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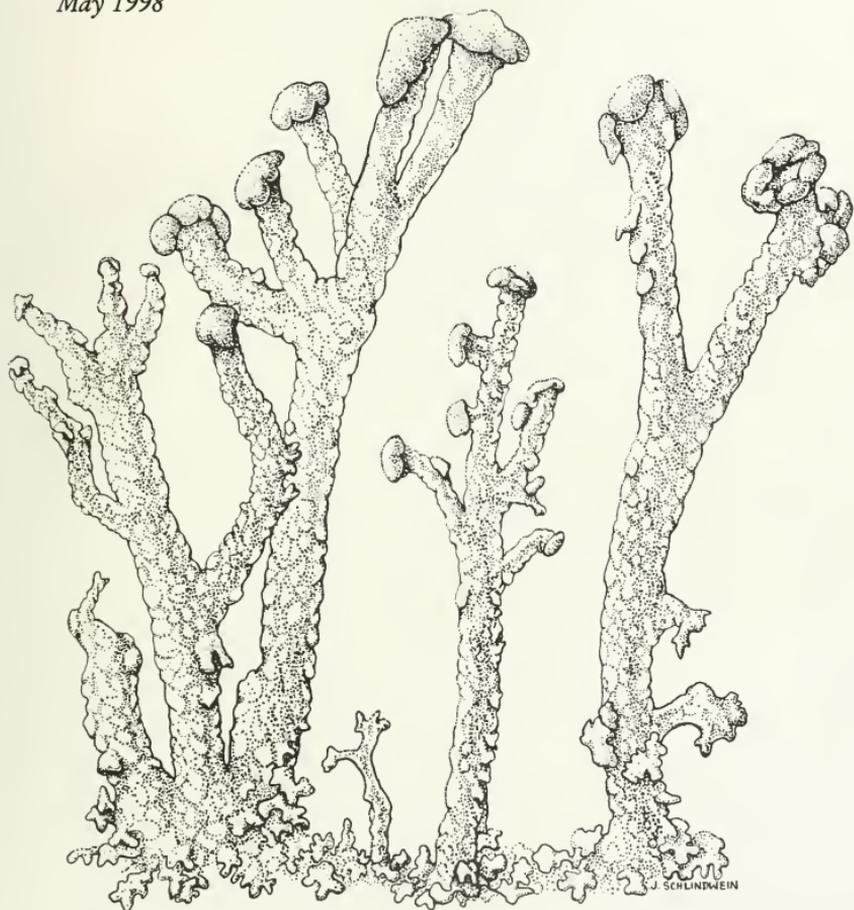
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1998 May

ERIGENIA

Number 16

May 1998



Journal of the Illinois Native Plant Society NATURAL HISTORY SURVEY

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Number 16, May 1998

The Illinois Native Plant Society Journal

The Illinois Native Plant Society is dedicated to the preservation, conservation, and study of the native plants and vegetation of Illinois.

ERIGENIA is named for *Erigenia bulbosa* (Michx.) Nutt. (harbinger of spring), one of our earliest blooming woodland plants. The first issue was published in August 1982.

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Original drawing of *Cladonia cristatella* TUCK. (British soldier lichen – due to their bright red apothecia) by Jill Schлиндwein.

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THE LICHEN FLORA OF CHICAGO AND VICINITY: ONE HUNDRED YEARS OF LICHENOLOGY

Gerould S. Wilhelm¹

ABSTRACT: One hundred years ago, William Wirt Calkins published a lichen flora of "Chicago and vicinity," including an annotated account of 125 lichen taxa, which translate nomenclaturally and taxonomically into 106 taxa recognized today. Over the last decade, 147 taxa of lichenized fungi have been seen alive in the "vicinity" of Chicago, of which 52 were recorded by Calkins in 1896; of Calkins's remaining 54 species, 34 have yet to be confirmed with a voucher specimen. Altogether, including 72 of the 106 taxa reported by Calkins, 188 lichenized fungi have been vouchered with a specimen, historic or contemporary, from "Chicago and vicinity", as delineated by Calkins. This paper accounts for 222 lichens, based upon literature reports and specimens, and compares Calkins's perception of the flora of 1896 with what we have seen in the present era. Given that there are significant difficulties in comparing names from Calkins's era to the present, the flora known today has a 41% similarity to that of a century ago. Also provided is a general description of habitat changes since settlement and a discussion of how these changes might relate to lichen inhabitation. In addition, there are keys to the identification of species, and a bibliography of literature that cites specimens from Chicago and vicinity.

INTRODUCTION

A century ago, William Wirt Calkins (1896) prepared a report on the lichen flora of "Chicago and vicinity" in response to a request from the managers of the Geological and Natural History Survey and the Chicago Academy of Sciences. Calkins defined the vicinity of Chicago as beginning at the north line of Cook County and Lake Michigan in Illinois, thence westward, coincident with the north line of Cook County to Kane County; thence southward along the east line of Kane and Kendall counties to the southeast corner of Kendall County; thence eastward, coincident with the south line of Cook County to the east line of Lake County, Indiana; thence northward to Lake Michigan. This circumscribes about 1,700 square miles, including in Illinois all of Cook and DuPage counties, a sliver of northeastern Kane County, and the nine north townships of Will County, and in Indiana the northern third of Lake County.

From his youth, William Wirt Calkins (1842–1914) was deeply interested in all aspects of natural history, and was a lifelong member of the Sullivant Moss Society (Hasse 1914). Born in Berwyn, Illinois, he served throughout the Civil War in Company E of the 104th Regiment of the Illinois Volunteer Army, in which he served at the rank of 1st Lieutenant; he later wrote and

published the history of this regiment. His career also included duty as the aide-de-camp to General John Beatty. Calkins evidently terminated his service at the rank of Colonel. An amateur mycologist and lichenologist, Calkins was a prolific collector, and the author of several important papers on natural history, including a catalogue of the lichens of LaSalle County, Illinois (Calkins and Huett 1898). Significant Calkins lichen collections are currently housed at the Chicago Academy of Sciences (CHAS), the Field Museum of Natural History (F), the University of Illinois at Champaign (ILL), the University of Michigan (MICH), the New York Botanical Garden (NY), and the United States National Herbarium (US).

Chicago and vicinity, as delineated by Calkins, is the site of one of the larger, industrial, urban, and suburban metropolitan areas of the world. Nearly the whole of the territory is encumbered either by roads, lawns, buildings, manufacturing sites, agriculture, or railroad yards, leaving little land available for living things other than humans, their pets, a few Eurasian weeds, and ornamental trees and shrubs.

This metropolitan area is located near the middle of a continent in a north-temperate climate, at the southwestern terminus of a freshwater lake that averages 50 miles in width and 300 miles in length. It lies about

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750 miles north of the Gulf of Mexico and 1,000 miles east of the Rocky Mountains. Dry winds prevail out of the west or southwest in spring and summer, and blow arctic cold from the north in winter. Rainfall is usually 35–40 inches per year, roughly equivalent to the evaporation potential. Precipitation historically remained in sodden ground and was dissipated principally through evapotranspiration. Today, precipitation is mostly flushed away through storm sewers, leaving much less for ambient humidity than was the case in 1832, when settlement at the end of the Black Hawk War exposed the landscape to drainage, row-crop agriculture, and urban development. Lichenologists who pass through the area today are not likely to get the impression that lichenose vegetation around Chicago would be at all diverse or interesting.

The Chicago area is composed of a complex of recently deposited lake plains and terminal moraines (Willman 1971), the older of which were formed about 15,000 years ago. Much of the eastern portion of Cook County, and all of the northern third of Lake County, Indiana, are in the lake plain of Glacial Lake Chicago, the last stages of which did not recede until 2,000 years ago. Most of the remainder of Cook County, all but the western edge of DuPage County, and most of northeastern Will County consist of an undulating complex of terminal moraines of various ages. The soils have a high clay content and often support a perched water table. The southwestern edges of DuPage County and adjacent Will County consist mostly of gently rolling terminal and ground moraines. Northern Will County and a small tract of southwestern Cook County are transected by a unique bedrock valley where dolomitic limestone is often found at or near the surface and even as an outcrop in a few places. Extreme western Cook and northwestern DuPage counties are dominated by end moraines admixed with complexes of outwash features.

Calkins 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.'" This same general assessment could characterize the region today.

The lake plain is characterized by vast, level lacustrine and aeolian dune deposits of various ages. Throughout much of the postglacial period the lacustrine deposits were dominated by wet to mesic prairie. The dunes were characterized by groves of *Quercus alba* and *Q. velutina*, and, near Lake Michigan in Lake County, by savannas of *Betula papyrifera* and *Pinus banksiana*. Exposed bedrock in the lake plain was virtually absent; potential corticolous substrate was fairly limited, as landscape fires were conducted annually in autumn by the native people (Blane 1922; Ellsworth 1937; Ernst 1819; Featherstonhaugh 1844; Parker 1835; Shirreff 1835). There is an interesting terricolous substrate in the low, calcareous to circumneutral sand ridges near the verge of Lake Michigan, characterized by *Catapyrenium squamulosum*, a lichen that grows in open but stabilized areas. Much of the lake plain now is urban and industrial. Currently, the corticolous lichen flora of the lake plain is, at best, quite depauperate and low in diversity, consisting mostly of *Arthonia caesia*, *Candelaria concolor*, *Physcia millegrana*, and *Physcia stellaris*.

The terminal and ground moraines are characterized by undulating or gently rolling, originally loess-capped, clayey deposits. The lower topography and poorly drained areas were dominated by tallgrass prairie, where potential lichen substrate would have been very limited, consisting of the occasional glacial erratic or lone *Quercus macrocarpa*. On the better-drained rises, which are numerous and quite regular in their occurrence, there were groves of trees, consisting mainly of oaks and hickories, such as *Quercus alba*, *Q. bicolor*, *Q. coccinea*, *Q. macrocarpa*, *Q. rubra*, *Carya cordiformis*, and *C. ovata*, as well as *Juglans nigra* (Swink and Wilhelm 1994). Most of these trees were open grown because of the frequent ground fires that passed through these woodlands (Wilhelm 1991).

In the morainic districts, corticolous species that Calkins regarded as frequent (given the limitations of taxonomic translation) were *Anisomeridium nyssigenum*, *Arthonia caesia*, *Flavoparmelia caperata*, and *Physcia stellaris*—species that one finds regularly today. He also considered frequent to common the following species, most of which are rare or absent today: *Caloplaca*

flavorubescens, *Graphis scripta*, *Lecanora hybocarpa*, *Opegrapha atra*, *Parmotrema perforatum*, *Pertusaria macounii*, *P. pustulata*, *Punctelia subrudecta*, and *Pyrenula pseudobufofonia*. More common today than in Calkins's era are *Candelaria concolor*, *Candelariella reflexa*, *C. xanthostigma*, *Lepraria lobifcians*, *Parmelia sulcata*, *Phaeophyscia pusilloides*, *P. rubropulchra*, *Physcia millegrana*, *Physciella chloantha*, *Physconia detersa*, *Punctelia rudecta*, and *Xanthoria fallax*.

Open-grown trees today that can support lichens are in older subdivisions and in some of the parklike areas in older sections of county forest preserves and municipal parks. Our original woodlands have become so densely populated by trees as a result of fire suppression that light levels have dropped to 1% or less of ambient light levels; the hydrologic scheme has changed also, along with the ground-layer vegetation (Wilhelm 1991). Consequently, the trunks and larger limbs of older trees are heavily shaded. In any event, most corticolous substrates in contemporary woodlands are now bereft of lichen growth.

Calkins did not list many terricolous species as common other than "*Cladonia chlorophaea*" [conista?], probably because of the dense ground cover of vascular vegetation. Today, there are frequent spots of eroded, weathered clays and clayey tills that can support other species of *Cladonia*, such as *C. cristatella*, *C. peziziformis*, *C. polycarpoides*, and *C. rei*.

Calkins did not indicate that lignicolous species were particularly common locally, the more notable exceptions being *Cladonia "chlorophaea"* and *C. coniocraea*. Other than weathered fence rails, there may not have been much weathered lignum available. On those fence rails, however, a suite of species grew that, other than *Caloplaca microphyllina*, we do not see today, such as *Imshaugia aleurites*, *Ramalina subampliata*, *Teloschistes chrysophthalmus*, and *Tuckermannopsis americana*. Weathered fence rails are rare today, but our woods are full of decorticate logs and various forms of weathered lignum, inhabited regularly by *Cladonia coniocraea*, *C. conista*, *C. cristatella*, *C. macilenta* var. *bacillaris*, *Placynthiella icmalea*, and *Trapelopsis flexuosa*.

Except for the bedrock valley of the Des Plaines River, with its gladelike exposures of dolomite, saxicolous substrates were and are fairly limited. Today, as in Calkins's time, the older, weathered dolomitic bedrock contains a suite of locally interesting species, such as *Aspicilia contorta*, *Caloplaca cinnabarina*, *Dermatocarpon minutum*, *Lecanora*

muralis, *Lecania perproxima*, *Placynthium nigrum*, and *Sarcogyne regularis*. More regularly occurring today on weathered concrete and flagstone are *Bacidina egenula*, *Caloplaca feracissima*, *Endocarpon pusillum*, *Lecanora dispersa*, and *Verrucaria calkinsiana*.

Generally, Calkins believed that "the geological conditions in most of our territory are not favorable to the growth of a great number of species owing to the absence of forests and out-cropping rocks of different formations and ages, all having an important bearing, because these are the substrates to which lichens attach themselves, and the investigator will note that certain strata and trees, or the earth, contain some species not found elsewhere."

Even as he apologized for the inherently depauperate nature of the Chicago lichen flora, he believed it to once 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 grow, and to find them abundantly we must seek the country where the air on which they feed is pure and the substrates suitable."

One can only wonder of what this once rich lichen flora consisted. Calkins noted that *Ramalina americana* grew on oaks "along the lake shore and throughout our territory." This species is now very rare, and the only contemporary specimens we have seen consist of tiny fragments. Calkins made his studies of Chicago at a time of heavy smokestack industry, when sulphur dioxide concentrations may well have been as high or higher than they are today. If there truly were a time when *Ramalina americana* was regarded as growing throughout the area, one scarcely can imagine what variety of species constituted this once rich, pre-industrial flora.

The air is probably freer of sulfur dioxide and certain other pollutants now than it was during the period of heavy industry, but the influence of the internal combustion engine has increased tremendously over the last century, as has the use of aerially dispersed agricultural herbicides and pesticides. Whatever the effect of changes in air pollution levels, it is certain that other changes as well have dramatically affected lichen habitats over the last century.

Wilhelm and Lampa (1987) proposed that the tallgrass prairie biome of the Midwest, once replete with

regular prairie fires and largely treeless except for scattered stands of open-grown oaks and hickories, now supports a nearly continuous growth of many different kinds of trees (native, naturalized, and cultivated), which bridge the northern forests with those to the south and east. It is possible that such a change in the distribution of corticolous substrates has allowed at least less modal species an opportunity to extend their ranges. One might wonder, for example, whether *Flavopunctelia flaventior* was native this far south, or if *Pyxine subcinerea* grew this far north prior to settlement.

Calkins's annotated flora reported 125 fungal names that translate today into 106 taxa now generally included among the lichenized genera or their immediate allies. We have seen early specimens that voucher 50 of these taxa. We have been unable to find specimens from any time period to voucher or otherwise substantiate 34 of the taxa reported by Calkins from Chicago and vicinity, although many are known from nearby counties.

Bearing in mind that he evidently believed the flora of his day to have been altered from the indigenous one, Calkins described 25 species as frequent or common in the Chicago area. Although interpretations of Calkins's assessments of abundance and frequency are not quantitative, certain loose comparisons can be made. Of the species he listed as frequent or common, or "throughout our territory", it would be reasonable to describe only 6 of them in similar terms today: *Arthonia caesia*, *Bacidina egenula*, *Endocarpon pusillum*, *Hyperphyscia adglutinata*, *Physcia stellaris*, and *Verrucaria calkinsiana*. The coefficient of similarity $2C/(A+B)$, where C = species in both list A and B, A = species in list A, B = species in list B between the common species in 1896 and those common in 1996 is 0.25.

Over the last decade or so we have documented the extant local occurrence of 147 taxa, of which 52 were recognized by Calkins in his flora. An additional 19 taxa, unreported by Calkins, and yet unaccounted for today, are based upon historic, turn-of-the-century specimens collected by Calkins or others. Altogether, 222 lichens have been reported or vouchered from "Chicago and vicinity." The coefficient of similarity between the total flora known today and Calkins's flora is 0.41. Calkins felt that the flora already had changed notably in his time, and it is clear that it has continued to change since then.

In the geographic area Calkins covered, we have not seen living examples of 32% of the species he considered

common. These include *Anisomeridium bifforme*, *Cladonia pyxidata*, *Caloplaca ferruginea*, *Lecanora hybocarpa*, *Pertusaria macounii*, *Punctelia subrudecta*, *Pyrenula pseudobifonia*, and *Verrucaria fuscella*. Several species that are now frequent to common in Chicago and vicinity apparently were unknown to Calkins. These include *Anisomeridium nyssigenum*, *Cladonia polycarpoides*, *Cladonia rei*, *Lepraria lobificans*, *Phaeophyscia rubropulchra*, *Physcia ascendens*, and *Trapeliopsis flexuosa*. Two species evidently unknown to Calkins, *Caloplaca feracissima* and *Lecanora dispersa*, are both now nearly ubiquitous throughout the region on weathered concrete. The lichens with cyanobacteria as phycobionts are virtually absent today, as is the preponderance of large-foliose species.

While there is little question that the flora has changed significantly over the last 100 years, any analysis is complicated by several critical factors. The anatomy and morphology of the ascoma have received much taxonomic attention in recent years, such that major generic realignments are occurring in most groups of lichenized fungi. Generally, organizational concepts in lichen taxonomy have changed much since Calkins's time, affecting generic as well as species concepts. Further, the discovery of the taxonomic importance of lichen chemical substances has dramatically changed species concepts in many genera. For example, *Parmelia* has been split into numerous genera: *Flavoparmelia*, *Flavopunctelia*, *Hypotrachyna*, *Myelochroa*, *Parmelia*, *Parmotrema*, *Xanthoparmelia*, and many others.

On both morphological and microchemical grounds, the genus *Physcia* has been much revised; it now consists of *Heterodermia*, *Hyperphyscia*, *Phaeophyscia*, *Physcia*, *Physciella*, and *Physconia*, and others outside the region. What Calkins called *Physcia obscura* now encompasses five or six species of *Phaeophyscia*. Early concepts in pyrenocarpous lichens are all but untranslatable today.

In some groups, such as *Cladonia*, there are now more species than were recognized in 1896, mostly as a result of microchemical research. For example, most of the specimens that Calkins called *Cladonia pyxidata* are now referable either to *C. conista*, *C. chlorophaea*, *C. cryptochlorophaea*, or *C. grayi*, an accurate determination of which cannot be made without thin-layer chromatography. On the other hand, most of the specimens Calkins called *Lecanora subfusca*, *L. subfusca* var. *allophana*, *L. subfusca* var. *argentata*, and *L. subfusca* var. *distans* are now referable to one species, *L.*

hybocarpa. We have seen several Cook County specimens that Calkins named either *Sagedia oxyspora* and *Pyrenula thelaena*, all of which now are called *Julella sericea*.

There are other problems as well. Every early specimen we have seen from Illinois labeled *Arthonia lecideella*, a fairly distinct taxon in its own right, is referable to *Arthonia caesia*. Yet, there is risk in making the routine translation for literature reports where no corroborating specimen can be examined. One of the great difficulties in comparing the contemporary flora with that observed by Calkins is the lack of voucher material. Without a complete, well-curved collection to testify to one's taxonomic concepts and species interpretations, unvouchered literature reports inevitably lose meaning over time.

Many genera are still poorly understood. Our own interpretations of many of the crustose genera, such as *Caloplaca*, *Lecanora*, *Lecidea*, *Rimodina*, and *Verrucaria* must be regarded as extremely tentative. We have seen no type material and are relying wholly on the interpretation of contemporary literature, which is anemic with regard to midcontinental North America.

While little seems certain in lichen taxonomy, one thing does seem evident—lichens and their habitats have changed markedly in their presence and distribution over the last one hundred years in "Chicago and vicinity." Calkins discriminated 125 species in 1896; today, we recognize 147. It does not appear that species richness has declined over the last one hundred years, but there are definite indications that significant changes have occurred in composition and physiognomy.

Larger foliose and fruticose lichens, which were clearly considered common by Calkins, have been replaced by small foliose and crustose species. What is needed to track changes in lichen inhabitancy over the next decades is a system of repeatable base-line sampling transects laid out in preserved tracts such as nature preserves and forest preserves. To limit lichen community research to correlations with air quality, while important, certainly overlooks the powerful impacts of other factors, such as changes in substrate availability and vascular plant communities. Also important is the need to have better information on the effects of land use and management practices to determine their impacts on all biota, including lichenized fungi.

THE FLORA

Below is a key to the genera of fungi that are lichenized or closely allied to lichenized fungi, and are known from the Chicago area as defined by Calkins. Following that is a catalogue of the species, alphabetized by genus. Where more than one species of a genus is enumerated, there is an artificial key to each taxon. The voucher status of each species is superscripted in one of five categories:

- 1= recognized by Calkins and supported by a contemporary voucher collection.
- 2= recognized by Calkins and supported only by a historic voucher collection.
- 3= recognized by Calkins but unsupported by a voucher collection.
- 4= known only from a contemporary voucher collection.
- 5= known only from literature other than Calkins or from an historic collection not included by Calkins.

After each species account is a listing of the counties from which modern specimens exist, along with a citation:

ILLINOIS: Co = Cook Co.; Du = DuPage Co.;
Wi = northern Will Co.
INDIANA: La = northern third of Lake Co.

Principal collectors are coded by their last initial:

Richard Hyerczyk (H), Wayne Lampa (L),
Linda Masters (M), and Gerould Wilhelm (W).

Nomenclature approximates Esslinger and Egan (1995). Unless otherwise indicated by a herbarium acronym (i.e., CHAS, F, ILL, MICH, NY, US), all references to voucher material refer to specimens housed at the Morton Arboretum herbarium (MOR).

Any local user of this flora should bear in mind that the greater Chicago region (the twenty-two counties delineated by Swink and Wilhelm [1994]), includes another 70 species or so that are as yet not known from Calkins's delineated territory. A more complete accounting of the lichens in the southern Lake Michigan region can be obtained in the forthcoming *Lichens of the Chicago Region*, by the author.

KEY TO THE GENERA

Apothecia atop slender black stalks; growing on the polyporous fungus

Trichaptum biforme PHAEOCALICIMUM

Apothecia sessile or immersed; not growing on *Trichaptum*.

