvanica* var. *subintegerrima* at Pinhook Bog. The Du Page County specimens are both from "bark" at the West Du Page Woods Forest Preserve. Calkins (1896) reported that it grew on "oaks in Cook and Du Page counties, and elsewhere." Farther north, in Allegan County, Michigan, we have collected it on scrubby trees of *Quercus velutina*. [atranorin, physodic acid, physodalic acid, protocetraric acid]

Allegan-MSA, Cook, DuPage-MOR, LaPorte-MOR, Ottawa-MSA, Walworth-MOR, WIS

HYPOTRACHYNA (Vain.) Hale PARMELIACEAE [Photobiont: *Trebouxia*. Gr. *hypo*, under, beneath, less than usual + *trachyno*, to roughen; probably from the somewhat roughened appearance of the densely squarrose-rhizinate lower surface. Spores 8, hyaline, simple]

Hypotrachyna livida (Tayl.) Hale (L. *lividus*, blue, bluish, leaden color; from?) = *Parmelia tiliacea* of Calkins and Berry. Berry (1941) reported it from Lake County, Illinois, but Culberson (1961) showed no specimens north of Peoria. Calkins (1896) reported it from "oaks at Riverside, Lemont and Hanover." [lividic acid, atranorin, 4-0-methylphysodic acid]

Cook, Lake Il

HYSTERIACEAE

One local genus **Hysterium**

HYSTERIUM Pers. HYSTERIACEAE [Photobiont: absent. Gr. *hysteros*, womb; evidently an allusion to the female pudenda. Spores, 8, septate, usually with at least 2 brown cells]

Hysterium angustatum Alb. & Schwein. (L. = *angusto*, crowd together, constrict, limit; perhasp an allusion to the gregarius nature of the hysterothecia) Frequent on a wide array of branches and branchlets. Also in the region is *H. pulicare* (Lightf.) Pers., which differs only in that the end cells of the spores are hyaline; the cells of *H. angustatum* are all brown.

Kendall-MOR

IMSHAUGIA S. L. F. Meyer PARMELIACEAE [Photobiont: *Trebouxia*. After Henry A. Imshaug (b. 1925), American lichenologist recently retired from Michigan State University. Spores small, 8, hyaline, simple]

Imshaugia aleurites (Ach.) S. L. F. Meyer (Gr. *aleuron*, wheaten flour + *-ites*, having to do with, like; probably from the appearance of the tiny isidia, like the aleuron grains in certain wheat cells) = *Cetraria aleurites* of Calkins; *Parmeliopsis aleurites* (Ach.) Nyl. Calkins (1896) reported this species from "old rails near Lemont and Joliet." [thamnolic acid, atranorin]

Cook, Will

JULELLA Fabre TRIPETHELIACEAE [Photobiont: absent. L. *iulus*, catkin + *-ella*, diminutive; probably from the shape of the ascus. Thallus endophloedal; spores 4-8, hyaline, muriform]

Julella fallaciosa (Arnold) R. C. Harris (L. *falax*, fallacious) = *Polyblastiopsis fallaciosa* (Arnold) Zahlbr. Our modern records are prevailingly from *Acer saccharum* and *Quercus alba*. Although we have vouchers from only a few counties, this species and *Anisomeridium polypori* are quite common locally on trees in savannas and closed woodlands. Until I have a better understanding in this

genus, I am including here local reports of *Julella sericea* (A. Massal.) Coppins. *Julella lactea* (A. Massal.) M. E. Barr, which differs from *J. fallaciosa* in having only 4 ascospores per ascus each more than 27 µm long, rather than 8 fewer than 27 µm long, is known from districts north and south of the Southern Lake Michigan Region.

Allegan-MSC, Berrien-MOR, Cook-MOR, NY, DuPage-MOR, Kalamazoo-MIN, MSC, Kendall-MOR, Kenosha-MOR, Lake Il-MOR, McHenry-MOR, Will-MOR

KIRSCHSTEINIOTHELIA D. Hawksw. PLEOSPORACEAE [Photobiont: absent. *Kirschsteinia* + Gr. *thele*, nipple; a pyrenocarpous lichen evocative of *Kirschsteinia*, a Sphaerialian fungus named after Wilhelm Kirschstein, 1863–1946, German mycologist. Spores 8, brown, 1-septate]

Kirschsteiniotelia aethiops (Berk. & Curtis) D. Hawksw. (Gr. *aethiops*, appear unusual or irregular; perhaps from the spores with the constricted septum) The Cook County specimen, Calkins #162, "Ill., on oaks, etc. Glencoe," was identified by Calkins as *Pyrenula punctiformis*. This specimen has brown, 1-septate spores 21–34 µm long constricted at the septum and with the cells mostly notably unequal in the larger spores; the interthelial hyphae are massed and intertwined, but not deliquescent; spores are arranged more or less biserially in the asci. From what we can tell, this more or less fits the description of *Microthelia micula* Körb., as per Harris (1973), which name Esslinger (2016) refers here. We do not actually think that this specimen is *Kirschsteiniotelia*, but the oversized spores take it out of any *Mycomicrothelia* described by Hawksworth (1985). Probably, we should just leave the thing out, since it is not even lichenized, as far as we can tell, but we are including it here under *K. aethiops* as a kind of "place holder" for the 1-septate, brown-spored, cylindrical-celled pyrenocarps with 8 spores per ascus and persistent pseudoparaphyses.

Cook-F, Kalamazoo-MSC

LATHAGRIUM (Ach.) Gray COLLEMATACEAE [Photobiont: *Nostoc*. Etymology known only to Acharius. Spores 8, hyaline, septate]

Lathagrium auriforme (With.) Otálora, P. M. Jørg., & Wedin (L. *auris*, an ear + *forma*, shape, appearance; from the folded thallus resembling an ear) = *Collema granosum* of Calkins (1896), who reported it from mossy rocks near the Des Plaines River.

Will

LECANIA A. Massal. RAMALINACEAE [Photobiont: Chlorococcoid. Gr. *lekane*, dish, pot; from the shape of the apothecia. Spores 8, hyaline, 1-septate]

1. Thallus with sorediate, yellowish-green; apothecia absent L. CROATICA
1. Thallus esorediate, not yellowish green.
 2. Apothecia white pruinose; spores becoming 4-celled L. SPADICEA
 2. Apothecia without pruina; spores remaining 2-4 celled
 - Spores remaining 2-celled L. PERPROXIMA
 - Spores mostly 4-celled L. NAEGELII

Lecania croatica (Zahlbr.) Kotlov (of Croatia) Occasional on bark in wooded remnant areas, our specimens from *Acer saccharum*, *Fraxinus nigra*, *Juglans nigra*, *Populus deltoides*, *Quercus alba*, *Quercus rubra*, *Tilia americana*, *Tsuga canadensis*, and *Ulmus rubra*. This is the species we have long known as "*Lecidea* sp. #4", following the speculation of Harris (1978).

Berrien-MOR, DuPage-MOR, Kane-MOR, Kenosha-MOR, LaPorte-MOR, LaSalle-MOR, McHenry-MOR, Porter-MOR, Will-NY, Winnebago-MOR

Lecania naegeli (Hepp) Diedr. & van den Boom (in honor of the Swiss lichenologist, Carl Wilhelm von Nägeli, 1817-1891) Evidently uncommon, our only records are from the bark of *Populus* and *Prunus serotina*, in full sun.

Allegan-MS, DuPage-MOR

Lecania perproxima (Nyl.) Zahlbr. (*L. per-*, denoting throughout, during, all over + *proximus*, the nearest, next; for what it is not clear, but Nylander seemed impressed by the IKI+ reaction of the hymenial gelatin, turning the hymenium blue throughout) = *Lecanora perproxima* Nyl. This species is occasional on dolomitic outcrops, and even on weathered concrete. Calkins stated that this species grew on "calcareous rocks at Joliet and elsewhere." His report of the European *Lecania erysibe*, as *Lecanora erysibe*, is referable here; the former species has spores no longer than 14 μm . We are in no way certain that we have the proper name for this lichen, but this name can hold its place until we have a more justifiable one.

Boone-MOR, DeKalb-MOR, Kankakee-MOR, Kendall-MOR, Kenosha-MOR, LaSalle-F,MOR, Lee-MOR, Ogle-MOR, Will-MOR

Lecania spadicea (Flotow) Zahlbr. (*L. spadiceus*, deep reddish brown, date-colored; perhaps from the color of the moist epithecium) Not yet known from the Southern Lake Michigan region, it has been collected on shaded limestone in Jo Daviess County, Illinois.

LECANORA Ach. LECANORACEAE [Photobiont: *Trebouxia*. Gr. *lekane*, dish, pot + *horos*, margin, limit; from the rimmed apothecia. Thallus margins not effigurate; spores 8, hyaline, simple or rarely 1-septate]

1. Thallus or apothecia saxicolous
 - Thallus K+ yellow L. SUBIMMERGENS
 - Thallus K- L. POLYTROPA
1. Thallus or apothecia corticolous, lignicolous, or apothecia absent.
 2. Usnic or isousnic acid present; thallus with yellowish tints.
 3. Apothecial rim scant, often disappearing, or apothecia absent.
 - Apothecia present L. SYMMICTA
 - Apothecia absent L. THYSANOPHORA
 3. Apothecial rim well developed.
 4. Apothecial rims smooth; isousnic acid L. SALIGNA
 4. Apothecial rims sorediate or granular; usnic acid
 - Apothecial margins with a gelatinous cortex at the base; fumarprotocetraric acid present
..... L. CONIZAEOIDES
 - Apothecial margins without a cortex; fumarprotocetraric acid absent L. STROBILINA
 3. Usnic and isousnic acids absent; thallus without distinctly yellowish tints.
 5. Apothecia decidedly pruinose, whitish, yellowish, or buff to light brown or roseate.

- Discs C+ yellow L. CARPINEA
 Discs C- L. CAESIORUBELLA SSP. CAESIORUBELLA
5. Apothecia epruinose or only slightly frosted, buff, grayish, or reddish brown to nigrescent, or apothecia absent.
 6. Atranorin absent; thallus and rims K-.
 - Fumarprotocetraric acid absent; thallus distinctly white and thick, areolate, or even supracodioid L. WISCONSINENSIS
 - Fumarprotocetraric acid present; thallus greyish-green, not thick and distinctly and white L. CONIZAEIDES
 6. Atranorin present; thallus and rims K+ yellow.
 7. Thallus sorediate; zeorin present or absent.
 8. Zeorin absent; thallus with significant exposures of upper cortex L. IMPUDENS
 8. Zeorin present; thallus with limited exposures of upper cortex.
 - Thallus immersed, with a shiny blue prothallus at the margin L. NOTHOCAESIELLA
 - Thallus surficial, the margin with corticate areoles L. APPALACHENSIS
 7. Thallus esorediate; zeorin absent.
 9. Amphithecium without large angular crystals
 - Apothecia prevalingly less than 0.8 mm across; spores less than 14 μm long LECANORA GLABRATA
 - Apothecia largely more than 0.8 mm across; spores more than 14 μm long L. ALLOPHANA
 9. Amphithecium with large angular crystals.
 10. Granules limited to the epihymenium
 - Apothecial margin strongly beaded or irregularly formed, the cortex less than 15 μm thick L. CINEREOFUSCA
 - Apothecial margin smooth or nearly so, the cortex more than 15 μm thick L. CHLAROTERA
 10. Granules distributed down into the hymenium along the paraphyses.
 - Apothecial disks reddish brown to nigrescent; spores broadly ovoid; fumarprotocetraric acid present L. PULICARIS
 - Apothecial disks pale to reddish brown; spores ellipsoid; fumarprotocetraric acid absent L. HYBOCARPA

Lecanora allophana Nyl. (Gr. *allos*, other, different + *phana*, to appear; an evident allusion to its different appearance from related species) This species has been reported several times from the Southern Lake Michigan region and is well known from neighboring districts but we have yet to discover a properly identified local specimen. [atranorin, triterpenoides other than zeorin]

Lecanora appalachensis Lendemer & R. C. Harris (from the Appalachian Mountains of eastern North America, the type locality) Yet unknown from the immediate Southern Lake Michigan region, this corticolous, sorediate, usually sterile species may be overlooked inasmuch as it is known from districts all around the region. [atranorin, zeorin]

Lecanora caesiorubella Ach. ssp. *caesiorubella* (L. *caesius*, light gray + *rubeo*, to be red + *-ellus*, diminutive; from the reddish apothecia) Our only record is one from Milwaukee County, collected in 1869 (Lapham *s.n.* WIS) and annotated by Imshaug & Brodo. A Calkins specimen of this species is cited from Illinois (Imshaug & Brodo 1966), so it likely was collected in or near

the Southern Lake Michigan region. It is probable that Calkins's (1896) report of *Lecanora pallida* from Will County is referable here, the name used during the same era by Lapham. [atranorin, virensic acid]

Milwaukee-WIS, Will

Lecanora carpinea (L.) Vainio (L. = of the hornbeam tree) Our only specimen is from the smooth bark of *Carya cordiformis*. [sordidone]

DuPage-MOR

Lecanora chlarotera Nyl. (Gr. *klaros*, exultant + *teros*, fiefdom, temple, sacred district; the allusion unclear, but the type locality, Jena, Thuringia, was the site of the German Confederation, Friedrich Schiller University, and home to many exalted German Romanticists) Frequent to common in districts ambient to the Southern Lake Michigan region, we have yet to discover a local specimen. A similar species, *L. rugosella* Zahlbr. has apothecia more than 0.8 mm in diameter and a thick, verruculose to granulose thallus. [atranorin, gangaleoidin, ± nephrosteranic acid]

Lecanora cinereofusca H. Magn. (L. *cinereus*, ash-colored + *fuscus*, brown; perhaps from the color of the apothecia) Our only contemporary collection is from the bark of an open-grown *Prunus serotina*. Brodo (1984) cites a Calkins (#61) specimen from La Salle County; he described the apothecia as: "*immersed in thallus, finally becoming sessile, 0.7–1.5 mm diameter; discs reddish orange, deep red, darkening to dark reddish brown or reddish black; margins at first thick, verrucose to ridged and rough, becoming discontinuous and thin in many specimens.*" This specimen is referable to the typical variety. [atranorin, pannarin, usually placodialic acid, ± roccellic acid]

DuPage-MOR

Lecanora conizaeoides Cromb. (Resembling *L. coniza*, which comes from Gr. *konis*, dust + *-izein*, to make; probably from the dusty-granular thallus) This is one species that is almost certainly adventive from Europe. Our only record for this species is on the bark of *Pseudolarix kaempferi* at the Morton Arboretum. [fumarprotocetraric acid]

DuPage-MOR

Lecanora glabrata (Ach.) Malme (L. = *smooth*; from the smooth clear epithecium) Our only records are from the bark of open-grown trees of *Celtis occidentalis* and *Prunus serotina*. [atranorin]

DuPage-MOR, Ogle-MOR

Lecanora hybocarpa (Tuck.) Brodo (Gr. *hybos*, hump-backed + *karpos*, fruit; from the tumescent apothecia) Including *L. subfusca*, *L. s. var. allophana*, *L. s. var. argentata*, and *L. s. var. distans* of Calkins. Other Midwestern species in the *L. subfusca* group include *L. glabrata* (Ach.) Malme, which has small apothecia and no granules between the epithelial hyphae, and *L. argentata* (Ach.) Malme, which contains gangaleoidin. *Lecanora allophana* Nyl., also known from the Midwest, contains atranorin only, but has many of its apothecia larger than 0.8 µm and no epihymenial granules. In the early 1970s, Irwin Brodo annotated specimens of this species, which he later referred here, *L. pseudo-chlarotera*, a herbarium name he used during his studies. Now rare on oaks, hickories, and ashes, Calkins (1986) indicated that it was a common corticolous species. [atranorin, roccellic acid]

Cook-NY, DuPage-MOR, Kane-MICH, Lake Il-MOR, McHenry-ILL, Ogle-MOR, Walworth-MOR

Lecanora impudens Degel. (*L. impudens*, shameless; evidently Degelius was impressed with its outrageous display of soralia, naked, usually without accompanying apothecia!) Yet unknown from the Southern Lake Michigan region, this species, rarely fertile, is rather frequent in districts ambient to our region. [atranorin, \pm triterpenoides other than zeorin]

Lecanora nothocaesiella R. C. Harris & Lendemer (*L. nothus*, false, mongrel, cross-bread + *caesiella*; an allusion to the superficial similarity to *Lepraria caesiella*) Yet unknown from the Southern Lake Michigan region, this corticolous species is largely sympatric with *Lecanora appalachensis*, both of which species are discussed by Lindemer *et al.* (2013). [atranorin, zeorin]

Lecanora polytropa (Hoffm.) Rabenh. (Gr. *poly*, many + *tropo*, change, turn; perhaps evoking its variable thallus development) This species occurs frequently just to the north of our region on granitic boulders, particularly those that are commonly visited by perching birds. Our only record is from a granitic erratic along a stream. [rangiformic acid, usnic acid, zeorin, and fatty acids]

DuPage-MOR

Lecanora pulicaris (Pers.) Ach. (*L. pulicaris*, with or bearing fleas, the allusion here unclear) Rather frequent just north and east of southern Lake Michigan, our only record is from the bark of *Rhamnus cathartica*. [atranorin, fumarprotocetraric acid, \pm rocellic acid]

DuPage-MOR

Lecanora saligna (Schrad.) Zahlbr. (*L. salignus*, like or of willow; from a supposed frequency of occurrence on willow) Most of our specimens are from old wood; Wetmore's specimen from Lake County, Indiana, was from *Quercus rubra*, and the St. Joseph County, Indiana, specimen is from *Carya ovata*. Skorepa's (1970) report of *L. symmicta*, which see, from Will County is referable here. Most previous reports of "*L. umbrina*" are referable here. [isousnic acid]

Cook-MOR, DuPage-MOR, Ford-MOR, Grundy-MOR, Kane-MOR, Lake II-MOR, Lake In-INDU, LaSalle-MOR, Lee-MOR, McHenry-MOR, Porter-MIN, St. Joseph IN-MOR, Will-MOR

Lecanora strobilina (Spreng.) Kieff. (Gr. *strobilos*, anything twisted + *inus* pertaining to; derivation uncertain) Not uncommon just outside the Southern Lake Michigan region on weathered fence rails and open-grown trees, it is uncommon locally. One of our specimens is from a planted specimen of *Betula pendula*, another from a planted specimen of *Gleditsia triacanthos*, and one from a planted tree of *Liriodendron tulipifera*. There are also specimens from *Acer saccharinum*, *Carya ovata*, *Quercus alba*, *Quercus macrocarpa*, *Quercus rubra*, and *Rhus typhina*. [usnic acid, \pm zeorin]

Cook-MOR, DeKalb-MOR, DuPage-MOR, Ford-MOR, Kendall-MOR, Kenosha-MOR, LakeIn-MOR, LaSalle-MOR, Livingston-MOR, Ogle-MOR, Walworth-MOR, Waukesha-WIS, Will-MOR, Winnebago-MOR

Lecanora subimmersens Vain. (*L. sub-*, somewhat + *immergo*, to immerse; from the somewhat immersed younger apothecia) This species is not infrequent in regions ambient to the Southern Lake Michigan region, although we have yet to secure a local record. [atranorin, zeorin]

Lecanora symmicta (Ach.) Ach. (Gr. *syn-*, combined + *miktos*, mixed, thrown together; from the irregular aggregations of apothecia) = *L. varia* var. *symmicta* of Calkins. It may also include Calkins's *L. varia*, from Cook, since we have yet to see that species in the Midwest. Calkins

reported that there were "numerous varieties" in the region; it contains usnic acid ± psoromic or fumarprotocetraric acids. Most early Illinois specimens called *L. varia* are referable to *L. strobilina*. According to Harris, *L. symmicta* is confined to the coasts and has a thallus reaction of C+ orange because of the presence of xanthonenes. Our entity is fairly frequent on a wide variety of corticolous and lignicolous substrates, particularly in disturbed or landscaped areas. Some specimens called "*Lecanora varia saepinicola*" by Calkins are referable here. [usnic acid, xanthone, zeorin, ± psoromic acid, ± fumarprotocetraric acid]

Berrien-MOR, Cook-MOR, DeKalb-MOR, DuPage-MOR, Ford-MOR, Jasper-MOR, Kane-MOR, Kenosha-MOR, Lake Il-MOR, Lake In-MOR, LaGrange-MOR, La Porte-MOR, McHenry-MOR, Racine-MOR, St. Joseph In-MOR, Starke-MOR, Walworth-MOR, Waukesha-WIS, Will-MOR, Winnebago-MOR

Lecanora thysanophora R. C. Harris (Gr. *thysanos*, a fringe, tassel + *phoros*, a bearing; from the possession of a white fibrous prothallus that emerges at the margins of the thallus resembling a fringe) This is a lichen of cool, mesophytic forests where we have specimens from *Carya cordiformis*, *C. ovata*, *Fraxinus americana*, *Quercus alba*, *Q. rubra*, and *Ulmus americana*. It is abundant at the Wayne Grove Forest Preserve in northwestern DuPage County. [atranorin, zeorin, usnic acid ± porphyritic acid]

Berrien-MOR, DuPage-MOR, Lake Il-MOR, McHenry-MOR, Porter-MIN,MOR, Walworth-WIS, Winnebago-MOR

Lecanora wisconsinensis H. Magn. (of Wisconsin) Our only record for this lichen locally is on the lower trunk and horizontal root of a small ash growing in rubble.

Berrien-MOR

LECANORACEAE

- A. Exciple not thalloid, without and algal component.
 - Thallus UV+ faint orange [lichexanthone] **Phyrrhospora**
 - Thallus UV-, without lichexanthone **Lecidella**
- A. Exciple thalloid, with algae an algal component.
 - B. Thallus placodioid, with lobed margins **Protoparmeliopsis**
 - B. Thallus not placodioid, without lobed margins.
 - C. Apothecia adnate, the discs flesh-colored, some of them 2 mm or more across; thallus saxicolous, of scattered to aggregated, smooth, convex areoles **Rhizoplaca**
 - C. Apothecia and thalli various, but not as above.
 - Thallus absent or scarcely evident near the apothecium **Myriolecis**
 - Thallus thick or thin but generally evident **Lecanora**

LECANOGRAPHACEAE

- A. Spores 4-6 septate, less than 40 μ m long **Alyxoria**
- A. Spores more than 7-septate, more than 40 μ m long **Zwckhia**

LECIDEA Ach. LECIDEACEAE [Photobiont: *Trebouxia*-like. Gr. *likos*, dish; the Latinized diminutive, an allusion to the small dish-like apothecia. Spores 8, hyaline, simple; axis of ascus apex strongly amyloid, *Porpidia*-type]

Lecidea plebeja Nyl. (*L. plebeius*, one among the common people, Nylander's allusion

abstruse—as is often the case) Yet unknown from the Southern Lake Michigan region, this species has been recorded regularly in districts ambient to the region. Elsewhere it grows on fallen logs and stumps of *Pinus* and *Juniperus* species. The thallus is a thick, areolate crust, the ascoma a nigrescent hypothecium and capitate paraphyses; it is unlikely that this species will remain in *Lecidea*.

LECIDEACEAE

- A. Thallus on mosses over rock **Bryobilimbia**
 A. Thallus not on mosses, usually saxicolous or corticolous **Lecidea**

LECIDELLA Körb. LECANORACEAE [Photobiont: *Chlorella*-like. *Lecidea* + *-ella*, diminutive; evidently appears like a little *Lecidea*. Spores 8, hyaline, simple; axis of ascus apex not amyloid, *Lecanora*-type]

1. Thallus corticolous L. EUPHOREA
 1. Thallus saxicolous L. STIGMATEA

Lecidella euphorea (Flörke) Hertel (Gr. *euphoros*, healthy; perhaps from the relatively large, tumescent apothecia, appearing as though quite healthy) Our only record for this species from two Willey specimens (#47 & #51, ILL, as *Lecidea enteroleuca*), one collected on poplar bark, the other on sumac, both at Algonquin, Illinois. This species is characterized by spores mostly 10–14 × 6 μm, a dark blue green epithecium, yellowish brown hypothecium, and slender, branched, scarcely dilated paraphyses. The cortex is K+ yellow, KC+yellow, and C+orange. We are including here a similar species, *L. elaeochroma* (Ach.) M. Choisy, which has been reported from districts just north of our region. [atranorin, isoarthothelin, thiophanic acid, 5,7-di chloro-3-O-methylnorlichexanthone].

McHenry-ILL

Lecidella stigmata (Ach.) Hertel & Leuckert (Gr. *stigma*, a mark made by a pointed instrument, dot, a Latinized plural alluding to the numerous “dots” or apothecia) Our only record for this species is one collected in on a sandstone outcrop in LaSalle County. The cortex is K+yellow, C+yellow, KC+ yellowish red. [atranorin, chloroatranorin, hopane-6a,22diol, lichexanthone]

LaSalle-MOR

LEIMONIS R. C. Harris PILOCARPACEAE [Photobiont: Chlorococcoid. Gr. *Leimon*, Hesiod’s word for field in the Poem, Theogony, in which he describes the genealogy of the gods, the allusion here in reference to the common occurrence of this lichen in open areas, especially old fields often in early stages of succession. Spores 8, hyaline, simple; apex of ascus strongly amyloid]

Leimonis erratica (Körb) R. C. Harris & Lendemer (L. *erraticus*, wandering to and fro; perhaps from its frequent occurrence on glacial erratics) = *Micarea erratica* (Körb) Hertel,

Rambold & Pietschmann. Our only record for this species is an old field near Portage. Generally, the apothecia appear to have the tincture of blue-black near the rim with the epihymenium showing a pale brown.

Kalamazoo-MSC

LEMPHOLEMMA Körber LICHINACEAE [Photobiont: *Nostoc*. Gr. *lemphos*, putrescent carcasses + *lemma*, that which is peeled off, rind; probably an allusion to its appearance as small crusts of rotting rind. Spores hyaline, simple, subglomose]

Lempholemma cladodes (Tuck.) Zahlbr. (Gr. *kladion*, a small branch; from its resemblance to a small *Cladonia*) We have one record from a dry, sandy prairie, about 15 cm off of a limestone trail and another from the soil between cracks on a massive dolomitic exposure.