Thallus subcrustose (with marginal lobes) to foliose, squamulose, umbilicate, or fruticose, usually with a well-defined lower cortex GROUP I

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 either minutely fruticose or subcrustose without distinct lobes and with a blue green prothallus evident at the margins.
 - Thallus subcrustose with a blue green prothallus PLACYNTHUM
 - Thallus minutely fruticose DENDRISCOULON
2. Thallus appearing distinctly lobed or foliose or fruticose, without a blue green prothallus.
 - Thallus pulvinate or umbilicate, usually attached at only a central point; phycobiont *Gleocapsa* LICHINELLA
3. Thallus attached to the substrate at several locations; phycobiont *Nostoc*.
 - Thallus lacking an organized cortex, the hyphae interwoven; upper surfaces dull, usually olivaceous to black COLLEMA
 - Thallus with a layer of more or less isodiametric cortical cells; upper surfaces usually smooth to sub-lustrous, slate gray to brown LEPTOGIUM
1. Thallus not gelatinous, variously colored; medulla evident.
4. Thallus fruticose, podetiate, or of adnate to suberect squamules.
5. Thallus of adnate squamules.
 - 6. Thallus saxicolous; ascoma a perithecium.
 - Spores nonseptate CATAPYRENIUM
 - Spores multifiform (with horizontal and longitudinal septa) ENDOCARPON
 - 6. Thallus terricolous or corticolous; ascoma an apothecium.
 - Squamules brownish to olivaceous, neither pink nor sorediate; phycobiont blue-green HEPPIA
 - Squamules pinkish, brownish, or sorediate; phycobiont green PSORA
5. Thallus various, but not of adnate squamules.
7. Thallus in part or entirely of ascending squamules.
 - Squamules brown or brownish gray on both surfaces; perithecia present DERMATOCARPON
 - Squamules greenish or grayish above, white below; perithecia absent CLADONIA
7. Thallus without squamules.
8. Thallus of flattened lobes or branches.
 - Thallus gray to orange, K+ deep purple TELOSCHISTES
 - Thallus yellowish green, K- RAMALINA
8. Thallus of uniformly or irregularly rounded branches.
 - 9. Stalks or branches of thallus with a central medullar core, not hollow EVERNIA
 - 9. Stalks or branches of thallus hollow.
 - Podetia with a fibrous, dull surface CLADINA
 - Podetia with a corticate, smooth, lustrous surface CLADONIA
4. Thallus adnate to loosely appressed, but distinctly foliose or umbilicate.
 - 10. Thallus orange, yellow, yellowish green, or yellowish gray.
 - 11. Cortex K+ deep purple XANTHORIA
 - 11. Cortex K- or K+ yellow.
 - 12. Thallus esorediate.

13. Larger lobes more than 1 mm wide XANTHOPARMELLA
13. Lobes less than 1 mm wide.
14. Apothecial disc bright yellow CANDELARIA
14. Apothecial disc brown or black.
 - Apothecial disc brown; spores colorless LECANORA
 - Apothecial disc black; spores brown DIMELAENA
12. Thallus sorediate.
 - 15. Thallus bright lemon yellow or yellow green; lobes small, less than 1 mm wide CANDELARIA
 - 15. Thallus yellow green; lobes more than 1 mm wide.
 - Medulla C+ red FLAVOPUNCTELLA
 - Medulla C- FLAVOPARMELLA
10. Thallus without yellowish tints.
 - 16. Thallus brown or brownish gray (rarely pale gray and umbilicate); cortex K-.
 - 17. Lower cortex covered by a dense tomentum or matted appressed hairs PELTIGERA
 - 17. Lower cortex smooth or sparsely to densely rhizinate, but not concealed by a dense tomentum.
 - 18. Lobe surfaces abundantly pruinose; soralia marginal PHYSONIA
 - 18. Lobe surfaces smooth, or if pruinose, then esorediate.
 - 19. Lobes erect or suffruticose, or thallus umbilicate.
 - Thallus foliose; perithecia absent TUCKERMANNOPSIS
 - Thallus umbilicate with imbedded perithecia DERMATOCARPON
 - 19. Lobes appressed.
 - 20. Medulla C+ red MELANELIA
 - 20. Medulla C-.
 - 21. Rhizines absent; lobes discrete or appearing to flow together, tightly adnate HYPERPHYSCIA
 - 21. Rhizines present; lobes discrete, loosely appressed but not tightly adnate.
 - Thallus light to dark tan, with numerous imbedded black dots (perithecia) CATAPYRENIUM
 - Thallus brownish gray to dark gray; perithecia absent PHAEOPHYSCIA
16. Thallus mineral gray, whitish gray, or greenish gray, never umbilicate; cortex K+ yellow or K-.
 - 22. Either the upper cortex with small white pores or the medulla C+ red, or both PUNCTELLA
 - 22. Upper cortex without white pores; medulla C-.
 - 23. Lower cortex white, light tan, or absent.
 - 24. Thallus isidiate; cortex K+ deep yellow IMSHAUGIA
 - 24. Thallus without isidia; cortex K- or K+ pale yellow.
25. Soredia in marginal soralia; medulla K+ yellow HETERODERMIA
25. Soredia absent or laminar, or if marginal, then medulla and cortex K-.
 - 26. Cortex K- PHYSCIELLA
 - 26. Cortex K+ yellow.
 - Larger lobes 3 mm or more across; lower cortex tan PUNCTELLA
 - Lobes less than 3 mm across; lower cortex white PHYSCIA
23. Lower cortex brown or black (occasionally pale near the margins).
27. Medulla distinctly tinted orange or salmon PYXINE
27. Medulla white or pale yellow.

28. Medulla K-.
Thallus sorediate; lobes hollow
..... HYPOGYMNA
Thallus esorediate; lobes solid ANZIA
28. Medulla K+ yellow or red.
29. Lobes broad, usually 4 mm or more wide, typically with a rhizine-free zone near the margins; medulla K+ red.
Upper cortex reticulate-cracked or maculate RIMELIA
Upper cortex without cracks or maculae PARMOTREMA
29. Lobes narrower; rhizines typically distributed throughout on the lower surface; medulla K+ yellow or red.
Upper cortex with distinct white markings, particularly toward the tips PARMELIA
Upper cortex without white markings MYELOCHROA
- GROUP II
1. Ascoma a perithecium, the spores released through a small pore.
2. Thallus saxicolous or terricolous.
3. Spores abundantly muriform.
Thallus areolate to, more typically, squamulose; spores 2 per ascus ENDOCARPON
Thallus areolate, continuous; spores 8 per ascus STAUROTHELE
3. Spores either without septa, or with only transverse septa (rarely somewhat muriform in *Thelidium*).
4. Spores nonseptate.
Thallus crustose VERRUCARIA
Thallus squamulose CATAPYRENIUM
4. Spores septate.
Spores all exceeding 20 μ long, 1-3 septate; phycobionts green THELIDIUM
Spores all less than 20 μ long, 1-septate; phycobionts blue-green PYRENOCOLLEMA
2. Thallus corticolous.
5. Thallus of thick, brown, rounded squamules CATAPYRENIUM
5. Thallus not of thick, rounded squamules.
6. Spore walls notably thickened PYRENULA
6. Spore walls not notably thickened.
7. Spores becoming brown.
Spores 1-septate KIRSCHSTEINIOTHELIA
Spores 3-6 septate EOOPYRENULA
7. Spores persistently hyaline.
8. Spores muriform (with both transverse and longitudinal septa) JULELLA
8. Spores not muriform, with transverse septa only.
9. Thallus restricted to *Populus*; spores much elongate, nearly or quite as long as the asci LEPTORHAPHIS
9. Thallus of a diversity of corticolous substrates; spores oblong to oval, much shorter than the asci.
10. Spores up to 20 μ long.
Septum of spores eccentric, the cells notably unequal in volume; asci more than 3 times as long as wide, or asci polysporous asci ANISOMERIDIUM
Septum of spores not eccentric, the cells about equal; asci less than 3 times as long as wide; asci never polysporous NAETROCYMBE
10. Larger spores more than 20 μ long.
- Spores more than 31 μ long and 12 μ wide ACROCORDIA
Spores less than 31 μ long and 12 μ wide ARTHOPYRENTA
1. Ascoma an exposed apothecium, without a pored enclosure, or if more or less enclosed then immersed in thalloid warts or powdery soralia, or ascomata absent (ascomata flasklike in the bright yellow genus *Thelocarpon*).
11. Apothecia chronically absent.
12. Thallus K+ deep purple CALOPLACA
12. Thallus K- or K+ yellow or red.
13. Thallus sorediate throughout, without corticate tissues.
Thallus bright yellow CANDELARIELLA
Thallus granules without yellowish tints LEPRARIA
13. Thallus not sorediate throughout.
14. Thallus black throughout; phycobionts usually blue-green.
15. Thallus arenicolous PLACYNTHIELLA
15. Thallus saxicolous.
16. Thallus well developed, with a distinctly blue green prothallus evident at the margins PLACYNTHIUM
16. Thallus effuse, granular, without an evident prothallus.
Gleocapsa evident PSOROTICHTIA
Gleocapsa absent LICHENOTHELIA
14. Thallus not black throughout; phycobionts green.
17. Thallus C-.
18. Thallus without yellowish tints PLACYNTHIELLA
18. Thallus yellow or with yellowish tints.
Thallus yellow, of notable corticate granules or granular soredia CANDELARIELLA
Thallus yellowish green, the soredia in discrete soralia LECIDEA
17. Thallus C+.
19. Thallus esorediate PLACYNTHIELLA
19. Thallus sorediate.
Soredia erupting from verrucae or cortical warts TRAPELIOPSIS
Soredia not erupting from verrucae TRAPELIA
11. Apothecia present.
20. Apothecia irregular to elongate; thallus rudimentary, often little more than a discoloring of the substrate around the apothecia.
21. Spores muriform, with 2-5 longitudinal septa ARTHOTHELIUM
21. Spores septate, with 3-11 transverse septa only.
22. Exciple undeveloped; asci subglobose ARTHONIA
22. Exciple well developed; asci elongate.
Spores with cylindrical cells; apothecia more or less circular to oblong; hymenium IKI+; spores IKI+ blue to orange OPEGRAPHA
Spores with lenticular cells; apothecia irregular, often branched or elongating; bymenium IKI-; spores usually IKI+ bluish black GRAPHIS
20. Apothecia mostly regular, rounded, or absent; thallus rudimentary to well developed.
23. Thallus and apothecia black throughout; spores simple to 1-3 septate.
Thallus terricolous or fungicolous PLACYNTHIELLA
Thallus saxicolous PLACYNTHIUM
23. Thallus and apothecia variously colored, but not black throughout, or thallus absent; spores various.
24. Exciple thalloid, with an algal component.
25. Spores septate, muriform, or polaribilocular.

26. Spores either muriform or with 20 or more transverse septa.
 Spores muriform, with 1-3 longitudinal septa DIPLOSCHISTES
 Spores without longitudinal septa CONOTREMA
26. Spores 1-3 septate or polaribilocular.
 27. Spores polaribilocular; apothecia or thallus or both often K+ deep purple (look also for tiny black dots in the hymenium and see *Caloplaca flavovirescens*) CALOPLACA
 27. Spores merely septate; apothecia and thallus K- or K+ yellow or red.
 28. Spores hyaline.
 Apothecia yellow or yellowish CANDELARIELLA
 Apothecia black, brown, or whitish pruinose LECANORA
 28. Spores gray or brown.
 29. Asci disintegrating, not evident with mature spores CYPHELIUM
 29. Asci evident.
 Spore walls thin and evenly developed, the lumina cylindrical AMANDINEA
 Spore walls unevenly thickened, the lumina often angled RINODINA
25. Spores nonseptate.
 30. 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 ASPICILLA
 Thallus continuous; ascomata not as above PERTUSARIA
 30. Apothecia adnate or immersed, but not as above; spores of various sizes.
 31. 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
 31. Neither the thallus nor the apothecia yellow.
 32. Spores numerous, asci always bearing more than 32 spores ACAROSPORA
 32. Spores few to 16 per ascus, rarely a few asci with more than 16.
 33. Spore walls thick PERTUSARIA
 33. Spore walls thin.
 34. Thallus or apothecia corticolous, or if saxicolous, then spores less than 14 μ long LECANORA
 34. Thallus or apothecia saxicolous and the spores more than 14 μ long.
 Apothecial disc flat or concave, the surface at or below the surface of the thallus ASPICILLA
 Apothecial disc distinctly adnate, the surface elevated well above the surface of the thallus TRAPELIA
24. Exciple without algae, or exciple absent.
 35. Spores minute and numerous, more than 16 per ascus.
 36. Thallus corticolous BIATORELLA
 36. Thallus saxicolous.
 Disc notably beset with carbonaceous ridges and lumps POLYSPORINA
- Disc nearly or quite without carbonaceous intrusions SARCOGYNE
35. Spores few to 16 per ascus.
 37. Spores septate.
 38. Spores brown, or muriform, or both.
 39. Spores 3-several septate OPEGRAPHA
 39. Spores 1-septate.
 Thallus K+ red BUELLIA
 Thallus K- AMANDINEA
38. Spores hyaline, never muriform.
 40. Paraphyses indistinct or absent ARTHONIA
 40. Paraphyses evident, distinct or intertwined.
 41. Spores 2-celled.
 Paraphyses intertwined and anastomosed MICAREA
 Paraphyses distinct DIMERELLA
41. Spores 4- to many-celled.
 42. Ascomata with elevated rims and deeply sunken hymenia CONOTREMA
 42. Ascomata with exposed, surficial hymenia.
 43. Thallus saxicolous.
 Epithecium green in KOH; algae aggregated in small packets BACIDINA
 Epithecium not green in KOH; algae not in packets BACIDIA
43. Thallus corticolous, lignicolous, terricolous, or muscicolous.
 Spores tending to taper at one end, less than 34 μ long, 3-5 septate SCOLIOSPORUM
 Spores nearly acicular, the larger more than 34 μ long, commonly more than 5-septate BACIDIA
37. Spores nonseptate, though sometimes with 2 large polar vacuoles.
 44. Thallus C+ pink, gyrophoric acid present.
 45. Thallus saxicolous TRAPELIA
 45. 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
44. Thallus C-, gyrophoric acid absent.
 46. 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
 46. Thallus not granular, or granules up to 0.5 mm across, dense, dark brown to black when wet, never terricolous.
 47. Apothecia orange, K+ purple PROTOBLASTENIA
 47. Apothecia neither orange nor K+ purple.
 48. Thallus KC+ orange; apothecia to 0.25 mm across; larger spores more than 5 μ wide PYRRHOSPORA
48. Thallus KC-; apothecia and spores various. Apothecia flesh-colored to darkening, usually irregular in shape, with a difficult-to-define margin, the larger discs often more than 0.4 mm across LECANORA
 Apothecia black, more or less round, the rim thick and conspicuous PORPIDIA

ACAROSPORA A. Massal.

Acarospora americana ⁴ H. Magn. Known only from an exposed granitic boulder on the grounds of the Morton Arboretum, in DuPage County. This is a C- species that in all other respects looks like the more widespread C+ rose species *A. fuscata* (Nyl.) Arnold. Du-W#19636

ACROCORDIA A. Massal.

Acrocordia megalospora ⁵ (Fink) R. C. Harris According to Harris (1973), this species ranges throughout Illinois and the Chicago region, though we have yet to secure a specimen locally. It evidently prefers elms and white oaks.

AMANDINEA Choisy ex Scheid. & H. Mayrh.

Asci polysporous *A. polyspora*
Asci octosporous *A. dakotensis*
 Apothecia with a thalline margin, the proper exciple evidently lacking *A. dakotensis*
 Apothecia not erumpent, without a thalline margin, the proper exciple, well developed *A. punctata*

Amandinea dakotensis ⁵ (H. Magn.) P. May & Sheard Our only record for this species is a Calkins specimen (#167 NY) from Cook County, which he called *Buellia alboatra*.

Amandinea polyspora ⁴ (Willey) E. Lay & P. May Frequent to common just to the west and south of the Chicago region, where it grows on twigs and branches of open-grown trees. Our only record of this lichen locally is from *Malus pumila* near Barrington, in Cook County. Co-H#1234

Amandinea punctata ¹ (Hoffm.) Coppins & Scheid. = *Buellia schaeferi* and *B. parasema* (in part) of Calkins, who reported it from Cook (#79 NY) and Grundy (F) counties, noting that it grew on weathered rails and once on an old stump. He does not mention *Buellia punctata*, the name so long used for this species. Imshaug (1951) cited Calkins (F) specimens from Cook and Grundy counties. The Field Museum has two specimens from Grundy annotated by Imshaug; Calkins had called them *B. schaeferi*. *Amandinea punctata* is characteristic of weathered fence posts and rails, where it often grows with *Caloplaca microphyllina* and *Physcia millegrana*, though it grows on bark occasionally. Co-H#670; Du-W#14616; La-H#196; Wi-W#19233

ANISOMERIDIUM (Müll. Arg.) Choisy

Spores about 3 times as long as wide, sometimes becoming 4-celled; microconidia elliptical *A. nysseaegenium*
 Spores about twice as long as wide, remaining 2-celled; microconidia globose *A. bifforme*

Anisomeridium bifforme ³ (Borrer) R.C. Harris Calkins's report of *Pyrenula gemmata* is, perhaps, referable here; several non-Chicago area specimens we have seen that he

labeled *Pyrenula gemmata* are *A. bifforme*; but see also *Eopyrenula intermedia* and *Kirschsteiniotbelia aethiops*. He reported it from "oaks and hickories at River Forest and in all our territory." We have not seen *A. bifforme* locally. It is possible Calkins was referring, at least in part, to *A. nysseaegenium*, which is not infrequent today.

Anisomeridium nysseaegenium ⁴ (Ellis & Everh.) R. C. Harris Although it is now relatively frequent, it would seem that this species was unknown to Calkins, by any name, since all of the specimens we have seen are contemporary. Our records are mostly from *Crataegus* spp., *Quercus alba*, *Q. macrocarpa*, and *Populus deltoides*. There are several records from *Crataegus mollis*, *Quercus alba*, and *Ulmus americana* 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. Such forms have been called *Sarcinulella banksiae* Sutton & Alcorn, an anamorphic form known originally from Australia. Co-H#683; Du-W#19994; La-H#1371; Wi-H#107

ANZIA Stizenb.

Anzia colpodes ³ (Ach.) Stizenb. = *Parmelia colpodes* Calkins reported this species from oaks near Lemont, in Cook County. We have not seen it anywhere near Chicago; in southern Missouri, it grows mostly on *Quercus velutina*. We would be tempted to disbelieve the report, but there is a correctly identified Calkins specimen (#6011 CHAS) from nearby LaSalle County, Illinois. [atranorin, divaricatic acid]

ARTHONIA Ach.

Apothecia to 0.8 mm across, round or nearly so.
 Thallus greenish yellow or greenish blue *A. caesia*
 Thallus ashy white or evanescent *A. diffusa*
 Apothecia to 1.5 mm across, irregular, elongated to stellately branched.
 Apothecia reddish brown to nigrescent; thallus white *A. pyrthuliza*
 Apothecia dark brown to black; thallus whitish to sordid or greenish gray *A. radiata*

Arthonia caesia ¹ (Flotow) Körber = *A. lecidella* of Calkins (#177 NY; #504 ILL; #213 F). This species is common on a wide variety of corticolous substrates, particularly *Carya ovata*, *Fraxinus americana*, *Populus deltoides*, *Quercus alba*, *Q. velutina*, *Tilia americana*, and the smooth bark of young saplings. It is occasional on old wood. Calkins noted it from hickories and hawthorns throughout the area. [usnic acid] Co-H#582; Du-W#13865; La-W#14975; Wi-W#13941

Arthonia diffusa ³ Nyl. There is a Calkins specimen of this species from "Illinois, on oaks" (s.n. F); possibly this is from the Chicago area. There is another Calkins

specimen (#307 F) from "Illinois" that has 2-4 celled spores 15-22 μ long and 6-10 μ wide, distinct paraphyses, round black apothecia that are somewhat pruinose, and a rather thick thallus; it has been annotated as *A. polymorpha* Ach. In his book Calkins noted *A. diffusa* from hickories and maples in Will County. A little farther north, in Racine County, Wisconsin, it is known from a ravine near Crestview, where it grows on *Acer saccharum*. This ravine is characterized by boreal elements such as *Betula papyrifera*, *Juniperus communis* var. *depressa*, *Populus balsamifera*, and *Shepherdia canadensis*.

*Arthonia pyrrhuliza*³ Nyl. Calkins described his specimen as "thallus white, thin; apothecia reddish, slender, much divided, ramose." There is such a specimen from nearby LaSalle County, Illinois (s.n. F); its spores, about 15 μ long, are 4-celled, with one of the end cells notably enlarged. Fink (1935) doubts Illinois reports, but the LaSalle County specimen fits well enough his own description for this plant. Calkins noted that it was rare on oaks in Will County.

*Arthonia radiata*² (Pers.) Ach. Calkins noted this species from oaks near Elgin. There are Calkins specimens (#179, #217 F; #180 NY) of this species, although some of those he labeled *A. astroidea*. Most were collected in Glencoe, Cook County, on hickories.

ARTHOPYRENIA A. Massal.

*Arthopyrenia cinchonae*² (Ach.) Müll. Arg. Our only record of this species is a specimen (Calkins #6623, 1890 US) from "Illinois, Kane County, Elgin." Calkins had called it *Pyrenula glabrata*. In his flora he reports *P. glabrata* from "oaks near Elgin and Joliet." *Arthopyrenia cinchonae* is a species known today from the southeastern states and the Atlantic coast up to New Jersey, which casts doubt upon the validity of the label data.

ARTHOTHELIUM A. Massal.

Apothecia to 0.25 mm across, or elongated to 1 mm or more; phycobiont protozooid *A. taediosum*
 Apothecia mostly larger, to 1.5 mm across, irregular; phycobiont *Trentepohlia* *A. spectabile*

*Arthothelium spectabile*² A. Massal. = *Arthonia spectabilis* of Calkins, who noted that it grew on "maples at Glencoe, Riverside and elsewhere." There are historic Cook County specimens (#177 F; #213 NY) of this species.

*Arthothelium taediosum*³ (Nyl.) Müll. Arg. = *Arthonia taediosa* of Calkins, who reported it from maples in the Des Plaines valley.

ASPICILIA A. Massal.

Thallus areolate or not, but without heavily pruinose thalline rims around sunken apothecia; on HCl- rock *A. caesiocinerea*
 Thallus areolate, many areoles with deeply seated apothecia surrounded by heavily pruinose thalline rims; on dolomite.

Thallus white, pale greenish white, or gray, the areoles more or less contiguous; spores 8 *A. calcarea*
 Thallus grayish, the areoles discontinuous or scattered; spores 4-6 *A. contorta*

*Aspicilia caesiocinerea*⁴ (Nyl. ex Malbr.) Arnold Rare locally, this species is not uncommon just to the west of the Chicago region, where it occurs on sandstone in Lee and Ogle counties. It was collected recently on a granite boulder in the Palos Hills of southern Cook County. [aspicilin] Co-H#736

*Aspicilia calcarea*³ (L.) Mudd = *Lecanora calcarea* of Calkins, who reported this species from calcareous rocks at Joliet. [aspicilin]

*Aspicilia contorta*¹ (Hoffm.) Kremp. = *Lecanora calcarea* var. *contorta* of Calkins. Our only contemporary specimens of this species are from dolomitic outcrops in dry prairie near Joliet, where Calkins also made his collection (#188 NY). [aspicilin] Wi-W#12649

BACIDIA De Not.