DuPage-MOR, Will-MOR

LEPRARIA Ach. STEREOCAULACEAE [*Trebouxia* and *Stichococcus*. Gr. *lepra*, leprosy + *-arius*, like or connected with; from the scurfy appearance of the thalli. Spores not seen]

1. Divaricatic acid present; thallus bluish gray; thallus UV+ white L. CRYOPHILA
1. Divaricatic acid absent: thallus bluish gray or not; thallus UV-.
 2. Alectorialic acid present.
 - Thallus with placodioid margins, the granules ecorticate L. EBURNEA
 - Thallus without placodioid margins, the granules largely corticate L. NEGLECTA
 2. Alectorialic acid absent.
 3. Thallus with stictic acid, thick, typically pale greenish gray L. FINKII
 3. Thallus without stictic acid, thick or thin, bluish gray.
 4. Thallus with distinct tinctures of yellow; zeorin absent L. VOUAUXII
 4. Thallus without yellowish tinctures; zeorin present.
 - Thallus margins placodioid, the granules with rhizohyphae evident on the surfaces
 - L. HARRISIANA
 - Thallus margins not placodioid, the granules without rhizohyphae L. CAESIELLA

Lepraria caesiella R. C. Harris (*L. caesius*, pale blue + *ella*, small) This species generally includes many local reports referred to as sp. #1 based upon MOR specimens. Most of our specimens are from *Quercus* species, but it is also known from the bases of *Acer saccharum* and *Fraxinus americana*. Rhizohyphae absent. [zeorin, atranorin, ± pallidic acid]

Berrien-MOR, Cook-MOR, Iroquois-MOR, Kendall-MOR, LaSalle-MOR, Lake IN-MOR, Newton-MOR, Will-MOR

Lepraria cryophila Lendemer (Gr. *cryos*, frost + *phila*, loving) Many of our specimens equate to name *L. incana* as used by McKnight, Wilhelm & Whiteside (1987). Most of our specimens are from the bases of *Quercus*; many others are from a sandstone exposures. Most local reports of "*L. incana*" are referable here. Rhizohyphae abundant. [divaricatic acid, nordivaricatic acid]

Boone-MOR, Cook-MOR, Jasper-MOR, LaSalle-MOR, Lee-MOR, McHenry-MOR

Lepraria eburnea J. R. Laundon (*L. eburneus*, the color of ivory) Our only record is from a partly shaded sandstone bluff face at Magnolia Bluff County Park. Rhizohyphae uncommon. [alectorialic acid, \pm barbatolic acid, \pm protocetraric acid]

Rock-WIS

Lepraria finkii (B. De Lesd.) R. C. Harris (in honor of the prominent American lichenologist, Bruce Fink, 1861-1927) = *L. lobificans* Nyl. Older reports of *Pannaria lanuginosa* Ach. inevitably turn out to be some species of *Lepraria*, and specimens so named from this region usually are *L. finkii*. Half of our material is from the bases of *Quercus* in partly shaded to fully shaded areas. Other corticolous substrates include *Tilia americana*, *Thuja occidentalis*, *Acer saccharinum*, and *Tsuga canadensis*. It also grows on shaded dolomite and on cliff faces, as well as on fallen logs, on soil, or among mosses in moist humid areas. Rhizohyphae usually present. [stictic acid, constictic acid, zeorin, atranorin]

Berrien-MOR, Cook-MOR, DeKalb-MOR, DuPage-MOR, Grundy-MOR, Kane-MOR, Kankakee-MOR, Kendall-MOR, Lake II-MOR, Lake In-MOR, LaPorte-MOR, McHenry-MOR, Milwaukee-WIS, Porter-MOR, Pulaski-MOR, Racine-MOR, Rock-WIS, Walworth-MOR, Will-MOR

Lepraria harrisiana Lendemer (in honor of the foremost American botanist, Richard Clinton Harris, 1939- , peerless authority on the pyrenocarpous fungi) This species generally includes many local reports referred to as sp. #1 based upon MOR specimens. Most of our specimens are from *Quercus* species, but it is also known from the base of *Prunus serotina*. Rhizohyphae absent. [zeorin, atranorin, pallidic acid]

Cook-MOR, DuPage-MOR, Jasper-MOR, Kane-MOR, Kenosha-MOR, Lake II-MOR, LaPorte-MIN,MOR, LaSalle-MOR, Newton-MOR, Porter-MOR, Walworth-MOR, Will-MOR, Winnebago-MOR

Lepraria neglecta (Nyl.) Lettau (*L. neglectus*, neglected, not chosen; perhaps from its nondescript appearance) Our only records for this species are from exposed sandstone in our western sector. Rhizohyphae absent. [alectorialic acid]

Lee-MOR, Ogle-MOR

Lepraria vouauxii (Hue) R. C. Harris (In honor of the French mycologist, Father Leo Vouaux, 1870-1914.) Our only record for this species is from shaded sandstone outcrops at Castle Rock State Park. [pannaric acid 6 methylester, oxypannaric acid 6 methylester, \pm atranorin, \pm roccellic/angardianic acid]

Ogle-MOR

LEPROPLACA (Nyl.) Hue TELOSCHISTACEAE [*Trebouxia*. Gr. *lepra*, leprosy + *plax*, a flat round plate, dish; from the scurfy thalli with rounded margins. Photobiont: mostly "*Pseudotrebouxia*." anthraquinones, particularly parietin]

1. Thallus wholly leprose; apothecia absent L. CHRYSODETA
1. Thallus corticate, effigurate, with discrete soralia; apothecia present L. CIRROCHROA

Leproplaca chrysodeta (Räsänen) J. R. Laundon There is a specimen of what appears to be this species from a dolomitic cliff face along Cedarville Bluff in Stephenson County. It contains a substance that is 7, 7, 7 in TLC; the thallus is composed of yellowish gray, pulverulent,

spherical granules.

Leptoplaca cirrochroa (Ach.) Th. Fr. (*L. cirrhus*, yellowish, tawny orange + Gr. *chroa*, superficial color; perhaps from yellow thallus lobes) Our only record for this species is from dry limestone exposures in our western sector.

LaSalle-MOR, Winnebago-MOR

LEPTOGIUM (Ach.) Gray COLLEMATACEAE [Photobiont: *Nostoc*. Gr. *leptos*, peeled, slender, thin, weak + *ge*, the earth, land; perhaps from the thallus lobes that appear as thin shavings on the ground in terricolous species. Spores 8, hyaline, septate to muriform]

- 1. Lower surface of lobes whitish tomentose L. BURNETIAE
- 1. Lower surface without tomentum.
 - 2. Thallus without isidia L. CORTICOLA
 - 2. Thallus isidiate.
 - Upper surface of thallus strongly wrinkled, the lobes becoming fused L. MILLIGRANUM
 - Upper surface of thallus smooth, the lobes distinct L. CYANESCENS

Leptogium burnetiae Dodge (after ?) = *L. myochroum* of Calkins, a name that currently is synonymous with *L. saturninum* (Dicks.) Nyl., which grows farther north. Sierk (1964) mapped *L. hirsutum* Sierk from extreme northwestern Indiana, but cited no specimens. It is just as likely that the lichen Calkins had in hand was *Leptogium hirsutum* Sierk, which differs from *L. burnetiae* in that its isidia are more decidedly granular than the cylindrical, often branched, isidia seen in the latter. Calkins (1896) reported the habitat as the same as for *L. millegranum*, which see.

Will

Leptogium corticola (Tayl.) Tuck. (*L. cortex*, bark, cork + *colo*, to inhabit; from its habitat on tree bark) = *L. pulchellum* of Calkins (1896), who reported that it grew on calcareous rocks in Will County and on elms in Cook County, and noted that it was "better developed" farther south in Illinois.

Cook, LaSalle-ILL, Will

Leptogium cyanescens (Rabenh.) Körb. (Gr. *kyaneos*, dark blue + *-escens*, meaning beginning to, slightly; from the not quite dark blue thallus) Uncommon, our only specimens of this species are from shaded dolomitic cliffs and from shaded base-rich boulders in streams. Calkins (1896) did not mention it.

Cook-MOR, DuPage-MOR, Kankakee-MOR, LaSalle-MOR, Livingston-MOR, Will-MOR, Winnebago-MOR

Leptogium milligranum Sierk (*L. mille*, a thousand + *granum*, a seed; from the numerous seedlike isidia) We are referring Calkins's (1896) report of *L. chloromelum* here inasmuch as *L. chloromelum* (Ach.) Nyl. is now considered to be confined to the outer coastal plain of the southeastern United States. His mention of apothecia is disturbing, however, inasmuch as fruiting structures are rare on *L. milligranum*. Calkins described his plant as: "*Thallus small to large; orbiculate, rigid; plumbeo-virescent, lobate, plicate, rugose; apothecia medium size, lecanorine, plane, rufous, the thalline margin granulate. Spores ovoid . . . On elms . . . The varieties are found further south.*"

Cook, Will

LEPTORHAPHIS Körb. NAETROCYMBACEAE [Photobiont: unknown, though ascomata sometimes associated with *Trentepohlia*. Gr. *leptos*, peeled, slender, thin, weak + *rhaphis*, a needle, pin; from the acicular spores. Spores 4–8, hyaline, 3–7 septate]

1. Spores with pointed ends; restricted to *Betula* L. EPIDERMIDIS
1. Spores with blunt ends; restricted to *Populus* L. ATOMARIA

Leptorhaphis atomaria (Ach.) Szatala (L. *atomarius*, covered with atoms or spots; from the bespeckled appearance caused by the numerous black perithecia on the white thallus) One record for this species is from *Populus deltoides* along the edge of a cultivated field; the other is from a planted specimen of *Populus maximowiczii* at the Morton Arboretum.

DuPage-MOR, Kane-MOR

Leptorhaphis epidermidis (Ach.) Th. Fr. (Gr. *epi*, on, over + *derma*, skin, leather; probably in reference to its inhabitation of the outer papery bark of birch) = *Sagedia oxyspora* of Calkins, who reported this species from *Betula papyrifera* along the lake shore near Glencoe; he noted further that the "few native birch will soon disappear and with them this species." There are still a couple of trees in the ravine near Fort Sheridan, and we have searched them in vain for fertile pyrenocarps.

Cook-CACS, FH

LETHARIA (Th. Fr.) Zahlbr. PARMELIACEAE [Photobiont: *Trebouxia*. L. *lethale*, lethal, deadly; presumably after its effect on foxes, as implied in the name of the type species, *Letharia vulpina*. Spores 8, simple, hyaline, ellipsoid]

Letharia columbiana (Nutt.) J. W. Thomson (L. of Columbia) Our only record for this species is based upon a collection (Higginson *s.n.*, F) made in "Chicago, Illinois" in 1894. One cannot help but wonder if there was a label mix up somewhere along the line. The herbarium of Storror Higginson included specimens from the Pacific Northwest at the Chicago Natural History Museum. [vulpinic acid]

Cook-F

LICHENOTHELIA D. Hawksw. LICHENOTHELIACEAE [Photobiont unknown. Gr. *leichen*, a lichen + *thele*, nipple; a peritheciate lichen. Spores 1–3 septate to submuriform]

Lichenothelia scopularia (Nyl.) D. Hawksw. (L. *scopulus*, rugged rock or cliff + *-aria*, of or pertaining to) Our only collections of this species are from a granitic boulders, commonly shaded. *Lichenothelia* remains a poorly understood genus, largely because so many specimens, including all of ours are sterile. The thallus is composed of compacted, pseudoparenchymatous

brown cells 5–9 μm in diameter. Locally we have seen only green algae associated with it. Hawksworth (1981) discusses two species: *L. metzleri* (Lahm) D. Hawksw., with mainly 1-septate spores 21–24 μm long and 9–11 μm wide, and *L. scopularia* (Nyl.) D. Hawksworth, with mainly 3-septate spores 14–18 μm long and mostly less than 10 μm wide. The former is unknown from the eastern United States; there are several others in the North America, evidently restricted to California.

Cook-MOR, DuPage-MOR, Kane-MOR, Livingston-MOR, Will-MOR, McHenry-MOR

LICHINACEAE

- A. Thallus squamulose or fruticose.
 - B. Thallus brown, squamulose; photobiont *Nostoc* **Heppia**
 - B. Thallus not brown, more or less fruticose; photobiont not *Nostoc*.
 - Thallus fruticose, the lobes long and strap-like; usually pruinose; photobiont *Chroococcus* . **Thyrea**
 - Thallus more or less umbilicate, the lobes about as long as broad; usually epruinose; photobiont *Xanthocapsa* **Lichinella**
- A. Thallus crustose
 - C. Thallus sterile, thin, the photobiont unknown **Lichenothelia**
 - C. Thallus fertile; photobiont evident.
 - D. Paraphyses absent; photobiont with a reddish, K+purple sheath; photobiont cyanobacterial, with a reddish sheath **Cryptothele**
 - D. Paraphyses present, branches; photobiont with yellowish, K- sheaths; photobiont *Chroococcidiopsis*.
 - Proper exciple rather evident between the thallus and the hymenium **Pyrenocarpon**
 - Proper exciple absent or inconspicuous **PSOROTICHIA**

LICHINELLA Nyl. LICHINACEAE [Photobiont: *Xanthoeocapsa*. L. *Lichina*, a genus largely of tidewater rocks, considered by Agardh to be a lichenose alga, + *-ella*, diminutive; evocative of a little *Lichina*. Spores 8, hyaline, simple]

- 1. Lobes flat, to 2.5 mm broad, the older one granulose on the surface; more or less fruticose . . . L. NIGRITELLA
- 1. Lobes notably convex, the larger more than 2.5 mm broad, not granulose on the surface; umbilicate
..... L. CRIBELLIFERA

Lichinella cribellifera Nyl, P. P. Morena & Egea (*L. cribellum*, a small sieve + *fero*, to bear; the allusion obscure) = *Gonohymenia cribellifera* Henssen. Our only record for this species is a Calkins specimen from LaSalle County, which was determined by Wetmore.

LaSalle-F,MOR

Lichinella nigritella (Lettau) P. P. Morena & Egea (*L. nigritus*, blackened + *ellus*, diminutive; from the tiny blackened thalli) = *Gonohymenia nigritella* (Lettau) Henssen. Our only specimen is from a shaded, argillaceous, silty dolomitic bluff of the DesPlaines River, south of Darien.

DuPage-MOR

LITHOTHELIUM Müll.Arg. PYRENULACEAE [Photobiont: *Trentepohlia*. Gr. *lithos*, stone + *thele*, a nipple; probably from the hard, carbonaceous perithecia. Spores 8, hyaline to brown, 3–7 septate]

1. Spores colorless, 3-septate; on *Acer saccharum* L. HYALOSPORA
 1. Spores dark brown, 7-septate; usually on *Fraxinus* L. SEPTEMSEPTATA

Lithothelium hyalosporum (Nyl.) Aptroot (Gr. *hyaleos*, glassy + *spora*, seed; from the colorless spores) = *Plagiocarpa hyalospora* (Nyl.) R. C. Harris. Harris (1973) cited a specimen he collected at Warren Woods, presumably in beech-maple woods. *Lithothelium phaeospora* R. C. Harris) Aptroot, with only 4-celled, dark brown spores, is known from districts all around the Southern Lake Michigan Region.

Berrien-MSC, Cook-MICH

Lithothelium septemseptatum (R. C. Harris) Aptroot (L. *septem*, seven + *saeptum*, wall, hedge, partition + *-atus*, adjective ending; from the 7-septate spores) = *Plagiocarpa septemseptata* R. C. Harris. Harris (1973) cited a specimen he collected at Warren Woods, presumably in beech-maple woods; his Cass County specimen is from "maple." See also note under *Lithothelium hyalosporum*.

Berrien-MSC, Cass-MSC,

LOBARIA Schreb. LOBARIACEAE [Photobiont: *Trebouxia* or *Myrmecia*, or with *Nostoc* or *Scytonema*. L. *lobus*, a lobe + *-arius*, belong to; from the notably lobed thalli. Spores 8, hyaline to brownish, 1–3 septate)

1. Upper surface of lobes conspicuously foveolate-ridged; apothecia marginal; medulla C- L. PULMONARIA
 1. Upper surface of lobes smooth; apothecia laminal; medulla C+ pink L. QUERCIZANS

Lobaria pulmonaria (L.) Hoffm. (L. *pulmo*, lung + *aria*, like or connected with; evocative of the alveolate reticulation of the lobes. Our only record for this species locally is from an historic collection made in Milwaukee County (Lapham #50, NY).

Milwaukee-NY

Lobaria quercizans Michx. (*Quercus* + L. *-izans*, resembling; from its supposed similarity to oak leaves) = *Sticta quercizans* Michx. Calkins & Huett (1898) cited this species from an oak tree at Deer Park in La Salle County. There is an old record from Ottawa County [gyrophoric acid, atranorin]

LaSalle, Ottawa-F

LOBARIACEAE

One local genus **Lobaria**

MELANELIXIA O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch
 PARMELIACEAE [Photobiont: *Trebouxia*. Gr. *melaina*, black, or more literally a root of the genus *Melanelia* + Elix, in honor of the Australian lichenologist, John Alan Elix, 1941- , student of the Parmeliaceae and secondary metabolites)
 Spores 8, hyaline, simple]

Melanelixia subaurifera (Nyl.) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. &

Lumbsch (L. *sub-* below, slightly, imperfectly, nearly + *auris*, ear + *fero*, to bear; from its earlike appearance) = *Parmelia subaurifera* Nyl. = *Melanelia subaurifera* (Nyl.) Essl. There is a McHenry County specimen at ILL (Willey #48) named *Parmelia olivacea*; it is referable here. It is probable that Berry's (1941) report of the same species from Racine County is based upon a misidentification of *Melanelixia subaurifera*, particularly since he did not report this more common subsorediate species from the Southern Lake Michigan region. This lichen occurs on a wide variety of corticolous substrates locally including *Acer saccharinum*, *Carya cordiformis*, *Cephalanthus occidentalis*, *Fraxinus americana*, *Gleditsia triacanthos*, *Quercus alba*, *Quercus macrocarpa*, *Prunus americana*, *Rhus typhina*, and *Salix*. [lecanoric acid, subauriferin]

Allegan-MS, Cook-MOR, DuPage-MOR, Kenosha-MOR, Lake II-MOR, Lake In-MOR, LaPorte-MOR, LaSalle-F, McHenry-MOR, Ogle-MOR, Ottawa-MS, Porter-MIN, Racine-MOR, St. Joseph In-MOR, Walworth-MOR, Waukesha-WIS, Will-MOR, Winnebago-MOR

MELANOHALEA O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch
PARMELIACEAE [Photobiont: *Trebouxia*. Gr. *melaina*, black, or more literally a root of the genus *Melanelia* + Hale, in honor of the American lichenologist and educator, Mason Ellsworth Hale, 1929-1990, prolific student of the Parmeliaceae and creative observer of secondary metabolites) Spores 8, hyaline, simple]

Melanohalea septentrionalis (Lynge) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch (L. *septentrionalis*, of the north region) = *Parmelia septentrionalis* Lynge; *Melanelia septentrionalis* (Lynge) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch. Our only record for this species is from the bark of *Carya ovata*.

Waukesha-WIS

MICAREA Fr. **PILOCARPACEAE** [Photobiont: green, often of paired cells. L. *mica*, a crumb, morsel + *area*, a space; perhaps from the scattered appearance of the tiny apothecia over the area of the thallus. Spores 8, hyaline, simple or septate; apex of ascus amyloid, particularly the axial tube]

1. Spores 3-septate; thallus C+ red M. PELIOCARPA
2. Spores 0-1 septate; thallus C- M. PRASINA

Micarea peliocarpa (Anzi) Coppins & R. Sant. (Gr. *pelios*, dark or olive gray + *karpos*, fruit; from the gray apothecia) Yet unknown from the Southern Lake Michigan region, this species is recorded from districts ambient to the region, where it grows on siliceous rocks and on mosses over siliceous rocks. The hypothecium is hyaline and the hamathecium reacts C+red. [gyrophoric acid]

Micarea prasina Fr. (L. *prasinus*, leek green; from the color of the thallus) Our records are all from weathered lignin.

Berrien-MOR, DuPage-MOR, Porter-MIN

MICROPELTIDACEAE

One local genus **Mycoglaena**

MONOBLASTIACEAE

- A. Ascospores strictly uniseriate in the ascus, more than 25 μm long **Acrocordia**
 A. Ascospores often not strictly uniseriate in the ascus, less than 25 μm long **Anisomeridium**

MYCOCALICIACEAE

One local genus **Phaeocalicium**

MYCOGLAENA Höhnel MICROPELTIDACEAE [Photobiont: absent. Gr. *mykes*, a fungus + *glenos*, the eyeball; probably from the perithecia, which have the appearance of a black pupil surrounded by a blue green iris, after the manner of an eye. Spores 8, 3–5 septate, 1-muriform]

Mycoglaena meridionalis (Zahlbr.) Szatala (*L. meridionalis*, southern, or of a meridian; probably from the longitudinal septum, which distinguishes it from other merely septate species, though it also has a generally more southern distribution) Known from districts all around the Southern Lake Michigan region, our only local specimen is from DuPage County, on *Prunus serotina*. Most of our specimens are from smooth-barked trees, commonly *Gleditsia triacanthos*.

DuPage-MOR

MYCOPORACEAE

One local genus **Mycoporum**

MYCOPORUM Nyl. MYCOPORACEAE [Photobiont: *Trentepohlia*. Gr. *mykes*, a fungus + *poros*, callus; from the calluslike clusters of fungal ascomata. Spores large, 8, brown, muriform]

Mycoporum compositum (A. Massal.) R. C. Harris (*L. compositus*, put together, united; from the aggregated ascomata) = *M. pycnocarpum* Nyl. Harris (1973) mapped this species from just south and east of the Southern Lake Michigan region, collected most commonly on *Acer rubrum*.

MYELOCHROA (Asah.) Elix & Hale PARMELIACEAE [Photobiont: *Trebouxia*. Gr. *myelos*, marrow + *chroa*, superficial color; from the yellow-tinted medulla. Spores 8, hyaline, simple]

1. Thallus isidiate, saxicolous **M. OBSESSA**
 1. Thallus not isidiate, corticolous
 Thallus soresidiate; apothecia very rare **M. AURULENTA**

Thallus esorediate; apothecia common M. GALBINA

Myelochroa aurulenta (Tuck.) Elix & Hale (*L. aurum*, gold + *oulos*, woolly, curly + *entos*, within, inside; from the yellow medulla) = *Parmelina aurulenta* (Tuck.) Hale. Hale (1958) mapped this species from extreme southeastern Wisconsin as *Parmelia aurulenta* Tuck., but he does not cite specimens. Occasional, this species grows on a variety of open-grown trees or the upper trunks of forest-grown trees; we also have a specimen from shaded wooden roof shingles. [atranorin, ± zeorin]

Berrien-MOR, Cass-MSC, Cook-MOR, DeKalb-MOR, DuPage-MOR, Jasper-MOR, Jefferson-WIS, Kane-MOR, Kankakee-MOR, Kendall-MOR, Kenosha-MOR, Lake II-MOR, LaSalle-MOR, Lee-MOR, Livingston-MOR, Newton-MOR, Rock-WIS, Starke-US, Walworth-MOR, Will-MOR, Winnebago-MOR

Myelochroa galbina (Ach.) Elix & Hale (*L. galbinus*, yellowish; from the color of the medulla) = *Parmelia tiliacea*; *P. tiliacea* var. *sulphurosa* of Calkins; *Parmelina galbina* (Ach.) Hale. Calkins's report may be referable to *Myelochroa aurulenta*, which species was not treated by Calkins; his text, in fact, implied that apothecia were present. Berry (1941) restricted the var. *sulphurosa* to Louisiana and Florida, though we now have specimens from as far north as central Illinois, and there is a specimen, collected by Willey in 1883, at ILL (called *Parmelia tiliacea*) from McHenry County. The Rock County record is from the bark of *Prunus serotina*. The Lake County, Illinois specimen is from an oak at Lake Bluff. [galbinic acid, atranorin, zeorin]

Cook-CACS,NY, Lake II-F, McHenry-ILL, Rock-WIS

Myelochroa obsessa (Ach.) Elix & Hale (*L.*, *obsessus*, remain, grip firmly; perhaps from its rather tight adherence to the substrate.) = *Parmelina obsessa* (Ach.) Hale. Yet unknown locally, it grows as nearby as Iowa County, Wisconsin, on shaded St. Peters Sandstone. There is a specimen, so named, from Berrien County, Michigan (ASU 535086), but it unlikely to be this species; the substrate is given as *Quercus rubra*. [secalonic and galbinic acids]

MYRIOLECIS Clements LECANORACEAE [Photobiont: *Trebouxia*. Gr. *myrio-*, countless + *lekis*, dish, pot, or urn, from the numerous scattered apothecia over the substrate. Thallus not or only scarcely evident; spores 8, hyaline, simple]

1. Thallus saxicolous
 - Apothecia and/or the margins pruinose M. CRENULATA
 - Apothecia and margins without pruina M. DISPERSA
1. Thallus not saxicolous
 - Apothecia polysporous M. SAMBUCCI
 - Apothecia 8-spores M. HAGENII

Myriolecis crenulata (Hook.) Sliwa, Zhao Xin, & Lumbsch (*L. crenulata*, having small rounded teeth; an allusion to the somewhat cracked and segmented apothecial margin.) = *Lecanora crenulata* Hook. Our only record is from a shaded cliff face near Lemont.

Cook-MOR

Myriolecis dispersa (Pers.) Sliwa, Zhao Xin & Lumbsch (*L. dispersus*, scattered; from the

numerous, but often remote apothecia) = *Lecanora dispersa* (Pers.) Sommerf. This species is the common associate of *Endocarpon petrolepideum*, *Xanthocarpia crenulatella* and *X. feracissima* on limestone, flagstone, and weathered concrete; it is rare on siliceous rock. Calkins included this species with what called *L. hagenii*. [β -sitosterol]

Berrien-MOR, Boone-MOR, Cook-MOR, DeKalb-MOR, DuPage-MOR, Ford-MOR, Grundy-MOR, Jasper-MOR, Kane-MOR, Kankakee-MOR, Kendall-MOR, Kenosha-MOR, LaGrange-MOR, Lake II-MOR, Lake In-MOR, LaPorte-MIN, LaSalle-MOR, Lee-MOR, Livingston-MOR, McHenry-MOR, Milwaukee-MOR, Newton-MOR, Ogle-MOR, Porter-MIN,MOR, Racine-MOR, St. Joseph IN-MOR, Starke-MOR, Walworth-MOR, Will-MOR, Winnebago-MOR

Myriolecis hagenii (Ach.) Sliwa, Zhao Xin & Lumbsch (after Mark Gottfried Hagen, 1749–1829, Prussian botanist and pharmacist) = *Lecanora hagenii* (Ach.) Ach. Rather frequent on weathered lignin. Previous local reports of *Lecanora* are referable here.

Cook-MOR, DuPage-MOR, Grundy-MOR, Lake II-MOR, Lake In-MIN, LaPorte-MOR, Porter-INDU,MIN, Racine-MOR, Starke-MOR, Will-MOR

Myriolecis sambuci (Pers.) Clements (L. Of the genus *Sambucus*; from its supposed inhabitation on elderberry) = *Lecanora sambuci* (Pers.) Nul. *L. hagenii* var. *sambuci* of Calkins (1896), who listed this species as rare on elms and poplars in Will County. The Allegan County record is from *Populus*. The only specimens we have seen are from Illinois Beach State Park, all on *Populus tremuloides*. The [no substances]

Allegan-MSC, Lake II-MOR, Will

NAETROCYMBACEAE

- A. Ascospores nearly or quite as long as the ascus, filiform **Leptorhaphis**
 A. Ascospores notably shorter than the ascus, oblong **Naetocymbe**

NAETROCYMBE Körber NAETROCYMBACEAE [Photobiont: absent. (Gr. *naetr-* ? + Gr. = *cymba*, boat or vessel. Spores hyaline, mostly 2-celled]

Naetocymbe punctiformis (Pers.) R. C. Harris (L. *punctum*, a prick, puncture, or dot + *-formis*, denoting taking the shape of; from the appearance of the tiny perithecia as little dots) = *Pyrenula punctiformis* auct; *Arthopyrenia padi* Rabenh; *Santessoniolichen punctiforme* (Pers.) Tomas & Cif. Our only record of this species is a specimen (Calkins #211, NY), originally named *Pyrenula analepta*, from Elgin, Illinois, where it was collected "on shrubs."

Kane-NY

OCHROLECHIA A. Massal. OCHROLECHACEAE [Photobiont: Chlorococcoid. Gr. *ochros*, pale, sallow + *lechos*, couch, bed, nest; probably from the cushionlike apothecia. Spores 8, very large, hyaline, simple]

Ochrolechia arborea (Kreyer) Almb. (L. *arboreus*, of trees; from its habitat) The only Southern Lake Michigan region records for this species were collected on open-grown specimens of *Cornus racemosa*, *Populus tremuloides*, *Prunus serotina*, *Quercus macrocarpa*, *Q. velutina*, *Rhus typhina*, and *Ulmus americana*. the former in a dry, gravel-filled glacial crevice near

Harmony Hills, the other in savanna at Illinois Beach State Park. One can infer from the distribution map in Brodo (1991), that it is frequent just north of the Southern Lake Michigan region, with a few disjunct records in the southern Appalachians. We also have a few records from southern Illinois. [lichexanthone, lecanoric acid, gyrophoric acid]

Allegan-MSC, DuPage-MOR, Lake II-MOR, Walworth-MOR

OCHROLECHIACEAE

One local genus **Ochrolechia**

OPEGRAPHA Ach. OPEGRAPHIDACEAE [Photobiont: *Trentepohlia*. Gr. *ope*, a hole, chink, opening + *graphis*, of line drawings; from the partly open apothecia, rather than closed as in *Graphis*, which see. Spores mostly 8, hyaline to brown, 3–several septate, narrowly fusiform to subacicular]

Opegrapha vulgata Ach. (*L. vulgatus*, common; from a local ubiquity) There is a Calkins specimen of this corticolous species from La Salle County at the New York Botanical Garden.