Thallus saxicolous; spores less than 23 μ long *B. granosa*
 Thallus corticolous, terricolous, or muscicolous; spores more than 23 μ long.

Thallus terricolous, saxicolous, or muscicolous. *B. bagliettoana*
 Thallus corticolous.

Apothecia epruinose in age, with the exciple and hypothecium deep pink to red brown in KOH *B. polychroa*
 Apothecia commonly pruinose, at least along the margins, the exciple and hypothecium hyaline to yellowish in KOH *B. suffusa*

*Bacidia bagliettoana*⁴ (A. Massal. & De Not.) Jatta Muscicolous or terricolous; the only local record is from soil over dolomite at Joliet Junior College, in Will County, with *Catapyrenium squamulosum*. Wi-H#1219

*Bacidia granosa*⁴ (Tuck.) Zahlbr. This species is infrequent on dolomitic outcrops, HCl+ boulders, and weathered concrete. It has been called *B. trachona* (Ach.) Lettau by many North American authors. According to Richard Harris (pers. comm.), *B. trachona* is a European species, and our material is referable here. Calkins evidently was not aware of any *Bacidia* with short spores in the Chicago area; no specimens have been found, even under another name. Co-M#26; Du-W#1463; Wi-H#1132

*Bacidia polychroa*³ (Th. Fr.) Körber = *Biatora fuscorubella* of Calkins, who stated that this species grew on substrates similar to those of *Bacidia rubella*. *B. rubella* is a distinct species known from elsewhere in the Midwest, but the only Calkins material (#140, #897, LaSalle Co., Illinois, on linden, F) we have seen that he called *Biatora rubella* is referable to *Bacidia polychroa*.

Bacidia suffusa ² (Fr.) A. Schneider = *Biatora suffusa* Fr.
In southern Illinois, this species is rare on *Carya* and *Liquidambar*. Calkins noted it from *Carya* in Hanover and Lemont in Cook County, and there are correctly identified specimens (#143, 1897, F) from Cook County. Ekman (1996) cites both *Bacidia rubella* and *B. suffusa* from Cook County based upon specimens collected at Canton, Illinois, which is in Fulton County.

BACIDINA Vězda

Bacidina egenula ¹ (Nyl.) Vězda = *Biatora inundata* of Calkins. This species has been misidentified routinely in North America as *Bacidia inundata* (Fr.) Körb. *Bacidina egenula* differs in having a K+ green epithecium. 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." Co-M#29; Du-W#14366; Wi-W#12652

BIATORELLA De Not.

Biatorella cyphalea ³ (Tuck.) Zahlbr. = *Biatora cyphalea* Tuck. Fink (1935) restricted this species to Illinois. Magnusson (1934) cited a Calkins specimen from elms, "Chicago: Fox River." Actually, Calkins reported it as "rare on elms near the Fox River," a location that is more likely in Kane County than in Chicago. We have not seen the specimens upon which these records are based.

BUELLIA De Not.

Buellia stillingiana ⁵ J. Steiner = *B. parasema* (in part). This species is not uncommon on corticolous substrates just south of the Chicago region, and although we have not seen it alive locally, there is a Cook County specimen (Calkins #163 F), originally called *B. parasema*. Imshaug (1951) cited a specimen from Cook County. [norstictic acid, ± atranorin]

CALOPLACA Th. Fr.

- Thallus sorediate.
Thallus saxicolous C. citrina
Thallus lignicolous or corticolous C. microphyllina
Thallus esorediate.
Apothecial discs black or brownish black, or buff and pruinose, K- or K+ violet.
Discs distinctly K+ violet red; thallus corticolous or lignicolous, usually on *Juniperus*. C. pollinii
Discs K- or K+ pale violet; saxicolous C. atroalba
Apothecial discs pale yellow to orange, red orange, or brownish orange, K+ violet red.
Thallus corticolous or lignicolous.
Thallus yellowish gray to yellow, K+ red. . . C. flavorubescens
Thallus absent or immersed, gray or blackish, or waxy white, K-

Thallus waxy, pale gray, the discs bright orange and nearly or quite without a thalloid exciple C. sp. #3
Thallus absent, or immersed, or blackish; thalloid exciple present or absent.

Apothecial margins distinctly white pruinose, the discs dull tan yellow C. ulmorum
Apothecial margins epruinose, the discs rusty brown to orange.

Apothecial margins mostly yellow to orange, usually a little paler than the discs C. holocarpa
Apothecial margins gray to rusty red or darker.

Apothecial rim gray, conspicuous, and persistent C. cerina

Apothecial rim darkened rusty red, mostly flexuous and turning under in age C. ferruginea

Thallus saxicolous.

Thallus yellow or orange, distinctly present at least near many of the apothecia, K+ purple.

Thallus distinctly orange-tinged, paler than to concolorous with the apothecia.

Many of the apothecia more than 0.4 mm across C. squamosa

Apothecia all less than or equal to 0.4 mm across C. cinnabarina

Thallus distinctly yellow, notably paler than the orange or brownish apothecia.

Thallus margins usually notably lobulate and loosely appressed to the substrate; apothecia less than 0.4 mm across C. schaeferi
Thallus scant to continuous, but without notable lobulate margins; apothecia commonly more than 0.4 mm across.

Thallus thin, more or less continuous, the apothecial rims essentially concolorous with the brownish or orange discs and tending to disappear in age C. flavovirescens

Thallus thick, more or less aggregated around the apothecia, the apothecial rims paler than the yellowish or brownish discs C. vitellina

Thallus K- or absent or essentially so.

Apothecial margins gray; thallus abundant, gray to black C. sideritis

Apothecial margins yellow, orange, or red brown; thallus absent, gray, or black; substrate chemistry various.

Spore isthmus narrow, no more than 3.5 μ wide C. feracissima

Larger spore isthmus wider than 3.5 μ .
Thallus absent or essentially so, substrate HCl+ C. vitellina

Thallus evident, thin or thick; substrate HCl- C. oxfordensis

Caloplaca atroalba ⁵ (Tuck.) Zahlbr. There is a Calkins specimen from Will County (#1752 NY), which he named *Lecanora aipospila*. The only local contemporary record is from southern Will County, just outside of Calkins's area, where it grows on sandstone bedrock within the zone of fluctuation along Prairie Creek north of Wilmington. Farther south we have specimens from dolomite.

Caloplaca cerina ⁴ (Hedwig) Th. Fr. There are at least two early Cook County specimens (*s.n.* ILL; *s.n.* F), referable here, that were named *Placodium ferrugineum* by Calkins, and another (*s.n.* F) that he called *Placodium*

- aurantiacum*. There is a modern Cook County record from a wooden fence rail. Co-H#1308
- Caloplaca cinnabarina*¹ (Ach.) Zahlbr. = *Placodium cinnabarinum* of Calkins. As it was in Calkins's day, this is a frequent species on 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 μ long, with isthmi 3–4 μ long. The apothecia rarely exceed 0.4 mm across, and mostly run about 0.2–0.3 mm across. See also comments under *C. schaereri*. Co-W#14145; Wi-W#12650
- Caloplaca citrina*⁴ (Hoffm.) Th. Fr. This species is typically found on vertical, dolomitic cliff faces or weathered quarry walls in the Des Plaines valley. 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 called *C. citrina* var. *flavocitrina* (Nyl.) A. E. Wade. Co-M#28; Du-W#13938; Wi-H#1196
- Caloplaca feracissima*⁴ H. Magn. Evidently unknown to Calkins, this species accounts for most of the dirty yellow encrustations on sidewalks, flagstones, and weathered concrete. It grows routinely with *Endocarpus pusillus* and *Lecanora dispersa*. As understood here, this species includes specimens whose apothecia have discs that appear orange brown and have pale rims as well as those whose apothecia have definitely brownish discs and even yellower and larger rims. There are populations that at times seem so distinctly different that one is scarcely able to imagine lumping them together as one species; then, there are others in which the apothecia appear to blend insensibly from one end of the spectrum to the other. Neither group has the nearly septate spores of *C. approximata* (Lyngé) H. Magn., in which the isthmus is scarcely 1 μ wide. Both groups, though distinct, are very weedy on weathered flagstone and concrete. Occasional specimens have paraphyses in which the terminal 1 or 2 cells expand to 7 or 8 μ , said to be characteristic of *C. lactea* (A. Massal.) Zahlbr., but so many of our specimens grade from 3 to 6 μ in this respect that it seems there is no discontinuous segregation. The reports of *C. arenaria* by McKnight et al. (1987) should be referred here. Co-W#13609; Du-W#13322; La-W#13775; Wi-H#1240
- Caloplaca ferruginea*² (Hudson) Th. Fr. = *Placodium ferrugineum* of Calkins, at least in part, who noted this species from "oaks along the Des Plaines river and near Elgin on hickories . . . plentiful." We have seen a Cook County specimen, properly identified (#6085 CHAS) from Oak Park. An "Illinois" specimen (#318 NY) was later annotated *C. pollinii* by Rudolph, we believe erroneously. See also comments under *C. cerina* and *C. flavovirescens*.
- Caloplaca flavovirescens*² (Hudson) J. R. Laundon = *Placodium aurantiacum* of Calkins, who listed it from "elms and poplars at Glencoe; on hickories and other trees along the Des Plaines River." Curiously, he said it grew on rocks at Lemont and elsewhere; these latter reports probably refer to what is now known as *C. flavovirescens*. Many Calkins corticolous specimens we have seen that he called *P. aurantiacum* are referable to *C. ulmorum*, which see, but at least two Cook County specimens (#6082 CHAS; #81 F) are properly identified.
- Caloplaca flavovirescens*⁴ (Wulfen) Dalla Torre & Sarnth. Locally this species is infrequent on weathered concrete, dolomitic erratics, or quarry walls; it is much more common away from the region. A Cook County specimen (s.n. F) that Calkins called *Placodium ferrugineum* is referable here. Occasional specimens of this species have in their hymenia parasitic, polysporous asci with brown, septate spores mostly 4–6 μ long; according to R. C. Harris (pers. comm.) these may be *Muellerella lichenicola* (Sommerf. ex Fr.) D. Hawksw. Co-H#709; Du-W#14642
- Caloplaca holocarpa*⁴ (Hoffm. ex Ach.) M. Wade Evidently unknown to Calkins, this is an occasional but widespread species of a wide variety of bark and lignin substrates, though generally with it is found on the upper trunks of *Populus*. Co-H#693; La-H#350; Wi-H#269
- Caloplaca microphyllina*¹ (Tuck.) Hasse = *Placodium microphyllum* of Calkins (#6084 CHAS; s.n. F). That orange swatch that one can see from the road on farm wood and fences in agricultural districts is usually either rust leached from barbed wire or *C. microphyllina*. It often grows with *Physcia millegrana* and *Amandinea punctata*. Co-H#237; Du-W#19232; La-H#193; Wi-H#1131
- Caloplaca oxfordensis*⁴ Hedr. Our only record of this species is from granitic boulders in an open meadow at the Morton Arboretum, in DuPage County, although it grows on granitic erratics more frequently just to the north and east of us (Wetmore 1996). Du-W#19639
- Caloplaca pollinii*⁵ (A. Massal.) Jatta Farther south, this species grows on *Juniperus virginiana* in natural areas. Calkins's Cook County specimen (#53 MICH) was confirmed by Wetmore (1994); we have not seen the specimen, so we do not know what Calkins called it.

Caloplaca schaeferi ⁴ (Flörke) Zahlbr. This species is uncommon locally on dolomitic cliff faces and outcrops, as well as on weathered flagstone, and known only from DuPage County. It can resemble *C. cinnabarina*, because the apothecia are tiny, rarely more than 0.4 mm across, and the thallus is cracked-areolate to continuous, even occasionally effigurate, but the thallus is notably less orange than the discs, and the spores commonly are more than 11 μ long. We are not at all certain that *C. schaeferi* is the proper name for this lichen, but it appears to be the one used by Rudolph (1955) for at least a similar lichen. Du-W#14360

Caloplaca sideritis ⁴ (Tuck.) Zahlbr. Evidently unknown to Calkins, this species is occasional on granitic and dolomitic erratics, and on dolomitic outcrops and cliff faces. It is a variable lichen locally, particularly with respect to spore size, which is described as 11–14 μ long (Wetmore 1996); a few of our specimens have spores ranging from 16–22 μ , but are alike in all other respects. Co-H#443; Du-W#19640; Wi-H#1127

Caloplaca squamosa ⁴ (de Lesd.) Zahlbr. Uncommon locally on dolomitic erratics and on weathered concrete or mortar in full sun, this lichen is more common farther south. Rarely, specimens have clustered apothecia with tiny fringes of minutely lobulate thallus, evocative of descriptions we have seen for *C. irrubescens* (Nyl.) Blomb. Co-H#580, Du-W#14601

Caloplaca ulmorum ⁵ (Fink) Fink There are Calkins specimens of this species that he had called *Placodium aurantiacum* (#50, #1641 NY). We have a contemporary specimen from just west of the Chicago region, which grew on the trunk of *Juglans nigra* in a partly open mowed area.

Caloplaca vitellinula ⁴ (Nyl.) H. Olivier This species occurs occasionally in Cook and Will counties and farther south and west on weathered dolomite and concrete. It is disturbingly similar to what we are calling *C. squamosa*, which has a more orange thallus, with more distinctly lobulate squamules. Co-Horn#45; Wi-H#1322

Caloplaca sp. #3 ⁴ sensu MOR Characterized by a waxy, pale gray, areolate thallus, with orange discs and proper exciple. Young apothecia appear to have a weakly developed thalloid exciple, but this is soon evanescent; spores are about 14 μ long, with isthmi about 6 μ long. Our only record for this distinctive lichen is from a wooden fence rail at Harms Woods, in Cook County. Co-H#863

CANDELARIA A. Massal.

Thallus esorediate *C. fibrosa*
Thallus sorediate *C. concolor*

Candelaria concolor ¹ (Dickson) Stein Presumably including some of what Calkins called *Theloschistes concolor*, but we have seen no specimens of *C. concolor* collected by Calkins; see comments under *C. fibrosa*. This species today, with the possible exception of *Physcia millegrana*, is the most common lichen in the Chicago region. It accounts for most of the yellow swatches that are so characteristic of suburban trees such as *Populus deltoides*, *Fraxinus pennsylvanica* var. *subintegerrima*, *Acer negundo*, *Juglans nigra*, and *Ulmus americana*. It also grows on fence posts and rails, concrete, dolomitic erratics and outcrops, and tombstones. Occasional specimens have a very scant or concealed thallus, and have been called *C. concolor* var. *effusa* (Tuck.) G. Merr. & Burnham. Co-M#37; Du-W#12419; La-W14981; Wi-M#4

Candelaria fibrosa ⁵ (Fr.) Müll. Arg. Although unlisted by Calkins, there are several Cook County specimens collected by Calkins that he labeled either *Theloschistes polycarpus* (#5686 CHAS) or *Theloschistes concolor* (#5684 CHAS; #2031 NY; s.n. F). Still frequent on canopy branches in Missouri, it has not been collected in Illinois in this century.

CANDELARIELLA Müll. Arg.

Thallus of small squamules or areolae, or absent; apothecia usually present; corticolous or saxicolous. *C. vitellina*
Thallus notably sorediate or of spheroidal corticate granules; apothecia commonly absent; 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. reflexa*

Candelariella reflexa ⁴ (Nyl.) Lettau More than half of our local specimens are from *Quercus velutina*, though we also have it from *Q. macrocarpa*, *Crataegus mollis*, *Juglans nigra*, *Populus deltoides*, *Prunus serotina*, *Tilia americana*, and weathered fence rails. Harris and Buck (1978) describe a similar species (*C. efflorescens* R. C. Harris & W. R. Buck) and map it from areas all around the Chicago region, particularly north and east of us. It appears to differ principally in having 32-spored asci, as opposed to the 8-spored asci of *C. reflexa*. Our lower Midwestern plants infrequently produce apothecia, but all that we have seen have 8-spored asci. Until we see material to the contrary we are defaulting all of our sterile morphs to *C. reflexa*, and here also we are referring the reports of *C. efflorescens* by McKnight et al. (1987). Co-H#733; Du-W14363; La-H#1368; Wi-H#1124
Candelariella vitellina ¹ (Hoffm.) Müll. Arg. Possibly included within *Placodium vitellinum* of Calkins, but his Cook County specimen (#6080 CHAS), from wood, is *Candelariella xanthostigma*. Most northern Illinois

specimens are from sandstone exposures, but the only specimens we have seen in the broader Chicago region are from igneous boulders. It is rare on lignin, such as weathered 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 and not as coalesced. Be alert for a similar species, frequent on carbonate rock all around the Chicago area, *C. aurella* (Hoffm.) Zahlbr. Du-W#19637

*Candelariella xanthostigma*⁴ (Ach.) Lettau Occasional locally, mostly on oaks. It was here in Calkins's time, but he evidently included it with *Candelariella vitellina*, which see. Wetmore (1986) reports it from Lake County. Du-W#14158

CATAPYRENIUM Flotow

*Catapyrenium squamulosum*¹ (Ach.) Breuss = *Endocarpon hepaticum* and *E. rufescens* of Calkins. Thomson (1987) does not cite specimens, but appears to dot Cook County on a distribution map; there is a Calkins specimen (#30 NY) from Cook County. Our contemporary Cook and Will county specimens are from shallow soil over dolomite. It often grows with *Psora decipiens* and prairie species such as *Andropogon gerardii*, *A. scoparius*, *Artemisia caudata*, *Comandra umbellata*, *Euphorbia corollata*, *Liatris cylindracea*, *Petalostemum purpureum*, *Silphium terebinthinaceum*, and *Solidago nemoralis*. Near Lake Michigan at Clarke and Pine Nature Preserve, in Lake County, it grows in stabilized sand ridge prairie with *Andropogon scoparius*, *Arenaria stricta*, *Artemisia caudata*, *Aster azureus*, *A. ptarmicoides*, *Carex richardsonii*, *Liatris aspera*, and *Solidago nemoralis*. In the extreme north western portion of the broader Chicago region (Swink and Wilhelm 1994), which includes a small section of the kettle and kame topography of northern Illinois and southeastern Wisconsin, the gravelly hill prairies include this species along with *Heppia adglutinata* and *Psora decipiens*. Co-W#17520; La-W#13769; Wi-W#12428

CLADINA Nyl.

Ultimate branches with a strong tendency to be swept in one direction *C. arbuscula*
Ultimate branches not notably oriented in one direction *C. subtenius*

*Cladina arbuscula*⁴ (Wallr.) Hale & Culb. Our only record for this species is on weathered clay near Palos Park in Cook County, growing with *C. cervicornis* ssp. *verticillata*, *Cladonia cristatella*, *C. peziziformis*, *C. polycarpoides*, and *Danthonia spicata*. [usnic acid, fumarprotocetraric acid] Co-H#1279

*Cladina subtenius*¹ (Abbayes) Hale & Culb. Probably = *Cladonia rangiferina* var. *sylvatica* of Calkins, since he did not mention any other *Cladina*. Locally, this species is rare on eroded, well-leached clayey till or loess, typically with other terricolous lichens and *Danthonia spicata*. Calkins noted it from dead wood and sandstones in the Des Plaines River valley. [usnic acid, fumarprotocetraric acid] Du-L#79

CLADONIA P. Browne

- Podetia forming cups.
- Podetia and cups esorediate.
 - Thallus UV+ bright white (squamous) *C. squamosa*
 - Thallus UV-, podetia without or with only scattered squamules.
 - Central portions of the cups proliferating, producing secondary and tertiary cups .. *C. cervicornis* ssp. *verticillata*
 - Cups not proliferating, or proliferating from their margins only.
 - Cups with membranes irregularly perforated *C. multiformis*
 - Cups without perforations.
 - Podetia tall, olive green, with the cups usually proliferating at their margins *C. gracilis* ssp. *turbinata*
 - Podetia short, gray green, the cups not or only rarely proliferating *C. pyxidata*
- Podetia and/or cups nearly or quite covered by fine to coarse soredia.
- Podetia very elongate, terminated by small cups, finely sorediate nearly or quite to the base.
 - Cups usually poorly developed and on only a few podetia: grayish acid present *C. cylindrica*
 - Most or all of the podetia with well-developed cups; grayish acid absent *C. fimbriata*
- Podetia stout, the cups often deep and flaring, sometimes the stalk mostly corticate.
 - Apothecia and/or pycnidia red, thallus yellowish green; usnic acid present *C. pleurota*
 - Apothecia and/or pycnidia brown; thallus grayish or whitish; usnic acid absent.
 - Grayish acid present *C. grayi*
 - Grayish acid absent.
 - Cryptochlorophaea acid present *C. cryptochlorophaea*
 - Cryptochlorophaea acid absent.
 - Soredia coarse and granular; cups stout, bourgeonic acid absent *C. chlorophaea*
 - Soredia fine; cups thin, deep, and expanded; bourgeonic acid present *C. conista*
 - Podetia not forming cups, or podetia absent.
 - Podetia chronically absent or less than 4 mm long.
 - Apothecia manifest, the podetia nearly or quite sessile; squamules notably incised.
 - Squamules K+ (fumarprotocetraric acid) ... *C. caespiticia*
 - Squamules K+ yellow (thamnoic acid) ... *C. parasitica*
 - Apothecia rare, the podetia minute and pointed or absent; squamules various.
 - Many squamules (2)3 mm or more long.
 - Squamules K+ yellow turning red (norstictic acid) ... *C. polycarpoides*
 - Squamules K-; norstictic acid absent ... *C. squamosa*
 - All squamules less than 2 mm long.
 - Squamules P- or P+ yellow, fumarprotocetraric acid absent *C. macilentia* var. *bacillaris*
 - Squamules P+ red (fumarprotocetraric acid).

- Grayanic acid present *C. cylindrica*
 Grayanic acid absent *C. ramulosa*
10. Podetia manifest, 4 mm or more long.
14. Podetia esorediate.
15. Podetia much branched and elongated; basal squamules few or absent; apothecia absent *C. furcata*
15. Podetia simple or only sparingly branched; basal squamules well developed; apothecia conspicuous.
16. Apothecia red (rarely black); barbatic acid present.
 Podetia wholly corticate *C. cristatella*
 Podetia with ecorticate patches that turn brown and translucent *C. didyma*
16. Apothecia tan or brown to nigrescent; barbatic acid absent.
17. Podetia K+ yellow turning red (norstictic acid) *C. polycarpoides*
17. Podetia K- or K+ yellow; norstictic acid absent.
18. Thallus yellowish green; usnic acid present *C. piedmontensis*
18. Thallus grayish green or gray; usnic acid absent.
19. Apothecia tan; squamules less than 1.5 mm long *C. peziziformis*
19. Apothecia brown; many squamules more than 1.5 mm long.
 Podetia UV- (fumarprotocetraric acid), smooth or sparsely squamulose *C. sobolescens*
 Podetia UV+ bright white (squamic acid), densely squamulose or not *C. squamosa*
14. Podetia sorediate, at least in part.
20. Apothecia and/or pycnidia red.
 Squamules incised, esorediate; podetia scarcely sorediate, beset with granular or isidioid squamules except in ecorticate areas that turn brown and translucent *C. didyma*
 Squamules occasionally lobed but not incised, sorediate; podetia with patches of fine soredia *C. macilentia* var. *bacillaris*
20. Apothecia and pycnidia brown.
21. Podetia both P- and K-; fumarprotocetraric acid and norstictic acid absent *C. rei*
21. Podetia either P+ red or K+ red; either fumarprotocetraric acid or norstictic acid present.
22. Grayanic acid present *C. cylindrica*
22. Grayanic acid absent.
23. Podetia K+ yellow turning red (norstictic acid), esorediate *C. polycarpoides*
23. Podetia K-, norstictic acid absent, usually sorediate.
24. Many squamules more than 2 mm long, lobed, but not much incised; basal portions of podetia with large corticate patches.
 Podetia mostly very slender, commonly corticate for more than 2 mm above the base *C. ochrochlora*
 Podetia mostly stout, sorediate throughout, or corticate to about 2 mm above the base *C. coniocraea*
24. Most of the squamules less than 2 mm long, lobed or incised, but podetia essentially decorticate throughout.
 Squamules not much incised; podetia very elongate and tapering, some of them 1.5 cm or more long *C. subulata*
 Squamules usually incised; podetia various, but shorter than 1.5 cm *C. ramulosa*

*Cladonia caespiticia*⁴ (Pers.) Flörke The substrate for this species is quite variable, though it is most often found at the bases of *Quercus velutina* or *Q. palustris* in the greater Chicago region. It is rare locally, our Cook County specimen being from a decorticate log. [fumarprotocetraric acid] Co-Horn #23

Cladonia cervicornis (Ach.) Flotow ssp. *verticillata*¹ (Hoffm.) Ahti. = *C. gracilis* var. *verticillata* of Calkins. Contemporary specimens are from weathered clayey till, often with *Danthonia spicata*. [fumarprotocetraric acid] Co-H#1278; Du-L#123

*Cladonia chlorophaea*⁴ (Flörke ex Sommerf.) Sprengel = *C. pyxidata* of Calkins, in part. Note that Calkins did not mention this species and, of course, was unaware of the chemical segregates. He did, however, label some of his specimens *C. pyxidata* var. *chlorophaea* (e.g. #1831, #1832, #1839 NY). Most of the local specimens we have seen are Calkins collections from Glencoe, in Cook County; there is a modern record from a forest preserve near Wheaton in DuPage County. [fumarprotocetraric acid] Du-L#134

*Cladonia coniocraea*¹ (Flörke) Sprengel Specimens Calkins called *Cladonia fimbriata* (#1898 NY), *C. fimbriata* var. *tsubaeformis* (#251 NY), *C. fimbriata* var. *apolepta* (#1981 NY) and *C. ochrochlora* (#1848 NY), are referable here. Though yet unknown from Lake County, this species is characteristic of corticate and decorticate logs in shaded woods, often with *C. macilentia* var. *bacillaris*, but it is occasional at the bases and along the lower trunks of trees, particularly oaks. Rare specimens are difficult to distinguish from *C. ochrochlora*, which see. [fumarprotocetraric acid] Co-Horn #25; Du-L#107; Wi-H#1270

*Cladonia conista*¹ A. Evans = *C. pyxidata* of Calkins, in part, and one Calkins specimen labeled *C. fimbriata* var. *simplex* (#1891, in part, NY). This is the more common of the *C. chlorophaea* segregates locally, frequent on weathered clayey till or spoil, or on weathered sandy fields, sand prairies, and black oak savannas. It is occasional at the bases of trees, particularly oaks, but there are also specimens from burnt wood, decorticate logs, and stumps. In recent years, this species has been called *C. humilis* (With.) J. R. Laundon, but, according to Purvis et al. (1992) that species contains atranorin only. [fumarprotocetraric acid, bourgeanic acid] Co-H#756; Du-L#88; La-W#12963; Wi-H#1270

*Cladonia cristatella*¹ Tuck. This is the common "British soldiers" lichen; Calkins (#1932 NY) considered it occasional on decaying logs and stumps. Today, 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. [barbatic acid, didymic acid, \pm usnic acid] Co-W#13873; Du-L#81; La-W#16356
- Cladonia cryptochlorophaea*⁴ Asah. = *C. pyxidata* of Calkins in part (#1833 NY). Locally, this species grows in habitats similar to those of *C. conista*, though it is less common. A Calkins specimen from Cook County (#1891, in part, NY) was originally called *C. fimbriata* var. *simplex*. [cryptochlorophaeaic acid, \pm fumarprotocetraric acid, \pm atranorin] Co-H#608; Du-L#185
- Cladonia cylindrica*⁴ (A. Evans) A. Evans = *C. fimbriata* of Calkins, in part. All Chicago area material is from shaded decorticate logs and stumps. Calkins's specimen from Cook County (#1849 NY) was originally called *C. fimbriata simplex*. [grayanic acid, fumar-protocetraric acid] Co-H#1109; Du-Armstrong#677; Wi-H#1129
- Cladonia didyma*⁴ (Fée) Vainio Rare locally, this species is confined to decorticate logs. [barbatic acid, didymic acid] Co-H#1115; Du-L#87
- Cladonia fimbriata*¹ (L.) Fr. This species is occasional on decorticate logs and stumps, and rare on weathered till. All of the specimens we have seen named *C. fimbriata* by Calkins are referable to some other species. [fumarprotocetraric acid] Co-W#14661; Du-L#103
- Cladonia furcata*¹ (Hudson) Schrader This lichen if yet unknown from Lake County. Its common habitat locally is weathered till in natural areas. Calkins noted it from "calcareous earth near Joliet and elsewhere." [fumarprotocetraric acid] Co-H#190; Du-L#187; Wi-H#851
- Cladonia gracilis* (L.) Willd. ssp. *turbinata*³ (Ach.) Ahti Possibly = *C. gracilis* of Calkins, who reports it from Will County, but it is likely that his report is referable to some other species. One specimen in Calkins's bound *Lichenes Exsiccati* at ILL was named *C. gracilis* var. *verticillata*. It is referable here, but his description of var. *verticillata* in his flora is accurate; see *C. cervicornis* ssp. *verticillata*. [fumarprotocetraric acid]
- Cladonia grayi*⁴ G. Merr. ex Sandst. Occasional in the area today. Calkins would have included specimens of this species with *C. pyxidata*. It grows in habitats similar to *C. conista*. [grayanic acid, \pm fumarprotocetraric acid] Co-Horn #37; Du-L#179
- Cladonia macilenta*¹ Hoffm. var. *bacillaris* (Genth) Schaerer = *Cladonia macilenta* of Calkins, inasmuch as he did not recognize the variety *bacillaris*, and noted that *C. macilenta* and *C. cristatella* were easily told by their scarlet apothecia. There is one specimen (#97 NY) that he labeled *C. macilenta* that is indeed var. *bacillaris*. 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*, *Quercus velutina*, and *Prunus serotina*. [barbatic acid] Co-Horn #24; Du-L#196; Wi-H#1099
- Cladonia multififormis*⁴ G. Merr. Our only record of this northern species is from weathered till in DuPage County, where it grows with *C. peziziformis*. [fumarprotocetraric acid] Du-L#84
- Cladonia ochrochlora*³ Flörke There is some controversy over the taxonomy of this species and *C. coniocraea*. The only specimen we have seen of this species locally is one from Cook County (Calkins #1897 NY) that Calkins labeled *C. fimbriata* var. *coniocraea*, collected on an exposed cedar root near Glencoe. [fumarprotocetraric acid]
- Cladonia parasitica*² (Hoffm.) Hoffm. = *C. delicata* of Calkins (#1915 NY), who noted that was "found near Elgin on old stumps, near Lemont, and elsewhere," at least in Cook County. [thamnolic acid, decarboxy-thamnolic acid]
- Cladonia peziziformis*¹ (With.) J. R. Laundon = *C. mitrula* of Calkins (#1857 NY). With the possible exception of *C. polycarpoides*, 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] Co-W#13871; Du-L#108; La-H#214; Wi-W#12431
- Cladonia piedmontensis*⁴ G. Merr. A rare species, our few specimens are from weathered clayey till in Cook and DuPage counties. [usnic acid] Co-Horn #36; Du-L#183
- Cladonia pleurota*⁴ (Flörke) Schaerer A rare species, our few specimens are from weathered clayey till. [usnic acid, zeorin] Co-H#610; Du-L#125
- Cladonia polycarpoides*⁴ Nyl. Yet unknown from northern Will County, and though not quite as "weedy" as *C. peziziformis* or *C. rei*, *C. polycarpoides* is widespread and locally frequent, and will grow here on almost any terricolous substrate suitable for lichens. Given its contemporary abundance, it is curious that none of the species listed by Calkins appear able to include it within even broad interpretations of their descriptions, nor have we discovered any Calkins specimens. [norstictic acid] Co-W#13872; Du-L#131; La-W#15167

*Cladonia pyxidata*⁵ (L.) Hoffm. This species is very rare here now, though Calkins regarded it as "formerly abundant on earth along the lake shore in woods, [and] common elsewhere in our territory, on earth and rocks." It is probable, however, that this description applies most securely to members of the *C. chlorophaea* complex, since all of the Calkins specimens we have seen that he labeled *C. pyxidata* are in that complex. The only authentic specimen we have seen is one collected by Moffatt (s.n., 4 September 1897, ILL) from Lake County at "Miller Woods," where it no doubt grew in sandy black oak savanna. Without seeing some annotated material by Calkins, we cannot speculate as to what he may have been referring with the name *C. pyxidata* var. *poillum*. [fumarprotocetraric acid]

*Cladonia ramulosa*⁴ (With.) J. R. Laundon This species is characteristic locally on corticate and decorticate fallen logs in partly shaded areas, where it often grows with *C. macilentata* var. *bacillaris*. It also grows at the bases of trees in oak woodlands. There is a common squamulose, sorediate, epodetiate, fumarprotocetraric acid-producing species that occurs at the bases of trees throughout the Midwest; it may be referable here. Calkins may well have included it simply with those lichens he was calling *C. fimbriata*. [fumarprotocetraric acid] Co-W#14146; Du-W#12404; La-W#16677; Wi-W#13943

*Cladonia rei*⁴ Schaerer 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. Skorepa's (1970) report of *C. decorticata*. The specimen of Skorepa and Vermoch (#5225 SIU) is referable here. It is probable that Calkins was including this lichen with those that he called *C. fimbriata*. [homosekikaic acid] Co-W#13874; Du-L#218; La-W#15166; Wi-H#1157

*Cladonia squamosa*³ Hoffm. Calkins reported it from "earth and rotten logs in Will County and the western part of Cook." Although we have records of this species from as nearby as Ogle County, Illinois, we must remain circumspect about the accuracy of the report until a voucher specimen is discovered. [squamatic acid]

*Cladonia subulata*⁴ (L.) F. H. Wigg. Possibly some of those specimens Calkins called *C. fimbriata* var. *tubaeformis* would be referable here. Our few records for this species include a specimen (Clinton s.n., 1890, ILL) collected in Cook County and one collected recently in Cook County at Spring Lake Nature Preserve on a decorticate log. [fumarprotocetraric acid] Co-H#1237

COLLEMA F. H. Wigg.

Thallus isidiate or warty-papillose, corticolous.

Thallus minute, to 0.5 cm across, subcrustose, the lobes not warty; spores 2-5 septate, 1-2 muriform, 16-30 μ long, about half as wide *C. fragrans*

Thallus larger, clearly foliose, the lobes flat to much thickened and warty; spores not muriform.

Lobes much thickened and warty-isidiate; apothecia abundant; spores 2(4)-celled, 15-24 μ long *C. conglomeratum*

Lobes flat, finely isidiate; apothecia rare; spores 3-6 celled, 25-80 μ long *C. subflaccidum*

Thallus without isidia or warty papules, saxicolous or terricolous.

Thallus saxicolous, gray, finely wrinkled; apothecia absent or rare; spores 3-4 septate, 1-muriform, elliptic, 26-36 μ long *C. auriforme*

Thallus terricolous, corticolous, or rarely saxicolous, dark olivaceous to brownish black, not finely wrinkled; apothecia common; spores various.

Spores 4 per ascus, 3-5 septate, 1-2 muriform; lichen of leached clayey soils *C. limosum*

Spores 8 per ascus, 3-septate, 0-1 muriform; lichens of carbonate-rich soils.

Apothecial margin coarsely crenulate; spores more than 11 μ broad *C. bachmanianum*

Apothecial margin more or less even; spores less than 11 μ broad *C. tenax*

*Collema auriforme*³ (With.) Coppins & J. R. Laundon = *C. granosum* of Calkins, who reported it from mossy rocks near the Des Plaines River in Will County.

*Collema bachmanianum*⁴ (Fink) Degel. Known locally only from a shaded dolomite ledge at Waterfall Glen Forest Preserve and from a shaded dolomite wall at Camp Sagawau. Wilhelm and Lampa (1987) reported the DuPage County specimen as *Heppia lutosus*. Co-H#603; Du-W#12401

*Collema conglomeratum*³ Hoffm. = *C. pycnocarpum* of Calkins, who noted it from "elms and shrubs in Will County," and regarded it as rare.

*Collema fragrans*³ (Sm.) Ach. = *C. microphyllum* of Calkins, who recorded it from elm bark in Cook and Will counties, and regarded it as rare.

*Collema limosum*³ (Ach.) Ach. Calkins reported this species as rare on clay soil in Will County.

*Collema subflaccidum*³ Degel. Calkins reported *C. flaccidum* (Ach.) Ach., a saxicolous species, from oaks and elms in Cook and Will counties, so it is probable that *C. subflaccidum* is the species he had. He did state, however, that it could grow on rocks as well, but was ambiguous as to whether this was the case in the Chicago area. In any case, he regarded this lichen as rare locally. We have seen neither species in northern Illinois.

*Collema tenax*³ (Sw.) Ach. The only contemporary record for this species near the Chicago area is from a dolomitic canyon at Kankakee River State Park. Calkins found it on "calcareous soil" near Joliet.

CONOTREMA Tuck.

*Conotrema urceolatum*³ (Ach.) Tuck. Calkins stated that this species was found on maples and poplars in Cook and Will counties. Farther east, this species forms characteristic white patches on *Acer saccharum* in old growth forests.

CYPHELUM Ach.

*Cyphelium tigillare*⁴ (Ach.) Ach. Evidently unknown to Calkins, this species is occasional on old fence posts and rails, but we have one specimen from the bark of *Prunus serotina* and another from *Gleditsia triacanthos*. [rhizocarpic acid, epanorin, + two unknowns] Co-H#710; Du-W#14159; La-H#1494; Wi-H#1135

DENDRISCOCAULON Nyl.

*Dendriscoaulon umbausense*⁵ (Auersw.) Degel. This obscure species was unknown from the Chicago area until discovered recently at the edge of a specimen of *Peltigera canina* (Calkins s.n. F), which was collected on mosses at Glencoe, Cook County.

DERMATOCARPON Eschw.

*Dermatocarpum minutum*¹ (L.) W. Mann = *Endocarpum minutum*, including *E. m.* var. *complicatum* and *E. m.* var. *muhlenbergii* of Calkins. This species is occasional on exposed or shaded basalt or dolomite, often in canyons or on rocky cobbles in woodland streams. Co-M#33; Du-W#12411; Wi-H#1146

DIMELAENA Norman

*Dimelaena oreina*⁴ (Ach.) Norman Our only local record for this species is from a granite boulder near Northbrook, in Cook County. Co-H#1301

DIMERELLA Trevisan

*Dimerella pineti*⁴ (Ach.) Vězda This is a rare species in Illinois; our only local record is from a shaded decorticate log at the Danada Forest Preserve in DuPage County. Du-L#159

DIPLOSCHISTES Norman

Diploschistes muscorum (Scop.) R. Sant. ssp. *muscorum*³ = *Urceolaria scruposa* of Calkins, who reported it from "calcareous earth in Will County and on dead cedars along the banks of the Illinois; rare." Though we have not seen it locally, this species is frequent on mosses and lichens over sand at nearby Illinois Beach State Park, Lake County, Illinois. [lecanoric acid, diploschistic acid]

ENDOCARPON Hedwig

*Endocarpum pusillum*¹ Hedwig As it was 100 years ago (#29 NY), this is a ubiquitous species throughout the area on weathered concrete, flagstone, and other rocks, now growing regularly with *Caloplaca feracissima*, *Lecanora dispersa*, and *Verrucaria calkinsiana*; there are also rare occurrences on old wood, cloth, and even on Styrofoam. Co-W#13610; Du-W#14358; La-H#812; Wi-W#12652

EOPYRENULA R. C. Harris

*Eopyrenula intermedia*⁵ Coppins Our only local record for this species is a Cook County Calkins specimen (#216 F) that he had labeled *Pyrenula gemmata*; it was collected on maple. See also *Anisomeridium bifforme*.

EVERNIA Ach.

*Evernia mesomorpha*⁴ Nyl. Most of our material appears to be adventive in that it is found on planted trees or fence rails, and usually is represented only by tiny thalli. Hale (1979) excluded it from the region. [divaricatic acid, usnic acid] Co-Horn s.n. 1990; Du-L#167; Wi-H#1253

FLAVOPARMELIA Hale

*Flavoparmelia caperata*¹ (L.) Hale = *Parmelia caperata* of Calkins. (#6003 CHAS; s.n. F). 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 lichens disappear, so it is now 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*. [protocetraric acid, usnic acid, caperatic acid] Co-Horn #30a; Du-W#12405

FLAVOPUNCTELIA (Krog) Hale

Thallus with white pores or maculae on the upper cortex F. flaventior
Thallus without white pores F. soredica

*Flavopunctelia flaventior*⁴ (Stirton) Hale 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*, *Fraxinus* spp., *Juglans nigra*, *Populus deltoides*, *Quercus macrocarpa*, and *Salix* spp. Wetmore (1986) cites it from

Lake County. [lecanoric acid, usnic acid] Co-W#15667; Du-W#12423; La-H#205a; Wi-H#1335

*Flavopunctelia soredica*⁴ (Nyl.) Hale Also unknown to Calkins, this species appears to have an autecology similar to that of *F. flaventior*, although it is less frequent. It is more or less evenly distributed among the following substrates: *Carya cordiformis*, *Fraxinus pennsylvanica* var. *subintegerrima*, *Quercus macrocarpa*, *Q. rubra*, *Q. velutina*, and *Salix nigra*. [lecanoric acid, usnic acid] Co-Horn #30; Du-L#21a

GRAPHIS Adans.

*Graphis scripta*¹ (L.) Ach. According to Calkins, this species was common in the region (#165, #168, #1764 NY; #6535, #6546 CHAS; #111 F), but it is now only occasional on the smooth plates of *Quercus* species in the red oak group, and on the smooth barks of hickories, maples, lindens, and hackberries. Calkins's report of *Graphis (Phaeographis) dendritica* (#147 F) is referable here, inasmuch as specimens of his at the Field Museum that he called *G. dendritica* are actually *G. scripta*. There is a *Phaeographis* specimen of Calkins's from Cook County at the New York Botanical Garden, but the associated species, *Graphina albaphoides*, on the same bark fragment suggests strongly that the specimen came from Florida. Wi-H#1126

HEPPIA Nägeli

*Heppia adglutinata*¹ (Kremp.) A. Massal. = *H. despreauxii* of Calkins. Our specimens are from dry gravelly hill prairies, where it grows on thin soil among carbonate pebbles, where vascular vegetation is sparse. Consistent lichen associates are *Catapyrenium squamulosum* and *Psora decipiens*. Vascular vegetation is characterized by *Andropogon gerardii*, *A. scoparius*, *Arenaria stricta*, *Artemisia caudata*, *Bouteloua curtipendula*, *Comandra umbellata*, *Euphorbia corollata*, *Liatis cylindracea*, *Lithospermum incisum*, *Petalostemum purpureum*, *Scutellaria parvula* var. *leonardii*, *Silphium terebinthinaceum*, and *Solidago nemoralis*. It was collected in Will County, in a gladelike prairie at Joliet Junior College, with *Bacidia bagliettoana*, *Placynthium nigrum*, and *Catapyrenium squamulosum*. This species was long known as *Heppia lutosa*, but Hensson (1994) restricts that species to farther west; it has 1+ deep blue asci, while those of *H. adglutinata* are 1-.

HETERODERMIA Trevisan

*Heterodermia speciosa*³ (Wulfen) Trevisan = *Physcia speciosa* of Calkins, who reported that it occurred "at Riverside on oaks; on hickories, near Elgin and other

localities." We have seen living specimens as nearby as LaFox, in Kane County, Illinois. [atranorin, zeorin]

HYPERPHYSCIA Müll. Arg.

Thallus sorediate; lobes somewhat discrete *H. adglutinata*
Thallus esorediate; lobes confluent *H. syncolla*

*Hyperphyscia adglutinata*¹ (Flörke) H. Mayrh. & Poelt = *Physcia adglutinata* of Calkins. Small and inconspicuous, this species is frequent on roadside elms and ashes, and on planted trees in parks and landscape areas throughout the area. Co-W#17524; La-H#1318; Wi-H#1246

*Hyperphyscia syncolla*² (Tuck. ex Nyl.) Kalb Our only local records for this species are from two Calkins specimens (#18, #100 NY), which he had labeled *Physcia stellaris* and *P. adglutinata*, respectively.

HYPOGYMNIA (Nyl.) Nyl.

*Hypogymnia physodes*¹ (L.) Nyl. = *Parmelia physodes* of Calkins. Rare; our few specimens of this common northern species are represented by small thalli about 2 cm in diameter or less. The DuPage County specimens are both from "bark" at the West DuPage Woods Forest Preserve. Calkins (s.n., Cook Co., CHAS) reported that it grew on "oaks in Cook and DuPage counties, and elsewhere." [atranorin, physodic acid, physodalic acid, protocetraric acid] Du-L#53

IMSHAUGIA S. F. Meyer

*Imshaugia aleurites*³ (Ach.) S. F. Meyer = *Cetraria aleurites* of Calkins, who reported it from "old rails near Lemont and Joliet," evidently in Cook and Will counties. We are inclined to suspect the accuracy of this report, until a specimen is located. [thamnolic acid, atranorin]

JULELLA Fabre

*Julella sericea*¹ (A. Massal.) Coppins Most of the specimens that Calkins labeled either *Pyrenula thelaena* (#213, #1625 NY) or *Sagedia oxyspora* (#25, #26, #198 NY; #6487 CHAS), both of which he listed as growing on birches at Glencoe, are actually *Julella sericea*. Our contemporary records are from *Acer saccharum*, *Celtis occidentalis*, and *Quercus alba*. This species and *Anisomeridium nyssigenum* are quite common locally on trees in savannas and closed woodlands. Another specimen (s.n., n.d., CHAS) that Calkins labeled *Pyrenula thelaena* is a nonlichenized pyrenocarp. Co-H#1231; Du-W#19995; Wi-H#1238

KIRSCHSTEINIOTHELIA D. Hawksw.