LaSalle-MOR

OPEGRAPHIDACEAE

One local genus **Opegrapha**

OPHIOPARMACEAE

One local genus **Hypocenomyce**

PARMELIA Ach. PARMELIACEAE [Photobiont: *Trebouxia*. L. *parma*, a small round shield or buckler + *-eilea*, circumclude, close on every side; perhaps from the notably lecanorine rim that surrounds the disc. Spores 8, hyaline, simple]

- 1. Thallus sorediate P. SULCATA
- 1. Thallus isidiate.
 - Rhizines squarrose branched P. SQUARROSA
 - Rhizines unbranched or merely forked P. SAXATILIS

Parmelia saxatilis (L.) Acharius (*L. saxatilis*, of rocks) Calkins (1896) reported this species from "... trees in Cook County near Elgin and on recent sandstones and boulders at Lemont." *Parmelia squarrosa* had not been named at that time, so the corticolous report may be referable to the same. There is, however, a specimen at ILL (Calkins LE-325) from Cook County called *Parmelia saxatilis* that is actually *P. sulcata*. His report from "sandstones and boulders" may represent *P. saxatilis*, since it is prevailingly a saxicolous species, *P. squarrosa* known rarely from rocky substrates. Hinds (1998) maps no specimens from the southern Lake Michigan regiona. [salazinic acid, atranorin]

Cook-ILL

Parmelia squarrosa Hale (*L. squarrosus*, rough with stiff scales, bracts, leaves, or processes; from rough appearance of the short-branched rhizines) Our only record for which we have

seen specimens is from bark at Elson's Hill Forest Preserve and at Warren Dunes State Park. Hinds (1998) maps a record from northwestern Indiana. [salazinic acid, atranorin]

Berrien-MSC, DuPage-MOR

Parmelia sulcata Tayl. (*L. sulcus*, furrow, groove + *-atus*, provided with; from the lined markings on the upper cortex) = *Parmelia saxatilis* var. *sulcata* of Calkins. A common substrate, especially in our Indiana counties, is *Quercus velutina*, but it is frequent on a wide variety of trees, including cultivated specimens in suburbs. In 1991 at the Morton Arboretum, a blue-gray gnatcatcher built its nest in *Syringa reticulata* exclusively of *Parmelia sulcata* fragments — with the upper cortex comprising the outer surface. *Punctelia rudecta* is a similar foliose species common throughout the region, but it is found low on the trunks of large oaks where gnatcatchers are seldom seen. *Parmelia sulcata* grows more often on the upper surfaces of branches where gnatcatchers are more likely to forage. [salazinic acid, atranorin]

Allegan-MSC, Berrien-MOR, Cook-ILL,MOR-NY, DeKalb-MOR, DuPage-MOR, Ford-MOR, Iroquois-MOR, Jasper-MOR, Kalamazoo-MSC, Kane-MOR, Kankakee-MOR, Kendall-MOR, Kenosha-MOR, LaGrange-MOR, Lake II-MOR, Lake In-MOR, LaPorte-MOR, LaSalle-ILL,MOR, Lee-MOR, McHenry-MOR,NY, Milwaukee-MOR, Newton-MOR, Ogle-MOR, Ottawa-MSC, Porter-INDU,MOR, Racine-MOR, Rock-WIS, St. Joseph IN-MOR, Starke-MOR, Walworth-MOR, Waukesha-WIS, Will-MOR, Winnebago-MOR

PARMELIACEAE

- A. Thallus fruticose, with erect or pendent branches, generally originating from a single hold-fast.
 - B. Thallus yellow-green.
 - Fibrils evident; branches smoothly terete **Usnea**
 - Fibrils absent; branches irregularly wrinkled **Evernia**
 - B. Thallus brown or bright yellow.
 - C. Thallus bright yellow [See also *Phacopsis*] **Letharia**
 - C. Thallus brown.
 - Thallus branches flattened and involute **Cetraria**
 - Thallus branches terete **Bryoria**
- A. Thallus foliose.
 - D. Thallus with yellowish-green; usnic acid usually present.
 - E. Thallus finely isidiate **Xanthoparmelia**
 - E. Thallus with granular or powdery soredia or pustular isidia
 - F. Medulla C+ red **Flavopunctelia**
 - F. Medulla C-.
 - Lobes less than 2 mm wide, linear **Parmeliopsis**
 - Lobes mostly more than 3 mm wide, rounded **Flavoparmelia**
 - D. Thallus without tinctures of yellow; usnic acid absent.
 - G. Thallus brown or brownish gray (rarely pale gray and umbilicate); cortex K-.
 - H. Lobes erect or suffruticose.
 - Thallus abundantly and conspicuously beset with granular pseudocyphellae **Tuckermanella**
 - Thallus with pseudocyphellae **Tuckermanopsis**
 - H. Lobes appressed.
 - Thallus without isidia or soredia **Melanohalea**
 - Thallus isidiate, many of the isidia breaking down into soredia **Melanelixia**
 - G. Thallus mineral gray, whitish gray, or greenish gray, never umbilicate; cortex K+ yellow or K-.
 - I. Lower cortex white, light tan, or absent.

- Upper cortex K+ pale yellow, commonly with small white pores **Punctelia**
 Cortex K+ deep yellow, without pores **Imshaugia**
- I. Lower cortex brown or black (occasionally pale near the margins).
- J. Medulla K-.
- K. Thallus sorediate
 Thallus lobes inflated, hollow **Hypogymnia**
 Thallus lobes flat, not hollow **Canoparmelia**
- K. Thallus esorediate; lobes solid.
 Medulla KC-; lower cortex with a thick tomentum; lobes appearing inflated ...
 **Anzia**
 Medulla KC+ rose; lobes flat, merely rhizinate **Hypotrachyna**
- J. Medulla K+ yellow or red.
- L. Lobes broad, usually 4 mm or more wide, typically with a rhizine-free zone near the margins; medulla K+ red **Pamotrema**
- L. Lobes narrower; rhizines typically distributed throughout on the lower surface; medulla K+ yellow or red.
- M. Upper cortex without white markings; medulla pale but distinctly yellow near the soralia **Myelochroa**
- M.. Upper cortex reticulate or with distinct white markings, at least toward the lobe tips.
 Upper cortex reticulate-alveolate; medulla K+ deep yellow, stictic acid
 **Crespoa**
 Upper cortex, not reticulate-alveolate, with distinct white markings; medulla K+ yellow to red, salazinic acid **Parmelia**

PARMELIOPSIS (Stizenb.) Nyl. PARMELIACEAE [Photobiont: *Trebouxia*.
Parmelia + Gr. *opsis*, aspect, view, appearance; a segregate of *Parmelia*, which see.
 Spores 8, hyaline, simple]

Parmeliopsis ambigua (Wulfen in Jacq.) Nyl. (*L. ambiguous*, interchangeable, uncertain, doubtful; perhaps from an uncertainty as to its taxonomic position) The only record of this species is Calkins's *Lichenes Exsiccati* #88 at ILL. The specimen label states that it was collected on old fence rails in Cook County. [usnic acid, divaricatic acid]

Cook-ILL

PARMOTREMA A. Massal. PARMELIACEAE [Photobiont: *Trebouxia*. *L. parma*, a small round shield + *trema*, a hole, especially the female pudendum; probably after the perforated apothecia of *Parmotrema perforatum*. Spores 8, hyaline, simple]

1. Thallus with isidia or soredia.
2. Medulla K- P. SUBMARGINALE
2. Medulla K+ red.
 - Lower surface with a broad bare white zone near the margins P. PERFORATUM
 - Lower surface black or brown and mostly rhizinate to the margins P. CETRATUM
1. Thallus with either isidia or soredia.

- 3. Medulla C+ red P. AUSTROSINENSE
- 3. Medulla C-.
 - 4. Thallus esorediate.
 - Medulla K+ yellow P. CRINITUM
 - Medulla K+ yellow turning red P. SUBTINCTORIUM
 - 4. Thallus sorediate.
 - 5. Medulla K+ yellow; stictic acid present P. PERLATUM
 - 5. Medulla K+ yellow turning red; stictic acid absent.
 - 6. Salazinic acid absent; lower cortex with white blotches or zones near the margins; upper cortex without cracks or maculae P. HYPOTROPUM
 - 6. Salazinic acid present; lower cortex brown to black, without white blotches or zones near the margins; upper cortex often reticulate-cracked or maculate.
 - Lower cortex bearing rhizines nearly or quite to the margins P. RETICULATUM
 - Lower cortex nearly or quite free of rhizines near the margins P. MARGARITATUM

Parmotrema austrosinense (Zahlbr.) Hale (L. *auster*, south, the wind out of the south + *Sinae*, the Chinese; from southern Asia) Our only local record for this species is on an open-grown *Fraxinus americana* on high dunes at Grand Marais, where it is much disjunct from its otherwise Appalachian/Ozarks distribution. [lecanoric acid, atranorin]

Berrien-MOR

Parmotrema cetratum (Ach.) Hale (L. *cetra*, a sort of leather shield + *-atus*, an adjective ending; from the form of the thallus) = *Parmelia cetrata* Ach., *R. cetrata* (Ach.) Hale & A. Fletcher. Were it not for the fact that Berry (1941) was a monographer of the genus *Parmelia*, I would be disposed to include this report under the following taxon. We have numerous modern records from Missouri, but none as yet from Illinois. [salazinic acid, atranorin]

Cook, LaSalle-ILL

Parmotrema crinitum (Ach.) M. Choisy (L. *crinitus*, with long hair; from the marginal cilia) = *Parmelia crinita* of Calkins. Most early reports of this species from Illinois are referable either to *Rimelia reticulata* or to *R. cetrata*, but Calkins (1896) described isidia on the Southern Lake Michigan region specimens, and reported this lichen from oaks in Hanover Township and on a detached rock near Lemont; Berry (1941) reports it from Walworth County. See also comments below under *Parmotrema margaritatum*. [stictic acid, atranorin]

Cook, Walworth-WIS

Parmotrema hypotropum (Nyl.) Hale (Gr. *hypo*, under, beneath, less than usual + *tropos*, a turn, turning, direction; probably from the often turned up lobes exposing the under surface) More common farther south, it is rare locally. Our Cook County specimen was found on *Fraxinus* at Cap Sauer's Holding, and the Jasper County specimen is from *Quercus palustris* at the Jasper-Pulaski Wildlife Area. The Will County records are from *Crataegus mollis*, *Gleditsia triacanthos*, and *Prunus serotina*. The DuPage County record is from the upper branches of a cultivated tree of *Pinus strobus*. [norstictic acid, atranorin]

Cook-MOR, DuPage-MOR, Jasper-MOR, Ogle-MOR, Walworth-WIS, Will-MOR

Parmotrema margaritatum (Hue) Hale (Gr. *margarites*, pearl + *-atus*, provided with; probably from the appearance of the smooth white cortex) Our only contemporary records are from McHenry County, at Glacial Park, and from Chiwaukee Prairie in Kenosha County, where

it grew on *Quercus macrocarpa*. There is a Calkins specimen at the New York Botanical Garden, collected at Glencoe and called *Parmelia crinita*. It is esorediate except for one soralium. Had this soralium been overlooked, the specimen may well have been called either *P. despectum* or *P. eurysacum* (Hue) Hale., which are frequent farther south; the former has irregular, eciliate lobe margins, while the latter has rounded, ciliate lobemargins. If the maculae of the cortex are overlooked, *Rimelia reticulata*, which is sorediate, would key here. [salazinic acid, atranorin]

Cook-F,NY, Kenosha-MOR, McHenry-MOR

Parmotrema perforatum (Jacq.) A. Massal. (*L. perforatus*, perforated; from the perforated apothecia) = *Parmelia perforata* of Calkins. Modern records suggest that this species is now confined to districts farther south in Illinois. Calkins (1896) described the plant from the Southern Lake Michigan region and reported it as a common species on "various trees in Cook and Will counties." [norstictic acid, atranorin]

Cook, Will

Parmotrema perlatum (Huds.) M. Choisy (*L. perlatus*, carried, conveyed, presented) Our only record for this species is from Bourbon, Indiana, collected in 1889.

Marshall-WIS

Parmotrema reticulatum (Tayl.) Hale (*L. reticulatus*, made like a net; from the connected cracks in the upper cortex) = *Rimelia reticulata* (Tayl.) Hale & A. Fletcher. Including Calkins's report of *Parmelia perlata*. Calkins (1896) report of *P. cetrata* must also be included here inasmuch as he described his specimens as having "sorediferous" lobes. Very common farther south, we have only a few modern records, all from different corticolous substrates. Calkins considered this species common in the Southern Lake Michigan region a century ago. [salazinic acid, atranorin]

Cook-MOR, DeKalb-MOR, DuPage-MOR, Grundy-MOR, Kane-MOR, LaSalle-ILL, Livingston-MOR, Newton-MOR, Racine-MOR, White-US, Will-MOR, Winnebago-MOR

Parmotrema submarginale (Michx.) DePriest & B. Hale () Our only record for this species is from an old collection (Calkins s.n., F) made in LaSalle County. [atranorin, protocetraric acid]

LaSalle-MOR

Parmotrema subtinctorium (Zahl.) Hale (similar to *P. tinctorium*, *L. tinctorium*, used for dyeing) Our only record is from a decorticate tree branch along Grant Creek near Wilmington. [atranorin, norlobaridone, salazinic acid]

Will-MOR

PELTIGERA Willd. PELTIGERACEAE [Photobiont: *Nostoc* and *Coccomyxa*. *L. pelta*, small shield + *gero*, to carry, bear; apparently from the apothecia borne on the lobe margins. Spores acicular, 8, hyaline to brownish, 3–7 septate]

1. Thallus usually with laminal soralia, less than 3 cm across and typically with strongly ascending lobes P. DIDACTYLA
1. Thallus without soralia, usually broader and with mostly adnate or spreading-ascending lobes.
 2. Photobiont green; appressed, scale-like, cephalodia present and darker than the upper cortex P. LEUCOPHLEBIA
 2. Photobiont blue-green; cephalodia absent.

3. Thallus surfaces with cylindrical, peltate, or flattened isidia.
 - Isidia clavate, globular to cylindrical, or more or less flattened P. EVANSIANA
 - Isidia scalelike or peltate P. LEPIDOPHORA
3. Upper surface without isidia, or with only marginal isidia or lobules.
 4. Upper cortex tomentose, at least near the margins.
 5. Thallus margins, and particularly the cracks in the cortex, lined with isidia or isidioid lobules P. PRAETEXTATA
 5. Thallus margins and cracks entire, without or with only disparate isidia
 - Rhizines simple, not tufted P. PONOJENSIS
 - Rhizines prevailingly tufted, running together P. RUFESCENS
 4. Upper cortex smooth to the margins.
 6. Thallus margins, and particularly the cracks in the cortex, lined with isidia or isidioid lobules P. ELISABETHAE
 6. Thallus margins and cracks entire, without or with only disparate isidia.
 7. Apothecia flat; rhizines in concentric arrays P. HORIZONTALIS
 7. Apothecia erect; rhizines not in concentric arrays.
 - Apothecia black; corticolous at tree bases P. NECKERI
 - Apothecia brown; terricolous P. POLYDACTYLON

Peltigera didactyla (With.) J. R. Laundon (Gr. *di*, two, double + *daktylos*, a finger, toe; apparently from the strongly ascending lobes) = *P. spuria* (Ach.) DC. Rare, this species is confined to stable shaded or moist sands in natural areas.

Allegan-MSC, Jasper-MOR, Kankakee-MOR, Lake Il-MOR, Lake In-MOR, LaSalle-MOR, Ogle-MOR, Porter-MOR, Will-MOR

Peltigera elisabethae Gyeln. (? A chivalrous commemoration of an acquaintance of Gyelnik's) Rare just outside the Southern Lake Michigan region, particularly northward, we have seen no specimens locally. [tenuiorin, triterpenoids, zeorin, ± gyrophoric acid]

Peltigera evansiana Gyeln. (after Alexander William Evans, 1868–1959, American bryologist and lichenologist) Not uncommon just north of our region, our only records are from a Black Oak Savanna at Indiana Dunes State Park, in Porter County, under *Pinus strobus* in LaSalle County, and the base of a tree near Big Bend in Waukesha County.

LaSalle-MOR, Porter-MOR, Waukesha-WIS

Peltigera horizontalis (Gyel.) Trass (L. *horizontalis*, like the horizon, flat) Our only record for this species is based upon a collection (Imshaug 27392, MSC) collected at Warren Dunes State Park and on the sand dunes at Old Baldy near Saugatuck.

Allegan-MSC, Berrien-MSC

Peltigera lepidophora (Vain.) Bitter (Gr. *lepidos*, scale + *phoros*, a bearing; from the flattened, scalelike isidia) Our only records for this species are from a sandy interdunal prairie east of Ogden Dunes and from the dunes at Mount Baldhead near Saugatuck.

Allegan-MSC, Porter-MOR

Peltigera leucophlebia (Nyl.) Gyeln. (Gr. *leukos*, white + *phleb*, of or relating to veins) Our only record for this northern species is from Allegan County, where it grows on soil at Saugatuck. The primary photobiont is *Coccomyxa*, although the cephalodia bear the cyanobacterium *Nostoc*. A sister species, *P. aphthosa* (L.) Willd is similar but the lower surface of the latter is nigrescent centrally, with pale blotches distally; *P. leucophlebia* is distinctly veiny

beneath.

Allegan-ASU

Peltigera neckeri Müll. Arg. (In honor of Belgian botanist and mycologist, Noël Martin Joseph de Necker, 1730-1793) Yet unknown from the region, this species is recorded from as nearby as Carroll and Champaign counties in Illinois. Its black, longitudinally rolled apothecia are characteristic.

Peltigera polydactylon (Neck.) Hoffm. (Gr. *poly*, many + *daktylos*, a finger, toe; from the numerous lobes) Calkins & Huett (1898) reported this species from La Salle County, and we have one modern collection from the bluff of the Fox River near Sheridan, where it grows under remnant *Pinus strobus*. An early McHenry County record is a mixed collection (Willey #58) from McHenry County, labeled *P. canina*, which is also in the packet. [tenuiorin, triterpenoids, ± gyrophoric acid]

McHenry-ILL

Peltigera ponojensis Gyeln. (after the Ponoy River on the Kola peninsula in Russia) Our only record for this northern and western species is from mossy sand at Old Baldy near Saugatuck.

Allegan-MSU

Peltigera praetextata (Sommerf.) Zopf (L. *prae-*, before, very + *textus*, weave + *-atus*, provided with; from the tight tomentum) = *P. canina* var. *rufescens* (Weis.) Mudd f. *innovans* (Körb.) J. W. Thomson. This species, only weakly distinct from *P. rufescens* or *P. canina*, is found in habitats similar to both. The Berrien County record is from a sandy cemetery, with *Arenaria serpyllifolia*, *Cardamine hirsuta*, *Danthonia spicata*, *Antennaria plantaginifolia*, *Stellaria media*, and *Veronica arvensis*.

Berrien-MOR, VanBuren-WIS, Walworth-WIS, Waukesha-WIS

Peltigera rufescens (Weis) Humb. (L. *rufus*, reddish + *-escens*, beginning to; from the reddish brown thallus) = *P. canina* var. *rufescens* (Weis.) Mudd. This species is occasional on open, dry, often sandy substrates. Thomson (1950) reports it from Lake County, Indiana. A report of *Peltigera canina* from DuPage County, (Wilhelm & Lampa 1987) is referable here.

Allegan-MSU, Berrien-MOR, Boone-MOR, Cook-MOR, NY, DuPage-MOR, Jasper-MOR, Kane-MOR, Kankakee-MOR, Lake II-MOR, LaSalle-MOR, Lee-MOR, Livingston-MOR, McHenry-MOR, Newton-MOR, Ogle-MOR, Porter-INDU, MIN, MOR, Racine-WIS, Will-MOR, Winnebago-MOR

PELTIGERACEAE

- A. Apothecia infrequent, elongate, marginal or terminal; spores hyaline ***Peltigera***
 A. Apothecia usually evident marginal or laminal, round or nearly so; spores becoming brownish . . . ***Solorina***

PERTUSARIA DC. PERTUSARIACEAE [Photobiont: Chlorococcoid. L. *pertusus*, perforated, punctured + *-arius*, belonging to; from the punctured appearance of the thallus caused by the ostiolate warts. Spores large, thick-walled, 1–8, hyaline, simple]

1. Norstictic acid present; stictic acid absent; medulla K+ red.
 - Spores 1 or 2 P. NEOSCOTICA
 - Spores 4, 6, or 8 P. PROPINQUA
1. Norstictic acid absent; stictic acid present; medulla K- or K+ yellow.
 2. Spores prevailingly 4-6 per ascus P. LEIOPLACA
 2. Spores 2 per ascus.
 - Cortex UV- or UV+ orange pink, C- or C+ weak yellow; inner spore wall strongly undulate and striate P. MACOUNII
 - Cortex UV+ orange red, C+ deep yellow, especially around the ostioles; inner spore wall smooth or essentially so P. PUSTULATA

Pertusaria leioplaca DC. (Gr. *leios*, smooth + *plax*, a flat round plate, dish; apparently from its smooth cortex) Our only record is the report by Calkins (1896), who reported this species from "oaks near Elgin and elsewhere." There is specimen from nearby Warren County, Indiana, growing on *Carya cordiformis*. Farther south is a similar 4-spored species, *Pertusaria tetralthalamia* (Fée) Nyl.; its spores are sculpted on the inner wall, where as those of *P. leioplaca* are smooth. [stictic acid, ± constictic acid, 4,5-dichlorolichexanthone]

Kane

Pertusaria macounii (I. M. Lamb) Dibben (after John Macoun, 1831-1920, Irish-born Canadian naturalist and botanist) = *P. pertusa* of some authors; *P. communis* of Calkins. There are two specimens of *Pertusaria* from Cook County in Calkins's *Lichenes Exsiccati* at ILL named *P. communis*. His #128 looks more like *Variolaria trachythallina* (Erichs.) Lendemmer, while #285 resembles *P. paratuberculifera* Dibben. He annotated two collections from Mahomet, Illinois, (ILL) as *P. communis*, but both are referable to *P. velata*. There is a specimen (Calkins #78, NY) that he called *P. communis*, and it is *P. macounii*; it was collected in Glencoe, on oak. The Rock and Waukesha county records were from the bark of *Carya ovata*. A similar species, *P. plittiana* Erichs., is known from nearby; it is saxicolous, and differs in that it contains norstictic acid, connorstictic acid, perlatolic acid, and stenosporic acid. [stictic acid, constictic acid, 2,7-dichlorolichexanthone, un1, un2, un3]

Cook-NY, Jefferson, Rock-WIS

Pertusaria neoscotica Lam. (after Nova Scotia) Our only record of this species is from the trunk of a Bur Oak along Carpenter Creek. [norstictic acid, connorstictic acid, ± planaic acid]

Jasper-MOR

Pertusaria propinqua Müll. Arg. (L. *propinquus*, near; alluding to what I do not know) Our only record for this species is from a specimen collected on *Quercus velutina*. [norstictic acid, connorstictic acid]

LaGrange-MOR

Pertusaria pustulata (Ach.) Duby (L. *pustulatus*, blistered; from the corticate warts) This appears to be the most common *Pertusaria* in the region today, most eastern species evidently missing from the "prairie peninsula". Most of our specimens are from *Carya*, but the Walworth County record was on *Quercus rubra*. [stictic acid, constictic acid, ± un1, ± un2, ± un3, ± un5]

Allegan-MSC, Cook-NY, Kane-MOR, Kendall-MOR, Lake Il-MOR, Lee-MOR, Livingston-MOR, Ogle-MOR, Racine-MOR, Walworth-MOR, Winnebago-MOR

PERTUSARIACEAE

- A. Apothecia in poriform warts, perithecia-like **Pertusaria**
 A. Apothecia lecanorine, often obscured by pruina or soredia-like masses.
 Thallus C+ red (lecanoric acid) **Varicellaria**
 Thallus C-, without lecanoric acid **Variolaria**

PHACOPSIS Tul. PARMELIACEAE [Parasitic on *Letharia*. Gr. *phaco*, lens-shaped + *opsis*, looks like. Spores 8, simple, hyaline, elliptic.]

Phacopsis vulpina Tul. (*L. vulpinus*, like a fox, but no doubt named for one of its hosts, *Letharia vulpina*) Extirpated, if it was ever here; our only record based upon the improbable record for *Letharia columbiana*, which see.

Cook-F

PHAEOCALICIUM A. F. W. Schmidt MYCOCALICIACEAE [Photobiont absent. Gr. *phaios*, dusky, dark gray + *kalyx*, a cup; from the cup-shaped apothecia. Spores, uniseriate in the ascus, simple to 1-septate, brown]

Phaeocalicium polyporaum (Nyl.) Tibell (*Polyporus*, a genus of fungus + L. *-eum*, denoting a place or source area; from its inhabitancy of polyporous fungi) Frequent in remnant wooded areas, where it grows on polyporous fungi, particularly *Trichaptum bifforme* (Fr.) Ryvarden. The latter grows on a variety of dead trees, but the more frequent substrate with *Phaeocalicium polyporaum* is *Prunus serotina*.

Cook-F,MOR, DuPage-MOR, Ford-MOR, Kane-MOR, Kenosha-MOR, Lake II-MOR, McHenry-MOR, Racine, Waukesha-ILLS, Will-F,MOR

PHAEOPHYSCIA Moberg PHYSCIACEAE [Photobiont: *Trebouxia*. Gr. *phaios*, dusky, dark gray + *Physcia*, which see; from the brownish gray thallus. Lower cortex usually black; spores 8, brown, 1-septate]

1. Thallus esorediate.
 2. Apothecia rare; margins of lobes dissected into lobulate fringes P. SQUARROSA
 2. Apothecia common; margins of lobes entire.
 - Margins of apothecia and upper cortex smooth P. CILIATA
 - Margins of apothecia and upper cortex with stiff spreading hairs P. HIRTELLA
1. Thallus sorediate.
 3. Lower cortex usually pale or tan; thallus lobes prevailing less than 0.3 mm wide P. INSIGNIS
 3. Lower cortex black; lobes prevailing more than 0.3 mm wide.
 4. Medulla red or deep orange nearly or quite throughout P. RUBROPULCHRA
 4. Medulla white.
 5. Thallus beset with colorless cortical hairs on the lobe tips or soredia.
 - Cortical hair prevailing on the lobe tips; soralia both laminal and marginal, pale to brown, few to none cortical hairs, the soredia fine to granular P. HIRSUTA
 - Cortical hairs prevailing in the soralia; soralia marginal, soon nigrescent, abundantly beset with cortical hairs, the soredia granular to subsidiod or even lobular and corticate

- P. KAIRAMOI
5. Thallus without colorless cortical hairs, though white-tipped rhizines may project profusely along the lobe margins.
6. Soredia granular, somewhat diffused in poorly delimited soralia P. ADIASTOLA
6. Soredia fine, farinose, confined to rounded soralia.
- Soralia strongly capitate, almost stipitate, primarily terminal on main or secondary lobes
..... P. PUSILLOIDES
- Soralia orbicular, but not capitate P. ORBICULARIS

Phaeophyscia adiastrata (Essl.) Essl. (Gr. *adiastolos*, mixed, joined, not separated; probably from the more or less coalesced soralia) This species is characteristic of shaded dolomitic erratics, cliff faces and ledges; the Rock County record is from exposed sandstone; it much less common on shaded lignin.

Boone-MOR, Cook-MOR, DuPage-MOR, Jefferson, Kane-MOR, Kankakee-MOR, Kendall-MOR, Lake In-MOR, LaSalle-MOR, Lee-MOR, Racine-MOR, Rock-WIS, Waukesha, Will-MOR, Winnebago-MOR

Phaeophyscia ciliata (Hoffm.) Moberg (L. *ciliatus*, furnished with cilia; from the projecting marginal rhizines) = *Physcia obscura* of Calkins. Commoner southward, this is an occasional species locally on open-grown trees, often in disturbed areas. Nearly a third of our specimens are from *Populus deltoides*, and we have three from dolomitic boulders in open areas. It almost always grows with *Candelaria concolor*, *Phaeophyscia pusilloides*, *Physcia millegrana*, and *Physcia stellaris*. We have even seen it growing on *Ramalina americana*.

Berrien-MOR, Cook-MOR, DeKalb-MOR, DuPage-MOR, Ford-MOR, Grundy-MOR, Jasper-MOR, Kane-MOR, Lake II-MOR, Lake In-MOR, Livingston-MOR, McHenry-MOR, Newton-MOR, Ogle-MOR, Porter-MIN, Pulaski-MOR, Rock-WIS, St. Joseph In-MOR, Walworth-MOR, Will-MOR, Winnebago-MOR

Phaeophyscia hirsuta (Mereschk.) Moberg (L. *hirsutus*, with bristly hairs; from the cortical hairs on the apothecial margins) Including *P. cernohorskyi* (Nádv.) Essl., which is described as having labriform or capitate soralia, while *P. hirsuta*, in the strict sense, is said to have linear, mostly marginal soralia. As understood here, this species, *sensu lato*, is occasional on open-grown trees, usually in disturbed or cultural areas. It is just as likely to grown on weathered concrete, wood, and infrequently on both carbonate and siliceous rock. None of our specimens are fertile. Occasional, small specimens may have to few soralia to make the distinction between it and *P. kairamoi*, but the latter has very few cortical hairs on the distal lobe surfaces, while that is where such hairs are concentrated in *P. hirsuta*. See also notes under *P. kairamoi*.

Cook-MOR, DuPage-MOR, Ford-MOR, Grundy-MOR, Jasper-MOR, Kenosha-MOR, Lake II-MOR, LaSalle-MOR, McHenry-MOR, Porter-MIN, Rock-WIS, Will-MOR, Winnebago-MOR

Phaeophyscia hirtella Essl. (L. *hirtus*, stiffly hairy + *-ellus*, diminutive; from the small hairs around the rim of the apothecium) This species, which is weedy southward in the Midwest and common in Missouri, remains unknown from the Southern Lake Michigan region.

Phaeophyscia insignis (Mereschk.) Moberg (L. *insignis*, unique, well marked; probably from the pale lower cortex that is rare in *Phaeophyscia*) This species is not infrequent to our west and south, but our only local records is from a shaded siliceous and carbonate rocks. It is both saxicolous and corticolous. The soralia are similar to those of *P. pusilloides*, but the latter has broader lobes and a black lower cortex. See also notes under *Physciella melanchra*.