*Kirschsteiniotelia aethiops*² (Berk. & Curtis) D. Hawksw. A Cook County specimen (#162 F) was

identified by Calkins as *Pyrenula punctiformis*. This specimen has brown, 1-septate spores 21–34 μ 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* K rb., as per Harris (1973), which name Egan (1987) refers here. An "Illinois" specimen (s.n., n.d., CHAS) that Calkins labeled *Pyrenula punctiformis* is a nonlichenized pyrenocarp with tiny, empty perithecia. Yet another nonlichenized fungus (#6562 CHAS), with 1-septate spores 17–19 μ long, was labeled *Pyrenula gemmata* by Calkins. We do not actually think that these brown-spored specimens are *Kirschsteiniothelia*, but the oversized spores take it out of any *Mycocomicrothelia* described by Hawksworth (1985). Probably we should just leave these specimens out, since they are not even lichenized, as far as we can tell, but we are including them 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.

LECANIA A. Massal.

*Lecania perproxima*¹ (Nyl.) Zahlbr. = *Lecanora perproxima* of Calkins. This species is occasional in the lower Des Plaines River valley on dolomitic outcrops, and even on weathered concrete. Calkins stated that it grew on "calcareous rocks at Joliet and elsewhere." His report of the European *Lecania erysibe*, as *Lecanora erysibe*, is referable here; *Lecania erysibe* has spores no longer than 15 μ , while those of *L. perproxima* are longer. Wi-H#1197

LECANORA Ach.

Thallus or apothecia saxicolous.

Thallus placoid, the margins distinctly lobed *L. muralis*

Thallus granular or absent, the margins not distinctly lobed.

Apothecia heavily white pruinose; discs C + yellowish red *L. rupicola*

Apothecia essentially epruinose; discs C- *L. dispersa*

Thallus or apothecia corticolous, or apothecia absent.

Usnic or isousnic acid present; thallus with yellowish tints.

Apothecial rim well developed.

Apothecial rim scant, often disappearing, or apothecia absent *L. symmicta*

Apothecial rims sorediate or granular; usnic acid *L. strobilina*

Apothecial rims smooth; isousnic acid *L. saligna*

Usnic and isousnic acids absent; thallus without distinctly yellowish tints.

Apothecia heavily pruinose, whitish, yellowish, or buff to light brown or roseate.

Apothecia darker, flesh to brown; norstictic acid and atranorin absent *L. hagenii*

Apothecia whitish to buff or roseate; norstictic acid and/or atranorin present *L. caesiurubella* ssp. *caesiurubella*

Apothecia epruinose or only slightly frosted, buff, grayish, or reddish brown to nigrescent.

Atranorin present; thallus and rims K + yellow *L. hybocarpa*

Atranorin absent; thallus and rims K- *L. umbrina*

Spores 12–32 per ascus *L. sambuci*

Spores 8 per ascus *L. conizaeoides*

Fumarprotocetraric acid present *L. conizaeoides*

Fumarprotocetraric acid absent *L. umbrina*

Lecanora caesiurubella Ach. ssp. *caesiurubella*⁵ A Calkins specimen of this species is cited from Illinois (Imshaug and Brodo 1966), so it likely was collected in or near the Chicago region. It is probable that Calkins's report of *Lecanora pallida* from Will County is referable here. [atranorin, physodalic and virensic acids]

*Lecanora conizaeoides*⁴ Nyl. ex Crombie This species is almost certainly adventive from Europe. Our only record is from bark of *Pseudolarix kaempferi* at the Morton Arboretum, in DuPage County. [fumarprotocetraric acid] Du-W#14602

*Lecanora dispersa*⁴ (Pers.) Sommerf. Possibly including *Lecanora privigna*, in part, of Calkins. *Lecanora dispersa* is the common associate of *Endocarpus pusillum* and *Caloplaca feracissima* on limestone, flagstone, and weathered concrete. Given its contemporary ubiquity and morphological distinctness, it is of some interest to note that Calkins did not record it in 1896, nor have we seen any local specimens referable to *L. dispersa*. See also comments under *L. umbrina* and *L. hagenii*. [β -sitosterol] Co-W#13608; Du-W#13325; La-W#13771; Wi-H#1158

*Lecanora hagenii*¹ (Ach.) Ach. Calkins reported this species from fence rails and calcareous rocks near Lemont, in Cook County, but it is likely that he was referring to some other species, such as *Lecanora dispersa*, to which his saxicolous specimen (#6103 CHAS) from LaSalle County, Illinois, is referable. Contemporary Lake County specimens are from a black oak in a savanna and from a planted specimen of *Ulmus pumila* in Highland. La-W#20813

*Lecanora hybocarpa*² (Tuck.) Brodo Including *L. subfusca* (#61 NY), and probably *L. s.* var. *allophana*, *L. s.* var. *argentata*, and *L. s.* var. *distans* of Calkins. Brodo (1984) mapped this species from what appears to be Cook County. Although it now is a very rare lichen in the general region on oaks, hickories, and ashes, Calkins indicated that it was a common corticolous species. [atranorin, \pm roccellic acid]

*Lecanora muralis*⁴ (Schreber) Rabenh. This species is characteristic of dolomitic exposures or outcrops and erratics in pastures and prairies; it is occasional on granitic and basaltic boulders and on weathered concrete and flagstone. Though yet unknown from Lake County, it evidently is a species native to the area, so it is

interesting that Calkins did not report it. All of our material lacks gyrophoric acid. The nearest record of a thallus with a C+ cortex is LaSalle County, Illinois (W#16690). [usnic acid, murolic acid, psoromic acid, atranorin, zeorin, \pm fumarprotocetraric acid] Co-H#438; Du-W#19635; Wi-W#12430

Lecanora rupicola ⁴ (L.) Zahlbr. Rare; one of our specimens of this species is from a shaded cliff face along the canyon at Camp Sagawau, east of Lemont, in Cook County; the other grows with *Calopluca citrina* on shaded dolomite near Joliet in Will County. [traces of atranorin, chloratranorin, sordidone, lecanoric, norstictic, roccellic, thiophanic, and variolaric acids] Co-M#27; Wi-H#1247

Lecanora saligna ⁴ (Schrader) Zahlbr. Evidently unknown to Calkins, this species is now frequent throughout the area on weathered lignum. Wetmore's (1986) specimen from Lake County, Indiana, is from *Quercus rubra*. Skorepa's (1970) report of *L. symmicta*, which see, from Will County is referable here. [isousnic acid] Co-W#14145; Du-W#14356; Wi-H#1096

Lecanora sambuci ³ (Pers.) Nyl. = *L. hageni* var. *sambuci* of Calkins, who listed this species as rare on elms and poplars in Will County.

Lecanora strobilina ⁴ (Sprengel) Kieffer Not uncommon just outside the Chicago region on wooden fence rails and open-green trees, it is rare locally, and evidently was unknown to Calkins. Our only local specimen is from a planted tree of *Gleditsia triacanthos*. [usnic acid, \pm zeorin] Co-H#1228

Lecanora symmicta ¹ (Ach.) Ach. = *L. varia* var. *symmicta* of Calkins. It may also include Calkins's *L. varia*, from Cook County, 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 \pm psoromic or fumarprotocetraric acids. Most early Illinois specimens called *L. varia* are referable to *L. strobilina*, but that species is rare this far north in the state, and Calkins's description of the apothecial margin does not sound right for *L. strobilina*. The specimen (SIU) upon which the report of *Lecanora symmicta* from Will County (Skorepa 1970) is based is referable to *L. saligna*. According to Richard Harris (pers. comm.), *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. [usnic acid, xanthonene, zeorin, \pm psoromic acid, \pm fumarprotocetraric acid] Co-H#701; Du-W#14137; La-W#16672

Lecanora umbrina ⁴ (Ach.) A. Massal. Calkins appears to have lumped this species with *L. hagenii*. It is known locally only from Cook County. Our contemporary records, all from Cook County, may not be *L. umbrina*, but rather may represent lignicolous forms of *L. dispersa*. All of them are from weathered lignum, and the apothecia are quite tightly aggregated, unlike *L. dispersa*, in which the apothecia commonly are loosely aggregated to dispersed. Each of our specimens has an obscure but seemingly different chemistry in TLC. Co-H#799

LECIDEA Ach.

Lecidea sp. #4 ⁴ sensu Harris (1973) We have two specimens of this undescribed species from the Morton Arboretum, DuPage County, from *Quercus alba* and *Q. rubra*. All of the specimens we have seen are from closed forest. [usnic acid, zeorin] Du-W#16970

LEPRARIA Ach.

Thallus with stictic acid, thick, typically pale greenish gray
 *L. lobificans*
 Thallus without stictic acid, thick or thin, but not usually pale greenish gray.

Atranorin present; thallus typically thin, bluish gray *L. sp. #1*
 Atranorin absent; thallus thick, bluish gray or not.

Divaricatic acid present; thallus bluish gray *L. incana*
 Divaricatic acid absent; thallus greenish gray *L. lesdainii*

Lepraria incana ⁴ (L.) Ach. Our only record for this species is from the base of a bur oak at Bluff Springs Fen, in Cook County. [divaricatic acid, \pm zeorin, \pm usnic acid, \pm atranorin] Du-W#15666

Lepraria lesdainii ⁴ (Hue) R. C. Harris Our specimens are from shaded dolomitic cliff faces, as are all of our Midwestern collections. [terpene with RF value just above zeorin] Co-M#34; Du-W#14639

Lepraria lobificans ⁴ Nyl. This is the most common *Lepraria* in the flora. Although Calkins collected it (#237, #1700 NY) in Cook County and labeled the specimens *Pannaria lanuginosa*, he did not include it in his flora. Half of our contemporary material is from the bases of *Quercus* in partly shaded to fully shaded areas. Other local corticolous substrates include *Tilia americana* and *Acer saccharinum*. 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. [stictic acid, constrictic acid, zeorin, atranorin] Co-M#32; Du-W#16500; Wi-W#13944

Lepraria sp. #1 ⁴ sensu MOR *L. incana* of McKnight et al. (1987). Nearly all of our specimens are from *Quercus*, and half of those are from *Q. velutina* in the black oak savannas of northwest Indiana. This is a fairly frequent species in the Midwest, but it has yet to be described. [zeorin, atranorin] Co-H#1235; Du-W#19629

LEPTOGIUM (Ach.) Gray

Lower surface of lobes whitish tomentose *L. burnetiae*
 Lower surface without tomentum.

Thallus lobes narrow, the margins finely dissected into dense isidioid or coralloid branches; lobe surfaces longitudinally wrinkled
 *L. lichenoides*
 Thallus without coralloid branches; lobe surfaces smooth or wrinkled.
 Thallus without isidia *L. corticola*
 Thallus isidioid.

Upper surface of thallus strongly wrinkled, the lobes becoming fused *L. milligrammum*
 Upper surface of thallus smooth, the lobes distinct.

Thallus olivaceous to blackish brown, typically of carbonate rock; apothecia frequently present *L. dactylinum*
 Thallus slate gray; of various substrates; apothecia very rare
 *L. cyanescens*

*Leptogium burnetiae*³ C. W. Dodge Presumably = *L. myochroum* of Calkins, a name that currently is synonymous with *L. saturninum* (Dickson) Nyl., which grows farther north. Calkins reported it from Will County, noting that the habitat was the same as for *L. millegrammum*, which see; but also see comments under *L. dactylinum*.

*Leptogium corticola*³ (Taylor) Tuck. = *L. pulchellum* of Calkins, 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.

*Leptogium cyanescens*⁴ (Rabenh.) Körber Evidently unknown to Calkins, this species is rare today; all of our specimens are from shaded dolomitic cliffs and from shaded boulders in streams, although further south this species is frequently corticolous. Co-H#604; Du-W#13939; Wi-H#1187

*Leptogium dactylinum*⁴ Tuck. There is a Calkins specimen at ILL (#175) from "Illinois" that he called *L. myochroum*, but it looks to us like *L. dactylinum*. Our specimens are from shaded dolomitic boulders and cliffs. Du-W#12398; Wi-H#1186

*Leptogium lichenoides*³ (L.) Zahlbr. = *L. lacerum* of Calkins, who reported it from elms in Cook and Will counties. Elsewhere in the Midwest, this species typically occurs on mossy carbonate rocks, which casts considerable doubt on the accuracy of the report.

*Leptogium milligrammum*³ Sierk We are referring Calkins's report of *L. chloromelum* here inasmuch as *L. chloromelum* (Sw. ex 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. milligrammum*. Calkins reported his plant from Cook and Will counties, and described it as follows: "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."

LEPTORHAPHIS Körber

*Leptorhaphis atomaria*⁴ (Ach.) Szat. Our only record for this species must be considered adventive, inasmuch as it is from a planted specimen of *Populus maximowiczii* at the Morton Arboretum. Du-W#14607

LICHENOTHELIA D. Hawksw.

Lichenothelia sp.⁴ Our only collections of this genus are from exposed granitic boulders in Cook County, but it is the common sterile (with us) thin black crust seen on HCl- boulders throughout our area. *Lichenothelia* is a poorly understood genus. Some have questioned its standing as a lichen, though its areolate thallus is clearly evocative of a lichen. The thallus is composed of compacted, pseudoparenchymatous brown cells 5-9 μ 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 μ long and 9-11 μ wide, and *L. scopularia* (Nyl.) D. Hawksw., with mainly 3-septate spores 14-18 μ long and mostly less than 10 μ wide. Co-W#14138; Wi-H#1128

LICHININELLA Nyl.

*Lichinella nigritella*⁴ (Lettau) Moreno & Egea Our only specimen is from a shaded, argillaceous, silty dolomitic bluff south of Darien. Du-W#12397

MELANELIA Essl.

*Melanelia subaurifera*⁴ (Nyl.) Essl. Evidently unknown to Calkins, this species is encountered rarely, mostly on oaks and hickories. [Icanoric acid, subauriferin] Co-Horn #31; Du-L#200; La-H#1496

MICAREA Fr.

*Micarea prasina*⁴ Fr. Our only local collection for this inconspicuous species is from a moist, shaded, decorticate log at the Morton Arboretum in DuPage County, but it occurs occasionally throughout our area on moist shaded logs and tree bases. Though unknown to Calkins, this lichen may have been overlooked, as apothecia are commonly absent. Du-W#22723

MYELOCHROA (Asah.) Elix & Hale

Thallus sorediate; apothecia very rare *M. aurulenta*
 Thallus esorediate; apothecia common *M. galbana*

*Myelochroa aurulenta*⁴ (Tuck.) Elix & Hale = *Parmelina aurulenta* (Tuck.) Hale. Occasional on a variety of open-grown trees or the upper trunks of forest-grown trees; we also have a specimen from wooden roof shingles.

This species evidently was unknown to Calkins, so it must have been rare or absent in the Chicago area a century ago. [atranorin, \pm zeorin] Co-W#15663; Du-W#12409; Wi-H#1312

*Myelochroa galbina*² (Ach.) Elix & Hale = *Parmelia tiliacea* and *P. t. var. sulphurosa* of Calkins, who reported it from Cook County. Given its contemporary rareness, one would be tempted to speculate that Calkins's report may be referable to *Myelochroa aurulenta*, which was not treated by Calkins, but all of his early specimens labeled *P. tiliacea* (#22 NY) or the var. *sulphurosa* do indeed turn out to be *M. galbina*, and several of these are labeled from Cook County. His text, in fact, implied that apothecia were present. We have seen no contemporary specimens farther north in Illinois than Warren or Vermilion counties. [galbinic acid, atranorin, zeorin]

NAETROCYMBE K rber

*Naetrocymbe punctiformis*⁵ (Pers.) R. C. Harris The only specimen we have seen (Calkins #211 NY, det. by R. C. Harris) was originally labeled *Pyrenula analepta*, from Elgin, Illinois, where it was collected "on shrubs," but not published in Calkins's flora.

OPEGRAPHA Ach.

Thallus thin to evanescent, smooth; spores 3-septate *O. atra*
Thallus thin to obscurely chunky or pulverulent; spores 4–15 septate.
Spores more than 7-septate, the larger more than 40 μ long
Spores 4–6 septate, less than 40 μ long *O. viridis*

*Opegrapha atra*¹ Pers. According to Calkins, this species was once found "throughout our territory on oaks, hickories, cherries . . .," but now it is now quite rare. One of the specimens that Calkins labeled *O. atra* (#145 NY) is referable to *O. varia*; another (#6509 CHAS) is a nonlichenized lyrellate fungus with brownish muriform spores, which is most likely to be *Hysterium pulicare* Pers. Nevertheless, we have two contemporary specimens from Cook County and two from Will County, all of them from *Ulmus americana*. Co-H#249; Wi-H#122

*Opegrapha varia*¹ Pers. Calkins reported it with "various trees" in Cook and Will counties. We have recorded two contemporary specimens, one on *Populus deltoides*, the other on punky lignum. See also comments under *O. atra*. Co-H#819; Du-Johnson #195

*Opegrapha viridis*⁴ (Pers. ex Ach.) Behlen & Desberger The only Chicago area record for this species was collected on *Ulmus americana* near Darien. *O. viridis* has a distinctive K+ green exciple. Du-H#234

PARMELIA Ach.

Thallus isidiate *P. squarrosa*
Thallus sorediate *P. sulcata*

*Parmelia squarrosa*¹ Hale = *Parmelia saxatilis* of Calkins, who noted that it grew on trees in Cook County near Elgin and on "recent sandstones and boulders at Lemont," but see comments under *P. sulcata*. Thomson (1984) mapped *P. saxatilis* from as far south as Milwaukee, Wisconsin; at the same time he restricts *P. squarrosa* to northern Wisconsin and northern Michigan, but see Hale (1979), who maps them oppositely. Our only modern record is from bark at Elson's Hill Forest Preserve. One Calkins specimen (#601 CHAS) labeled *Parmelia saxatilis* consists of complete thalli of *P. squarrosa*, *P. sulcata*, and *Punctelia rudecta*. [salazinic acid, atranorin] Du-L#16b

*Parmelia sulcata*¹ Taylor = *Parmelia saxatilis* var. *sulcata* of Calkins. This is a relatively common species, found on a variety of corticolous substrates, including cultivated trees in suburbs. In 1991 at the Morton Arboretum, in DuPage County, a blue-gray gnatcatcher built its nest in *Syringa reticulata* exclusively of *Parmelia sulcata*. *Punctelia rudecta* is a similar foliose species common at the arboretum, but it is found low on the trunk 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. There are Calkins specimens from Cook County (#325 ILL; s.n. F; #502 NY) originally called *Parmelia saxatilis* that are actually *P. sulcata*. [salazinic acid, atranorin] Co-M#38; Du-W#12406; La-W#14974; Wi-M#7

PARMOTREMA A. Massal.

Thallus sorediate.
Salazinic acid present; lower cortex brown to the margin
P. margaritatum
Salazinic acid absent; lower cortex white near the margin
P. hypotropum
Thallus esorediate.
Thallus isidiate *P. crinitum*
Thallus without isidia *P. perforatum*

*Parmotrema crinitum*³ (Ach.) Choisy = *Parmelia crinita* of Calkins. Most early reports of this species from Illinois are referable either to *Rimelia reticulata* or to *R. cetrata* (Ach.) Hale & Fletcher, but Calkins described isidia on the Chicago region specimens (none of which we have seen). He reported this lichen from oaks in Hanover Township and on a detached rock near Lemont, Cook County. See also comments below under *Parmotrema margaritatum*. [stictic acid, atranorin]

*Parmotrema hypotropum*⁴ (Nyl.) Hale More common farther south, it is rare locally. Our Cook County specimen was found on *Fraxinus* at Cap Sauer's Holding, and there are Will County records from *Crataegus mollis* and *Prunus serotina*. [norstictic acid, atranorin] Co-H#726; Wi-H#1230

*Parmotrema margaritatum*⁵ (Hue) Hale There is a Calkins specimen (#254 NY) collected at Glencoe and labeled *Parmelia crinita*. It is esorediate except for one soralium. Had this soralium been overlooked, the specimen may well have been called *Parmotrema euryssacum* (Hue) Hale, which is frequent farther south. There is another specimen (Blatchford s.n. F) collected in 1876 in Glencoe, Cook County, that is clearly *P. margaritatum*. There is yet another specimen (Calkins #6015 CHAS) from nearby LaSalle County, Illinois, that is more decidedly sorediate, also labeled *Parmelia crinita*. If the maculae of the cortex were overlooked on *Rimelia reticulata*, which is sorediate, it would key here. [salazinic acid, atranorin]

*Parmotrema perforatum*³ (Jacq.) A. Massal. = *Parmelia perforata* of Calkins. Contemporary records suggest that this species is now confined to southern Illinois, but there is a specimen (Calkins #6017 CHAS) from nearby LaSalle County, Illinois, that is true to name, and Calkins's description of the plant from the Chicago region seems to be accurate as to species; he reported it as common on "various trees in Cook and Will counties." [norstictic acid, atranorin]

PERTIGERIA Willd.

Thallus usually with laminal soralia, less than 3 cm across and typically with strongly ascending lobes *P. didactyla*
Thallus without soralia, usually broader and with mostly adnate or spreading-ascending lobes.

Upper cortex smooth to the margins *P. elisabethae*
Upper cortex tomentose, at least near the margins.

Thallus notably lobulate along what appear to be cracks and fissures in the upper cortex *P. praetextata*

Thallus without lobulate cracks and fissures.

Thallus thin, the lobes broad, round, the lobe tips typically turned downward; margins as thick as the rest of the thallus *P. canina*

Thallus thick, with a strong tendency to split when pressed, the lobes ascending; margins typically thickened *P. rufescens*

*Peltigera canina*⁴ (L.) Willd. Although it was not mentioned by Calkins, there is a specimen (Blatchford s.n., 1876, F), collected in Glencoe, Cook County, and his July 1888 specimen (#8 F), also from Glencoe, is accurately named *P. canina*. There is also one he called *P. rufescens* (Calkins s.n. F) from Glencoe. We have a contemporary record for this species from Greene Valley Forest Preserve, DuPage County. Du-L#85

*Peltigera didactyla*⁴ (With.) J. R. Laundon Rare. This species is confined to stable shaded or moist sands in natural areas, our only local collection being from moist stable sand near Liverpool in Lake County. La-W#12962

*Peltigera elisabethae*⁵ Gyelnik Calkins's specimen (#6047 CHAS) from Cook County was labeled by him *P. rufescens*, and there is a later Calkins specimen (#1673

NY) of this species, which he labeled *P. canina*, collected in 1905 at Glencoe; there it grew on shaded mossy clay in a ravine. [tenuiorin, triterpenoids, zeorin, \pm gyrophoric acid]

*Peltigera praetextata*⁵ (Flörke ex Sommerf.) Zopf Our only local record for this species is a Calkins specimen (s.n. F), which he collected from Glencoe, Cook County.

*Peltigera rufescens*¹ (Weiss) Humb. This species is occasional on open, dry, often sandy substrates. Calkins (s.n. F; #1675 NY) recorded it from "throughout our territory," but see comments under *P. elisabethae* and *P. canina*. Co-H#1206; Wi-#852

PERTUSARIA DC.

Thallus saxicolous or corticolous; medulla C+ red; spores mostly more than 150 μ long *P. velata*

Thallus corticolous; medulla C-; spores mostly less than 150 μ long.

Apothecia becoming sorediate; fumarprotocetraric acid present *P. multipunctoides*

Apothecia not becoming sorediate; fumarprotocetraric acid absent.

Cortex UV- or UV+ orange pink, C- or C+ weak yellow; inner spore wall strongly undulate and rayed *P. macounii*

Cortex UV+ orange red, C+ deep yellow; inner spore wall smooth or essentially so *P. pustulata*

*Pertusaria macounii*² (Lamb) Dibben = *P. communis* of Calkins, who considered it "common on oaks everywhere in our territory." There are two specimens (#78 NY, #6177 CHAS) from Cook County that Calkins had labeled *P. communis*. We have no contemporary records from the region, indeed the genus is now quite rare locally. [stictic acid, constictic acid, 2,7-dichlorolichexanthone, un1, un2, un3]

*Pertusaria multipunctoides*³ Dibben = *P. multipuncta* of Calkins, who reported it from oaks and hickories, stating that it was not rare. [fumarprotocetraric and succinprotocetraric acids, \pm protocetraric acid]

*Pertusaria pustulata*² (Ach.) Duby This appears to be the most common *Pertusaria* in the general region today, but we have seen no contemporary specimens from Calkins's area. Most of our specimens are from *Carya*. Calkins also reported *P. leioplaca*, which is synonymous for *P. leucostoma* (Bernh.) A. Massal., but the only specimens we have found that Calkins labeled *P. leioplaca* are actually *P. pustulata* (#79, #1672 NY). *P. leucostoma* is known from the Great Lakes region, and differs from *P. pustulata* mainly in have 4-6 spores per ascus, rather than 2. [stictic acid, constictic acid, \pm un1, \pm un2, \pm un3, \pm un5]

*Pertusaria velata*² (Turner) Nyl. Calkins reported this species from both rocks and trees. Most of our specimens from southern Illinois are from oaks. There is a correctly identified specimen from Cook County (Calkins #80 NY). [lecanoric acid]

PHAEOCALICUM A. F. W. Schmidt

Phaeocalicum polyporaeum ⁺ (Nyl.) Tibell Evidently overlooked by Calkins, this species is confined to the thallus of the polyporous fungus *Trichaptum bifforme*, which grows on the lower trunks of dead and dying trees. Co-H#1386; La-W#22751; Wi-H#1385

PHAEOPHYSCIA Moberg

Thallus esorediate.

Apothecia rare; margins of lobes dissected into lobulate fringes *P. imbricata*

Apothecia common; margins of lobes entire *P. ciliata*

Thallus sorediate.

Medulla red or deep orange nearly or quite throughout *P. rubropulchra*

Medulla white.

Margins of apothecia and lobes beset with colorless cortical hairs *P. cernoborskyi*

Thallus without colorless cortical hairs, though white-tipped rhizines may project profusely along the lobe margins.

Soredia granular, somewhat diffused in poorly delimited soralia *P. adiastola*

Soredia fine, confined to rounded soralia *P. pusilloides*

Phaeophyscia adiastola ⁺ (Essl.) Essl. Probably included with *Physcia obscura* of Calkins, since there is an "Illinois" collection by him (#27 NY) that he labeled *P. obscura*. This species is characteristic of shaded dolomitic erratics, cliff faces, and ledges. Co-H#659; Du-W#12400; Wi-H#1106

Phaeophyscia cernoborskyi ⁺ (Nádv.) Essl. Evidently unknown to Calkins, this species is now occasional on open-grown trees, usually in disturbed or cultural areas. We also have specimens from dolomitic and granitic boulders, weathered concrete, and tombstones. Co-H#1300; Du-W#12424

Phaeophyscia ciliata ⁺ (Hoffm.) Moberg = *Physcia obscura* of Calkins, in part. 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. Co-W#15670; Du-W#14266; Wi-W#14979

Phaeophyscia imbricata ⁺ (Vainio) Essl. Our only record for this species is from *Ulmus americana* at Herrick Lake Forest Preserve. Du-L#223

Phaeophyscia pusilloides ⁺ (Zahlbr.) Essl. Either unknown to Calkins, or included with what he called *Physcia obscura*. Locally this species is frequent throughout the area on open-grown, usually fast-growing trees such as *Populus deltoides*, *Fraxinus pennsylvanica* var. *subintegerrima*, *Ulmus americana*, *Salix* spp., and *Acer negundo*. In open areas it is occasional on boulders and fallen logs. The report of *P. orbicularis* from DuPage

County (Wilhelm & Lampa 1987) is referable here. Co-W#15347; Du-W#12410; La-W#14978

Phaeophyscia rubropulchra ⁺ (Degel.) Essl. Presumably, this species was included with what Calkins called *Physcia obscura*. It is now very common throughout the area on the bases of trees in open areas, where it often grows with associates such as *Physcia millegrana*, and in shaded woods, where it often is the only lichen. [rhodophyscin] Co-W#14139; Du-W#16624; La-W#14983; Wi-W#13321

PHYSICIA (Schreb.) Michx.

Thallus esorediate; apothecia common

Medulla K-; zeorin absent *P. stellans*

Medulla K+ yellow; zeorin present.

Lobes up to 1 mm wide *P. pumilior*

Lobes prevalingly more than 1 mm wide *P. aioplia*

Thallus sorediate.

Thallus lobes narrow and finely branched; soredia granular.

Lobes notably longer than wide; saxicolous *P. subtilis*

Lobes about as broad as wide; corticolous, rarely saxicolous *P. millegrana*

Thallus lobes broader, not finely divided; soredia fine and powdery.

Tips of lobes hooded, the soralia nearly or quite concealed; long white marginal cilia conspicuous *P. ascendens*

Tips of lobes not concealing the soralia; cilia absent *P. americana*

Physcia ascendens ⁺ (Fr.) H. Olivier Evidently unknown to Calkins, this northern species is now frequent throughout the area on a wide variety of corticolous substrates, as well as weathered concrete and dolomitic boulders. [atranorin] Co-H#439; Du-W#16622; Wi-H#1137

Physcia aioplia ⁺ (Ehrh. ex Humb.) Fűr. = *P. stellans* var. *aioplia* of Calkins. Rare locally; we have seen contemporary specimens only from Will County. Curiously, Calkins listed the habitat as "boulders of the prairies and on stones at Lemont." Calkins's report of *Physcia granulifera* evidently is also referable here, inasmuch as the only two Illinois specimens of Calkins's that we have seen labeled *Physcia granulifera* (#179, #270 NY), though not specifically collected in the Chicago area, are referable to *P. aioplia*. We have no documented records of *Heterodermia granulifera* (Ach.) Culb., the nomenclatural cognate, from north of extreme southern Illinois. See also *Physconia detersa*. [atranorin, zeorin] Wi-H#1254

Physcia americana ⁺ G. Merr. Farther south, this is a common corticolous species; locally it is uncommon, known from *Fraxinus americana*, *Juglans nigra*, and a shaded dolomitic cliff face. [atranorin, unknown terpene] Co-H#1105; Du-W#12395; Wi-H#1311

Physcia millegrana ⁺ Degel. = *P. tribacis* of Calkins (#104 NY). This species, and *Candelaria concolor*, are the

commonest lichens in the Chicago 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] Co-M#36; Du-W#16621; La-W#14977; Wi-M#8

*Physcia pumilior*⁴ R. C. Harris Our only specimen is from DuPage County, where it occurs rarely on bark. This species has been called *P. alba* by Midwestern authors. [atranorin, zeorin] Du-L#63

*Physcia stellaris*¹ (L.) Nyl. According to Calkins (#144 F; #26 NY), this was the most common species of the genus, occurring everywhere on oaks, hickories, and other trees, as well as rocks. It is common today as well, growing on a wide variety of corticolous substrates, though nearly half of our specimens are from *Fraxinus pennsylvanica* var. *subintegerrima*, *Populus deltoides*, and *Quercus velutina*. It is frequent on fallen branches, the source trees of which are sometimes difficult to determine. [atranorin] Co-W#14149; Du-W#12421; La-W#14928; Wi-M#14.

*Physcia subtilis*⁴ Degel. This species is rare to occasional on granitic and basaltic erratics in pastures and old fields, our only local specimens being from Cook County. [atranorin] Co-H#1227

PHYSICIELLA Essl.

*Physicella chloantha*⁴ (Ach.) Essl. This is a frequent species throughout the area in disturbed and landscaped areas. It grows on tombstones with *Xanthoria* spp., on concrete with *Endocarpon pusillum*, and on *Ulmus* spp. and other fast-growing trees such as *Populus alba* and *Celtis occidentalis*; we have one specimen from *Malus pumila*. In natural habitats it occurs on open-grown *Quercus alba*. Co-W#13607; Du-W#12425; Wi-H#1134

PHYSCONIA Poelt

*Physconia detersa*⁴ (Nyl.) Poelt 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. Given its conspicuousness and distinctness it is hard to imagine that Calkins would have overlooked this species, and it is just as hard to imagine that it is not native here. His description of *Physcia granulifera* (see *Physcia aipolia*) might fit *Physconia detersa*. Co-H#235; Du-W#12413; La-W#14984; Wi-H#1100

PLACYNTHIELLA Elenkin

Thallus terricolous, C- P. uliginosa
Thallus lignicolous, C+ red P. icmalea

*Placynthiella icmalea*⁴ (Ach.) Coppins & P. James This species is occasional on dead limbs, decorticate logs, and old wood throughout the area. Even though it 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 that the specimen is not *P. icmalea*. [gyrophoric acid, ±lecanoric acid] Co-H#1233; Du-W#14621; La-Wetmore #53744; Wi-W#14728

*Placynthiella uliginosa*⁴ (Schrader) Coppins & P. James More frequent as an arenicolous species in the sand districts just outside the Chicago area, there are two specimens collected locally. Both are from weathered till, with *Cladonia peziziformis* and *C. polycarpoides*, and with the interesting *Liatris scariosa* (L.) Willd. var. *nieuwlandii* (Lunell) E. G. Voss, which is a rare variant (Swink & Wilhelm 1994) of the southern end of Lake Michigan. [gyrophoric acid, ±lecanoric acid] Co-H#1498; Wi-H#1497

PLACYNTHIUM (Ach.) Gray

*Placynthium nigrum*¹ (Hudson) Gray = *Pannaria nigra* of Calkins, who reported it from calcareous rocks near Lemont. It is occasional, particularly on exposed dolomitic rocks along the Des Plaines River valley. Co-H#1203; Du-W#12394; Wi-H#1204

POLYSPORINA Vězda

*Polysporina simplex*⁴ (Davies) Vězda Evidently unknown to Calkins, our only records of this species are from granitic boulders at the Shoe Factory Road Prairie and Camp Sagawau, both in Cook County. Co-W#13613

PORPIDIA Körber

*Porpidia tahawasiana*³ Gowan = *Lecanora privigna* of Calkins. Calkins noted that this was scarcely distinguishable from what he called *L. privigna* var. *pruinosa* (see comments under *Sarcogyne regularis*), and that it grew on siliceous rocks. Two specimens of this species (Calkins s.n. F) from nearby LaSalle County, Illinois are from sandstone and originally labeled *Lecanora privigna* and *L. privigna* var. *revertens*.

PROTOBLASTENIA (Zahlbr.) J. Steiner

*Protoblastenia rupestris*⁴ (Scop.) J. Steiner Possibly overlooked by Calkins, our only records of this species are from exposed dolomitic bedrock at the Cap Sauers Holding near Palos Park in Cook County, and a dolomitic boulder near Bollingbrook in Will County. Notwithstanding the K+ purple apothecium, which is evocative of *Caloplaca*, the anatomy of the ascoma and spores are more *Psora*-like. [parietin] Co-H#415

PSORA Hoffm.

*Psora decipiens*⁴ (Hedwig) Hoffm. Evidently overlooked by Calkins, this is a conservative species of open kames and other prairies where dolomite is exposed and shallow pockets of calcareous soils have developed in cracks or among the pebbles. *Catapyrenium squamulosum* is a constant associate. Our specimens are without substances, corresponding to "strain I" of Tindal (1986); he places those specimens with norstictic acid into "strain II" and those with hyposalazinic acid into "strain III". Co-W#17522; Wi-W#12427

PUNCTELLA Krog

Thallus lacking isidia and soredia; medulla C- or C+ red.
 Medulla C- P. bolliana
 Medulla C+ red P. semansiana
 Thallus with either isidia or soredia; medulla C+ red.
 Thallus isidiate P. rudecta
 Thallus sorediate P. subrudecta

*Punctella bolliana*⁴ (Müll. Arg.) Krog Yet unknown from northern Lake County, it could be described as occasional today, growing mostly on *Q. alba*, *Q. macrocarpa*, and *Q. rubra*, but other frequent substrates include *Carya ovata* and *Juglans nigra*. In most cases the trees are open-grown and relatively large. The specimens that we have seen that Calkins labeled *Parmelia borrieri* are referable here (for example, #49 F; #11, #24 NY; #6002 CHAS), but in his flora he describes *P. borrieri* as being beset with round soredia, features that describe *Punctella subrudecta*, not *P. bolliana*. [atranorin, protolichesterinic acid] Co-W#15665; Du-W#12408; Wi-W#13945

*Punctella rudecta*¹ (Ach.) Krog = *P. borrieri* var. *rudecta* of Calkins. Three-fourths of our specimens are from open-grown oaks, but we do have specimens from *Juglans nigra*, *Maclura pomifera*, and *Ostrya virginiana*; there is also a specimen from a basaltic boulder in an open pasture. [lecanoric acid, atranorin] Co-W#15664; Du-W#12407; Wi-H#1125

*Punctella semansiana*⁵ (Culb. & C. Culb.) Krog Although this species is relatively frequent farther south, particularly on rock, our only local record is an early collection (E.T. & S.A. Harper s.n., 1893, F) from bark in River Forest, Cook County. [lecanoric acid, atranorin]

*Punctella subrudecta*³ (Nyl.) Krog = *Parmelia borrieri*, in part, of Calkins, who noted that it was "very common everywhere in our territory, especially on oaks," and that it was sorediate. All of our regional specimens are from *Quercus alba*. We have yet to see this lichen in Calkins's area, but we have specimens from as nearby as Kane County, Illinois, and Newton County, Indiana. [lecanoric acid, atranorin]

PYRENOCOLLEMA Reinke

*Pyrenocollema prosperellum*² (Nyl.) R. C. Harris = *Verrucaria prosperella* Nyl., which was originally described in Calkins's flora (#233 NY, #6550 CHAS). Harris (1975) described this species as follows: "Thallus gray, continuous to rimose, epilithic. Phycobiont 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 and Harris (1980) cite the type 16 km from Chicago (H-NYL 991) and list the substrate in Louisiana as "sandstone outcrops."

PYRENULA A. Massal.

Thallus UV+ yellow; spores pale yellowish brown; hymenium I+ greenish blue P. pseudobufonia
 Thallus UV-; spores lavender brown; hymenium I+ or pinkish P. subbelliptica

*Pyrenula pseudobufonia*² (Rehm) R. C. Harris = *P. nitida* of Calkins (#6563 CHAS; #1624 NY). Harris (1973) lists trees of mesophytic forests as the substrate for this species; it is common south and east of the Chicago region, and Calkins considered it more or less frequent throughout the area, but we have not seen any contemporary local specimens. [lichexanthone]

*Pyrenula subbelliptica*⁵ (Tuck.) R. C. Harris Harris (1973) mapped this species from just south of the Chicago region, and listed its substrates as *Carpinus*, *Fagus*, *Fraxinus*, and *Quercus*. A Calkins specimen from Cook County (s.n. F) listed *Quercus* as a substrate. The specimens we have seen too often have spore lumina evocative of *P. macoonii* 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. subbelliptica* are occasionally evident.

PYRRHOSPORAS Körber

*Pyrrhospora varians*³ (Ach.) R. C. Harris = *Biatorea varians* of Calkins, who reported it from oaks and hickories in Cook County. This species is weedy in and around St. Louis, Missouri, but we have seen no contemporary local collections.

PYXINE Fr.

Medulla yellow; cortex K- and UV+ bright yellow; lobes typically with a conspicuous patch of dense pruina just back from the tip P. subcinerea
 Medulla salmon orange; cortex K+ yellow and UV-; lobes without pruina, or with a diffuse patch near the tips P. sorediata

*Pyxine soredata*⁴ (Ach.) Mont. Evidently unknown to Calkins, and relatively rare today, as we have only two records of it locally. At the Morton Arboretum, it grew on the surface of a limb of an open-grown *Crataegus mollis*; the Will County record is from *Populus deltoides*. [atranorin] Du-W#14609; Wi-H#1205

*Pyxine subcinerea*⁴ Stirton = *P. caesiopruinosa* of previous North American authors, not Nylander. Commoner farther south, our only records are from a cultivated elm at the Morton Arboretum, in DuPage County, where it is presumed to be adventive, and from *Crataegus mollis* at Paw Paw Woods in Cook County. [atranorin, lichexanthone] Co-H#730; Du-W#12402

RAMALINA Ach.

Thallus lobes up to 5 mm wide *R. americana*
Larger lobes greater than 5 mm wide *R. subampliata*

*Ramalina americana*¹ Hale Including *R. calicaris* var. *fastigiata* of Calkins. Very rare today; only the DuPage County record is a well-developed thallus of this species, collected in 1997 on senescent branches of *Rhus glabra*. There is a contemporary Cook County record, from *Populus deltoides*, represented by a very small thallus, which, if imagined in full development, might more aptly be placed with *R. subampliata*. There is also a small ort of a specimen, which must be defaulted here, from a weathered fence rail at the Lockport Prairie, in Will County. An early Calkins specimen (#19 F) is clearly this species, collected "on oaks." Another Calkins specimen (#5650 CHAS) has a broad-lobed thallus that one may refer to *Ramalina subampliata*. [usnic acid] Co-W#15669; Du-W#22762; Wi-H#1268

*Ramalina subampliata*² sensu Fink (1935) and Howe (1914), not Nylander = *R. calicaris* var. *fraxinea* of Calkins, who reported it from oaks and old fences near Lemont. A Cook County specimen (Calkins I-2 ILL), originally called *R. calicaris* var. *fastigiata* is referable here. Riefner (1990) seemed to restrict *R. fastigiata* (Pers.) Ach. to the West Coast of the United States, and described it as having narrower lobes and evernic acid. The proper name for this species has me completely at sea. Although Egan (1987) included it, rendering the epithet "*subampliata*," Bowler and Rundel (1973) reported that *R. subampliata* is not known from North America; the latter authors, however, do not give our material a name. Hale (1979) limits the lobe width of *R. americana* (*R. fastigiata* of Howe [1914]) to 5 mm. Howe separated *R. subampliata* from *R. fastigiata* by indicating that the lobes are generally wider in the former, so reports of *R. subampliata*, or the locally misapplied name *R. fraxinea* (L.) Ach., should stand alone under some

other name, perhaps *R. sinensis* Jatta. But the latter species, like *R. americana*, has its apothecia mostly terminal, while our material, or at least all that we have seen, has an abundance of laminal apothecia, like *R. celastri* (Sprengel) Krog & Swinscow, which has been called *R. ecklonii* in North America. A. H. Magnusson annotated two broad-lobed Illinois specimens (MICH) as *R. confusa* H. Magn. in 1958, but Egan did not carry this name, even as a synonym; evidently it is simply a "herbarium name." Howe had annotated these specimens *R. fastigiata* var. *subampliata* in 1912. Hale (1979) pointed out that *R. sinensis* is prevalently south-western and has decorticate areas on older portions of the thallus, a feature that does not describe Illinois material. He 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. Bowler and Rundel 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 specimens. Thomson (1990) referred some of these broad-lobed "prairie-forest" border species to *R. unifolia* J. W. Thomson, which appears fairly distinctive in that it has strong longitudinal ridges intercalated with decorticate zones; and it has curved spores. Lacking a decisively better name, we are exploiting the name *R. subampliata* for the broad-lobed species in Illinois that do not look like *R. unifolia*. One might be tempted to use the name *R. fraxinea*, but that species has curved spores, such as in Calkins's #5653 (CHAS) in which the spores are 12 μ long and half as wide, and the apothecia are terminal. Some other Illinois material we have seen have laminal apothecia, straight spores, and lack the decorticate zones and longitudinal ridges as seen in more northern or western material. [usnic acid]

RIMELIA Hale & Fletcher

Thallus soredate *R. reticulata*
Thallus without soredia *R. cetrata*

*Rimelia cetrata*⁵ (Ach.) Hale & Fletcher Occasional farther south, our only local record for this species is a specimen collected by Calkins (s.n. F) in Cook County, which he originally had called *Parmelia saxatilis*. Berry (1941) cited *Parmelia cetrata* Ach. from Cook County, probably based upon the Calkins specimen. [salazinic acid, atranorin]

*Rimelia reticulata*¹ (Taylor) Hale & Fletcher Including Calkins's report of *Parmelia perlata*. Calkins report of *P. cetrata* must also be included here inasmuch as he

described his specimens as having "sorediferous" lobes. Although this lichen is very common farther south, we have only a few modern records, all from different corticolous substrates. Calkins considered this species common in the Chicago region a century ago. [salazinic acid, atranorin] Co-H#1317; Du-W#12390; Wi-H#1338

RINODINA (Ach.) Gray

Thallus corticolous

Apothecial rims pale gray R. subminuta

Apothecial rims brown R. archaea

Thallus saxicolous

Spore lumina with equally thick walls on all sides, but the septum strongly thickened and often obscured by a darkened band; substrate HCl+ or HCl R. bischoffii
Spore lumina with unequal or angular walls, the septum scarcely or not at all obscured by a darkened band; substrate HCl- R. cana

*Rinodina archaea*⁴ (Ach.) Arnold Our only record of this species is from Somme Prairie Grove, in Cook County, where it was collected on *Carya ovata*. Co-H#848

*Rinodina bischoffii*³ (Hepp) A. Massal. Calkins 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 Calkins specimen (s.n. NY) from LaSalle 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.