DuPage-MOR, McHenry-MOR

Phaeophyscia kairamoi (Vainio) Moberg (in honor of the Finnish botanist and industrialist, Alfred Oswald Kaimaro, 1858-1858, who of the Botanical Museum in Helsinki, was also a senator and diplomat) Our records for this infrequent but overlooked species are from *Fraxinus lanceolata*, *Juglans nigra*, *Quercus alba*, headstones, a decorticate log, and among mosses over shaded dolomite, and both dolomitic and igneous erratics. Although we have seen only one fertile specimen locally, it is not uncommon for *P. kairamoi* to be fertile, the apothecia often bearing fine cortical hairs as seen in *P. hirtella*.

Boone-MOR, DuPage-MOR, Kendall-MOR, LaGrange-MOR, Livingston-MOR, McHenry-MOR, Milwaukee-MOR, Pulaski-MOR

Phaeophyscia orbicularis (Neck.) Moberg (*L. orbiculus*, a small circle + *-aris*, pertaining to; from the discrete circular soralia) Our only records for this species are from a marble tombstone, a dolomitic cliff face, and the bark of *Carya ovata*. See also comments under *P. rubropulchra*.

DuPage-MOR, Livingston-MOR, Ogle-MOR

Phaeophyscia pusilloides (Zahlbr.) Essl. (from its original name, *Physcia pusilla*, an illegitimate name to which Zahlbruckner added *-oides*, like or resembling, to create a replacement name) Locally this species is ubiquitous on open-grown, usually fast-growing trees such as *Populus deltoides*, *Ulmus* spp., *Salix* spp., and *Acer negundo*. In open areas it is occasional on boulders and fallen logs.

Berrien-MOR, Cook-MOR, DeKalb-MOR, DuPage-MOR, Ford-MOR, Grundy-MOR, Kane-MOR, Kenosha-MOR, LaGrange-MOR, Lake II-MOR, Lake In-MOR, LaSalle-MOR, McHenry-MOR, Milwaukee-MOR, Newton-MOR, Ogle-MOR, Porter-MOR, Pulaski-MOR, Racine-MOR, St. Joseph In-MOR, Starke-MOR, Walworth-MOR, Will-MOR, Winnebago-MOR

Phaeophyscia rubropulchra (Degel.) Essl. (*L. ruber*, red + *pulcher*, beautiful; from the attractive red medulla) = *Physcia orbicularis* of Armstrong (1977); all of her voucher material is referable to this species. This species is very common on the bases of trees in open or partly shaded areas, where it often grows with associates such as *Physcia millegrana*, and in shaded woods, where it often is the only lichen. Some specimens have weakly disposed portions of red medulla and may be mistaken for *P. orbicularis*. A few of our specimens with red medullae have soralia more like *P. pusilloides*. [rhodophyscin]

Allegan-MSC, Berrien-MOR, Boone-MOR, Cook-MOR, DeKalb-MOR, DuPage-MOR, Ford-MOR, Grundy-MOR, Iroquois-MOR, Jasper-MOR, Kane-MOR, Kankakee-MOR, Kendall-MOR, Kenosha-MOR, LaGrange-MOR, Lake II-MOR, Lake In-MOR, LaPorte-MOR, LaSalle-MOR, Lee-MOR, Livingston-MOR, McHenry-MOR, Milwaukee-MOR, Newton-MOR, Ogle-MOR, Porter-INDU-MOR, Racine-MOR, St. Joseph-MOR, Starke-MOR, Walworth-MOR, Will-MOR, Winnebago-MOR

Phaeophyscia squarrosa Kashiw. (*L. squarrosus*, rough with stiff scales, bracts, leaves, or processes; from the marginal lobules) = *P. imbricta* (Vain.) Essl. Our only record for this species is from *Ulmus americana* at Herrick Lake Forest Preserve.

DuPage-MOR

PHYSICIA (Schreb.) Michx. PHYSCIACEAE [Photobiont: *Trebouxia*. Gr. *physke*, a blister, wart, sausage; from the well developed thalline apothecia. Lower cortex white; spores 8, brown, 1-septate]

1. Thallus without isidia or soredia; apothecia common.
 2. Medulla K-; zeorin absent P. STELLARIS
 2. Medulla K+ yellow; zeorin present.
 3. Lobes up to 1 mm wide P. PUMILIOR
 3. Lobes prevailingly more than 1 mm wide.
 - Thallus saxicolous P. PHAEA
 - Thallus corticolous P. AIPOLIA
1. Thallus sorediate or isidiate.
 4. Thallus lobes broader, not finely divided; soredia fine and powdery.
 5. Tips of lobes hooded, the soralia nearly or quite concealed; long white marginal cilia conspicuous P. ADSCENDENS
 5. Tips of lobes not concealing the soralia; cilia absent
 - Lower surface pale brown; soralia grayish; thallus saxicolous P. CAESIA
 - Lower surface white; soralia white; thallus saxicolous or corticolous P. AMERICANA
 4. Thallus lobes narrow and finely branched; soredia granular, sometimes subsidiate.
 6. Thallus loosely appressed, the lobes about as broad as long; corticolous or saxicolous P. MILLEGRANA
 6. Thallus tightly appressed to placodioid, the lobes notably longer than broad; saxicolous.
 7. Thallus placodioid, even the lobe tips appressed; lobes distinct but flowing close together P. DAKOTENSIS
 7. Thallus not placodioid, the lower cortex discernable in many areas, particular at the tips; lobes distinct, commonly with the substrate quite visible between them, at least distally.
 - Thallus rather easily detached from the substrate, the principal lobes flabelliform branched distally into the ultimate lobules P. THOMSONIANA
 - Thallus closely fixed to the substrate difficult, the principal lobes linear to the tip P. SUBTILIS

Physcia adscendens (Fr.) H. Olivier (L. *adscendens*, ascending; from the elevated thallus lobes) This northern species is frequent on a wide variety of corticolous substrates, as well as weathered concrete and dolomitic boulders. [atranorin]

Allegan-MSC, Berrien-MIN, Boone-MOR, Cook-F.MOR, DeKalb-MOR, DuPage-MOR,WIS, Ford-MOR, Grundy-MOR, Kane-MIN,MOR, Kenosha-MOR,WIS, Lake Il-MOR, Lake In-MOR, La Porte-MOR, Lee-MOR, Livingston-MOR, McHenry-MOR, Milwaukee-MOR, Porter-INDU,MOR, Racine-MOR, Rock-WIS, St. JosephIN-MOR, Starke-MOR, Waukesha, Will-MOR, Winnebago-MOR

Physcia aipolia (Humb.) Hampe *in* Fürnröhr (Gr. *aei*, ever, always + *polios*, hoary, gray; perhaps from the whitish gray maculae present throughout the upper cortex) = *P. stellaris* var. *aipolia* of Calkins. Frequent, half of our specimens are from *Quercus alba*; the others are from *Ulmus americana*, *Populus deltoides*, *Juglans nigra*, and even *Rhamnus cathartica*. Curiously, Calkins listed the habitat as "boulders of the prairies and on stones at Lemont." [atranorin, zeorin]

Allegan-MSC, Berrien-MIN, Boone-MOR, Cook-MIL, DeKalb-MOR, DuPage-MOR, Grundy-MOR, Jasper-MOR, Jefferson-WIS, Kane-MICH,MOR, Kendall-MOR, Kenosha-MOR, LaGrange-MOR, Lake Il-MOR, Lake In-MOR, LaSalle-MOR, Lee-MOR, Livingstone-MOR, McHenry-MOR, Newton-MOR, Ogle-MOR, Porter-DUKE, Rock-WIS, Starke-MOR, Walworth-MOR,WIS, Waukesha-WIS, Will-MOR, Winnebago-MOR

Physcia americana G. Merr. (of America) Farther south, this is a common corticolous species; locally it is uncommon, known from *Fraxinus americana*, *Juglans nigra*, and *Quercus*

velutina; two of our specimens are from shaded dolomitic cliff faces. [atranorin, unknown terpene]

Allegan-MSC, Cook-MOR, DuPage-MOR, WIS, Iroquois-MOR, Jefferson-WIS, Kane-MICH, MOR, US, Kendall-MOR, Newton-MOR, Ogle-MOR, Rock-WIS, Will-MOR, Winnebago-MOR

Physcia caesia (Hoffm.) Fürnr. (*L. caesia*, bluish gray; from the color of the soralia) Our only record for this species is from dolomitic boulders that line the entrance road to Magnolia Bluff County Park. This species occurs just to the north of our region on granitic boulders, particularly those that are commonly visited by perching birds. [atranorin, zeorin]

Rock-WIS,

Physcia dakotensis Essl. (of the Dakotas) Occasional of granitic or basaltic erratics in full sun. Many local reports of *Physcia subtilis* Degel. are referable either here or to *P. thomsoniana*, two species recently segregated by Esslinger (2004, 2017). [Atranorin]

Cook-MOR, DuPage-MOR, Grundy-MOR, Kane-MOR, Kendall-MOR, McHenry-MOR, Ogle-MOR, Will-MOR, Winnebago-MOR

Physcia millegrana Degel. (*L. mille*, a thousand + *granum*, a seed; from the numerous seedlike soredia) = *P. tribacia* of Calkins. This species is not treated by Moberg (7). This is the commonest lichen in the Southern Lake Michigan region. It grows on virtually all corticolous substrates, often without associates, but more often with *Candelaria concolor*. It also grows on weathered concrete and flagstone. [atranorin]

Allegan-MICH, MSC, Berrien-MOR, Boone-MOR, Cook-MIL, MOR, NY, WIS, DeKalb-MOR, DuPage-ILL, MOR, WIS, Ford-MOR, Grundy-MOR, Iroquois-MOR, Jasper-MOR, Jefferson-WIS, Kalamazoo-MSC, Kane-MICH, MOR, Kankakee-F, MOR (see *Amandinea punctata*), Kendall-MOR, Kenosha-MOR, WIS, LaGrange-MOR, Lake II-ILL, MIN, MOR, Lake In-MOR, OSU, LaPorte-MOR, LaSalle-MOR, Lee-MOR, Livingston-MOR, McHenry-MOR, NY, Milwaukee-MOR, WIS, Newton-MOR, Ogle-MOR, Porter-DUKE, INDU, MIN, MOR, OSU, Pulaski-MOR, Racine-MOR, Rock, St. Joseph-MOR, Starke-MOR, US, VanBuren-ASU, Walworth-MIL, MOR, OSU, WIS, Waukesha-ILLS, WIS, Will-MOR, Winnebago-MOR

Physcia phaea (Tuck.) J. W. Thomson (*Gr. phaios*, dark, dusky; a seemingly inappropriate epithet for the whitish gray lichen) Our only record for this species is from a collection made on a sandstone outcrop west of Covil Creek in La Salle County. [atranorin, zeorin]

LaSalle-MOR

Physcia pumilior R. C. Harris (*L. pumilus*, dwarfish + *-ior*, a comparative ending; from the tiny lobes, much narrower than those of its closest relative, *Physcia aipolia*) Rare, our only specimens are from *Populus deltoides* and *Fraxinus americana*. This is the *P. alba* of Midwestern authors. [atranorin, zeorin]

DeKalb-MOR, DuPage-MOR, Walworth-MOR

Physcia stellaris (L.) Nyl. (*L. stellaris*, starry, speckled; perhaps from the often radiate silver thallus lobes) Including *P. stellaris* f. *tuberculata* (Kernst.) DT. & S. Thomson (1963) refers a Lake County, Illinois, specimen to *P. stellaris* f. *stellaris*. This species is ubiquitous on a wide variety of corticolous and lignicolous substrates, though nearly half of our specimens are from *Fraxinus lanceolata*, *Populus deltoides*, and *Quercus velutina*. Frequent associates include *Candelaria concolor*, *Chrysothrix caesia*, *Hyperphyscia adglutinata*, *Phaeophyscia pusilloides*, and *Physcia millegrana*. It is frequent on fallen branches, the source trees of which are sometimes difficult to determine. [atranorin]

Allegan-MSC, Berrien-MOR, Boone-MOR, Cook-F,MOR-NY, DeKalb-F,MOR, DuPage-ILL,MOR,WIS, Ford-MOR, Grundy-MOR, Iroquois-MOR, Jasper-MOR, Jefferson-WIS, Kalamazoo-MSC, Kane-MOR, Kankakee-MOR, Kendall-F,MOR, Kenosha-MOR, LaGrange-MOR, Lake II-MIN,MOR, Lake In-MOR, La Porte-MOR, LaSalle-MOR, Livingston-MOR, McHenry-MOR,NY Milwaukee-MOR,UWSP, Newton-MOR, Ogle-MOR, Ottawa-MSC, Porter-ILL,MIN,MOR, Pulaski-MOR, Racine-MOR, Rock-WIS, St.Joseph-MOR, Starke-MOR, VanBuren-ASU, Walworth-MOR, Waukesha-WIS, Will-MOR, Winnebago-MOR

Physcia subtilis Degel. (*L. subtilis*, slender, minute, delicate; from the very narrow thallus lobes) Rare on partly shaded granitic erratics. See also the note under *P. dakotensis*. [atranorin]
Cook-MOR, DuPage-MOR, Kane-MOR, LaSalle-MOR, McHenry-MOR

Physcia thomsoniana Essl. (In honor of the Wisconsin lichenologist, John Walter Thomson, 1913-2009, founder of the Botanical Club of Wisconsin and mentor to many aspiring lichenologists) This species is rare on granitic erratics in pastures and old fields; there is also a specimen from nearby Lee County, Illinois, from the cortex of *Quercus velutina*. See also notes under *P. dakotensis*. [atranorin]

LaSalle-MOR, Lee-MOR, Ogle-MOR

PHYSICIACEAE

- A. Thallus crustose, fully adherent to the substrate.
 - Thallus lobed **Hyperphyscia**
 - Thallus not lobed **Rinodina**
- A. Thallus foliose.
 - B. Thallus mineral or whitish gray, cortex K+ yellow
 - Cells of upper cortex isodiametric; lower cortex corticate **Physcia**
 - Cells of upper cortex elongate and aligned with the lobes; lower cortex corticate or ecorticate **Heterodermia**
 - B. Thallus brown or brownish gray; cortex K-.
 - C. Lobe surfaces abundantly pruinose; soralia linear and marginal **Physconia**
 - C. Lobe surfaces epruinose; soralia usually laminal.
 - D. Thallus margins and rims of apothecia dissected into isidioid lobules **Anaptychia**
 - D. Thallus and apothecia without isidioid lobules.
 - Lower cortex paraplectenchymatous **Phaeophyscia**
 - Lower cortex prosoplectenchymatous **Physciella**

PHYSICIELLA Essl. PHYSICIACEAE [Photobiont: *Trebouxia*. *Physcia*, which see + *L. -ellus*, diminutive; supposedly smaller than many *Physcia* species. Lower cortex white, prosoplectenchymatous; spores not seen, but presumably like those of *Phaeophyscia*]

- 1. Many of the soredia in crescent-shaped soralia at the lobe tips P. CHLOANTHA
- 1. Soredia all, or nearly all in laminal soralia P. MELANCHRA

Physciella chloantha (Ach.) Essl. (Gr. *chloanthos*, budding; perhaps from the abundant sorediate lobe tips) = *Physcia chloantha* Ach.; *Phaeophyscia chloantha* (Ach.) Moberg. This is a frequent species of disturbed and landscaped areas. It grows on tombstones with *Xanthoria* spp., on concrete with *Endocarpon petrolepideum*, on *Ulmus* spp., and other fast-growing species such as *Populus alba* and *Celtis occidentalis*; we have one specimen from *Malus pumila*. In natural

habitats it occurs on open-grown trees of *Quercus alba*. It would not be difficult to confuse this species with *Phaeophyscia orbicularis* if care is not taken to determine the white color of the lower cortex.

Berrien-MIN, Boone-MOR, Cook-MOR, DeKalb-MOR, DuPage-MOR, Grundy-MOR, Jasper-MOR, Kalamazoo-MS, Kane-MOR, Kankakee-MOR, LaGrange-MOR, Lake Il-MOR, Lake In-MIN, LaSalle-MOR, Lee-MOR, Livingston-MOR, Milwaukee-MOR, Newton-MOR, Ogle-MOR, Porter-MOR, Rock-WIS, St. Joseph IN-MOR, Starke-MOR, Will-MOR, Winnebago-MOR

Physciella melanchra (Hue) Essl. (Gr. *melaina*, black + *chroa*, color of the skin, superficial color; perhaps from the darkened color of the upper cortex) Rare, our only specimens are from weathered fence rails. This species might be confused with *Phaeophyscia insignis*, which is similar, with orbicular soralia, but much smaller lobed and with a paraplectenchymatous lower cortex; the lobes of the *Physciella* are commonly more than 0.3 mm wide and the lower cortex is prosoplectenchymatous.

DuPage-MOR, Lee-MOR, McHenry-MOR, Winnebago-MOR

PHYSCONIA Poelt PHYSCIACEAE [Photobiont: *Trebouxia*. Gr. *physcion*, paunch, belly; evidently derived from *Physcia*, which see. Spores not seen, but presumably like *Phaeophyscia*]

1. Lobe margins and surfaces well beset with corticate-granular soredia or subsidoid granules; lower surface of the terminal lobes fibrous, with darkening lines extending proximally P. PERISIDIOSA
1. Lobe margins and surfaces well beset with powdery to finely granular, ecorticate soredia; lower surface of the terminal lobes corticate, dull white P. LEUCOLEIPTES

Physconia leucoleiptes (Tuck.) Essl. (Etymology unknown to me; perhaps a Greek allusion to the white pruina. = *Physcia grisea* (Lam.) Zahlbr. f. *grisea* of Thomson (1963). Though not nearly so common, this species grows on substrates similar to those of *Candelaria concolor* and *Physcia millegrana*, which are its nearly constant associates. Our plants were long included with *Physconia detersa* (Nyl.) Poelt, which has no secondary metabolites and K⁺ yellow soralia; the soralia of *P. leucoleiptes* react K⁺ yellow. Those thalli with gyrophoric acid in the medulla have been segregated as *Physconia kurokawae* Kashiw. (after Syo Kurokawa, 1926–, director of the department of botany at the National Science Museum in Tokyo), but there are populations within which there are individuals with both chemotypes and most contemporary floristicians include with *P. leucoleiptes*. [secalonic acid A; ± gyrophoric acid]

Allegan-MS, Boone-MOR, Cook-MOR, DeKalb-MOR, DuPage-MOR, Ford-MOR, Grundy-MOR, Jefferson-FH,WIS, Kane-MOR, Kankakee-MOR, Kendall-MOR, Kenosha-MOR, LaGrange-MOR, Lake Il-MOR, Lake In-MOR, Lee-MOR, Livingston-MOR, McHenry-MOR, Milwaukee-MOR,WIS, Newton-MOR, Ogle-MOR, Porter-MOR, Pulaski-MOR, Racine-MOR, Rock-WIS, St. Joseph IN-MOR, Starke-MOR, Walworth-MOR, Waukesha-WIS, Will-MOR

Physconia perisidiosa (Erichsen) Moberg (L. *per-*, thoroughly, utterly + *isidium*, corticate outgrowth + *-osa*, condition) Rare, our only records are from the boles of *Quercus alba* and *Salix nigra*, though in our western purlieu there is a specimen from a limestone boulder.

Jasper-MOR, Winnebago-MOR

PILOCARPACEAE

A. Spores simple.

- Apothecia with a thin but evident proper or lecidine margin; hypothecium brown **Leimonis**
 Apothecia without any evident proper margin; hypothecium greenish black **Brianaria**

A. Spores 1-3 septate.

- Apothecia with a thin but evident proper or lecidine margin; conidia in the shape of a bowling pin; photobiont of individual chlorococcoid cells **Fellhanera**
 Apothecia without any evident proper margin; not bowling pin-shaped; photobiont of small, usually paired cells **Micarea**

PLACIDIOPSIS Beltr. VERRUCARIACEAE [Photobiont: *Trebouxia*. With the appearance of *Placidium*. Spores 8, hyaline, 1-septate.]

Placidiospis minor R. C. Harris (*L. minor*, smaller, less) Yet unknown from the Southern Lake Michigan region, this minute, squamulose, areolate pyrenocarp grows on siliceous rocks, particularly pebbles in sandy areas, often with *Leimonis erratica* and *Trapelia glebulosa* (Harris 1979).

PLACIDIUM Flot. VERRUCARIACEAE [Photobiont: *Trebouxia* and *Myrmecia*.

Gr. *plax*, a flat round plate, dish + *-idion*, diminutive; from the planar squamules. Spores 8, hyaline, simple; hamothecium evanescent. Some authorities place those forms with rhizines in the genus *Clavascidium* Breuss.]

1. Thallus corticolous, squamulose and adnate to foliose with the lobes densely rhizinate below P. ARBOREUM
1. Thallus terricolous, squamulose or crustose, tightly adnate; rhizines present or absent.
 2. Lower surface of squamules with broad bare black zones; rhizohyphae aggregated in restricted areas P. LACHNEUM
 2. Lower surface of squamules occupied nearly throughout with rhizohyphae alone or with rhizines intermixed.
 3. Rhizines absent P. SQUAMULOSUM
 3. Rhizines present, notably coarser than the fine, intermeshed rhizohyphae.
 - Spores in 2 rows in the ascus P. UMBRINUM
 - Spores in 1 row in the ascus P. LACINULATUM

Placidium arboreum (Mont.) J. W. Thomson (*L. arboreus*, of trees) Our only record for this species is a Calkins specimen from La Salle County at the University of Illinois in the bound volumes of *Lichenes Exsiccati*. Calkins called it *Endocarpon arboreum*. Farther south, this species is occasional on old-growth, open-grown ashes and oaks of the white oak group.

LaSalle-MOR

Placidium lachneum (Ach.) B. de Lesd. (Gr. *lachnos*, woolly hair, down; from the dense fibrous prothallus) Including, part, local reports of *Catapyrenium lachneum* (Ach.) R. Sant., *Dermatocarpon lachneum* (Ach.) A. L. Sm., *Endocarpon hepaticum* Ach.; probably also including *E. rufescens* Ach. Allo of our records are from dolomite prairies in Will and Boone counties and outwash prairies in McHenry and northwestern Cook counties. It often grows with *Heppia*

conchiloba and *Psora decipiens* and prairie species such as *Andropogon gerardii*, *A. scoparius*, *Artemisia campestris caudata*, *Comandra richardiana*, *Dalea purpurea*, *Euphorbia corollata*, *Liatris cylindracea*, *Schizachyrium scoparium*, *Silphium terebinthinaceum*, and *Solidago decemflora*. It occurs occasionally with *Placidium squamulosum*.

Boone-MOR, Cook-MOR, McHenry-MOR, Will-MOR

Placidium lacinulatum (Ach.) Breuss (L. *lacinulatus*, with small flaps or divisions) = *Clavascidium lacinulatum* (Ach.) M. Prieto. Our only records are from soil in outwash gravel in Walworth County and from thin soil in cracks of dolomitic pavement in Will County.

Walworth-WIS, Will-MOR

Placidium squamulosum (Ach.) Breuss (L. *squamulosus*, covered with small scales; from the aggregated scale-like thalli) Occasional in our western sector in areas of base-rich soil where the soil is shallow and or competition from vascular vegetation is scant. In Grows on thin soil over dolomite, gravelly hill prairies, and sand prairies near Lake Michigan. There are a few specimens from compacted clay and old gravel quarries, where it is obviously adventive. In sand prairie near the lake vascular vegetation associates include *Andropogon gerardii*, *Artemisia caudata campestris*, *Coreopsis lanceolata*, *Euphorbia corollata*, *Liatris aspera intermedia*, *Lithospermum croceum*, *Minuartia michauxii*, *Oligoneuron album*, *Schizachyrium scoparium*, *Smilacina stellata*, *Solidago decemflora*, *Solidago speciosa*, *Symphyotrichum ericoides*, and *Symphyotrichum oolentangiense*.

Cook-MOR, DuPage-MOR, Kane-MOR, Lake Il-MOR, Lake In-MOR, Lee-MOR, McHenry-MOR, Ogle-MOR, Rock, Will-MOR, Winnebago-MOR

Placidium umbrinum (Breuss) M. Prieto & Breuss (L. *umbros*, full of shade + *-inus*, pertaining to; from the dark color of the apothecia) = *Clavascidium umbrinum* (Breuss) M. Prieto. Our only record for this species is the report from Jefferson County by Thomson (2003).

Jefferson-WIS

PLACYNTHIACEAE

One local genus **Placynthium**

PLACYNTHIELLA Elenkin TRAPELIACEAE [Photobiont: *Chlorella?* The genus *Placynthium* + *-ellus*, diminutive; from the minute dark-colored, isidioid thallus. Spores 8, hyaline, simple]

1. Thallus C+ pink; thallus corticolous or lignicolous P. ICMALEA
1. Thallus C-; thallus arenicolous or lignicolous.
 - Wet thallus granules dark brown to black, less than 0.1 mm across P. ULIGINOSA
 - Wet thallus granules distinctly greenish, mostly more than 0.1 mm across P. OLIGOTROPHA

Placynthiella icmalea (Ach.) Coppins & P. James (Gr. *icmas*, moisture + *aleo*, warmed or exposed to the sun; perhaps from the dark color of the thallus on weathered wood that gives the appearance of a moist stain) = *Saccomorpha icmalea* (Ach.) Clauzade & Roux. Skorepa's report of *Lecidea uliginosa* from Will (his #5217, SIU) is referable here. It is occasional on dead limbs, decorticate logs, and old wood. Even though this species contains gyrophoric acid, which typically reacts C+ pink, it is a fast-fading pink, and sometimes difficult to discern from

a simple C test. Negative results should be confirmed with TLC before concluding the specimen is not *P. icmalea*. Wetmore (1988) reports it from Porter County. [gyrophoric acid, ± lecanoric acid]

Cook-MOR, DuPage-MOR, Jasper-MOR, Lake II-MOR, Lake In-MIN, MOR, LaPorte-MOR, Ottawa-MS, Porter-MIN, Walworth-MOR, Will-MOR

Placynthiella oligotropha (J. R. Laundon) Coppins & P. James (Gr. *oligos*, few, small + *trophis*, well nourished; from its tendency to grow in areas where nutrients are scarce, such as on sand) = *Saccomorpha oligotropha* (J. R. Laundon) Clauzade & Roux. The Porter County specimen was collected on sand north of Furnessville Road along the horse trail south of the visitor center at the Indiana Dunes National Lakeshore (Wetmore 1988).

Porter-MIN

Placynthiella uliginosa (Schrad.) Coppins & P. James (L. *uliginosus*, full of moisture; perhaps the dark thallus appears soaked from a distance) Our only local records for this species are in black oak savannas, but it is a frequent sand binder in sandy prairies farther south and will certainly be documented more regularly in our sand counties.

Berrien-MOR, Cook-MOR, LaSalle-F, Pulaski-MOR, Will-MOR

PLACYNTHIUM (Ach.) Gray PLACYNTHIACEAE [Photobiont: *Dichothrix* and *Scytonema*. Etymology evidently known only to Acharius. Spores 8, hyaline, 1–3 septate]

Placynthium nigrum (Huds.) Gray (L. *niger*, black; from the color of the thallus) = *Pannaria nigra* of Calkins. This species is rare on weathered dolomitic erratics and outcrops.

Boone-MOR, Cook-MOR, DuPage-MOR, Kane-MOR, Kankakee-MOR, Ogle-MOR, Will-MOR

PLEOSPORACEAE

One local genus **Kirschteiniothelia**

POLYCAULIONA Hue TELOSCHISTACEAE [Photobiont: *Trebouxia*. Gr. *poly-*, many + *kaulos*, stalk, stem + ? the ending implies something violet, which means I have not put the word together right. Rhizines absent; spores 8, hyaline, polaribilocular; anthraquinones, particularly parietin]

Polycauliona polycarpa (Hoffm.) Frödén, Arup, & Søchting (Gr. *poly*, many + *karpos*, fruit; from the numerous apothecia) = *Xanthoria polycarpa* (Hoffm.) Rieber; *Theloschistes lichneus* of Calkins. Rather infrequent on a variety of corticolous, open-grown substrates, including weather fence rails.

Allegan-MS, Berrien-MOR, Cook-FH, ILL, MOR, DuPage-MOR, Grundy-MOR, Kane-MOR, Kenosha-MOR, Lake II-MOR, McHenry-ILL-MOR, Porter-MOR, Will-MOR, Winnebago-MOR

POLYSPORINA Vězda ACAROSPORACEAE [Photobiont: *Trebouxia* and *Myrmecia*. Gr. *poly*, many + *spora*, seed + L *-inus*, pertaining to; from the numerous spores in each ascus. Spores numerous, minute, simple]

Polysporina simplex (Taylor) Vězda (L. *simplex*, simple; perhaps from its simple form, having tiny apothecia and no thallus) Our only records of this species are from a granitic boulders, often with *Lecanora polytropa*. *Polysporina urceolata* (Anzi) Brodo (L. *urceolus*, a little urn or pitcher) has been reported from “dolomitic gravel on a hill prairie near Elgin,” but no specimen can be found.