*Rinodina cana*¹ (Arnold) Arnold Uncommon, there is a contemporary DuPage County record from a granitic boulder. Calkins reported a lichen he called *R. sophodes* (Ach.) A. Massal. 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 labeled *R. sophodes*, as *R. cana*. Du-W#19638

*Rinodina subminuta*⁴ H. Magn. Our only local record for this species is from Messenger Woods Forest Preserve, in Will County, where it was collected on *Quercus alba*; farther south and west it is occasional on poplars along streams. Wi-H#1241

SARCOGYNE Flotow

*Sarcogyne regularis*¹ Körber = *Lecanora privigna* var. *pruinosa* of Calkins. Occasional throughout the area on a wide variety of carbonate-rich substrates, including tufa rock, gravel, concrete, shale, and exposed dolomite. His specimen (#6093 CHAS) from LaSalle County, Illinois, that he labeled *L. cervina*, is actually *Sarcogyne regularis*.

See also comments under *Lecanora dispersa* and *Porpidia tabaxuasiana*. Co-W#15473a; Du-W#14352; La-W#13773; Wi-#1184

SCOLICIOSPORUM A. Massal.

*Scoliciosporum chlorococcum*⁴ (Stenh.) Vězda Our only record for this species locally is from the upper branches of a fallen tree in DuPage County. Du-Armstrong #224

STAUROTHELE Norman

*Staurothele diffractella*⁴ (Nyl.) Tuck. Evidently unknown to Calkins. Our only local record for this species is from a sheltered dolomitic cliff face near Lemont, in Cook County. Co-M#30

TELOSCHISTES Norman

*Teloschistes chrysophthalmus*² (L.) Th. Fr. = *Teloschistes chrysophthalmus* of Calkins. There are specimens (#5687 CHAS; #34 F) collected at Lemont by Calkins. He reported it from "Lemont, on old rails in woods. Also on old oak trees near the lake shore, Lake View." We have not seen it alive anywhere near the Chicago area.

THELIDIUM A. Massal.

*Thelidium microcarpum*⁴ (Leight.) A. L. Sm. This is a poorly understood genus in North America, so our use of the name *T. microcarpum* must be regarded as tentative. It fits the description of that species in Purvis et al. (1992). Our specimens have an olivaceous, epilithic, thin, continuous to dispersed areolate thallus, with superficial perithecia to 0.3 mm across, which we interpret as lacking an involucrellum. The spores are about 25–35 μ , mostly 4-celled. There is a specimen that was distributed by Calkins (#199 F) as *Verrucaria prospersella*, which is referable here. Our records are from shaded dolomitic cobble and HCl+ building rubble. Co-H#352; La-H#344; Wi-M#5

THELOCARPON Nyl. ex Hue

*Thelocarpon laureri*⁴ (Flotow) Nyl. Not common locally, it grows occasionally on weathered lignum and rarely on granitic erratics. [pulvinic acid derivatives] Co-W#13614; Wi-W#14350

TRAPELIA Choisy

Thallus sorediate T. placodioides
Thallus esorediate.

Thallus thick, distinctly effigurate with marginal lobes . . . T. involuta
Thallus thin, of dispersed or continuous areoles, without marginal lobes T. coarctata

*Trapezia coarctata*¹ (Sm.) Choisy = *Biatora coarctata*. Uncommon locally, as it probably was in 1896. Contemporary specimens are from granitic erratics or

sandstone cobbles or outcrops, sometimes partly shaded.

Calkins reported it from both calcareous and arenaceous rocks. [gyrophoric acid] Co-H#405; Wi-H#1229

*Trapelia involuta*⁴ (Taylor) Hertel The only specimen of this species we have seen locally is from HCL—rock on the campus of Joliet Junior College, in Will County, along the nature trail. [gyrophoric acid] Wi-H#1224

*Trapelia placodioides*⁴ Coppins & P. James. Our only local records are from partly shaded to exposed igneous boulders. [gyrophoric acid] Co-H#809; Du-L#223

TRAPETIOPSIS Hertel & Gotth. Schneider

Apothecia plane, with persistent margins; thallus gray green to dark green, thin *T. flexuosa*
 Apothecia typically convex, the margins disappearing; thallus gray, thick and convex to granular warty *T. granulosa*

*Trapetiopsis flexuosa*⁴ (Fr.) Coppins & P. James This species is now occasional throughout the area 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] Co-H#737; Du-W#14622; La-H#1373

*Trapetiopsis granulosa*¹ (Hoffm.) Lumbsch Without seeing the specimens, it is difficult to know where to dispose of Calkins's report of *Lecidea enteroleuca* from Will County. From his description, however, it is probable that some of the material is referable here. Egan (1987) noted that reports of *L. enteroleuca* often refer to what are now recognized as various species of *Lecidella*. There are several contemporary specimens from DuPage County, where it grows most commonly on weathered or charred wood. [gyrophoric acid] Du-W#16502

TUCKERMANNOPSIS Gyelnik

*Tuckermannopsis americana*² (Sprengel) Hale = *Cetraria ciliaris* of Calkins, who collected it from "old rails in Lemont Township; on old birch at Glencoe" (#5657 CHAS). [atranorin, alectoronic acid]

VERRUCARIA Schrader

Hypothallus thick or thin, black.

Each areole appearing to have numerous black dots (ostioles), the black hypothallus more than 0.25 mm high *V. fayettensis*
 Areoles with only 1-few ostioles; hypothallus rarely more than 0.25 mm high.

Perithecia less than 0.17 mm across, several per areole
 *V. fuscella*
 Perithecia mostly more than 0.17 mm across, 1 or rarely 2 per areole
 *V. nigrescens*

Hypothallus pale or not evident.

Thallus white, thin or endolithic or absent.
 Exciple hyaline, the black involucrellum not completely encircling the perithecium *V. muralis*
 Exciple black, fused to the involucrellum above, extending around the bottom of the perithecium *V. calkinsiana*

Thallus thin to thick, evidently epilithic and corticate, sordid to grayish or olive green, or brownish to black, or if white then areolate.

Perithecia more than 0.23 mm across, the exciple black below
 *V. calkinsiana*
 Perithecia less than 0.23 mm across, the exciple hyaline below.
 Thallus pale gray *V. illinoensis*
 Thallus dark brown to olive brown *V. sordida*

*Verrucaria calkinsiana*¹ Servit This is our most common *Verrucaria*. Usually, early collectors called this lichen *V. muralis* or *V. rupestris*, but occasionally it was called *V. pyrenophora* or *V. nigrescens* (Calkins #203 NY), names used by Calkins, or *V. inundata*. It grows on all manner of carbonate rocks, such as dolomite, weathered concrete, calcareous pebbles and cobbles, and even 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 μ long. Co-W#14663; Du-S#14353; La-W#13774; Wi-H#1133

*Verrucaria fayettensis*¹ Servit This species is uncommon locally on weathered dolomite, but we have several contemporary records from DuPage County. It was most commonly called *V. fuscella* by early collectors, although Calkins called two Cook County specimens (*s.n.*; #199 NY) *V. viridula*. Du-W#12392; Wi-H#1245

*Verrucaria fuscella*² (Turner) Winch If we are interpreting it properly, this species has not been seen in the Chicago area in recent years. Elsewhere in Illinois it grows mostly on dolomite or limestone. Calkins considered it to be an uncommon species, which he knew only from "detached calcareous rocks near Joliet," and is more likely referable to *V. fayettensis*.

*Verrucaria illinoensis*⁵ Servit This species was described from calcareous rocks in LaSalle County by Servit (1950). Our only local record is a Calkins specimen (#154 F) from Riverside, in Cook County. Interestingly enough, he called this specimen *Verrucaria (Pyrenocollema) prospersella*, to which it has a superficial resemblance.

*Verrucaria muralis*¹ Ach. This species is rare on carbonate rock, including weathered concrete, flagstone, and even small pebbles. Du-W#14265; Wi-H#1152

*Verrucaria nigrescens*¹ Pers. Our only contemporary record for this species, if we are interpreting it properly, is from weathered dolomite near Palos Park, in Cook County. It is otherwise uncommon in the lower Midwest. Calkins reported this species from limestone along streams, but several older specimens under this name we have referred elsewhere. Co-H#587

*Verrucaria sordida*⁵ Servit Very rare locally, this species occurs on carbonate-rich rock. It 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, although he did not use that name in his flora of the Chicago area; also referable here is a Cook County specimen (#226 NY) he called *V. nigrescens*.

XANTHOPARMELIA (Vainio) Hale

Thallus isidiate *X. australasica*
Thallus without isidia *X. cumberlandia*

*Xanthoparmelia australasica*³ D. J. Galloway = *Parmelia conspersa* of Calkins, who indicated that his specimens were often isidiate, "fuscous-black" beneath, and grew on stones in Cook and Will counties. 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*. Calkins's assertion that it grew on old wood near Elgin reflects a rare circumstance. [usnic acid, salazinic acid, norstictic acid]

*Xanthoparmelia cumberlandia*⁴ (Gyelnik) Hale Possibly introduced to the area, our only record for this species is from landscape boulders at the Chicago Botanic Garden, at the north edge of Cook County. [usnic acid, stictic acid, norstictic acid] Co-W#15153

XANTHORIA (Fr.) Th. Fr.

Thallus sorediate, common.

Many lobes exceeding 0.5 mm wide, the soredia in large labriform soralia *X. fallax*
Lobes narrow, up to 0.5 mm wide, the soredia scattered to terminal, but not in regularly labriform soralia *X. sp.* #1
Thallus esorediate, rare.

Thallus saxicolous *X. elegans*
Thallus corticolous *X. polycarpa*

*Xanthoria elegans*⁵ (Link) Th. Fr. Our only local record for this species is a Calkins specimen (*s.n.* NY), collected in 1909 at "Sag" in Cook County, on a limestone boulder. There are contemporary specimens from a little farther north and west collected on weathered concrete.

*Xanthoria fallax*⁴ (Hepp) Arnold Probably including *Theloschistes lychneus* of Calkins, in part. This lichen occurs relatively frequently. More than half of our specimens are from fast-growing roadside trees such as *Populus deltoides*, *Fraxinus pennsylvanica*, and *Ulmus* spp. It also grows on open-grown oaks and walnuts, as well as on weathered concrete and old fence rails. Josef Poelt has seen examples of this material and confirms that they do represent *X. fallax*. See comments under *Xanthoria* sp. #1. Co-H#428; Du-W#14608; La-H#251

*Xanthoria polycarpa*¹ (Hoffm.) Rieber = *Theloschistes parietinus* of Calkins (#5685 CHAS; #16 NY). Calkins

noted that it grew "along the lake shore, on oaks and poplars; also in Lemont and elsewhere." Today, it is infrequent, most of our specimens being from *Fraxinus* and *Populus* species and weathered lignum. Rudolph (1955) cites a specimen of *X. parietina* from Cook County, probably based upon a misidentification or a label mix-up, it being a maritime species. Co-H#806; Du-L#49; Wi-H#1154

Xanthoria sp. #1¹ *sensu* MOR Probably including *Theloschistes lychneus* of Calkins, in part (e.g., #5683 CHAS; *s.n.* F). This species is occasional on a wide variety of corticolous substrates, mostly in disturbed areas. It also grows on exposed dolomitic boulders. The identity of this species remains a problem. Most of the specimens referred here routinely have been called *X. candelaria* (L.) Th. Fr., but most contemporary students of the genus exclude that species from the interior of North America, noting only that our material is not described. Well-developed specimens have the soredia formed under the internal thallus lobes, and the soralia are minutely crescent-shaped, evocative of *X. fallax*, which has broad, appressed lobes and strongly crescent-shaped or even circular soralia. Louise Lindblom, at Lund University in Sweden, is tentatively including it with *Xanthoria fulva* (Hoffm.) Poelt & Petutschnig, acknowledging that it may well be an new species endemic to the eastern United States. Josef Poelt, who looked at our material and who named *X. fulva*, believed it to be a new species. Co-H#828; Du-W#16504; Wi-H#1148

ACKNOWLEDGMENTS

This effort would have been utterly impossible without the efforts and cooperation of several people. Richard C. Harris, of the New York Botanical Garden, has been an enduring and patient mentor. In addition, he examined and annotated the complete set of Calkins specimens at NY, and loaned them to the Morton Arboretum for the duration of Chicago study. Douglas Ladd, of The Nature Conservancy, Missouri, has had a complete involvement in the evolution of every biological and ecological concept I have developed, including those dealing with lichens. Linda Masters, of the Conservation Research Institute (CRI), not only has been a regular field companion and collector, but also a provider of chromatographic and other herbarium-related assistance. Much of what is known today about the contemporary flora of Chicago area counties is the result of collections by Richard D. Hyerczyk of Chicago. Barbara A. Johnson, of CRI, has been a

constant source of editorial assistance, and she currently curates the lichen herbarium at the Morton Arboretum. I am supremely grateful to these people for their involvement in the development of this flora.

SYNONYMS AND MISAPPLIED NAMES

The following names include taxonomic synonyms or misapplied names, as used by Calkins. Some may represent misidentifications; others are legitimate older names that are known now to have narrower distributions. In some cases, they are related species that appear in text where taxonomic problems are discussed. All of these names are indexed to the species under which they are mentioned.

- Arthonia astroidea* - *Arthonia radiata*
Arthonia lecidella - *Arthonia caesia*
Arthonia spectabilis - *Arthothelium spectabile*
Arthonia taediosa - *Arthothelium taediosum*
Bacidia inundata - *Bacidina egenula*
Bacidia trachona - *Bacidia granosa*
Biatora coerata - *Trapelia coerata*
Biatora cyphalea - *Biatorella cyphalea*
Biatora fusco-rubella - *Bacidia polychroa*
Biatora inundata - *Bacidina egenula*
Biatora rubella - *Bacidia polychroa*
Biatora suffusa - *Bacidia suffusa*
Biatora varians - *Pyrrhospora varians*
Buellia alboatra - *Amandinea dakotensis*
Buellia parasema - *Amandinea punctata*
Buellia punctata - *Amandinea punctata*
Buellia schaeferi - *Amandinea punctata*
Candelariella efflorescens - *Candelariella reflexa*
Cetraria aleurites - *Imshaugia aleurites*
Cetraria ciliaris - *Tuckermannopsis americana*
Cladonia decorticata - *Cladonia rei*
Cladonia delicata - *Cladonia parasitica*
Cladonia fimbriata - *Cladonia coniocraea*, *C. ramulosa*, *C. rei*
Cladonia fimbriata v. apolepta - *Cladonia coniocraea*
Cladonia fimbriata var. coniocraea - *Cladonia ochrochlora*
Cladonia fimbriata v. simplex - *C. constata*, *C. cryptochlorophaea*, *C. cylindrica*
Cladonia fimbriata v. tubaeformis - *Cladonia coniocraea*, *C. subulata*
Cladonia gracilis v. verticillata - *Cladonia gracilis ssp. turbinata*, *C. cervicornis ssp. verticillata*
Cladonia humilis - *Cladonia conista*
Cladonia mitrula - *Cladonia peziziformis*
Cladonia pyxidata v. pocillum - *Cladonia pyxidata*
Cladonia rangiferina v. sylvatica - *Cladonia subtenus*
Collema flaccidum - *Collema subflaccidum*
Collema granosum - *Collema auriforme*
Collema microphyllum - *Collema fragrans*
Collema pycnocarpum - *Collema conglomeratum*
Endocarpon hepaticum - *Catapyrenium squamulosum*
Endocarpon minutum - *Dermatocarpon minutum*
Endocarpon minutum v. complicatum - *Dermatocarpon minutum*
Endocarpon minutum v. mühlenbergii - *Dermatocarpon minutum*
Endocarpon rufescens - *Catapyrenium squamulosum*
Graphis dendritica - *Graphis scripta*
Heppia despreauxii - *Heppia adglutinata*
Heppia lutosa - *Collema bachmanianum*, *Heppia adglutinata*
Lecania erysibe - *Lecania perproxima*
Lecanora aiospila - *Caloplaca atroalba*
Lecanora calcarea - *Aspicilia calcarea*
Lecanora calcarea v. contorta - *Aspicilia contorta*
Lecanora cervina - *Sarcogyne regularis*
Lecanora erysibe - *Lecania perproxima*
Lecanora hageni v. sambuci - *Lecanora sambuci*
Lecanora pallida - *Lecanora caesiorubella*
Lecanora perproxima - *Lecania perproxima*
Lecanora privigna - *Lecanora dispersa*, *Porpidia tahawasiensis*
Lecanora privigna v. pruinosa - *Sarcogyne regularis*
Lecanora subfusca - *Lecanora hybocarpa*
Lecanora subfusca v. alophana - *Lecanora hybocarpa*
Lecanora subfusca v. argentata - *Lecanora hybocarpa*
Lecanora subfusca v. distans - *Lecanora hybocarpa*
Lecanora varia - *Lecanora symmetrica*
Lecanora varia v. symmetrica - *Lecanora symmetrica*
Lecidea enteroleuca - *Trapelopsis granulosa*
Leptogium chloromelum - *Leptogium milligranum*
Leptogium lacerum - *Leptogium lichenoides*
Leptogium myochroum - *Leptogium burnetiae*, *L. dactylum*
Leptogium pulchellum - *Leptogium corticola*
Microthelia micula - *Kirschsteiniethelia aethiops*
Muellerella lichenicola - *Caloplaca flavorescens*
Myrianagium duriaei - nonlichenized fungus
Pannaria lanuginosa - *Lepraria lobifigans*
Pannaria nigra - *Placythium nigrum*
Parmelia borrieri - *Punctelia bolliana*, *P. subrudecta*
Parmelia borrieri v. rudecta - *Punctelia rudecta*
Parmelia caperata - *Flavoparmelia caperata*
Parmelia cetrata - *Rimelia cetrata*
Parmelia colpodes - *Anzia colpodes*
Parmelia conspersa - *Xanthoparmelia australasica*
Parmelia crinita - *Parmotrema crinitum*, *P. margaritatum*
Parmelia perforata - *Parmotrema perforatum*
Parmelia perlata - *Rimelia reticulata*
Parmelia physodes - *Hypogymnia physodes*
Parmelia saxatilis - *Parmelia squarrosa*, *P. sulcata*, *Rimelia cetrata*
Parmelia saxatilis v. sulcata - *Parmelia sulcata*
Parmelia tiliaea - *Myelochroa galbina*
Parmelia tiliaea v. sulphurea - *Myelochroa galbina*
Parmelia aurulenta - *Myelochroa aurulenta*
Pertusaria communis - *Pertusaria maouinii*
Pertusaria leioplaea - *Pertusaria pustulata*
Pertusaria multipuncta - *Pertusaria multipunctoides*
Phaeographis dendritica - *Graphis scripta*
Phaeophyscia orbicularis - *Phaeophyscia pusilloides*
Physcia alba - *Physcia pumilio*
Physcia adglutinata - *Hyperphyscia adglutinata*, *H. syncolla*
Physcia granulifera - *Physcia apolia*, *Physconia detersa*
Physcia obscura - *Phaeophyscia adiatola*, *P. ciliata*, *P. pusilloides*, *P. rubropulchra*
Physcia speciosa - *Heterodermia speciosa*
Physcia stellaris v. apolia - *Physcia apolia*
Physcia tribacia - *Physcia millegrana*
Placodium aurantiacum - *Caloplaca flavorescens*, *C. ulmorum*, *C. cerina*
Placodium cinnabarinum - *Caloplaca cinnabarina*
Placodium ferrugineum - *Caloplaca ferruginea*, *C. cerina*
Placodium microphyllum - *Caloplaca microphyllana*
Placodium vitellinum - *Candelariella vitellina*
Pyrenula anaterpa - *Naetrocymbe punctiformis*
Pyrenula gemmata - *Anisomeridium bifforme*, *Eopyrenula inaequalis*, *Kirschsteiniethelia aethiops*
Pyrenula glabrata - *Arthopyrenia cinchonae*
Pyrenula nitida - *Pyrenula pseudobufonia*
Pyrenula punctiformis - *Kirschsteiniethelia aethiops*

Pyrenula thelaena - Julella sericea
 Pyxine caesiopruinosa - Pyxine subcinerea
 Ramalina calicaris v. fastigiata - Ramalina americana
 Ramalina calicaris v. fraxinea - Ramalina subampliata
 Ramalina celsitri - Ramalina subampliata
 Ramalina confusa - Ramalina subampliata
 Ramalina fastigiata - Ramalina subampliata
 Ramalina ecklonii - Ramalina subampliata
 Ramalina fastigiata v. subampliata - Ramalina subampliata
 Ramalina fraxinea - Ramalina subampliata
 Ramalina sinensis - Ramalina subampliata
 Ramalina subampliata - Ramalina subampliata
 Ramalina unifolia - Ramalina subampliata
 Rinodina sophodes - Rinodina cana
 Sagedia oxyspora - Julella sericea
 Sarcinulella banksiae - Anisomeridium nysigenum
 Theloschistes chrysophthalmus - Theloschistes chrysophthalmus
 Theloschistes concolor - Candelaria concolor
 Theloschistes lychneus - Xanthoria fallax, X. sp. #1
 Theloschistes parietinus - Xanthoria polycarpa
 Urceolaria scruposa - Diploschistes muscorum
 Verrucaria aethiobola - Verrucaria sordida
 Verrucaria inundata - Verrucaria calkinsiana
 Verrucaria prosperella - Pyrenocollema prosperellum, Thelidium microcarpum, V. illinoisensis
 Verrucaria pyrenophora - V. calkinsiana
 Verrucaria rupestris - Verrucaria calkinsiana, V. muralis
 Verrucaria viridula - Verrucaria fayetensis

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THE LICHEN FLORA OF THE COOK COUNTY FOREST PRESERVES PART I: PALOS DIVISION

Richard D. Hyerczyk¹

ABSTRACT: This is the first in a projected series of papers that will document the lichenized fungi of the Cook County forest preserve system. In this initial paper, the scope of the project is delineated, and the first results of the study are presented. For the Forest Preserve District of Cook County's Palos Division, 65 species of lichens are reported, of which 33 were vouchered. An annotated species list is provided, as well as checklists for the individual preserves within this division.

INTRODUCTION

In 1914, the Forest Preserve District of Cook County, Illinois, was organized by popular vote of the citizens of the county to "hold lands containing one or more natural forests . . . for the purpose of protecting and preserving the flora, fauna and scenic beauties . . . for the purpose of the education, pleasure, and recreation of the public" (Forest Preserve District of Cook County 1921).

By 1991, the District had acquired and preserved over 27,100 hectares (67,000 acres) of land throughout Cook County (King and Zoars 1990). For administrative purposes, the entire preserve system is subdivided into 12 divisions: Calumet, Des Plaines, Indian Boundary, New, North Branch, Palos, Poplar Creek, Sag Valley, Salt Creek, Skokie, Tinley, and Thorn Creek. Detailed maps of these divisions can be obtained from the Cook County Forest Preserve District.

The preserve system is located along major stream and river systems of Cook County and roughly forms an arc parallel to the shore of Lake Michigan. According to the natural divisions of the Chicago region, as delineated by Swink and Wilhelm (1994), nearly 77% of the preserves lie in the Western Morainal Section, 21% lie in the Chicago Lake Plain Section, and 2% lie in the Bedrock Valley Section.