Cook-MOR, DuPage-MOR, Grundy-MOR, LaSalle-ILL,MOR, Ogle-MOR

PORINACEAE

One local genus **Pseudosagedia**

PORPIDIA Körb. PORPIDIACEAE [Photobiont: *Asterochloris*. Gr. *porpe*, a buckle or pin, a brooch + *-idion*, diminutive; conceivably from the apothecia, evocative of little pins or brooches. Spores 8, hyaline, simple; axis of ascus apex strongly amyloid, *Porpidia*-like]

1. Apothecia densely gray pruinose P. ALBOCAERULESCENS
1. Apothecia epruinose, black.
 - Apothecial rim finely but distinctly radiately cracked or wrinkled P. SUBSIMPLEX
 - Apothecial rim smooth or essentially so P. CRUSTULATA

Porpidia albocaerulescens (Wulfen) Hertel & Knoph (L. *albus*, white + *caeruleus*, dark blue + *-escens*, beginning, becoming, slightly; from the color of the apothecia) Our only record for this species is from a granitic boulder Serena, in La Salle County.

LaSalle-MOR

Porpidia crustulata (DC.) Hertel & A. J. Schwab (Gr. *crustulatus*, burnt or charred; from the black apothecia) Our only records for this species is from sandstone exposures. Armstrong (1977) reported this species (as *Lecidea crustulata*) from the Morton Arboretum in Du Page County, but her specimen was sterile and collected from oak. *Porpidia crustulata* is saxicolous, and is similar to *P. macrocarpa*, which we have yet to discover locally, except that the apothecia are smaller (to 0.75 mm) and it generally has a better-developed thallus. Apothecia in the latter range from 0.5 to 2.0 mm in diameter and the thallus is obscure or absent; it also contains stictic acid. [Stictic acid]

LaSalle-MOR, Ogle-MOR

Porpidia subsimplex (H. Magn.) Fryday (L. *sub*, a little like, nearly + *simplex*, simple; the allusion unclear, though possibly Magnusson was impressed by a superficial resemblance to *Polysporina simplex*) = *P. Tahawasiana* Gowan. Our only record for this species is from Lee County, where it grows on an exposed sandstone ledge. It is very similar in appearance to *P. crustulata*, and there are some specimens that are discouragingly ambiguous in their identity. In some cases, unlike with *P. crustulata*, the hymenium of *P. subsimplex* reddens a bit with moisture.

LaSalle-F, Ogle-MOR

PORPIDIACEAE

One local genus **Porpidia**

PROTOBLASTENIA (Zahlbr.) J. Steiner PSORACEAE [Photobiont: Chlorococcoid. Gr. *protos*, first, primary + *blastos*, a germ, bud, shoot + *-enos*, pertaining to; from the simple spores. Notwithstanding the K+ purple apothecium, which is evocative of *Caloplaca*, the anatomy of the ascoma and spores are more *Psora*-like. Spores 8, hyaline, simple. Parietin]

Protoblastenia rupestris (Scop.) J. Steiner (*L. rupestris*, growing on rocks; from its habitat) Our only records of this species are from exposed dolomitic bedrock at the Flora Prairie northwest of Irene and from Cap Sauers Holding near Palos Park, and a dolomitic boulder near Bollingbrook. Calkins & Huett (1898) reported *Biatora calcivora* (= *Clauzadea immersa*) from nearby La Salle County, but Richard Harris (pers. comm.) believes this report is likely to be referable here.

Boone-MOR, Cook-MOR, DuPage-MOR, Will-MOR

PROTOPARMELIOPSIS M. Choisy LECANORACEAE [Photobiont: *Trebouxia*. Gr. *proto-*, first, original, chief + *parmelia* + Gr. *opsis*, aspect, view, appearance, evidently evocative of a nascent *Parmelia*. Thallus margins effigurate; spores 8, hyaline, simple or rarely 1-septate]

Protoparmeliopsis muralis (Schreb.) M. Choisy (*L. muralis*, growing on walls; from its frequent occurrence on walls) = *Lecanora muralis* (Schreb.) Rabenh. This species is characteristic of dolomitic outcrops and erratics in pastures and prairies, but can in habit weathered concrete and even siliceous rocks, such as granite or basalt. Evidently a species native to the area, it is interesting that Calkins did not report it. Farther south and west, specifically on siliceous or sandstone substrates, one may encounter specimens with gyrophoric acid in the cortex, which specimens may be called *P. gyrophorica* Lendemer. Known from just outside the region is *Lecanora valesiaca* (Muell.Arg.) Stizenb., which would key here, but it has an abundantly pruinose thallus and lacks triterpenoids. [usnic acid, triterpenoides, ± fumarprotocetraric acid]

Boone-MOR, Cook-MOR, DeKalb-MOR, DuPage-MOR, Grundy-MOR, Kane-MOR, Kankakee-MOR, Kendall-MOR, Lake II -MOR, Racine-MOR, Rock-WIS, Walworth-WIS, Will-MOR

PSEUDOSAGEDIA (Müll. Arg.) M. Choisy PORINACEAE [Photobiont: *Trentepohlia*. Gr. *pseudo-* false + *sagedia*, evocative of the genus *Sagedia*. Spores 8, hyaline, 4-several celled]

Pseudosagedia chlorotica (Ach.) Hafellner & Kalb (Gr. *khloros*, greenish-yellow, perhaps from the color of the hypothecium) = *Porina chorotica* (Ach.) Müll.-Arg.; *Trichothelium chloroticum* (Ach.) R. C. Harris. Our only records are from granitic erratics.

DuPage-MOR, LaSalle-F, Will-MOR

PSILOLECHIACEAE

One local genus **Psilolechia**

PSILOLECHIA Massal. PSILOLECHIACEAE [Photobiont: *Trebouxia*. Gr. *psilos*, tall, high + *lechos*, couch, bed, nest; the allusion unclear. Spores 8, hyaline, simple]

Psilolechia lucida (Ach.) M. Choisy (L. *lucida*, bright, shining) Our only record for this species is from a shaded sandstone cliff with a northeast exposure. Also in the near vicinity of southern Lake Michigan is *Chaenotheca furfuracea* (L.) Tibell, which is similar vegetatively but produces pulvinic acid instead of rhizocarpic acid; its apothecia are stalked capitulum with a mazaedium, while those of *Psilolechia* are sessile and with 8-spored asci. [rhizocarpic acid]

LaSalle-MOR

PSORA Hoffm. PSORACEAE [Photobiont: *Trebouxia* and *Myrmecia*. Gr. *psora*, the itch, scurvy; from the scurvy or scab-like thalli. Spores 8, hyaline, simple]

1. Thallus saxicolous; squamules brown; apothecia, rusty red, centrally disposed P. PSEUDORUSSELLII
1. Thallus terricolous; squamules pink; apothecia nigrescent, marginally disposed P. DECIPIENS

Psora decipiens (Hedwig) Hoffm. (L. *decipiens*, deceiving; perhaps from its superficial resemblance to another species) = *Biatora decipiens* of Fink (1906). Our specimens are without substances, which circumstance refers them to "strain I" of Timdal (1986). He places those specimens with norstictic acid into "strain II" and those with hyposalazinic acid into "strain III". Most of our specimens are from open kames and other prairies where dolomite is exposed and shallow pockets of calcareous soils have developed in cracks or among the pebbles. We have one specimen from the calcareous stable sands of the lakeplain prairies of Illinois Beach State Park. The pinkish, white-farinose margins are in strong contrast to the chestnut-brown thalli of *Placidium lachneum* or *P. squamulosum*, usually one of which is an associate.

Boone-MOR, Cook-MOR, Kane-MOR, Lake II-MOR, Lee-MOR, McHenry-MOR, Ogle-MOR, Walworth-MOR, WIS, Will-MOR, Winnebago-MOR

Psora pseudorussellii Timdal (Gr. *pseudes*-, false, deceptive + *russellii*; resembling *Psora russellii*, named after John Lewis Russell, 1808–1873, American cryptogamist and naturalist) Our only records of this species are from exposed dolomitic bedrock in our western sector.

Boone-MOR, Winnebago-MOR

PSORACEAE

- A. Thallus crustose, not of adnate squamules; apothecium K+ purple **Protoblastenia**
- A. Thallus of adnate squamules; apothecia K-.
 - Squamules gray to nigrescent **Psorula**
 - Squamules not gray or nigrescent **Psora**

PSOROGLAENA Müll. Arg. VERRUCARIACEAD [Photobiont: *Clorococcoid*. Gr. *psora*, the itch, scurvy + *glenos*, the eyeball. Spores 8, hyaline, 1-several septate to muriform]

Psoroglaena dictyospora (Orange) H. Harada (Gr. *diktuon*, net + *spora*, seed; the allusion unclear to me) This species is known from as nearby as Vermilion County, Illinois, where it was collected at the base of a Catalpa at the headquarters area of Kickapoo State Park.

PSOROTICHIA A. Massal. LICHINACEAE [Photobiont: *Chroococciopsis*. Gr. *psora*, the itch, scurvy + *teichos*, wall around a city; probably from its frequency on concrete walls and rails. Spores 8, hyaline, simple]

Psorotichia schaeereri (A. Massal.) Arnold (after Ludwig Emanuel Schaerer, 1785–1853, Swiss clergyman and lichenologist) Our only record of this species is from an HCL- sandstone boulder along the old E. J. & E. Railroad right-of-way in a strip mine area south of Dell Abbey. Grundy-MOR, LaSalle-MOR

PSORULA Gotth. Schneid. PSORACEAE [Photobiont: *Chlorococcus*-like. Gr. *psora*, the itch, scurvy + *-ula*, diminutive; probably from its resemblance to *Psora*. Licheniculous on *Spilonema*. Spores 8, hyaline, simple]

Psorula rufonigra (Tuck.) Gotth. Schneid. (L. *rufo*- reddish + *nigra*, a black object) Our only record for this species is siliceous rocks at Magnolia Bluff, associated with *Spilonema revertens*, which see.

Rock-WIS

PUNCTELIA Krog PARMELIACEAE [Photobiont: *Trebouxia*. L. *punctum*, a prick, puncture, or dot + *-elia*, a generic ending, probably from Gr. *eilo*, to roll up or collect, as in a collection or group; from the numerous pseudocyphellae. Spores 8, hyaline, simple]

1. Thallus lacking isidia and soredia; medulla C- or C+ red
 - Medulla C- P. BOLLIANA
 - Medulla C+ red P. GRAMINICOLA
1. Thallus with either isidia or soredia; medulla C+ red.
 2. Thallus isidiate P. RUDECTA
 2. Thallus sorediate.
 - Soredia coarse and pustular, often coalescing into large areas and becoming lobulate P. MISSOURIENSIS
 - Soredia farinose, in round delimited soralia P. CASEANA

Punctelia bolliana (Müll. Arg.) Krog (after Ernst Friedrich August Boll, 1817–1868, German botanist who collected the type in Texas) = *Parmelia bolliana* Müll. Arg. Culberson & Culberson

(1956) map several dots from the Chicago area. *Parmelia borreri*, from Cook County (Calkins LE #323, ILL) is referable here, as well as Lake County, Illinois, and McHenry County specimens by the same name. In our Indiana counties, *Quercus velutina* is the substrate of choice; elsewhere *Q. alba*, *Q. macrocarpa*, and *Q. rubra* are the preferred substrates. Other frequent substrates include *Carya ovata* and *Juglans nigra*. In most cases the trees are open-grown and relatively large. [atranorin, protolichesterinic acid]

Allegan-MSC, Berrien-MOR, Boone-MOR, Cook-ILL,MOR, DeKalb-MOR DuPage-MOR, Ford-MOR, Grundy-MOR, Iroquois-MOR, Jasper-MOR, Jefferson-WIS, Kane-MOR, Kankakee-MOR, Kendall-MOR, Kenosha-MOR, LaGrange-MOR, Lake II-MOR, Lake In -MOR, LaPorte-MIN, LaSalle-ILL,MOR, Lee-MOR, Livingston-MOR, McHenry-MOR,NY, Milwaukee, Newton-MOR, Ogle-MOR, Porter-MOR, Pulaski-MOR, Racine-MOR, Starke-MOR, Walworth-MOR, Waukesha-WIS, Will-MOR, Winnebago-MOR

Punctelia caseana Lendemer & Hodgkinson (in honor the professor of botany at the College of William , Mary, Martha A. Case, 1959-) = *Parmelia subrudecta* of local authors, not Nylander; *P. borreri* of local authors, not Turner. Most of our specimens are from *Quercus alba*, though there is one from an open-grown tree of *Prunus serotina*. Calkins (1896) regarded this species as common in the region at the turn of the century. [lecanoric acid, atranorin]

DeKalb-MOR, DuPage-MOR, Newton-MOR

Punctelia graminicola (B. de Lesd.) Egan (L. *gramen*, grass + *cola*, dwell, the allusion lost on me) Much more frequent farther south, our only record for this species is from *Tilia americana* near Mount Baldhead near Saugatuck. [lecanoric acid, atranorin]

Allegan-MSC

Punctelia missouriensis G. Wilh. & Ladd (after the state of Missouri) The only substrate from which we have this species locally is *Quercus*, but farther downstate and across southern Illinois into Missouri it grows on a wide variety of trees, often in highly disturbed areas. [atranorin, lecanoric acid]

Berrien-MOR, DuPage-MOR, Ford-MOR, Jasper-MOR, Lake II-MOR, Lee-MOR, Livingston-MOR, McHenry-MOR, Newton-MOR, Pulaski-MOR, Walworth-MOR, Will-MOR

Punctelia rudecta (Ach.) Krog (L. *rudis*, rough, raw, wild + *ecto-*, out of, from; probably from the rough appearance of the upper cortex caused by the pseudocyphellae) = *Parmelia rudecta* and *P. borreri* var. *rudecta* of Calkins. Three-fourths of our specimens are from open-grown oaks, but we have specimens from *Juglans nigra*, *Larix laricina*, *Maclura pomifera*, and *Ostrya virginiana*; there is also a specimen from a basaltic boulder in an open pasture. The isidia are quite variable, ranging from fine, uniform, and simple to coralloid-branched and even sublobulate, with or without nigrescent apices. [lecanoric acid, atranorin]

Allegan-MICH,MSC, Berrien-MIN, Boone-MOR, Cass-MSC, Cook-ILL,MOR,NY, DeKalb-MOR, DuPage-MOR, Ford-MOR, Grundy-MOR, Jasper-MOR, Kane-MOR, Kankakee-MOR, Kendall-MOR, Kenosha-MOR, Lake II-MOR, Lake In-MOR, LaPorte-MOR, LaSalle-MOR, Lee-MOR, Livingston-MOR, McHenry-MOR, Milwaukee-WIS, Newton-MOR, Ogle-MOR, Ottawa-MICH.MSC, Porter-INDU,MOR, Pulaski-MOR, Racine-MOR, Rock-WIS, Starke-US, Walworth-MOR, Waukesha-WIS, Will-MOR, Winnebago-MOR

PYCNOTHELIA Dufour CLADONIACEAE [Photobiont: Chlorococcoid. Gr. *pyknos*, dense, thick + *thele*, nipple; from the tiny, clustered apothecia atop the podetia. Spores not seen]

Pycnothelia papillaria Dufour (L. *papilla*, nipple, teat + *-arius*, belonging to; probably from the swollen, apothecia-tipped podetia) Our only record for this species is from sandy soil on a sandstone cliff at the Nachusa Grassland. [usually atranorin, ± fatty acids, such as protolichesterinic acid]

Ogle-MOR

PYRENOCARPON Trevisan LICHINACEAE [Photobiont: *Chroococcidiopsis*.
Gr. *pyren*, kernel + *karpos*, fruit. Spores 8, hyaline, simple]

Pyrenocarpon thelostomum (J. Harriman) Coppins and Aptroot (Gr. *thele*, nipple + L. *stoma*, mouth) Our only records are from weathered concrete and limestone in the splash zone of Lake Michigan. Dillman *et al.* (2012) report the Lake County record (Hyerczyk #2545 F,MOR) as the first record for North America, which he had collected in 2008, but they erroneously list the location as Michigan. The Cook County record was collected in 2003 (Hyerczyk #1854 MOR), but filed under the name "*Psorotichia frustulata*."

Cook-MOR, Lake II-MOR

PYRENOCOLLEMA Reinke XANTHOPYRENACEAE [Photobiont: *Gloeocapsa*. Gr. *pyren*, kernel + *Collema*, which see; because of the perithecia on an otherwise collemataceous thallus. Spores 8, hyaline, 1–2 septate]

Pyrenocollema prospersella (Nyl.) R. C. Harris (L. *prospergo*, to sprinkle + *-ellus*, diminutive; probably in reference to the well scattered, nonaggregated perithecia) = *Verrucaria prospersella* Nyl.; *Arthopyrenia prospersella* (Nyl.) Zahlbr. Fink (1935) lists this species as a northern Illinois endemic. Harris (1975) described this species as: "*Thallus gray, continuous to rimose, epilithic. Photobiont with cells blue green in color, in small groups but without an obvious sheath. Ascocarps globose, 0.2–0.25 mm in diameter. Asci slightly ovate to elliptical. Spores 17–23 × 8–11 μ. Habitat on calcareous rocks, possibly more or less aquatic. It is known from a Belgian collection in addition to the type locality.*" Tucker & Harris (1980) cite the type 16 km from Chicago (H-NYL 991) and list the substrate in Louisiana as "sandstone outcrops."

Cook-F,MOR,NY

PYRENODESMIA A. Massal. TELOSCHISTACEAE [Photobiont: mostly "*Pseudotreboxia*." Gr. *pyren*, kernel + *desmos*, a bond or fastening. Thallus white; apothecia black; spores 8, hyaline, polaribilocular.]

Pyrenodesmia variabilis (Pers.) A. Massal. (L. *variabilis*, variable; perhaps from the variable size and appearance of the apothecia) = *Caloplaca variabilis* (Pers.) Müll. Arg.. Rudolph (30) listed this species from La Salle County. Interestingly, there is a Calkins specimen (F1177718) at the Field Museum referable to *Caloplaca atroalba*, which see. Our only record for this species

is from a dolomitic boulder in a pasture at the Des Plaines Fish & Wildlife Area, near Wilmington.

Will-MOR

PYRENULA Ach. PYRENULACEAE [Photobiont: *Trentepohlia*. Gr. *pyren*, kernel + *-ulus*, diminutive; from the perithecia that are thought to resemble small kernels or grains. Spores 8, brown, mostly 3-septate]

1. Thallus UV+ yellow; spores pale yellowish brown; hymenium I+ greenish blue *P. PSEUDOBUFONIA*
1. Thallus UV-; spores lavender brown; hymenium I+ or pinkish *P. SUBELLIPTICA*

Pyrenula pseudobufonia (Rehm) R. C. Harris (Gr. *pseudos*, false, deceptive + ?) = *P. neglecta* R. C. Harris; *P. nitida* of North American authors, not (Weigel) Ach. Harris (1973) lists trees of mesophytic forests as the substrate for this species; it is common south and east of the Chicago region. It is probable that the reports of *P. glabrata* (= *P. laevigata* of Calkins) are referable here, even though Calkins described the thallus as whitish and thin, features that do not suggest *P. pseudobufonia*. Harris (1973) asserted that *P. laevigata* is rare in the Great Lakes region, and that it occurs mostly on *Betula* and occasionally on *Fraxinus*, and cited a specimen of *P. pseudobufonia* from Cook County. See also comments under *Arthopyrenia cinchonae*. [lichexanthone]

Cook-MSU,NY

Pyrenula subelliptica (Tuck. in Lea) R. C. Harris (L. *sub*, below, almost, near + *ellipsis*, lack, imperfection + *-icus*, belonging to or emphasizing a character; from the elongate or imperfectly-formed median lumina of the spores) = *P. imperfecta* (Ell. & Ev.) R. C. Harris. Harris (1973) mapped this species from just south of the Southern Lake Michigan region; he listed its substrates as *Carpinus*, *Fagus*, *Fraxinus*, and *Quercus*. Most of the specimens we have seen too often have spore lumina evocative of *P. macounii* R. C. Harris, but the hymenium is usually notably, if not abundantly, interspersed with oil droplets and granules, and the white spots characteristic of *P. subelliptica* are occasionally evident. The only specimen we have seen is an old one from Cook County (Calkins *s.n.*, *nd.* MOR).

Cook-MOR

PYRENULACEAE

- A. Spores brown, 3-septate or occasionally 4–7 septate or even imperfectly muriform **Pyrenula**
- A. Spores 7–9 septate, or colorless and 3-septate **Lithothelium**

PYRRHOSPORA Körb. LECANORACEAE [Photobiont: *Trebouxia*. Gr. *pyrrhos*, flame-colored; from the reddish apothecia of the type species. Spores 8, hyaline, simple. Anthraquinones in the apothecia]

Pyrrhospora varians (Ach.) R. C. Harris (L. *varians*, changing; perhaps from the various shapes and degrees on confluence of the apothecia) = *Biatora varians* of Calkins (1896), who reported it from oaks and hickories. Locally frequent, on a variety of twigs and branches, our specimens are from *Gleditsia triacanthos*, *Juglans nigra*, *Populus grandidentata*, *Prunus serotina* *Rhus*

typhina and weathered lignin. This species is weedy in and around St. Louis, Missouri. Some authorities consider this species a true *Lecidea*, to wit, *L. varians* Ach.

Cook, DuPage-MOR, Lake-IL, MOR

PYXINE Fr. CALICIACEAE [Photobiont: *Trebouxia*. L. *pyxis*, a box + *-inus*, pertaining to; probably the apothecia reminded Fries of coin boxes. Spores 8, brown, 1–3 septate]

1. Medulla yellow; cortex K– and UV+ bright yellow; lobes typically with a more or less continuous or plaque-like patch of pruina just back from of the tip P. SUBCINEREA
1. Medulla salmon orange; cortex K+ yellow and UV–; lobes usually pruinose, the pruina granular-appearing and diffusely disposed near the tips P. SOREDIATA

Pyxine sorediata (Ach.) Mont. (Gr. *soredion*, a little heap + *-atus*, an adjective ending; from the numerous soredia) In Newton County, we have two specimens from *Quercus velutina*. At Warren Woods in Berrien County it grew on a fallen ash, and at the Morton Arboretum it grew on the surface of a limb of an open-grown *Crataegus*; the Will County record is from *Populus deltoides*. [atranorin]

Berrien-MOR, DuPage-MOR, LaSalle-F, Newton-MOR, Waukesha-WIS, Will-MOR

Pyxine subcinerea Stirton (L. *sub*, below, almost, near + *cinereus*, ash-colored; from the grayish thallus) = *P. caesiopruinosa* of previous North American authors, not Nylander. Commoner farther south, our only records are from a cultivated elm at the Morton Arboretum, where it is presumed to be adventive, two from *Crataegus* and one from a dead oak. According to Harris, *P. caesiopruinosa* (Nyl.) Imsh. is confined to the southeastern coastal plain, from where we have numerous specimens. It differs in that the medulla is K+ purple. [atranorin, lichexanthone]

Cook-MOR, DuPage-MOR

RAMALINA Ach. RAMALINACEAE [Photobiont: *Trebouxia*. L. *ramus*, a branch + *linum*, thread, rope; perhaps from the cordlike or lined appearance of the surface of the thallus branches. A genus in great need of revision, our position on the species delineated below is wholly provisional. Spores 8, hyaline, 1-septate]

1. Thallus sorediate.
 - Thallus saxicolous, the soredia granular R. INTERMEDIA
 - Thallus corticolous, the soredia very fine R. FARINACEA
1. Thallus esorediate.
 - Principal thallus lobes not or scarcely expanded distally, less than 4 mm broad, smooth to often somewhat warty with pseudocyphellae R. AMERICANA
 - Principal thallus lobes usually more or less expanded distally, more than 4 mm broad, smooth, pseudocyphellae rare or flush with the cortex R. SINENSIS

Ramalina americana Hale (of America) Including *R. calicaris* and *R. calicaris* var. *fastigiata*

of Calkins. Uncommon locally, our records are from *Acer negundo*, *Juglans nigra*, and *Populus deltoides*. Similar is *R. culbersoniorum* LaGreca, which is known from districts all around our region; it differs in having divaricatic acid as well as usnic acid. [usnic acid]

Cook-MOR, DuPage-MOR, Lake II-MOR, Marshall-WIS, Milwaukee-FH,MIL,MOR, Racine-MOR

Ramalina farinacea (L.) Ach. (*L. farina*, mealy + *-aceus*, resembling) The only specimen we have seen is from an open-grown dead ash. [usnic acid ±protocetraric acid, ±norstictic acid]

DuPage-MOR

Ramalina intermedia (Nyl.) Nyl. (*L. inter*, between, among + *medius*, middle; from its resemblance to two similar species) Not known from the 46-county Southern Lake Michigan region, there is a population of this rare lichen in Apple River Canyon State Park, in Jo Daviess County, where it grows on a limestone cliff near the center of the park. [usnic acid]

Ramalina sinensis Jatta (of China) = *R. calicaris* var. *fraxinea* of Calkins; *R. fastigiata* var. *subampliata* Nyl. Calkins reported it from oaks and old fences near Lemont. A Calkins Cook County specimen (*Lichenes Exsiccati* I-2), called *R. calicaris* var. *fastigiata* is referable here. Hale (1979), pointed out that *R. sinensis* is prevailing southwestern and has decorticate areas on older portions of the thallus, a feature that does not describe our material, which is corticate throughout. (Thomson 1990) described as a "prairie-forest" border species with the branches much dilated distally: *R. unifolia* J. W. Thomson, which appears fairly distinctive in that it has strong longitudinal ridges intercalated with decorticate zones and curved spores; it differs from the southwestern species, *R. complanata* (Sw.) Ach. in lacking divaricatic acid. Hale also noted that there is a northern Great Lakes form with broad lobes that has been referred to as *R. subampliata*, but does not speculate as to what its valid name might be and this latter epithet is what we have used up until this treatment. Bowler & Rundel (1973) noted that Nylander originally described *R. fastigiata* var. *subampliata* as having lobes 6–12 mm wide, but they did not explain why there "is no question that North American reports of *R. subampliata* are incorrect," or even how it differs from similar broad-lobed North American species. Lacking a decisively better name, we are exploiting the name *R. sinensis* for our rather smooth, broad-lobed species in Illinois. All of the Illinois and Southern Lake Michigan region material we have seen has laminal apothecia, straight spores, and lacks the decorticate zones and longitudinal ridges as seen in more northern or western material. [usnic acid]

Cook-ILL, DuPage-MOR, Kane-MICH, McHenry-ILL

RAMALINACEAE

A. Thallus either fruticose or parasitic on *Dermatocarpon*.

Thallus with apothecia parasitic on the lower cortex of *Dermatocarpon* **Tonia**

Thallus fruticose, the apothecia on flattened branches **Ramalina**

A. Thallus fruticose.

B. Spores 1-septate **Lecania**

B. Spores 3 or more septate.

Spores ellipsoid to fusiform, more than 5 μm wide, the thallus muscicolous **Bilimbia**

Spores cylindrical to bacilliform, less than 5 μm wide, the substrate various **Bacidia**

RHIZOCARPACEAE

One local genus **Rhizocarpon**

RHIZOCARPON DC. RHIZOCARPACEAE [Photobiont: Chlorococcoid. Gr. *rhiza*, root + *karpos*, fruit; from what feature of the ascocarp is unclear. Spores 8, hyaline to colored, septate to muriform]

Rhizocarpon reductum Th. Fr. (L. *reductus*, restored, reformed, brought back to a previous condition) = *R. obscuratum* of local authors. Yet unknown from the Southern Lake Michigan region, there is a specimen (Calkins #43, NY) collected presumably in northeastern Illinois; it was originally called *Pannaria nigra*.

RHIZOPLACA Zopf LECANORACEAE [Photobiont: *Trebouxia*. Gr. *rhiza*, root + *plax*, a flat round plate, dish; perhaps from the roundish thallus sometimes attached by a short "root," or umbilicus. Spores 8, hyaline, simple]

Rhizoplaca subdiscrepans (Nyl.) R. Sant. (Gr. *sub-* below, slightly, imperfectly, nearly + *discrepans*, in disagreement; probably an allusion to the various opinions regarding its distinctness from *R. chrysoleuca* (Sm.) Zopf—which is more decidedly umbilicate and tends to have flatter thallus surfaces) Our only specimens are on sandstone breaks in our western sector. The thalli of all of our material, including that from southern Illinois, are characterized by crowded, stalked, bullate areoles (McCune, 1987), and are therefore referable to *R. subdiscrepans* (Nyl.) R. Sant. [pseudoplacodiolic acid and usnic acid]

LaSalle-MOR, Lee-MOR, Ogle-MOR

RINODINA (Ach.) Gray PHYSCIACEAE [Photobiont: *Trebouxia*. Gr. *rhine*, a file or rasp + *dinos*, rotation, eddy, a large round goblet or cup; perhaps from the apothecia and their often dry or rough-appearing discs. Spores 8, brown, 1(3)-septate. Caution: As *Rinodina* spores pass maturity, they become very brown and much like *Buellia* spores. Look for the grayer spores that still display the characteristic lumen development.

1. Thallus corticolous.
 2. Spores mostly 16 or more per ascus R. POPULICOLA
 2. Spores 8 per ascus
 - Thallus with isidioid papillae R. PAPILLATA
 - Thallus without papillae R. FREYI
1. Thallus saxicolous.
 3. Spore lumina with equally thick walls on all sides, but the septum strongly thickened and often obscured by a darkened band
 - Substrate HCl+ R. BISCHOFFII
 - Substrate HCl- R. TEPHRASPIS
 3. Spore lumina with unequal or angular walls, the septum scarcely or not at all obscured by a darkened band.
 4. Apothecia immersed, the thallus dark gray, K- R. CANA
 4. Thallus K+.

Areoles less than 1 mm in diameter; spores prevailingly less than 20 μ m long and 12 μ m wide R. OXYDATA
Areoles most more than 1 mm in diameter; spores mostly more than 20 μ m long and 12 μ m wide R. DESTITUTA

Rinodina bischoffii (Hepp) A. Massal. (after Gottlieb Wilhelm Bischoff, 1797–1854, German botanist, lexicographer, and glossographer) Our only contemporary specimen is from a dolomitic outcrop in Boone County, where it grows with *Caloplaca sideritis*, *Circinaria contorta*, and *Verrucaria fayettensis*. Calkins (1896) reported this species from "calcareous rocks at Joliet and Lemont" and described it as a little-known species that occurred more abundantly farther south and west. A specimen at NY from La Salle County was identified accurately by Calkins as *R. bischoffii*, and it is indeed more frequent farther south and west, where it grows in limestone glades and on outcrops. [no substances]

Boone-MOR, Cook, LaSale-MOR, Will

Rinodina cana (Arnold) Arnold (L. *canus*, gray, hoary, white, or appearing as if aged; probably from the color of the thallus) Occasional on granitic or sandstone boulders, or sometimes on chert in glades. Calkins (1986) reported a lichen he called *R. sophodes* (Ach.) Nyl. from boulders near Lemont and stated that he had never "met with it elsewhere so far north." He described it thus: "*Thallus gray or cinereo-fuscescent; apothecia small, appressed; disc flat, fuscous black; margin entire.*" He may well have been referring to this species. John Sheard has annotated a specimen from central Illinois at NY, originally labelled as *R. sophodes*, as *R. cana*.

Cook, DuPage-MOR, LaSalle-MOR, Will-MOR

Rinodina destituta (Nyl.) A. Zahlbr. (L. *destitutus*, forsaken, impecunious) Infrequent locally on granitic boulders in pastures, this species is widespread in the Midwest on numerous HCl- rocks. [atranorin]

Grundy-MOR, Kendall-MOR, LaSalle-MOR, McHenry-MOR

Rinodina freyi H. Magn. (in honor of the German lichenologist, Eduard Frey, 1888-1974, student of the lichen flora of the Alps) Our only record is from *Carya ovata* at Somme Prairie Grove. [no substances]

Cook-MOR

Rinodina oxydata (Mass.) Mass. (Gr. *oxys*, sharp + *dateomai*, to divide; from the sharply divided spore lumina) Yet unknown from the Southern Lake Michigan region, it is well known in ambient districts on shaded HCl- rocks. [atranorin]

Rinodina papillata H. Magn. (L. *papilla*, nipple, pimple + *atus*, an adjective ending; from the isidioid thallus) All of our records are from open-grown oak species in our western sector.

Lee-MOR, Winnebago-MOR

Rinodina populicola H. Magn. (*Populus* + *-cola*, dwell; from its frequent occurrence on *Populus*) This largely western species is known from as nearby as Champaign County, where it was collected on *Carya*.

Rinodina tephropsis (Tuck.) Herre (Gr. *tephros*, ash gray + *aspis*, heavy wooden, usually round shield or buckler) This species is infrequent on HCl- rock. [5-O-methylhiasic acid, lecanoric acid, zeorin]

Grundy-MOR, Kendall-MOR

RUFOPLACA Arup, Søchting & Frödén TELOSCHISTACEAE [Photobiont: mostly "*Pseudotrebouxia*." L. rufus, reddish + Gr. *plax*, a flat round plate, dish; from the reddish apothecia, resembling plates; an unusually mixture of Latin and Greek roots. Spores 8, hyaline, polaribilocular.]

Rufoplaca oxfordensis (Hedr.) Arup, Søchting & Frödén (Probably of Oxford, Ohio) = *Caloplaca oxfordensis* Hedr. Our only records of this species are from granitic boulders in open meadows or pastures. Wetmore (1996) maps this species in several counties just to the north and east of the Southern Lake Michigan region.

Kane-MOR, LaSalle-MOR, McHenry-MOR, Winnebago-MOR

RUSAVSKIA S.Y. Kondr. & Kärnefelt TELOSCHISTACEAE [Photobiont: *Trebouxia*. In honor of Anna Ivanivna Rusavska, mother of the Ukrainian lichenologist, Sergey Yakovich Kondratyuk (1959 -), the latter a student of *Xanthoria* and its relatives. Spores 8, hyaline, polaribilocular; anthraquinones, particularly parietin]

- 1. Thallus esorediate R. ELEGANS
- 1. Thallus soorediate R. SOREDIATA

Rusavskia elegans (Link) S.Y. Kondr. & Kärnefelt (*L. elegans*, neat, elegant; from its comely appearance) = *Xanthoria elegans* (Link) Th. Fr. Commoner in northwestern Illinois, our only local records are from weathered concrete and dolomitic boulders.

Dekalb-MOR, Kenosha-MOR, Ogle-MOR, Rock-WIS

Rusavskia soorediata (Vain.) S.Y. Kondr. & Kärnefelt (Gr. *soredion*, a little heap + *-atus*, an adjective ending; from the conspicuous soredia) = *Xanthoria soorediata* (Vain.) Poelt. Yet unknown from the region, this western species has been collected as near as Rock Island County, Illinois, where it grows on a limestone cliff north of Hillsdale, and Iowa County, Wisconsin (Lindblom 1997).

SARCOGYNE Fée ACAROSPORACEAE [Photobiont: *Trebouxia* and *Myrmecia*.

Gr. *sarx*, flesh + *gyne*, a woman; probably from the tendency of a moistened hymenium to turn red. Spores numerous, hyaline, simple]

- 1. Thallus on carbonate-rich rock or thallus continuously epilithic; apothecia usually at least thinly pruinose.
 - Thallus endolithic S. REGULARIS
 - Thallus epilithic, white or sordid S. sp. #L2016
- 1. Thallus on noncarbonate rock; apothecia epruinose.
 - 2. Many of the apothecia more than 1 mm across, round but many proliferating forming clusters with more angular shared borders. S. SIMILIS
 - 2. Apothecia or less than 1 mm across, round or angular, but not notably proliferous.

Apothecia mostly more than 0.8 mm in diameter; hypothecium nigrescent S. CLAVUS
 Apothecia generally asymmetrical or angular, prevailing less than 0.8 mm in diameter; hypothecium
 hyaline S. HYPOPHAEA

Sarcogyne clavus (DC.) Kremp. (L. *clava*, club; from the shape of the ascus) Yet unknown from the Southern Lake Michigan region, it is occasional in ambient districts. This is our only species with a dark-colored hymenium.

Sarcogyne hypophaea (Nyl.) Arnold. (Gr. *hypo*, under, beneath + *phaios*, dusky, dark gray) = *Lecanora privigna* (Ach.) Nyl. The *Lecanora cervina* of Calkins (1896) probably should be referred here inasmuch as he said it was scarcely distinguishable from *L. privigna* and that it grew on siliceous rocks. Calkins, however, attributed the pruinose forms of *privigna* to siliceous rocks, an observation that is contrary to what is generally observed.

Cook, Will

Sarcogyne regularis Körb. (L. *regularis*, regular; perhaps regarded by Körber to occur routinely) = *Biatorella pruinosa* Ach. Probably including *Lecanora privigna* var. *pruinosa* of Calkins. Occasional on a wide variety of carbonate-rich substrates, including tufa rock, gravel, concrete, shale, and exposed dolomite. Some specimens called "*Lecanora cervina*" by Calkins are referable here.

Cook-MOR, DuPage-MOR, Grundy-MOR, Jasper-MOR, Kane-MOR, Kankakee-MOR, Kenosha-MOR, Lake Il-MOR, Lake In-MOR, LaSalle-F,MOR, McHenry-MOR, Racine-MOR, Walworth-MOR, Will-MOR

Sarcogyne similis H. Magn. (L. *similis*, si milar or resembling, an adjective usually used to modify nouns in the genitive or dative cases) Our only record for this species is from a collection made on exposed sandstone at Castle Rock. It has an unfortunate resemblance to *Porpidia macrocarpa*, which see, from which it must be distinguished by the numerous tiny spores and the fact that the disc, as in all *Sarcogyne*, turns vinaceous when wet.

Ogle-MOR

***Sarcogyne* sp. #L2106** Our only record is from a chert pebble on an eroded slope in full sun.

DuPage-MOR

SCLEROPHORA Chevall. CONIOCYBACEAE [Photobiont: *Trentepohlia*. Gr. *skleroun*, to harden + *phoros*, a bearing; the allusion not clear; apothecia mazaedial, spores numerous, hyaline, globose, often warty]

Sclerophora nivea (Hoffm.) Tibell (L. *nivea*, snow white) Our only record is from "trees" in LaSalle County, where represented by an undated specimen of Calkins (#370), which he called *Coniocybe pallida*. Generally it grows in the crevices of dry bark.

LaSalle-CUP

SCOLICIOSPORACEAE

One local genus ***Scoliciosporum***

SCOLICIOSPORUM A. Massal. SCOLICIOSPORACEAE [Photobiont: Chlorococcoid, often forming goniocysts. Gr. *skolekos*, of a worm + *spora*, seed; from the elongate, curved spores. Spores 8, hyaline, 3–7 septate]

1. Thallus corticolous S. CHLOROCOCCUM
 1. Thallus saxicolous S. UMBRINUM

Scoliciosporum chlorococcum (Stenh.) Vězda (Gr. *chloros*, green + *kokkos*, a kernel, grain; from the green granular thallus) = *Bacidia chlorococca* (Stenh.) Lettau. Infrequent on various corticolous substrates, including *Acer rubrum*, *Larix laricina*, *Pinus banksiana*, *Rhus typhina*, and *Tilia americana*. Armstrong (1977) reported *Bacidia chlorantha* (as "*B. chlorocantha*") from Du Page County, but her specimen is referable to this species. *B. chlorantha* (Tuck.) Fink is similar, but has more than 8 spores per ascus and conspicuous oil droplets in the hymenium.

Allegan-MSC, Berrien-MIN,MOR,MSC, DuPage-MOR, Jasper-MOR, Kalamazoo-MIN,MSC, LaPorte-MIN,MOR, LaSalle-MOR, Ottawa-MSC, Porter-MIN,MOR

Scoliciosporum umbrinum (Ach.) Arnold (L. *umbros*, full of shade + *-inus*, pertaining to; probably from the dark color of the nigrescent thallus granules) Our only records for this species are from a granitic erratics in open pastures and on old stone walls.

Jefferson-WIS, Kane-MOR, Winnebago-MOR

SCYTINIUM (Ach.) Gray COLLEMATACEAE [Photobiont: *Nostoc*. Gr. *skytos*, leather; + *-inus*, pertaining to; perhaps from the texture of the thallus thallus. Spores 8, hyaline, 2-11 septate, 1-3 muriform]

1. Thallus minute, to 1 mm across, subcrustose S. FRAGRANS
 1. Thallus usually larger, more or less fruticose or foliose.
 2. Thallus lobes narrow, the margins finely dissected into dense isidioid or coralloid branches; lobe surfaces longitudinally wrinkled S. LICHENOIDES
 2. Thallus without coralloid branches; lobes smooth.
 Thallus olivaceous to nigrescent, isidiate S. DACTYLINUM
 Thallus dark gray, without isidia S. JUNIPERINUM

Scytinium dactylinum (Tuck.) Otálora, P. M. Jørg. & Wedin (Gr. *daktylos*, a finger, toe + *-inus*, pertaining to; from the flattened isidioid marginal lobules that supposedly resemble fingers) = *Leptogium dactylinum* Tuck. Our only records for this species are from shaded, often mossy dolomitic exposures. There is a Calkins specimen at ILL (*LE*-175) from "Illinois" that he called *L. myochroum*, but it looks to us like *L. dactylinum*.

Boone-MOR, DuPage-MOR, Kane-MOR, Will-MOR

Scytinium fragrans (Sm.) Ach. (L. *fragrans*, sweet-smelling; an inexplicable epithet) = *Collema microphyllum* of Calkins, who recorded it from "elm bark; Cook and Will counties," and regarded it as rare.

Cook, Will

Scytinium juniperinum (Tuck.) Otálora, P. M. Jørg. & Wedin (*Juniperus*, juniper + *-inus*, pertaining to; perhaps from a resemblance of the thallus folds to the imbricated juniper leaves)

= *Leptogium juniperinum* Tuck. Rare throughout the state, one local record is from shaded, argillaceous, silty dolomite in a canyon along the DesPlaines River. The McHenry County record is admixed with *Peltigera rufescens* (Hyerczyk #2745, MOR) collected on gravelly soil alongside a hill prairie. The La Salle County collection is from moss patches on a wooded slope under *Pinus strobus*.

DuPage-MOR, McHenry-MOR

Scytinium lichenoides (L.) Otálora, P. M. Jørg. & Wedin (Gr. *leichen*, a lichen + *-oideos*, form of, type; with the form of a lichen) = *Leptogium lichenoides* (L.) Zahlbr.; *L. lacerum* of Calkins, who reported it from elms, although elsewhere in the Midwest, this species typically occurs on carbonate rocks, often with the moss, *Anomodon rostratus*. Our only contemporary records are from a dolomitic outcrop on a north slope along the east bank of the Fox River and from partially shaded rocks at Carver-Roehl County Park.

Kane-MOR, LaSalle-F,ILL, Rock-WIS

SOLITARIA Arup, Søchting & Frödén TELOSCHISTACEAE [Photobiont: *Chlorococcus*-like, not *Trentepohlia*. *L. solitarius*, solitary, only one. Spores not seen. Anthraquinones]

Solitaria chrysophthalma (Degel.) Arup, Søchting & Frödén (Gr. *chrysos*, gold + *ophthalmos*, the eye; probably from the deep golden orange apothecia on a pale yellow background) = *Caloplaca chrysophthalma* Degel. This attractive species is known from as far north in Illinois as Woodford County and as far south in Minnesota as Winona County, but it is yet unknown from the Southern Lake Michigan region.

SOLORINA Ach. PELTIGERACEAE [Photobiont: *Chlorococcus*-like, and or *Trebauxia*. Possibly from the Indonesian, volcanic island of Solor, or from the Latin verb, *solor*, which evokes feelings of comfort and ease; allusion to either theory is abstruse. Spores brown, ellipsoid to fusiform, 1-8, 2-celled]

Solorina saccata (L.) Ach. (*L. saccatus*, having the form of a sack) Known from as nearby as Ozaukee County, Wisconsin, where it grows on carbonate-rich soil, or soil over limestone or dolomite, it is yet unknown from the Southern Lake Michigan region.

SPIILONEMA Bornet COCCOCARPIACEAE [Photobiont: *Stigonema*. Gr. *spilos*, spot or blemish + *nema*, a slender thread or tube. Minutely fruticose; spores 8, hyaline, simple]

Spilonema revertens Ny. (*L. revertens*, returning, turning back; the allusion unclear) Our only record for this easily overlooked lichen is on a specimen in association with *Psorula rufunigra*, which is said to be lichenicolous upon it. Both grew together on a siliceous, exposed rock at Magnolia Bluff in nearby Rock County, Wisconsin. The minute much-branched thallus

filaments, no more than 0.3 mm long, are black to dark brown, sometimes with a bluish black hypothallus evident.

SQUAMULEA Arup, Søchting & Frödén TELOSCHISTACEAE [Photobiont: mostly "*Pseudotrebouxia*." L. *squamula*, small lobe, lodicule. Thallus orange; spores polaribilocular, the isthmus more than 1/3 as long as the spore. Anthraquinones, particularly parietin]

Squamulea subsoluta (Wedd.) Arup, Søchting & Frödén (Gr. *sub-* below, slightly, imperfectly, nearly + *solutus*, unbound, free; from the more or less dispersed areoles) = *Caloplaca subsoluta* (Wedd.) Zahlbr. *Placodium cinnabarinum* of Calkins. As it was in Calkins's day, this is a frequent species of a variety of carbonate rocks, including concrete; it also can grow on HCl- rocks. It grows in weedy areas as well as on rocks in natural contexts. Occasional asci will be found with 1 or 2 spores that are larger than normal, but typically the 8-spored asci contain broadly ellipsoid spores 10–11 µm long, with isthmi 3–4 µm long. The apothecia rarely exceed 0.4 mm across, and mostly run about 0.2–0.3 mm across. This species was long known locally as *Caloplaca cinnabarina* (Ach.) Zahlbr., which is a more distinctly reddish and placoid species with a southwestern distribution.

Boone-MOR, Cook-MOR, DeKalb-MOR, DuPage-MOR, Jasper-MOR, Kane-MOR, Kankakee-MOR, Kendall-MOR, Lake II-MOR, LaSalle-CUP,MIN,MOR, McHenry-MOR, Racine-MOR, Will-MOR

STEREOCAULACEAE

- A. Thallus leprose **Lepraria**
 A. Thallus fruticose **Stereocaulon**

STEREOCAULON Hoffm. STEREOCAULACEAE [Photobiont: *Trebouxia* in the algal layer; *Gloeocapsa*, *Nostoc*, *Scytonema*, and *Stigonema* in the cephalodia. Gr. *stereos*, solid, firm + *kaulos*, stalk, stem; from the solid podetia. Spores acicular, 8, hyaline, 3–7 septate]

Stereocaulon saxatile H. Magn. (L. *saxatilis*, among the rocks; from its rocky habitat) Our only record for this species is from a sandstone exposure in a grazed prairie east of Pine Rock Nature Preserve. [lobaric acid, atranorin]

Ogle-MOR

STICTIDACEAE

- One local genus **Conotrema**

STRIGULA Fr. STRIGULACEAE [Photobiont: *Trentepohlia*. L. *strigula*, a scraper, flesh brush; perhaps from the brushlike appearance of the hymenium. Spores 8, hyaline, 1–8 septate to submuriform]

1. Spores 2-4 celled S. AMERICANA

1. Spores 5–8 celled S. SUBMURIFORMIS

Strigula americana R. C. Harris (of America) Harris (1975) mapped this species from just west and south of the Southern Lake Michigan region. There are specimens from DuPage County on *Gleditsia triacanthos* and *Carya cordiformis*. We have a specimen from farther south in Illinois growing on *Quercus velutina*. *Strigula americana* is 2-celled; related, is *S. jamesii* (Swinsc.) R. C. Harris, which is 4-celled and known from districts east and west of the Southern Lake Michigan Region.

DuPage-MOR

Strigula submuriformis (R. C. Harris) R. C. Harris (L. *sub*, below, almost, near + *muriformis*, having the appearance of brick walls; from the occasional 1–2 muriform spores) Our only records for this species are from the bark of *Ulmus* and *Gleditsia* in park-like settings.

Ogle-MOR, Winnebago-MOR

STRIGULACEAE

One local genus **Strigula**

TELOSCHISTES Norman (TELOSCHISTACEAE Photobiont: *Trebouxia*. Gr. *telos*, end + *schistos*, split, divided; from the polaribilocular spores, the two end cells divided and rendered remote by an isthmus. Spores 8, hyaline, polaribilocular)

1. Apothecial margins ciliate T. CHRYSOPHTHALMUS
 1. Apothecial margins eciliate T. EXILIS

Teloschistes chrysophthalmus (L.) Th. Fr. (Gr. *chrysos*, gold + *ophthalmos*, eye; from the deep yellow or orange apothecia, particularly primordial ones, against the grayish background of the thallus) = *Theloschistes chrysophthalmus* of Calkins. Our only contemporary records for this species are from DuPage County, where it grew on *Fraxinus americana* and *Rhus typhina*, both open-grown. There is an early specimen at the Chicago Academy of Sciences, collected at Lemont by Calkins. He reported it from "Lemont, on old rails in woods" (Calkins 1896). Also on old oak trees near the lake shore, Lake View." Very rare today, there has been a recent collection made on an open grown *Fraxinus* species near at the Hidden Lake Forest Preserve.

[anthraquinones]

Cook-F, LaSalle-ILL, DuPage-MOR

Teloschistes exilis (Michx.) Vainio (L. *exilis*, small, undersized) A rather improbable disjunction from farther south, it was collected locally on a small branch of a dead, cultivated tree *Pinus banksiana*.

DuPage-MOR

TELOSCHISTACEAE

- A.. Thallus fruticose to foliose or subcrustose, but at least the lobe tips elevated or loosely adnate.
 B. Rhizines abundant

- Thallus saxicolous **Rusavskia**
 Thallus corticolous, usually sorediate **Xanthomendoza**
- B. Rhizines absent or quite scarce.
- C. Thallus fruticose **Teloschistes**
- C. Thallus not fruticose.
 Thallus small to 2 cm across, the lobes notably divided and incised **Polycauliona**
 Thallus large, often exceeding 2 cm across; lobes broad, broadly crenate, but not notably divided
 or incised **Xanthoria**
- A. Thallus placodioid and effigurate to subcrustose, all portions tightly adnate.
- D. Apothecia scarce or absent.
- E. Thallus lignicolous or corticolous
 Thallus chromate yellow **Solitaria**
 Thallus orange **Caloplaca**
- E. Thallus saxicolous.
 Thallus margins effigurate; soredia in soralia confined to the ends of the interior lobes
 **Leproplaca**
 Thallus not effigurate; soredia in poorly delimited soralia **Flavoplaca**
- D. Apothecia frequent.
- F. Apothecia black; thallus white **Pyrenodesmia**
- F. Apothecia black or orange; thallus not white or if so then the apothecial disk orange or pale.
- G. Rims of apothecia white, gray, or nigrescent, not yellow or orange, or if so then the thallus effigurate
 at the margin **Caloplaca**
- G. Rims of apothecia yellow or orange, or apothecia absent; thallus absent, areolate, squamulose, but
 never effigurate.
- H. Thallus absent or essentially so (rarely with scant yellow, appressed patches); saxicolous;
 apothecia less than 0.3 mm across; isthmus no more than 1/3 as long as the spore **Xanthocarpia**
- H. Thallus present, or if absent then the apothecia corticolous and the spore isthmus more than 1/3
 the length of the spore.
- I. Thallus K-.
 Thallus corticolous **Blastenia**
 Thallus saxicolous **Rufoplaca**
- I. Thallus K+ deep purple.
- J. Thallus distinctly orange-tinged, paler than to concolorous with the apothecia
 **Squamulea**
- J. Thallus distinctly yellow, notably paler than the orange or brownish apothecia.
- K. Thallus absent or of scattered, loosely appressed squamules **Athalia**
- K. Thallus obvious, more or less continuous.
 Thallus sorediate **Solitaria**
 Thallus esorediate **Gyalolechia**

THELIDIUM A. Massal. VERRUCARIACEAE [Photobiont: *Trebouxia* and
Protococcus. Gr. *thele*, a nipple + *-idion*, diminutive; from the tiny perithecia.
 Spores 8, hyaline, 1–3 septate]

Thelidium zwackhii (Hepp) A. Massal. (In honor of the German lichenologist Philipp
 Franz Wilhelm von Zwach-Holzhausen, 1826-1903) = Local reports of *Thelidium microcarpon*.
 Rather frequent on a variety of carbonate-rich substrates, include concrete, mortar, and pebbles.

Our specimens have an olivaceous, epilithic, thin, continuous to dispersed areolate thallus, with superficial perithecia to 0.3 mm across, which I interpret as lacking an involucrellum. The spores are about 25–35 μm , mostly 4-celled, and resemble exactly those depicted in Duncan (1963); they key to *T. microcarpum* (Leight.) A. L. Sm. in Orange (1991) as well. In all likelihood, the specimen that Calkins called *Verrucaria pyrenophora* is referable here; although there is a specimen in Calkins's bound *Lichenes Exsiccati*, we have not examined it. There is also a specimen at F, that was distributed by Calkins (#199) as *Verrucaria prosepersella*, which is referable here.

Cook-MOR, DeKalb-MOR, DuPage-MOR, Kane-MOR, Lake In-MOR, Will-MOR

THELOCARPACEAE

One local genus **Thelocarpon**

THELOCARPON Hue THELOCARPACEAE [Photobiont: Chlorococcoid. Gr. *thele*, a nipple + *karpos*, fruit; from the tiny yellow apothecia evocative of nipples. Spores numerous, hyaline, simple]

Thelocarpon laureri (Flotow) Nyl. (after Johann Friedrich Laurer, 1798–1873, German pharmacist, physician, and lichenologist) One of our records is from a granitic erratic on a gravelly kame, another is from an old fence rail at the Lockport Prairie. The Porter County record was collected from a log of *Populus deltoides*. [pulvinic acid derivatives]

Cook-MOR, Kane-MOR, Lake II-MOR, LaSalle-F,ILL, Livingston-MOR, Porter-INDU,MIN, Will-MOR

THELOTREMATACEAE

One local genus **Diploschistes**

THROMBIACEAE

One local genus **Thrombium**

THROMBIUM Wallr. THROMBACEAE [Photobiont: Chlorococcoid. L. *thrombus*, a blood clot or curd of milk; from the gelatinous, membranaceous form of the sprawling thallus. Spores 8, hyaline, simple; paraphyses present; ascoma globose, immersed, the wall black throughout]

Thrombium epigaeum (Pers.) Wallr. (Gr. *epi*, above + *ge*, earth; from its membranous growth on the ground) Yet unknown from our area, it occurs in immediate districts all around the Southern Lake Michigan Region, where it grows upon compact soil, mosses, and associated detritus.

THYREA A. Massal. LICHINACEAE [Photobiont: *Chroococcus*. Gr. *thyreos*, a large, oblong, door-shaped shield; from the form of the thallus. Spores 8, hyaline, simple]

Thyrea confusa Henssen (L. *confusus*, confused) = *Omphalaria pulvinata* Nyl. Our only record is from thin soil over dolomite, in full sun, in a dolomite prairie. Calkins & Huett (1898) reported it from La Salle County.

Will-MOR

TONINIA A. Massal. RAMALINACEAE [Photobiont: *Chlorococcoid* or absent. In honor of Carlo Tonini (1803-1877) a pharmacist in Verona, Italy, and friend of Abramo Bartolommeo Massalongo. Thalli independent or lichenicolous; spores 8, 1-7 septate.]

Toninia tecta C. A. Morse & Ladd (L. = hidden, covered; from its ignominious position beneath the thallus of its host, *Dermatocarpon*. A species primarily of the Great Plains, our only record is from the lower surface of a specimen of *Dermatocarpon muhlenbergii* at Kankakee River State Park, which represents the northern and eastern- most range extension limit. The apothecia are characterized by their prevailingly 3-septate spores, greyish epihymenium, and rufous hypothecium.

Kankakee-MOR

TRAPELIA M. Choisy TRAPELIACEAE [Photobiont: Chlorococcoid, or with *Protococcus* and *Chlorella*. Gr. *trapelos*, easily turned, changeable; perhaps from the variable, irregular morphology of the exciple. Spores 8, hyaline, simple]

1. Thallus sorediate T. PLACODIOIDES
 1. Thallus esorediate.
 Thallus thick, with rounded areoles or deeply rimose section, often more or less lobulate . T. INVOLUTA
 Thallus thin, continuous to rimose, without lobules our rounded areoles T. COARCTATA

Trapelia coarctata (Sm.) M. Choisy (L. *coarctatus*, confined, drawn close together, perhaps from the commonly cohering areoles) = *Biatora coarctata*. Most of our specimens are from granitic erratics or sandstone cobbles or outcrops, sometimes partly shaded. Calkins reported it from both calcareous and arenaceous rocks. [gyrophoric acid]

Berrien-MOR, Cook-MOR, DuPage-MOR, Jasper-MOR, LaSalle-F,ILL, Porter-MOR, St. Joseph IN-MOR, Will-MOR

Trapelia glebulosa (Sm.) J. R. Laundon (L. *glebulosus*, with rounded elevations, or clods) = *Trapelia involuta* (Tayl.) Hertel Our records are all from granitic erratics or sandstone, sometimes partly shaded. Wetmore (1986) reports it from Porter County. [gyrophoric acid]

McHenry-MOR, Porter-MIN, Will-MOR

Trapelia placodioides Coppins & P. James (*Placodium* + *-oideos*, form shape; probably from a superficial resemblance to *Placodium*) Our only local records are from partly shaded igneous boulders in remnant savannas. [gyrophoric acid]

Berrien-MOR, Cook-MOR, DuPage-MOR, Kendall-MOR, Lake Il-MOR, LaSalle-MOR, McHenry-MOR

TRAPELIACEAE

- A. Thallus C–, gyrophoric acid absent **Placynthiella**
- A. Thallus C+ pink, gyrophoric acid present.
 - B. Thallus saxicolous **Trapelia**
 - B. Thallus terricolous or lignicolous.
 - Thallus greenish gray or grayish, soredia erupting from verrucae **Trapeliopsis**
 - Thallus dark brown or blackish, without verrucae and cortical tissues **Placynthiella**

TRAPELIOPSIS Hertel & Gotth. Schneid. TRAPELIACEAE [Photobiont: Chlorococcoid and *Pseudochlorella*. ~ Schmitt and Lumbsch (2001) report the photobiont as *Chlorella ellipsoidea* Gerneck. *Trapelia* + Gr. *opsis*, aspect, view, appearance; a segregate of *Trapelia*, which see. Spores 8, hyaline, simple]

- 1. Apothecia plane, with persistent margins; thallus gray-green to dark green, thin T. FLEXUOSA
- 1. Apothecia typically convex, the margins disappearing; thallus gray, thick and convex to granular warty T. GRANULOSA

Trapeliopsis flexuosa (Fr.) Coppins & P. James (*L. flexuosus*, with many bends, winding; from forms of the thallus that sometimes passes into a wrinkled, areolate crust, a rare manifestation in the Southern Lake Michigan region and perhaps no longer attributable to this species) = *Lecidea flexuosa* (Fr.) Nyl.; *L. aeruginosa* Borrer. This species is occasional on decorticate logs, dead limbs, old wood, fence rails, burnt wood, and over moss; we have several records from the limbs of trees, including willows. [gyrophoric acid]

Cook-MOR, DuPage-MOR, Ford-MOR, Grundy-MOR, Iroquois-MOR, Jasper-MOR, Kane-MOR, Kendall-MOR, Lake II-MIN, MOR, Lake In-MOR, LaPorte-MOR, LaSalle-MOR, Newton-MOR, Porter-MIN, Walworth-MOR, Will-MOR, Winnebago-MOR

Trapeliopsis granulosa (Hoffm.) Lumbsch (*L. granulus*, a small grain + *-osus*, having the nature or quality of; from the granular thallus) = *Lecidea granulosa* (Ehrh.) Ach. This species grows on substrates similar to those of the preceding entry. It is also known locally from stable sand in sand prairies. Without seeing the specimens, of course, it is difficult to know where to dispose of Calkins's report of *L. enteroleuca* from Will County. From his description, however, it is probable that some of the material is referable here. Esslinger (2017)) noted that reports of *L. enteroleuca* often refer to what are now recognized as various species of *Lecidella*. [gyrophoric acid]

Allegan-MICH, MSC, Berrien-MOR, DuPage-MOR, Jasper-MOR, Kalamazoo-MSC, Kane-MOR, Lake II-MOR, LaPorte-MOR, McHenry-MOR, Porter-MOR, St. Joseph In-MOR, Starke-MOR, Will

TRYPETHELIACEAE

- A. Ascomata aggregated in raised warts **Trypethelium**
- A. Ascomata solitary, not aggregated in raised warts **Julella**

TRYPETHELIUM Spreng. TRYPETHELIACEAE [Photobiont: *Trentepohlia*. (Gr. *trypa*, hole + *thele*, nipple; from the perithecia imbedded in the pseudostroma. Spores 8, hyaline, 3–several septate)]

Trypethelium virens Michener. (*L. virens*, becoming green; from the color of the green, endophloeic thallus) = *Viridothelium virens* (Michener) Lücking, M. P. Nelsen, & Aptroot. We have yet to voucher mature ascocarps from the Southern Lake Michigan region, but we have seen thalli on beech trees and on *Carpinus* in Berrien County. Harris (1973) cites specimens from as nearby as Tippecanoe County, Indiana, and there are specimens from Ozaukee County, Wisconsin.

TUCKERMANELLA Essl. PARMELIACEAE [Photobiont: *Trebouxia*. Evidently an awkward derivation of Tuckermannopsis, which see, but with the wise choice to deploy only a single *n*. Spores small, 8, hyaline, simple]

Tuckermanella fendleri (Nyl.) Essl. (in honor of Augustus Fendler, 1813-1883, Prussian born American collector of natural history collections, noted for his fine specimens, many of which perished either by fire or flood) Yet unknown from the Southern Lake Michigan region, this species is frequent in nearby districts ambient to Chicago.

TUCKERMANNOPSIS Gyeln. PARMELIACEAE [Photobiont: *Trebouxia*. An awkward attempt to honor Edward Tuckerman, 1817–1886, the noted American botanist. There being no genus Tuckermannia, however, the *-opsis* suffix suggests that these lichens offer a resemblance to Dr. Tuckerman, which assertion may offend his relatives. Brodo (2016) provides only 1 *n*, while most authorities add and *n* to the name, perhaps to keep the antepenultimate syllable short. Spores small, 8, hyaline, simple]

1. Medulla C-; marginal lobules often developed T. ORBATA
1. Medulla C+; marginal lobules absent T. AMERICANA

Tuckermannopsis americana (Spreng.) Hale (of America) = *Cetraria ciliaris* of Calkins (1896), who reported it from "old rails in Lemont Township; on old birch at Glencoe." Thomson (2003) maps *C. halei* W. L. Culb. & C. F. Culb. from nearly throughout Wisconsin, local reports of which probably should be referred here. There are old specimens from Marshall and McHenry counties (A. W. B. s.n., WIS; Willey #69, ILL), originally called *Cetraria ciliaris*, which are referable here. There is a more contemporary record from a bog in Kalamazoo County. [atranorin, alectoronic acid]

Cook, Kalamazoo-MS, LaSalle-F, Marshall-WIS, McHenry-ILL

Tuckermannopsis orbata (Nyl.) M. J. Lai (*L. orbatus*, deprive of, of which feature I am not certain) Yet unknown from our region, Thomson (2003) maps it from as nearby as Jefferson County, Wisconsin, and we have seen an Illinois specimen from Effingham, from where it grew on *Quercus imbricaria*. [atranorin, protolichesterinic acid]

USNEA Adans. PARMELIACEAE [Photobiont: *Trebouxia*. Ar. *oshnah*, moss; from its superficial resemblance to mosses. Spores small, 8, hyaline, simple]

1. Thallus distinctly pendent.
 - Branches strongly segmented with crest or winged, without white warts; medulla K+ red U. ANGULATA
 - Branches round, beset with abundant white warts; medulla K- U. CERATINA
1. Thallus not pendent.
 2. Cortex or medulla with tinctures of red; apothecia absent
 - Medulla red; stictic acid absent U. MUTABILIS
 - Medulla white; stictic acid present U. RUBICUNDA
 2. Cortex yellow green, without tinctures of red; stictic acid absent.
 3. Cortex nigrescent proximally; thallus with tufts of isidia U. SUBFLORIDANA
 3. Cortex concolorous throughout; thallus without tufts of isidia.
 - Thallus branches angular or ridged in cross-section U. HIRTA
 - Thallus branches terete in cross-section U. STRIGOSA

Usnea angulata Ach. (*L. angulatus*, with corners or sharp angles) Our only records are old, collected prior to 1900. [norstictic acid]

Fulton-NY, LaSalle-F

Usnea ceratina Ach. (*L. ceratinus*, horny, or with horn-like projections) This species, sometime bushy, but often pendent occurs in districts ambient to the Southern Lake Michigan region, but we have seen no specimens. [usnic, diffractaic acid]

Usnea hirta (L.) F. H. Wigg. (*L. hirtus*, stiffly hairy; from the isidiose soredia) The only contemporary record we have seen is from a shrub of *Prunus americana* at Kankakee River State Park. Thomson (2003) reports it from Walworth County. [usnic acid]

Kalamazoo-MSC, Marshall-WIS, Walworth, Will-MOR

Usnea mutabilis Stirton (*L. mutabilis*, changeable) This species occurs in districts ambient to the Southern Lake Michigan region, but we have seen no specimens. [usnic acid]

Usnea rubicunda Stirton (*L. = rubicundus*, red, ruddy) There are specimens from as nearby as Dane County, Wisconsin, as well as from Illinois and Indiana farther south, but we have yet to discover it locally. [stictic acid, ±norstictic acid, ±salazinic acid]

Usnea strigosa (Ach.) Eaton (*L. strigosus*, thin, lean, meager; from the slender, stringy thallus) Calkins & Huett (1898) reported *Usnea barbata* and *Usnea barbata* var. *florida* from La Salle County; probably they both should be referred here. [usnic acid, ± norstictic acid, ± galbinic acid, ± fumarprotocetraric acid, ± psoromic acid]

DuPage-MOR, Marshall-WIS, Will-MOR

Usnea subfloridana Stirton (resembling *U. floridana*) Our only records for this species are from the branches of a large tree of *Quercus macrocarpa* and *Prunus serotina*. [usnic acid, squamatic acid]

Cook-MOR, Lake II -MOR

VARICELLARIA Nyl. PERTUSARIACEAE [Photobiont: Chlorococcoid. *L. varius*, pustule or pox + *-cella*, diminutive; evocative of small pox. spores large, thick-walled, 1–8, hyaline, simple]

Varicellaria velata (Turner) Schmidt & Lumbsch (L. *vellus*, a veil, covering + *-atus*, adjective ending; from the apothecia covered by soredia) = *Pertusaria velata* (Turner) Nyl. Calkins (1896) reported this species from both rocks and trees. Most of our specimens from southern Illinois are from oaks; all lack lichexanthone. [lecanoric acid]

Allegan-MSC, Cook-MIN,NY,WIS, LaGrange-MOR, Milwaukee-MIL, Winnebago-MOR

VARIOLARIA Kalb. PERTUSARIACEAE [Photobiont: Chlorococcoid. L. *varius*, pustule or pox + *-arius*, belonging to; evocative of small pox. Apothecia sorediate or pruinose; spores large, thick-walled, 1–8, hyaline, simple]

1. Medulla K+ deep yellow V. TRACHYTHALLINA
1. Medulla K- V. MULTIPUNCTOIDES

Variolaria multipunctoides (Dibben) Lendemer (L. *multus*, many + *punctum*, dot, spot + *-oides*, form of, type; from the appearance caused by the numerous tiny warts) = *Pertusaria multipuncta* of Calkins (1896), who reported it from oaks and hickories, stating that it was not rare. *Variolaria amara* Ach. is known from nearby, but differs from *P. multipunctoides* in that the medulla contains picrolichenic acid. [fumarprotocetraric and succinprotocetraric acids, ± protocetraric acid]

Cook

Variolaria trachythallina (Erichs.) Lendemer, Hodkinson & R. C. Harris (Gr. *trachys*, rough + *thallinus*, in reference to the body of a thallus) Our only record for this species is from a mesophytic forest. Other than medulla chemistry, this species differs from the former in that the apothecia are heavily pruinose rather than sorediate. [thamnolic acid]

Kalamazoo-NY

VERRUCARIA Schrad. VERRUCARIACEAE [Photobiont: *Trebouxia*, *Myrmecia*, and *Protococcus*. L. *verruca*, wart + *-arius*, like or connected with; from the wartlike appearance of the ascoma. We have little confidence that the specimens upon which the following names are based look much like their type material. Most of the *Verrucariae* listed below are morphologically distinct, but there appear to be more morphs than available descriptions. Spores 8, hyaline to brownish, simple]

1. Areoles sorediate along the margins V. MACROSTOMA
1. Areoles esorediate.
 2. Thallus thick, continuous to rimose; medulla black throughout.
 3. Thallus dark brown or nigrescent; perithecia evident V. NIGRESCENS
 3. Thallus pale to dark gray; perithecia immersed or evident at the surface.
 - Areoles with more than 5 tiny black dots evident at the surface, the perithecia wholly immersed V. FAYETTENSIS
 - Areoles with fewer than 5 dots or ostioles, which represent partly emersed perithecia V. FUSCELLA
 2. Thallus thick, thin, continuous to rimose or areolate, or wholly epilithic; medulla white or poorly developed.

4. Thallus brown to brown, olive, or nigrescent.
5. Thallus smooth, very thin, continuous, the perithecia evidently surficial V. SORDIDA
5. Thallus relative thick, areolate, the perithecia immersed or at least partly so.
 Thallus surface rather rough and irregular; perithecia about half emersed, the ostioles evident
 V. NIGRESCENTOIDEA
 Thallus surface warty, the perithecia wholly immersed, the surface without evident ostioles
 but, rather, with nigrescent areas flush with the thallus surface V. GLAUCOVIRENS
4. Thallus white, pale gray, absent, or endolithic.
6. Spores mostly more than 25 μ long; aquatic in clean-water springs V. ELAEOMELAENA
6. Spores rarely as much as 25 μ long; not aquatic.
7. Exciple black, fused to the involucrellum above, extending around the bottom of the
 perithecium V. CALKINSIANA
7. Exciple hyaline, the black involucrellum not completely encircling the perithecium.
 Thallus epilithic V. ILLINOISENSIS
 Thallus endolithic V. MURALIS

Verrucaria calkinsiana Servít (after Col. William Wirt Calkins, 1842–1914, American amateur mycologist and lichenologist) This is our most common *Verrucaria*. It grows on all manner of carbonate rocks, such as dolomite, limestone, weathered concrete, calcareous pebbles and cobbles, and even bone and tufa rock. The thallus can vary from appearing wholly endolithic to rather thick and creamy or sordid white, but a few cuts through the perithecia reveal a black, globular exciple. The spores are 14–25 μm long. Usually, early collectors called this lichen *V. muralis* or *V. rupestris*, but occasionally it was called *V. pyrenophora* or *V. inundata*.

Boone-MOR, Cook-MOR, DeKalb-MOR, DuPage-MOR, Grundy-MOR, Kane-MOR, Kankakee-MOR, Kendall-MOR, Kenosha-MOR, Lake II-MOR, Lake In-MOR, LaSalle-F, Lee-MOR, Livingston-MOR, McHenry-MOR, Ogle-MOR, Starke-MOR, Walworth-MOR, Will-MOR, Winnebago-MOR

Verrucaria elaeomelaena (A. Massal.) Arnold (Gr. *elaion*, oil + *melaina*, black; from the black perithecia heavily interspersed with oil droplets) This species is confined locally to the tufa runs and flats in our calcareous fens, where associates include *Carex sterilis*, *Eleocharis rostellata*, and *Rhynchospora capillacea*.

Kane-MOR

Verrucaria fayettensis Servít (after Fayette County, Iowa) = *V. iowensis* Servít. This species is uncommon locally on weathered dolomite. It was most commonly called *V. fuscella* by early collectors, although Calkins called a Cook County specimen *V. viridula*.

Boone-MOR[with *Rinodina bischoffii*], Cook-F, DuPage-MOR, Grundy-MOR, McHenry-MOR, Ogle-MOR, Will-MOR, NY.

Verrucaria fuscella (Turner) Winch (L. *fuscus*, brown + *-ellus*, diminutive; from the color of the thallus) This species, if we are interpreting it properly, is rare, our only record being from a dolomitic outcrop in southeastern DuPage County. Fink (1906) reports it from an esker in Kane County. Navarro-Rosines *et al.* (2007) call this species *Placopyrenium fuscella* (Turner) Gueidan & Cl. Roux.

Cook-MOR, DuPage-MOR, Kane

Verrucaria glaucovirens Grumman (L. *glaucus*, pale blue or whitish + *virens*, greenish; perhaps from the sometimes greenish brown color of the thallus) This is an occasional species from carbonate rocks.

Kane-MOR, Kenosha-MOR, Lake Il-MOR, McHenry-MOR

Verrucaria illinoisensis Servít (after the state of Illinois) This species was described from calcareous rocks in La Salle County by Servít (1950). Our only local record is a Calkins specimen from Riverside, in Cook County. Interestingly enough, he called this specimen *Verrucaria (Pyrenocollema) prosperella*, to which it has a superficial resemblance.

Cook-F, LaSalle-MOR

Verrucaria macrostoma DC. (Gr. *makros*, long, large + *stoma*, mouth; presumably from an enlarged ostiole) Rare, our only local specimens are from carbonate rock. This is the name applied to Old World specimens that have areolate to subsquamulose, pale brown to olive-green thalli, sterile forms of which are sorediate along the margins of the areoles. Whether our specimens are this species is yet to be determined, but they strongly resemble the photograph in Dobson (1981) that has been called *V. tectorum auct.*, now regarded by Purvis *et al.* (1992) as a synonym of *V. macrostoma*.

DuPage-MOR, Lake Il-MOR

Verrucaria muralis Ach. (*L. muralis*, growing on walls; from the habitat, often on rock walls) Including *V. rupestris* Schrad., which Esslinger (2016) recognizes as a distinct species. This species is occasional on a variety of carbonate-rich substrates, including weathered concrete, flagstone, and even small pebbles. It closely resembles *V. calkinsiana*, but the perithecia are generally more deeply imbedded in the substrate and there is scant if any epilithic thallus.

Cook-F-MOR, DuPage-MOR, Kenosha-MOR, Lake Il-MOR, Lake In-MOR, McHenry-MOR, Porter-MIN, Will-MOR

Verrucaria nigrescens Pers. (*L. nigrescens*, blackening; from the color of the thallus) This species is rather frequent on carbonate-rich outcrops, pebbles, and erratics, although we have one record from a basaltic erratic. Calkins reported this species from limestone along streams, but several older specimens under this name we have referred elsewhere. Early specimens have been called *V. fuscella*, *V. viridula*, and even *Lecidea tessellata*.

DuPage-MOR, Kendall-MOR, Lee-MOR, McHenry-MOR, Ogle-MOR, Will-MOR

Verrucaria nigrescentoidea Fink (from *V. nigrescens*, + *-oideus*, form, type; resembling *Verrucaria nigrescens*) This species is occasional on a variety of carbonate-rich substrates. It resembles *V. nigrescens* in general appearance, but the hypothecium is white.

Cook-MOR, DuPage-MOR, Kane-MOR, Kankakee-MOR, Kenosha-MOR, McHenry-MOR, Racine-MOR, Winnebago-MOR

Verrucaria sordida Fink (*L. sordidus*, dirty, foul; from the dirty brown color of the thallus) Uncommon locally, this species occurs on carbonate-rich rock, although we have a specimen from a chert pebble in Ralls County, Missouri that looks like this species. This appears to be a little-known species, and we are calling it *V. sordida*, not particularly because it closely fits Fink's description, but because it looks like specimens we have seen that Fink himself called *V. sordida*. Most of the specimens Calkins called *V. aethiobola* are referable here. We are also referring here a specimen (NY) he called *V. nigrescens*. It somewhat resembles *V. nigrescentoidea*, but the latter has a notably thicker thallus.

Berrien-MOR, Cook-NY, DuPage-MOR, Kane-MOR, Kendall-MOR, LaSalle-MOR, Walworth-MOR, Winnebago-MOR

VERRUCARIACEAE

- A. Apothecia always absent.
 - Thallus leprose **Botryolepraria**
 - Thallus squamulose **Agonimia**
- A. Apothecia usually present.
 - B. Spores simple.
 - C. Thallus umbilicate or squamulose, terricolous or saxicolous
 - Thallus umbilicate, saxicolous **Dermatocarpon**
 - Thallus squamulose, terricolous **Placidium**
 - C. Thallus crustose.
 - Perithecia deeply imbedded in the substrate; saxicolous **Bagliettoa**
 - Perithecia epilithic or only partially immersed in the substrate **Verrucaria**
 - B. Spores septate or muriform.
 - D. Spores abundantly muriform.
 - Spores more than 2 per ascus, usually 8; thallus continuous, rimose-cracked **Willeya**
 - Spores 2 per ascus; thallus squamulose **Endocarpon**
 - D. Spores not septate or with a few transverse septa.
 - E. Ascospore strictly 1-septate **Placidiosis**
 - E. Many of the ascospores more than 1-septate.
 - Thallus lignicolous **Psoroglaena**
 - Thallus saxicolous **Thelidium**

WILLEYA Müll. Arg. VERRUCARIACEAE [Photobiont: *Stichococcus*, *Protococcus*, and *Myrmecia*. In honor of the New England newspaper editor and lichenologist, Henry Willey, 1824-1907, productive but rather eccentric student of Edward Tuckerman. Spores 8, hyaline to brownish, muriform, hamathecium gelatinous]

Willeya diffractella (Nyl.) Müll. Arg. (L. *dis-*, away from + *fractus*, broken + *-ella*, diminutive; probably from the tendency of the thallus to break up into small, sometimes remote areoles) = *Endocarpon diffractellum* (Nyl.) Gueidan & Cl. Roux; *Staurothele diffractella* (Nyl.) Tuck. Uncommon locally on shaded or sheltered dolomitic boulders or cliff faces as well as siliceous rock.

Cook-MOR, DuPage-MOR, Kankakee-MOR

XANTHOCARPIA A. Massal. & De Not. (TELOSCHISTACEAE Photobiont: mostly "*Pseudotrebouxia*". Gr. *xanthos*, the various shades of yellow + *karpos*, fruit. Spores 8, hyaline, polaribilocular, the isthmus no more than 1/3 the length. Anthraquinones, particularly parietin)

- 1. Disks of apothecia clear yellow or yellowish-orange, not much darker than the rim X. CRENULATELLA
- 1. Disks of apothecia burnt orange, notably darker than the bright yellow rims X. FERACISSIMA

Xanthocarpia crenulatella ((Nyl.) Frödén, Arup & Søchting (L. *crenulata*, having small rounded teeth + *-ellus*, diminutive.) = *Caloplaca crenulatella* (Nyl.) H. Oliver. Frequent on base-rich rock, including weathered concrete, dolomite, slag, gravel, and occasionally on granitic erratics. It can occur with *Xanthocarpia feracissima*, particularly on weathered concrete.

Boone-MOR, Cook-MOR, DeKalb-MOR, DuPage-MOR, Ford-MOR, Jasper-MOR, Kane-MOR, Kendall-MOR, Lake IL-MOR, McHenry-MOR, Will-MOR

Xanthocarpia feracissima (H. Magn.) Frödén, Arup & Søchting (L. *ferax*, rich, fertile + *-issimus*, superlative suffix; from the masses of tiny yellow apothecia) = *Caloplaca feracissima* H. Magn. This species accounts for most of the dirty yellow incrustations on sidewalks, flagstones, and weathered concrete. It grows routinely with *Endocarpon petrolepideum* and *Myriolecis dispersa*. Occasional specimens have paraphyses in which the terminal 1 or 2 cells expand to 7 or 8 μm , said to be characteristic of *Xanthocarpia lactea* (A. Massal.) A. Massal., but so many of our specimens grade from 3 to 6 μm in this respect that it seems there is no discontinuous segregation. The reports of *Caloplaca arenaria* by McKnight, Wilhelm, & Whiteside (1987) are referable here. Rarely, the apothecia are closely associated with the parasitic fungus, *Thelidiella blastenicola* Fink, which is characterized by black, globular or subconic, scarcely ostiolate, perithecia.

Berrien-MOR, Boone-MOR, Cook-MOR, DeKalb-MOR, DuPage-MOR, Grundy-MOR, Jasper-MOR, Kalamazoo-MSC, Kane-MOR, Kenosha-MOR, Lake IL-MOR, Lake IN-MOR, LaSalle-MOR, Lee-MOR, Livingston-MOR, Marshall-WIS, Newton-MOR, Porter-MOR, Racine-MOR, Rock-WIS, St. Joseph IN-MOR, Walworth-MOR, Will-MOR, Winnebago-MOR

XANTHOMENDOZA S. Y. Kondr. & Kärnefelt TELOSCHISTACEAE
[Photobiont: *Trebouxia*. Gr. *xanthos*, the various shades of yellow + (evidently) Mendoza, a town in Argentina; seemingly an awkward constriction, since I do not think that there is a genus Mendoza, certain jumping spiders notwithstanding. Rhizines evident or lacking; spores 8, hyaline, polaribilocular; anthraquinones, particularly parietin]

1. Thallus esorediate X. HASSEANA
1. Thallus sorediate.
 2. Soredia fine, often greenish-yellow, confined to soralia formed at openings or slits between the upper and lower cortices, often between major lobe segments; larger lobes commonly more than 0.7 mm broad ... X. fallax
 2. Soredia fine to granular, always yellow-orange, in marginal soralia or on the distal portions of the lobes and lower cortex; thallus lobes more or less than 0.7 mm broad
 3. Soredia in marginal or even discrete laminal soralia, not produced along the distal portions of the lower cortex; lobes often more than 0.5 mm broad orange; pimple-like pycnidia rare X. ULOPHYLLODES
 3. Soredia mostly along the lobe margins and extending in decorticate arrays beneath the lobe tips; lobes less than 0.5 mm broad; pycnidia frequent.
 4. Soralia formed in the open cavity of hook-like or helmet-like lobe tips X. GALERICULATA
 4. Lobe tips flat or more or less crowned, but not helmet-like.
 - Thallus lobes dichotomously branched, all long and about equally narrow X. WEBERI
 - Thallus lobes irregularly palmately to flabellate-lobed, not all equally narrow ... X. FULVA

Xanthomendoza fallax (Arnold) Søchting, Kärnefelt & S. Y. Kondr. (*L. fallax*, deceptive; probably from its superficial resemblance to other species) = *Xanthoria fallax* (Arnold) Arnold. Frequent, more than half of our specimens are from fast-growing roadside trees such as *Populus deltoides*, *Fraxinus* spp., and *Ulmus* spp. It also grows on open-grown oaks and walnuts, as well as on weathered fence rails. A frequent associate is *Candelaria concolor*. Other associates include *Hyperphyscia adglutinata*, *Phaeophyscia ciliata*, *Physcia millegrana*, *Xanthomendoza fulva*, and *Xanthomendoza ulophyllodes*. Several local reports of this species have been misidentifications of *Xanthomendoza ulophyllodes*.

Boone-MOR, Cook-MOR, DeKalb-MOR, DuPage-MOR, Ford-MOR, Grundy-MOR, Jasper-MOR, Kane-MOR, Kankakee-MOR, Kenosha-MOR, LaGrange-MOR, Lake IL-MOR, Lake In-MOR, LaPorte-MOR, Lee-MOR, Livingston-MOR, Milwaukee-MOR, Porter-MIN, Pulaski-MOR, St. Joseph IN-MOR, Starke-MOR, Will-MOR, Winnebago-MOR

Xanthomendoza fulva (Hoffm.) Søchting, Kärnefelt & S. Y. Kondr. (*L. fulvus*, reddish yellow, from the conspicuous pycnidia) Infrequent on open-grown corticolous substrates as well as both siliceous and carbonate rock. A frequent associate is *Candelaria concolor*.

Cook-MOR, Jasper-MOR, Kane-MOR, Lake IL-MOR, Livingston-MOR, McHenry-MOR, Milwaukee-MOR, Starke-MOR

Xanthomendoza galericulata L. Lindblom (*L. galericulatus*, shaped like a hood) Our only record for this western species is from the branch of an open grown *Crataegus mollis*.

Will-MOR

Xanthomendoza hasseana (Räsänen) Søchting, Kärnefelt & S. Y. Kondr. (in honor of the American lichenologist, Hermann Edward Hasse, 1836-1915, who produced the "Lichens of Southern California") Our only records for this species are from the branch of a dead, open-grown ash and another on a dead open-grown *Prunus serotina*.

Berrien-MIN, Cook-MIN, US, DuPage-MOR

Xanthomendoza ulophyllodes (Räsänen) Søchting, Kärnefelt & S. Y. Kondr. (*Gr. ulo*, a scar, curly + *phyll*, leaf + *ode*, like) = *Xanthoria ulophyllodes* Räsänen This species is occasional on a wide variety of corticolous substrates, mostly in disturbed areas. It also grows on exposed dolomitic boulders and concrete. Frequent associates include *Candelaria concolor*, *Physcia millegrana*, *Physcia stellaris*, and *Xanthomendoza fallax*. The St. Joseph County, Indiana, record is on the same card as *X. fallax*.

Cook-MOR, DuPage-MOR, Kane-MOR, Kenosha-MOR, Lake IL-MOR, Lake In-MOR, McHenry-MOR, Milwaukee-MOR, Ogle-MOR, Porter-MIN, Racine-MOR, St. Joseph IN-MOR, Walworth-MOR, Will-MOR

Xanthomendoza weberi (S. Y. Kondr. & Kärnefelt) L. Lindblom (in honor of the American lichenologist, William Alfred Weber, 1918- , prolific student of lichens and professor at the University of Colorado at Boulder) This species is frequent on corticolous substrates, particularly oaks, and on both siliceous and carbonate rocks.

DuPage-MOR, Ford-MOR, Grundy-MOR, Kendall-MOR, Kenosha-MOR, LaGrange-MOR, Lake IL-MOR, McHenry-MOR, Newton-MOR, Ogle-MOR, Porter-MOR, Racine-MOR, Rock-WIS, Walworth-MOR, Will-MOR, Winnebago-MOR

XANTHOPARMELIA (Vain.) Hale PARMELIACEAE [Photobiont: *Trebouxia*.
Gr. *xanthos*, the various shades of yellow + *Parmelia*; a segregate genus of
Parmelia, which see, with strong tints of yellow. Spores 8, hyaline, simple]

1. Thallus without isidia.
 2. Thallus jet black below except near the margins.

Medulla K-	X. HYPOMELAENA
Medulla K+ yellow to red	X. HYPOFUSCA
 2. Thallus tan to brown below.

Salazinic acid present; medulla K+ red	X. VIRIDULOUMBRINA
Salazinic acid absent; medulla K+ yellow or very slowly turning reddish yellow .	X. CUMBERLANDIA
1. Thallus isidiate.
 3. Medulla K-
 3. Medulla K+ yellow or red.
 4. Lower cortex black except near the margins

Medulla K+ yellow turning red	X. AUSTRALASICA
Medulla K+ yellow, or yellow turning slowly to reddish	X. CONSPERSA
 4. Lower cortex tan or brown nearly throughout.

Salazinic acid present	X. MEXICANA
Salazinic acid absent	X. PLITTII

Xanthoparmelia australasica D. Galloway (of southern Asia) = *Parmelia conspersa* of Calkins (1896), who indicated that his specimens were often isidiate, "fuscous-black" beneath, and grew on stones in Lemont and Will County. We have taken the liberty of including these reports here inasmuch as all modern records of isidiate morphs with black lower surfaces in northern Illinois are referable to *X. australasica*. Recent specimens of this species have been collected in nearby Ogle County on sandstone outcrops in open pasture west of Pine Rock Nature Preserve. Calkins's assertion that it grew on old wood near Elgin would represent a rare observation today. This species was called *X. tinctina* (Maheu & A. Gillet) Hale in Hale (1979). [usnic acid, salazinic acid, norstictic acid]

Cook, Will

Xanthoparmelia conspersa (Ach.) Hale (*L. conspersus*, thickly and regularly aggregated) Yet unknown from the Southern Lake Michigan region, it is rather frequent in districts south and north. There is a report of a specimen from the bark of *Quercus velutina* (Hale #1024 WIS) in Waukesha County, determined by J. W. Thomson. A little farther north there is a record from a quartzite boulder. [usnic acid, stictic acid, with traces of constictic, cryptostictic, norstictic, and connorstictic acids, ± traces of hyposalazinic acid.]

Xanthoparmelia cumberlandia (Gyeln.) Hale (after Cumberland, Maine, in the United States) Perhaps Berry's (1941) report (Cheney #3485, WIS) of *Parmelia conspersa* should be referred here. This is the more frequent *Xanthoparmelia* locally. It grow on siliceous rock, usually in the open [usnic acid, stictic acid, norstictic acid]

Berrien-MSC, Cook-MOR, Grundy-MOR, Kankakee-MOR, LaSalle-MOR, Lee-MOR, McHenry-MOR, Ogle-MOR, Will-MOR, Winnebago-MOR

Xanthoparmelia hypofusca (Gyeln.) Hodkinson & Lendemer (Gr. *hypo-* under, beneath + *L. fusca*, dark-colored—an awkward mixture of Greek and Latin in allusion to the black lower cortex) This species, common in southern Illinois and the Missouri Ozarks, is known from as nearby as Sauk County, Wisconsin. [usnic, salazinic, norstictic acids]

Xanthoparmelia hypomelaena (Hale) Hale (Gr. *hypo*, under, beneath, less than usual + *melaina*, black; from the color of the lower cortex) Our only record of this species is from a west-facing basalt boulder nestled in the bank of a drainage way in a pastured valley on the Waish Kee Shaw Reservation. [usnic acid, fumarprotocetraric acid]

Kendall-MOR

Xanthoparmelia mexicana (Gyeln.) Hale (of Mexico) This species is rather frequent in our western sector, where it grows on sandstone and granite. [usnic acid, salazinic acid, norstictic acid]

Kane-MOR, LaSalle-MOR, Lee-MOR, McHenry-MOR, Ogle-MOR

Xanthoparmelia plittii (Gyeln.) Hale (after Charles C. Plitt, 1869–1933) This species is infrequent on sandstone in our western sector; one record from a granitic erratic in our eastern sector. [usnic acid, stictic acid]

LaSalle-MOR, Ogle-MOR, Pulaski-MOR

Xanthoparmelia subramigera (Gyeln.) Hale (*L. sub-* below, slightly, imperfectly, nearly + *ramus*, branch + *gero*, to carry, bear; from the branched thallus) This species, common in southern Illinois, but our only local collection is from a granite boulder south of Sheridan along the Fox River. [usnic acid, fumarprotocetraric acid]

LaSalle-MOR

Xanthoparmelia viriduloumbrina (Gyelnik) Lendemer (*L. viridis*, green + *ulus*, diminutive + *umbrina*, full of shade) = *X. somloënsis* (Gyeln.) Hale Rare, the Will County record is from a granitic boulder along the Dr. Zales Nature Trail at Joliet Junior College; the Ogle County record is from a massive sandstone exposure. [usnic acid, salazinic acid, norstictic acid. Previous reports of *X. stenophylla* (Ach.) Ahti & D. Hawksw. (Gr. *stenos*, short + *phyllon*, leaf) are referable here.

Ogle-MOR, Will-MOR

XANTHOPYRENACEAE

One local genus **Pyrenocollema**

XANTHORIA (Fr.) Th. Fr. TELOSCHISTACEAE [Photobiont: *Trebouxia*. Gr. *xanthos*, the various shades of yellow + *L. orius*, a place suitable for something; from yellow portion of the spectrum. Rhizines absent; spores 8, hyaline, polaribilocular; anthraquinones, particularly parietin]

Xanthoria parietina (L.) Th. Fr. (*L. parietis*, of a wall + *inus*, pertaining to; from its tendency to grow on walls) = *Theloschistes parietinus* of Calkins. Once very rare inland; there is a specimen of Calkins's from Cook County at the Chicago Academy of Sciences. Calkins treated it matter-of-factly, stating that it grew "along the lake shore, on oaks and poplars; also in Lemont and

elsewhere." In recent years it has begun to appear on young trees in corporate campus or landscape settings. Another early Cook County specimen (Calkins #16 NY), originally called *X. parietina*, is referable to *Polycauliona polycarpa*. Tuckerman (1860) reports it from Kendall County. Rudolph (1955) also reports it from Cook County. With us this species varies from adnate foliose to subfruticose, the older portions of the thallus often blanching to gray.

Cook, DuPage-MOR, Kendall, Lake II-MOR

ZWACKHIA Körber LECANOGRAPHACEAE [Photobiont: *Trentepohlia*. In honor of the German lichenologist Philipp Franz Wilhelm von Zwack-Holzhausen (1826-1903). Spores mostly 8, hyaline, 7–10 septate]

Zwackhia viridis (Ach.) Poetsch & Schied. (*L. viridis*, green; from the greenish thallus of some specimens) = *Opegrapha viridis* Ach. The only Southern Lake Michigan region records for this species were collected on *Ulmus americana* a stump of *Acer negundo*.

DuPage-MOR, LaSalle-MOR

INDEX OF SYNONYMS AND MISAPPLIED NAMES

The following is a listing of names that have been used or applied locally for Southern Lake Michigan region lichens. These names are not necessarily taxonomic synonyms or even routinely misapplied names; they may represent misidentifications or legitimate older names that are known now to have narrower distributions. In some cases, they are related species that appear in text where taxonomic issues are discussed. All of these names are indexed to the species under which they are listed or discussed.

- Acrocordia gemmata* — *Acrocordia megalospora*
Acarospora cervina — *Acarospora strigata*
Acarospora cinereoalba — *Acarospora americana*
Acarospora glaucocarpa — *Acarospora strigata*
Acarospora immersa — *Caeruleum immersum*
Anaptychia palmatula — *Anaptychia palmulata*
Anisomeridium juistense — *Anisomeridium polypori*
Anisomeridium nyssaegenum — *Anisomeridium polypori*
Anisomeridium willeyanum — *Anisomeridium polypori*
Arthonia caesia — *Chrysothrix caesia*
Arthonia gregaria — *Arthonia cinnabarina*
Arthonia lecidella — *Chrysothrix caesia*
Arthonia polymorpha — *Arthonia diffusa*
Arthonia punctiformis — *Arthonia quintaria*
Arthonia spectabilis — *Arthothelium spectabile*
Arthonia taediosa — *Arthonia susa*
Arthonia tumidula — *Arthonia cinnabarina*
Arthonia willeyi — *Arthonia diffusa*
Arthopyrenia analepta — *Arthopyrenia cinchonae*
Arthopyrenia finkii — *Acrocordia megalospora*
Arthopyrenia gemmata — *Acrocordia megalospora*, *Anisomeridium biforme*
Arthopyrenia padii — *Naetrocymbe punctiformis*
Arthopyrenia prosperella — *Pyrenocollema prosperella*
Arthopyrenia willeyana — *Anisomeridium polypori*
Bacidia chlorantha — *Scoliosporum chlorococcum*
Bacidia chlorococca — *Scoliosporum chlorococcum*
Bacidia coprodes — *Bacidia granosa*
Bacidia fuscobubella — *Bacidia polychroa*
Bacidia inundata — *Bacidia egenula*
Bacidia luteola — *Bacidia rubella*
Bacidia muscorum — *Bacidia bagliettoana*
Bacidia sabuletorum — *Bilimbia sabuletorum*
Bacidia trachona — *Bacidia granosa*
Bacidina egenula — *Bacidia egenula*
Biatora calcivora — *Protoblastenia rupestris*
Biatora coarctata — *Trapelia coarctata*
Biatora cyphalea — *Biatorella cyphalea*
Biatora decipiens — *Psora decipiens*
Biatora fusco-rubella — *Bacidia polychroa*
Biatora inundata — *Bacidia egenula*
Biatora rubella — *Bacidia rubella*
Biatora suffusa — *Bacidia suffusa*
Biatora varians — *Pyrrhospora varians*
Biatorella pruinosa — *Sarcogyne regularis*
Buellia atroalba — *Amandinea dakotensis*
Buellia disciformis — *Buellia erubescens*
Buellia parasema — *Amandinea punctata*
Buellia punctata — *Amandinea punctata*
Buellia stigmaea — *Buellia maculata*
Buellia stillingiana — *Buellia erubescens*
Buellia turgescens — *Buellia badia*
Caloplaca arenaria — *Xanthocarpia feracissima*
Caloplaca chrysophthalma — *Solitaria chrysophthalma*
Caloplaca cinnabarina — *Squamulea subsoluta*
Caloplaca citrina — *Flavoplaca citrina*
Caloplaca crenulatella — *Xanthocarpia crenulatella*
Caloplaca feracissima — *Xanthocarpia feracissima*
Caloplaca ferruginea — *Blastenia ferruginea*
Caloplaca flavocitrina — *Flavoplaca flavocitrina*
Caloplaca flavorubescens — *Gyalolechia flavorubescens*
Caloplaca flavovirescens — *Gyalolechia flavovirescens*
Caloplaca holocarpa — *Athallia holocarpa*
Caloplaca oxfordensis — *Rufoplaca oxfordensis*
Caloplaca pyracea — *Athallia pyracea*
Caloplaca subsoluta — *Squamulea subsoluta*
Caloplaca variabilis — *Pyrenodesmia variabilis*
Caloplaca vitellinula — *Athallia vitellinula*
Candelaria concolor effusa — *Candelaria concolor*
Candelariella reflexa — *Candelariella efflorescens*
Candelariella xanthostigmoides — *Candelariella efflorescens*
Canoparmelia crozalsiana — *Crespoa crozalsiana*
Catapyrenium lachneum — *Placidium lachneum*
Cetraria aleurites — *Imshaugia aleurites*
Cetraria ciliaris — *Tuckermannopsis americana*
Cetraria halei — *Tuckermannopsis americana*
Chrysothrix candelaris — *Chrysothrix xanthina*
Chrysothrix chlorina — *Chrysothrix xanthina*
Cladonia anomaea — *Cladonia ramulosa*
Cladonia arbuscula — *Cladina arbuscula*
Cladonia arbuscula mitis — *Cladina mitis*
Cladonia bacillaris clavata — *Cladonia macilenta bacillaris*
Cladonia bacilliformis — *Cladonia macilenta bacillaris*
Cladonia beaumontii — *Cladonia atlantica*
Cladonia borbonica cylindrica — *Cladonia cylindrica*
Cladonia capitata — *Cladonia peziziformis*
Cladonia caroliniana — *Cladonia dimorphoclada*
Cladonia cariota — *Cladonia cariosa*
Cladonia caroliniana — *Cladonia dimorphoclada*
Cladonia cervicornis verticillata — *Cladonia verticillata*
Cladonia chlorophaea carpophora — *Cladonia chlorophaea*
Cladonia chlorophaea simplex — *Cladonia chlorophaea*
Cladonia clavulifera — *Cladonia sobolescens*
Cladonia coniocraea ceratodes — *Cladonia coniocraea*
Cladonia conista simplex — *Cladonia conista*
Cladonia decorticata — *Cladonia rei*
Cladonia delicata — *Cladonia parasitica*
Cladonia didyma subulata — *Cladonia didyma*
Cladonia fimbriata coniocraea — *Cladonia ochrochlora*
Cladonia fimbriata simplex — *Cladonia chlorophaea*, *C. conista*, *C. cylindrica*
Cladonia gracilis — *Cladonia gracilis turbinata*

- Cladonia gracilis verticillata* — *Cladonia gracilis*, *C. verticillata*
Cladonia grayii aberrans — *Cladonia grayii*
Cladonia humilis — *Cladonia conista*
Cladonia macilenta — *Cladonia macilenta bacillaris*
Cladonia mitrulla squamulosa — *Cladonia peziziformis*
Cladonia pityrea — *Cladonia ramulosa*
Cladonia pityrea zwackhii squamulifera — *Cladonia ramulosa*
Cladonia pityrea zwackhii subacuta — *Cladonia ramulosa*
Cladonia polycarpoides — *Cladonia subcariosa*
Cladonia pulchella — *Cladonia didyma*
Cladonia pyxidata pocillum — *Cladonia chlorophaea*
Cladonia rangiferina — *Cladonia rangiferina*
Cladonia rangiferina sylvatica — *Cladonia subtenuis*
Cladonia subapodocarpa — *Cladonia subphila*
Cladonia subtenuis — *Cladonia subtenuis*
Cladonia subulata — *Cladonia coniocraea*
Clauzadea immersa — *Protoblastenia rupestris*
Claviscidium lacinulatum — *Placidium lacinulatum*
Claviscidium umbrinum — *Placidium umbrinum*
Collema bachmanianum — *Enchylium bachmanianum*
Collema conglomeratum — *Enchylium conglomeratum*
Collema granosum — *Lathagrium auriforme*
Collema limosum — *Enchylium limosum*
Collema microphyllum — *Scytinium fragrans*
Collema polycarpon — *Enchylium polycarpon*
Coniocybe pallida — *Sclerophora nivea*
Constrictolumina cinchonae — *Arthopyrenia cinchonae*
Dermatocarpon lachneum — *Placidium lachneum*
Dermatocarpon miniatum — *Dermatocarpon muhlenbergii*
Dermatocarpon pusillum — *Endocarpon petrolepideum*
Dimerella pineti — *Coenogonium pineti*
Ditremis biformis — *Anisomeridium biforme*
Ditremis nyssagenum — *Anisomeridium polypori*
Endocarpon arboreum — *Placidium arboreum*
Endocarpon diffractellum — *Willeya diffractella*
Endocarpon hepaticum — *Placidium lachneum*
Endocarpon miniatum — *Dermatocarpon muhlenbergii*
Endocarpon miniatum complicatum — *Dermatocarpon muhlenbergii*
Endocarpon miniatum muhlenbergii — *Dermatocarpon muhlenbergii*
Endocarpon pusillum — *Endocarpon petrolepideum*
Endocarpon pusillum garovaglii — *Endocarpon petrolepideum*
Endocarpon rufescens — *Placidium lachneum*
Gasparinia microphyllina — *Caloplaca microphyllina*
Gonohymenia cribellifera — *Lichenella cribellifera*
Gonohymenia nigrifera — *Lichenella nigrifera*
Graphina abaphoides — *Graphis scripta*
Graphis comma — *Graphis lineola*
Graphis dendritica — *Graphis scripta*
Graphis elegans — *Graphis scripta*
Heppia adglutinata — *Heppia conchiloba*
Heppia despreauxii — *Heppia conchiloba*
Heppia lutosa — *Heppia conchiloba*
Julella lactea — *Julella fallaciosa*
Lecania erysibe — *Lecania perproxima*
Lecanora aipospila — *Caloplaca atroalba*
Lecanora allophana — *Lecanora hybocarpa*
Lecanora argentata — *Lecanora hybocarpa*
Lecanora calcarea — *Circinaria calcarea*
Lecanora calcarea contorta — *Circinaria contorta*
Lecanora cervina — *Sarcogyne hypophaea*, *Sarcogyne regularis*
Lecanora crenulata — *Myriolecis crenulata*
Lecanora dispersa — *Myriolecis dispersa*
Lecanora erysibe — *Lecania perproxima*
Lecanora glabrata — *Lecanora hybocarpa*
Lecanora hagenii — *Myriolecis hagenii*
Lecanora hagenii sambuci — *Myriolecis sambuci*
Lecanora muralis — *Protoparmeliopsis muralis*
Lecanora pallida — *Lecanora caesiorubella*
Lecanora perproxima — *Lecania perproxima*
Lecanora privigna — *Sarcogyne hypophaea*
Lecanora privigna pruinosa — *Sarcogyne regularis*
Lecanora pseudo-chlarotera — *Lecanora hybocarpa*
Lecanora rugosella — *Lecanora chlarotera*
Lecanora sambuci — *Myriolecis sambuci*
Lecanora subfusca — *Lecanora hybocarpa*
Lecanora subfusca allophana — *Lecanora hybocarpa*
Lecanora subfusca argentata — *Lecanora hybocarpa*
Lecanora valesiaca — *Protoparmeliopsis muralis*
Lecanora varia — *Lecanora symmicta*
Lecanora varia saepinicola — *Lecanora symmicta*
Lecanora varia symmicta — *Lecanora symmicta*
Lecidea aeruginosa — *Trapeliopsis flexuosa*
Lecidea cyrtidia — *Brianaria sylvicola*
Lecidea enteroleuca — *Lecidella euphorea*, *Trapeliopsis granulosa*
Lecidea erraticata — *Brianaria silvicola*
Lecidea flavidolivens — *Fellhanera minnisinkorum*
Lecidea flexuosa — *Trapeliopsis flexuosa*
Lecidea granulosa — *Trapeliopsis granulosa*
Lecidea macrocarpa — *Porpidia crustulata*
Lecidea sp. #4 — *Lecania croatica*
Lecidea uliginosa — *Placynthiella icmalea*
Lecidea varians — *Pyrrhospora varians*
Lecidella elaeochroma — *Lecidella euphorea*
Lepraria incana — *Lepraria cryophylla*
Lepraria lesdainii — *Botryolepraria lesdainii*
Lepraria lobificans — *Lepraria finkii*
Leptogium chloromelum — *Leptogium milligranum*
Leptogium dactylinum — *Scytinium dactylinum*
Leptogium hirsutum — *Leptogium burnetiae*
Leptogium juniperinum — *Scytinium juniperinum*
Leptogium lacerum — *Scytinium lichenoides*
Leptogium lichenoides — *Scytinium lichenoides*
Leptogium myochroom — *Scytinium dactylinum*
Leptogium pulchellum — *Leptogium corticola*
Leptogium saturninum — *Leptogium burnetiae*
Lichenothelia metzleri — *Lichenothelia scopularia*
Lithothelium phaeospora — *Lithothelium hyalosporum*
Melanelia septentrionalis — *Melanohalea septentrionalis*
Melanelia subaurifera — *Melanelixia subaurifera*
Microthelia micula — *Kirschsteiniethelia aethiops*
Muellerella lichenicola — *Gyalolechia flavovirescens*
Mycobilimbia sabuletorum — *Bilimbia sabuletorum*
Mycocomiethelia — *Kirschsteiniethelia aethiops*
Mycobilimbia hypnorum — *Bryobilimbia hypnorum*
Mycoporum pycnocarpum — *Mycoporum compositum*
Omphalaria pulvinata — *Thyrea pulvinata*
Opegrapha atra — *Arthonia atra*
Opegrapha pulicaris — *Alyxoria varia*
Opegrapha varia — *Alyxoria varia*
Opegrapha viridis — *Zwackhia viridis*
Pannaria lanuginosa — *Lepraria finkii*
Pannaria nigra — *Cryptothele permiscens*, *Placynthium nigrum*,
Rhizocarpon reductum
Parmelia andreana — *Flavopunctelia flaviventris*
Parmelia aurulenta — *Myelochroa aurulenta*
Parmelia bolliana — *Punctelia bolliana*
Parmelia borrieri — *Punctelia bolliana*, *P. caseana*
Parmelia borrieri rudecta — *Punctelia rudecta*

- Parmelia caperata* — *Flavoparmelia caperata*
Parmelia cetrata — *Parmotrema cetratum*
Parmelia colpodes — *Anzia colpodes*
Parmelia crinita — *Parmotrema crinitum*
Parmelia flaventior — *Flavopunctelia flaventior*
Parmelia galbina — *Myelochroa galbina*
Parmelia olivacea — *Melanelixia subaurifera*
Parmelia perforata — *Parmotrema perforatum*
Parmelia perlata — *Parmotrema reticulatum*
Parmelia physodes — *Hypogymnia physodes*
Parmelia rudecta — *Punctelia rudecta*
Parmelia saxatilis sulcata — *Parmelia sulcata*
Parmelia septentrionalis — *Melanohalea septentrionalis*
Parmelia soledica — *Flavopunctelia soledica*
Parmelia subaurifera — *Melanelixia subaurifera*
Parmelia subrudecta — *Punctelia caseana*
Parmelia tiliacea — *Hypotrachyna livida*, *Myelochroa galbina*
Parmelia tiliacea sulphurea — *Myelochroa galbina*
Parmelia ulophyllodes — *Flavopunctelia soledica*
Parmelina obsessa — *Myelochroa obsessa*
Parmeliopsis aleurites — *Imshaugia aleurites*
Peltigera apthosa — *Peltigera leucophlebia*
Peltigera canina — *Peltigera polydactylon*
Peltigera canina rufescens — *Peltigera rufescens*
Peltigera canina rufescens innovans — *Peltigera praetextata*
Peltigera spuia — *Peltigera didactyla*
Pertusaria communis — *Pertusaria macounii*
Pertusaria paratuberculifera — *Pertusaria macounii*
Pertusaria pertusa — *Pertusaria macounii*
Pertusaria plittiana — *Pertusaria macounii*
Pertusaria tetrathalamia — *Pertusaria leioplaca*
Pertusaria velata — *Varicellaria velata*
Phaeographis dendritica — *Graphis scripta*
Phaeophyscia cernohorskyi — *Phaeophyscia hirsuta*
Phaeophyscia chloantha — *Physciella chloantha*
Phaeophyscia imbricata — *Phaeophyscia squarrosa*
Physcia adglutinata — *Hyperphyscia adglutinata*
Physcia chloantha — *Physciella chloantha*
Physcia granulifera — *Heterodermia granulifera*
Physcia obscura — *Phaeophyscia ciliata*
Physcia pulverulenta — *Anaptychia palmulata*
Physcia speciosa — *Heterodermia speciosa*
Physcia stellaris aipolia — *Physcia aipolia*
Physcia stellaris tuberculata — *Physcia stellaris*
Physcia subtilis — *Physcia dakotensis*
Physcia tribacia — *Physcia millegrana*
Physciopsis adglutinata — *Hyperphyscia adglutinata*
Physciopsis syncolla — *Hyperphyscia syncolla*
Physconia detera — *Physconia leucoleiptes*
Physconia grisea — *Physconia leucoleiptes*
Physconia distorta — *Anaptychia palmulata*
Placodium aurantiacum — *Caloplaca ulmorum*, *Gyalolechia flavorubescens*
Placodium cinnabarinum — *Squamulea subsoluta*
Placodium ferrugineum — *Blastenia ferruginea*, *Caloplaca cerina*
Placodium microphyllum — *Caloplaca microphyllina*
Placodium vitellinum — *Candelariella vitellina*
Placodium vitellinum aurellum — *Candelariella aurella*
Placopyrenium fuscella — *Verrucaria fuscella*
Plagiocarpa hyalosporra — *Lithothelium hyalosporum*
Plagiocarpa septemseptata — *Lithothelium septemseptatum*
Polyblastiopsis fallaciosa — *Julella fallaciosa*
Porina chlorotica — *Pseudosagedia chlorotica*
Porpidia macrocarpa — *Porpidia crustulata*
Porpidia tahawasiana — *Porpidia subsimplex*
Protoparmeliopsis gyrophorica — *Protoparmeliopsis muralis*
Pseudoparmelia baltimorensis — *Flavoparmelia baltimorensis*
Pseudoparmelia caperata — *Flavoparmelia caperata*
Pseudoparmelia crozalsiana — *Crespoa crozalsiana*
Pseudoparmelia texana — *Canoparmelia texana*
Psora scalaris — *Hypocenomyce scalaris*
Psorotichia frustulata — *Pycnocarpon thelostomum*
Punctelia flaventior — *Flavopunctelia flaventior*
Punctelia soledica — *Flavopunctelia soledica*
Pyrenula analepta — *Naetrocymbe punctiformis*
Pyrenula gemmata — *Eophyrenula intermedia*
Pyrenula glabrata — *Arthopyrenia cinchonae*, *Pyrenula pseudobufonia*
Pyrenula imperfecta — *Pyrenula pseudobufonia*
Pyrenula laevigata — *Pyrenula pseudobufonia*
Pyrenula neglecta — *Pyrenula pseudobufonia*
Pyrenula nitida — *Pyrenula pseudobufonia*
Pyrenula punctiformis — *Kirschsteinothelia aethiops*, *Naetrocymbe punctiformis*
Pyxine caesiopruinosa
Ramalina calicaris fastigiata — *Ramalina sinensis*
Ramalina calicaris fraxinea — *Ramalina sinensis*
Ramalina complinata — *Ramalina sinensis*
Ramalina culbersoniorum — *Ramalina americana*
Ramalina fastigiata subampliata — *Ramalina sinensis*
Ramalina subampliata — *Ramalina sinensis*
Ramalina unifolia — *Ramalina sinensis*
Rhizocarpon obscuratum — *Rhizocarpon reductum*
Rhizoplaca chrysoleuca — *Rhizoplaca subdiscrepans*
Rimelia cetrata — *Parmotrema citratum*
Rimelia reticulata — *Parmotrema reticulatum*
Rinodina sophodes — *Rinodina cana*
Saccomorpha icmalea — *Placynthiella icmalea*
Saccomorpha oligotropa — *Placynthiella oligotropa*
Sagedia oxyspora — *Leptorhaphis epidermidis*
Santessonilichen punctiforme — *Naetrocymbe punctiformis*
Sarcinulella banksiae — *Anisomeridium polypori*
Staurothele diffractella — *Willeya diffractella*
Sticta quercizans — *Lobaria quercizans*
Stictis urceolatum — *Conotrema urceolatum*
Strigula jamesii — *Strigula americana*
Thelidium microcarpon — *Thelidium zwackhii*
Thelidiella blastenicola — *Xanthocarpia feracissima*
Theloschistes chrysophthalmus — *Teloschistes chrysophthalmus*
Theloschistes concolor — *Candelaria concolor*
Theloschistes lycneus — *Polycauliona polycarpa*
Theloschistes parietinus — *Xanthoria parietina*
Trichothelium chloroticum — *Pseudosagedia chlorotica*
Urceolaria scruposa — *Diploschistes muscorum*
Usnea barbata — *Usnea strigosa*
Usnea barbata florida — *Usnear strigosa*
Variolaria amara — *Variolaria multipunctoides*
Verrucaria aethiobola — *Bacidia egenula*, *Verrucaria sordida*
Verrucaria baldensis — *Bagliettoa baldensis*
Verrucaria calciseda — *Bagliettoa calciseda*
Verrucaria inundata — *Verrucaria calkinsiana*
Verrucaria iowensis — *Verrucaria fayettensis*
Verrucaria marmorea — *Bagliettoa marmorea*
Verrucaria prospersella — *Pyrenocollema prospersella*
Verrucaria pyrenophora — *Thelidium zwackhii*, *Verrucaria calkinsiana*
Verrucaria rupestris — *Verrucaria calkinsiana*
Verrucaria tectorum — *Verrucaria macrostoma*
Viridothelium virens — *Trypethelium virens*
Xanthocarpia lactea — *Xanthocarpia feracissima*

Xanthoparmelia somloënsis — Xanthoparmelia viriduloumbrina
 Xanthoparmelia stenophylla — Xanthoparmelia viriduloumbrina
 Xanthoparmelia tasmanica — Xanthoparmelia hypofusca
 Xanthoparmelia trinctina — Xanthoparmelia australasica
 Xanthoria elegans — Rusavskia elegans
 Xanthoria fallax — Xanthomendosa fallax
 Xanthoria polycarpa — Polycauliona polycarpa
 Xanthoria sorediata — Rusavskia sorediata
 Xanthoria ulophyllodes — Xanthomendoza ulophyllodes

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