The Western Morainal Section is characterized by the undulating glacial deposits of the Valparaiso Moraine, which were laid down about 14,000 years ago. Glacial deposits consist mainly of clay and gravel; occasionally, granite and dolomite boulders are also found. Morainic plant communities included are mesic and dry mesic oak savannas, prairies, and mesic

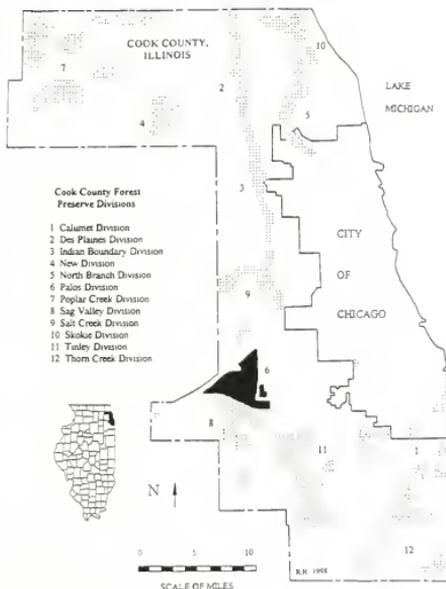


Figure 1. Palos Division

¹ 5204 S. Natoma, Chicago, Illinois 60638

woodlands. The Chicago Lake Plain Section is a nearly level area of land that was once covered by glacial Lake Chicago. Plant communities there include mesic prairies, marshes, and sedge meadows. The Bedrock Valley Section is represented where the dolomite bedrock has been exposed, especially along waterways, because of erosive forces that have cut through glacial deposits; plant communities represented there include fens, sedge meadows, and marshes.

Since no lichenological studies have been devoted to any of these forest preserve divisions, this project is being undertaken to document the lichen flora of each division, and to provide information on the growth forms, habitats, and relative frequency of these lichens. The 12 divisions listed above will be considered as separate study units. Voucher specimens will be collected and deposited in the herbarium at the Morton Arboretum in Lisle, Illinois. Where indicated, duplicate collections will be deposited in other herbaria. Once a species has been vouchered in one forest preserve division, the need for additional specimens will be superfluous for a number of species, particularly those that do not require chromatography or spore work.

PALOS DIVISION

The Palos Division is approximately 2,630 hectares (6,500 acres) in size and is composed of 29 individual preserves (fig. 1). It lies mainly in the Western Morainal Section of the natural divisions of the Chicago region. Elevations above mean sea level range from 182 meters (600 feet) to 220 meters (725 feet). Soils are predominantly silty, loamy clays of the Ashkum and Morley series (Mapes 1979). The Bedrock Valley Section is also represented, though to a lesser extent, along waterways, where dolomite bedrock has been exposed, or where dolomite quarries have been opened. Average elevation is about 182 meters (600 feet). Man-made features include the concrete of building foundations and road beds, wood rail fencing, and picnic tables.

MATERIALS AND METHODS

Between April 1991 and March 1996, 29 individual preserves were surveyed for their lichen flora. Spot tests for lichen chemical substances were made on collected specimens with calcium hypochlorite (C) and potassium hydroxide (KOH). Thin-layer chromatography following Culbertson (1972) was used to verify secondary-product chemistry. Nomenclature follows Esslinger and Egan (1995).

Additional sets of specimens have been deposited in the herbarium at the Field Museum of Natural History in Chicago, Illinois, and at the Cook County Forest Preserve District at Camp Sagawau near Lemont, Illinois.

RESULTS

Sixty-five species of lichens in 40 genera are reported for the Palos Division forest preserves. Twenty-eight lichens are crustose in growth form, 22 are foliose, 12 are fruticose, one is gelatinous, one is squamulose, and one is umbilicate. Of the reported taxa, 17% are common, 18% are frequent, 48% are occasional, and 17% are rare. Thirty-three taxa were vouchered specifically from the Palos Division.

The exposed dolomite bedrock, granite boulders, and weathered concrete provided habitat for several lichens. Species growing on these saxicolous substrates included (on dolomite) *Caloplaca squamosa*, *Dermatocarpon minutum*, *Placynthium nigrum*, *Sarcogyne regularis*, *Trapelia coarctata*, and *Verrucaria calkinsiana*; (on weathered concrete) *Bacidia granosa*, *Caloplaca feracissima*, *Endocarpon pusillum*, and *Lecanora dispersa*; (on granite) *Aspicilia caesiocinerea*, *Caloplaca siederitis*, and *Lichenotbelia* sp.

In the Palos Division, many areas were farmed or grazed before inclusion in the forest preserve system. In these, the top soil has eroded down to clay, on which *Catapyrenium squamulosum*, *Cladonia conista*, *C. cristatella*, *C. cryptochlorophaea*, *C. furcata*, *C. peziziformis*, and *C. polycarpoides* were found, along with several vascular plants that inhabit poorer soils, such as *Antennaria plantaginifolia*, *Danthonia spicata*, *Poa compressa*, and *Potentilla simplex*.

Some lignicolous species growing on decorticate logs, weathered wood fencing, and picnic tables included *Amandinea punctata*, *Caloplaca holocarpa*, *Cladonia coniocraea*, *C. cylindrica*, *C. macilenta* var. *bacillaris*, *Cyphelium tigillare*, *Lecanora symmicta*, *L. umbrina*, and *Trapeliopsis flexuosa*.

Several lichens were found on trees in the woodlands. They are, however, more commonly found along sunny paths, or in open situations, where light intensities are fairly high. Some species found on the trunks and lower limbs of trees and shrubs included *Anisomeridium myrsigenum*, *Arthonia caesia*, *Candelaria concolor*, *Candelariella reflexa*, *Hyperphyscia adglutinata*, *Lepraria lobificans*, *Parmelia sulcata*, *Phaeophyscia pusilloides*, *P. rubropulchra*, *Physcia millegrana*, *P. stellaris*, *Punctelia rudecta*, and *Xanthoria fallax*.

An alphabetized, annotated list of the lichenized fungi found in the Palos Division follows. Generalized degree of frequency and a brief discussion of habitat is given, followed by a collection number, if applicable. All collections were made by the author, unless otherwise indicated. At the end of each entry, growth form and substrate are listed.

AMANDINEA Choisy ex Scheid. & H. Mayrhr.

Amandinea punctata (Hoffm.) Coppins & Scheid.

Occasional; on weathered wooden picnic tables and at the bases of *Populus deltoides* and *Quercus rubra*. #370 (crustose; corticolous/licnolous)

ANISOMERIDIUM (Müll. Arg.) Choisy

Anisomeridium nyssigenum (Ellis & Everh.) R. C. Harris

Frequent; on the trunks of *Crataegus mollis*, *Populus deltoides*, and *Quercus alba*. #585 (crustose; corticolous)
The conidial form of this lichen, which has been called *Sarcinulella banksiae* Sutton & Alcorn, is also found here, and is occasional on the trunks of *Crataegus mollis*, *Quercus alba*, and *Ulmus americana*. #236 (crustose; corticolous)

ARTHONIA Ach.

Arthonia caesia (Flotow) Körber

Common; on *Cornus racemosa* and *Fraxinus americana*. #582 (crustose; corticolous)

ASPICILIA A. Massal.

Aspicilia caesiocinerea (Nyl. ex Malbr.) Arnold

Rare; on granite boulders along a shaded woodland creek. #736 (crustose; saxicolous)

BACIDIA De Not.

Bacidia granosa (Tuck.) Zahlbr.

Occasional; on weathered concrete. (crustose; saxicolous)

CALOPLACA Th. Fr.

Caloplaca feracissima H. Magn.

Common; on weathered concrete and dolomite, where *Endocarpon pusillum* and *Lecanora dispersa* are associates. It has even been collected from rusted metal. #657 (crustose; saxicolous)

Caloplaca holocarpa (Hoffm. ex Ach.) M. Wade

Occasional; on weathered wood rail fences and at the base of *Populus deltoides*. #690 (crustose; corticolous/licnolous)

Caloplaca microphyllina (Tuck.) Hasse

Occasional; on weathered wood rail fences, wood picnic tables, and on the trunk of *Quercus rubra*. #237 (crustose; lignicolous/corticolous)

Caloplaca sideritis (Tuck.) Zahlbr.

Occasional; on granite boulders in shaded woodland ravines. #443 (crustose; saxicolous)

Caloplaca squamosa (de Lesd.) Zahlbr.

Rare; on a dolomite boulder in full sun. #580 (crustose; saxicolous)

CANDELARIA A. Massal.

Candelaria concolor (Dickson) Stein

Common; on trunks and branches of *Crataegus mollis* and *Ulmus americana*, and on weathered concrete, granite, and wood. #669 (foliose; corticolous/licnolous/saxicolous)

Candelaria concolor var. *effusa* (Tuck.) G. Merr. & Burnham

Frequent; on trunks of *Populus deltoides* and *Ulmus americana*, and on weathered concrete. (foliose; corticolous/saxicolous)

CANDELARIELLA Müll. Arg.

Candelariella reflexa (Nyl.) Lettau

Occasional; on trunks and upper branches of *Crataegus mollis*, and on weathered wood rail fences. #733 (crustose; corticolous/licnolous)

CATAPYRENIUM Flotow

Catapyrenium squamulosum (Ach.) Breuss

Rare; on shallow soil over dolomite with *Danthonia spicata* and *Panicum virgatum*. #583 (squamulose; terricolous)

CLADONIA P. Browne

Cladonia caespiticia (Pers.) Flörke

Rare; on a decorticate log in an oak woodland. Horn #23 (fruticose; lignicolous)

Cladonia coniocraea (Flörke) Sprengel

Occasional; on decorticate logs in shaded oak woodlands. Horn #25 (fruticose; lignicolous)

Cladonia conista A. Evans

Occasional; on weathered clay till, and at the base of *Crataegus mollis*. #448 (fruticose; corticolous/terrlicolous)

Cladonia cristatella Tuck.

Occasional; on weathered clay in abandoned fields, on decorticate logs in oak woodlands, and on weathered wood. (fruticose; lignicolous/terrlicolous)

Cladonia cryptochlorophaea Asah.

Rare; on weathered clay till. #608 (fruticose; terrlicolous)

Cladonia cylindrica (A. Evans) A. Evans

Occasional; on decorticate logs in oak woodlands. (fruticose; lignicolous)

Cladonia furcata (Hudson) Schrader

Occasional; on sandy clay till in oak woodlands. #190 (fruticose; terrlicolous)

Cladonia macilenta Hoffm. var. *bacillaris* (Genth) Schaerer

Occasional; on decorticate logs in oak woodlands, often growing with *Cladonia coniocraea*. Horn #22 (fruticose; lignicolous)

Cladonia peziziformis (With.) J. R. Laundon

Occasional; on weathered clay till in abandoned farm fields, where *Danthonia spicata* is an associate. (fruticose; terricolous)

Cladonia polycarpoides Nyl.

Frequent; on weathered clay till in abandoned fields where *Danthonia spicata* is an associate. (fruticose; terricolous)

Cladonia ramulosa (With.) J. R. Laundon

Frequent, on decorticate logs in oak woodlands and at the bases of *Quercus rubra*. (fruticose; corticolous/lignicolous)

Cladonia rei Schaerer

Occasional; on decorticate logs. #630 (fruticose; lignicolous)

CYPHELIIUM Ach.

Cyphelium tigillare (Ach.) Ach.

Occasional; on weathered wood rail fences. #710 (crustose; lignicolous)

DERMATOCARPON Eschw.

Dermatocarpon minutum (L.) W. Mann

Occasional; on dolomite boulders in damp, shaded ravines and woodlands where *Leptogium cyanescens* is an associate. (umbilicate; saxicolous)

ENDOCARPON Hedwig

Endocarpon pusillum Hedwig

Common; on dolomite and weathered concrete where *Caloplaca feracissima* and *Verrucaria calkinsiana* are often associates. It has also been found growing on Styrofoam. #656 (crustose; saxicolous)

FLAVOPARMELIA Hale

Flavoparmelia caperata (L.) Hale

Occasional; on the trunk of *Ailanthus altissima* and on the upper branches of *Crataegus mollis*, *Quercus alba*, and *Q. rubra*. (foliose; corticolous)

FLAVOPUNCTELIA (Krog) Hale

Flavopunctelia flaventior (Stirton) Hale

Occasional; on the lower branches of an open grown *Crataegus mollis*. #1208 (foliose; corticolous)

Flavopunctelia soledica (Nyl.) Hale

Rare; on the trunk of *Fraxinus americana*. (foliose; corticolous)

HYPERPHYSICIA Müll. Arg.

Hyperphyscia adglutinata (Flörke) H. Mayrh. & Poelt

Frequent; on the lower branches of *Crataegus mollis* and *Ulmus americana*. #639 (foliose; corticolous)

LECANORA Ach.

Lecanora dispersa (Pers.) Sommerf.

Common; on weathered dolomite and concrete. (crustose; saxicolous)

Lecanora symmicta (Ach.) Ach.

Frequent; on the trunks of *Crataegus mollis* and *Fraxinus americana*, and on weathered wooden picnic tables. Horn #42 (crustose; corticolous/lignicolous)

Lecanora umbrina (Ach.) A. Massal.

Occasional; on weathered wood picnic tables and wood rail fences. #671 (crustose; lignicolous)

LEPRARIA Ach.

Lepraria lobificans Nyl.

Frequent; at the bases of a variety of trees including *Crataegus mollis*, *Quercus alba*, *Q. rubra*, and *Tilia americana*, and on weathered concrete and dolomite in damp woods. Horn #40 (crustose; corticolous/saxicolous)

LEPTOGIUM (Ach.) Gray

Leptogium cyanescens (Rabenh.) Körber

Occasional; on moss-covered dolomite boulders in shaded ravines, where *Dermatocarpon minutum* is often an associate. (gelatinous; muscicolous)

LICHENOTHELIA D. Hawksw.

Lichenothelia sp. *sensu* MOR Herbarium

Frequent; on granite boulders in shaded oak woodlands. #441 (crustose; saxicolous)

MELANELIA Essl.

Melanelia subaurifera (Nyl.) Essl.

Occasional; on the lower branches of *Fraxinus americana*. (foliose; corticolous)

OPEGRAPHA Ach.

Opegrapha atra Pers.

Frequent; on the trunks of *Ulmus americana* in wooded floodplains. (crustose; corticolous)

PARMELIA Ach.

Parmelia sulcata Taylor

Common; on the trunks and branches of *Crataegus mollis* and *Rhus glabra*, and on a weathered wood rail fence. #651 (foliose; corticolous/lignicolous)

PARMOTREMA A. Massal.

Parmotrema hypotropum (Nyl.) Hale

Occasional; on the trunks of *Crataegus mollis* and *Quercus macrocarpa*. (foliose; corticolous)

PHAEOCALICIUM A. F. W. Schmidt

Phaeocalicium polyporaenum (Nyl.) Tibell

Rare; on the polyporous fungus *Trichaptum bifforme*, which was growing on *Prunus serotina*. (crustose; fungicolous)

PHAEOPHYSCIA Moberg

Phaeophyscia adiaetola (Essl.) Essl.

Occasional; on dolomite and mosses in shaded woodlands. (foliose; muscicolous/saxicolous)

Phaeophyscia orbicularis (Necker) Moberg

Rare; on dolomite in shaded woodlands. #660 (foliose; saxicolous)

Phaeophyscia pusilloides (Zahlbr.) Essl.Common; on decorticate logs, and at the base of *Fraxinus americana* in moist woods. (foliose; corticolous/licnicolous)*Phaeophyscia rubropulchra* (Degel.) Essl.Common; on decorticate logs, and on the trunks of *Crataegus mollis*, *Fraxinus americana*, and *Ulmus americana*. (foliose; corticolous/licnicolous)

PHYSICIA (Schreber) Michaux

Physcia ascendens (Fr.) H. OlivierFrequent; on the trunk of *Fraxinus americana*. (foliose; corticolous)*Physcia millegrana* Degel.Common; on the trunks and branches of *Crataegus mollis*, *Prunus serotina*, *Quercus alba*, *Salix nigra*, and *Ulmus americana*, and on wood rail fences. (foliose; corticolous/licnicolous)*Physcia stellaris* (L.) Nyl.Common; on the trunks and branches of *Crataegus mollis*, *Quercus alba*, *Salix nigra*, and *Ulmus americana*. (foliose; corticolous)

PHYSICIELLA Essl.

Physciella obloantha (Ach.) Essl.Common; on the trunks of *Crataegus mollis* and *Ulmus americana*, and on weathered concrete. (foliose; corticolous/saxicolous)

PHYSICONIA Poelt

Physiconia detersa (Nyl.) PoeltOccasional; on the lower branches of *Fraxinus americana* and *Salix nigra*. (foliose; corticolous)

PLACYNTHIUM (Ach.) Gray

Placynthium nigrum (Hudson) Gray

Rare; on dolomite in an abandoned field. #1203 (crustose; saxicolous)

PROTOBLASTENIA (Zahlbr.) J. Steiner

Protoblastenia rupestris (Scop.) J. Steiner

Occasional; on dolomite rubble in open fields. (crustose; saxicolous)

PUNCTELIA Krog

Punctelia bolliana (Müll. Arg.) KrogOccasional; on the trunk of *Quercus alba* in open woods. (foliose; corticolous)*Punctelia rudecta* (Ach.) KrogOccasional; on the trunks of *Fraxinus americana* and *Quercus alba*. (foliose; corticolous)

PYXINE Fr.

Pyxine subcinerea StirtonRare; on a lower branch of *Crataegus mollis*. #730 (foliose; corticolous)

SARCOGYNE Flotow

Sarcogyne regularis Körber

Occasional; on dolomite in full sun. #401 (crustose; saxicolous)

STAUROTHELE Norman

Staurothele diffractella (Nyl.) Tuck.

Occasional; on dolomite boulders in shaded ravines. (crustose; saxicolous)

THELIDIUM A. Massal.

Thelidium microcarpum (Leight.) A. L. Sm.

Occasional; on weathered limestone, concrete mortar, and on dolomite in shaded woods. #352 (crustose; saxicolous)

TRAPELIA Choisy

Trapelia coarctata (Sm.) ChoisyOccasional; on dolomite gravel in open fields with *Sarcogyne regularis* and *Verrucaria calkinsiana*. (crustose; saxicolous)

TRAPELIOPSIS Hertel & Gotth. Schneider

Trapeliopsis flexuosa (Fr.) Coppins & P. James

Occasional; on weathered wood rail fences and dry-rotted logs. (crustose; lignicolous)

VERRUCARIA Schrader

Verrucaria calkinsiana ServitFrequent; on weathered concrete with *Caloplaca feracissima* and *Endocarpon pusillum*, and on dolomite with *Protoblastenia rupestris*, *Sarcogyne regularis*, and *Trapelia coarctata*. (crustose; saxicolous)

XANTHORIA (Fr.) Th. Fr.

Xanthoria fallax (Hepp) ArnoldFrequent; on the trunks of *Fraxinus americana* and *Ulmus americana*, and on weathered wood rail fences. (foliose; corticolous/licnicolous)

PALOS DIVISION LICHEN CHECKLIST

Belly Deep Slough

(SW S10 T37N R12E)

Amandinea punctata
 Arthonia caesia
 Caloplaca feracissima
 Candelaria concolor
 Cladonia cylindrica
 Cladonia rei
 Endocarpon pusillum
 Lecanora dispersa
 Parmelia sulcata
 Physcia adscendens
 Physcia millegrana
 Physcia stellaris
 Physciella chloantha
 Punctelia rudecta
 Trapeliopsis flexuosa

Buffalo Woods East

(W S34 T38N R12E)

Arthonia caesia
 Aspicilia caesiocinerea
 Caloplaca feracissima
 Caloplaca sideritis
 Candelaria concolor
 Cladonia conista
 Cladonia polycarpoides
 Cladonia ramulosa
 Cladonia rei
 Endocarpon pusillum
 Lecanora dispersa
 Lichenothelia sp.
 Phaeophyscia pusilloides
 Phaeophyscia rubropulchra
 Physcia millegrana
 Physciella chloantha
 Verrucaria calkinsiana

Buffalo Woods West

(SE S33 T38N R12E and

SW S34 T38N R12E)

Anisomeridium nyssigenum
 Arthonia caesia
 Caloplaca sideritis
 Candelaria concolor
 Candelaria concolor var. effusa
 Cladonia polycarpoides
 Endocarpon pusillum
 Lepraria lobifcans
 Lichenothelia sp.
 Parmelia sulcata
 Physcia adscendens

Physcia millegrana
 Physciella chloantha
 Trapeliopsis flexuosa
 Verrucaria calkinsiana

Bull Frog Lake/Pulaski Woods

(E S7 T37N R12E)

Caloplaca feracissima
 Candelaria concolor
 Cladonia ramulosa
 Endocarpon pusillum
 Hyperphyscia adglutinata
 Lecanora dispersa
 Lepraria lobifcans
 Lichenothelia sp.
 Phaeophyscia rubropulchra
 Physcia millegrana
 Physcia stellaris
 Physciella chloantha
 Verrucaria calkinsiana
 Xanthoria fallax

Buttonbush Slough

(NW S10 T37N R12E)

Anisomeridium nyssigenum
 Bacidia granosa
 Candelaria concolor
 Candelaria concolor var. effusa
 Cladonia cristatella
 Cladonia furcata
 Cladonia peziziformis
 Cladonia polycarpoides
 Hyperphyscia adglutinata
 Opegrapha atra
 Phaeophyscia pusilloides
 Physcia millegrana
 Physcia stellaris
 Physconia detersa
 Verrucaria calkinsiana

Columbia Woods

(NW S5 T37N R12E and

SE S32 T38N R12E)

Amandinea punctata
 Bacidia granosa
 Caloplaca feracissima
 Candelaria concolor
 Cladonia ramulosa
 Endocarpon pusillum
 Flavoparmelia caperata
 Hyperphyscia adglutinata
 Lecanora dispersa

Lecanora umbrina
 Lepraria lobifcans
 Lichenothelia sp.
 Parmelia sulcata
 Phaeophyscia pusilloides
 Phaeophyscia rubropulchra
 Physcia millegrana
 Physciella chloantha
 Sarcogyne regularis

Country Lane Woods/Cranberry**Slough Nature Preserve**

(E S9 T37N R12E)

Anisomeridium nyssigenum
 Arthonia caesia
 Bacidia granosa
 Caloplaca feracissima
 Caloplaca sideritis
 Candelaria concolor
 Candelaria concolor var. effusa
 Candelariella reflexa
 Cladonia coniocraea
 Cladonia macilenta var. bacillaris
 Cladonia polycarpoides
 Cladonia ramulosa
 Cladonia rei
 Endocarpon pusillum
 Flavopunctelia flaventior
 Lecanora dispersa
 Lepraria lobifcans
 Lichenothelia sp.
 Opegrapha atra
 Parmelia sulcata
 Phaeophyscia pusilloides
 Phaeophyscia rubropulchra
 Physcia millegrana
 Physcia stellaris
 Punctelia bolliana
 Punctelia rudecta
 Verrucaria calkinsiana
 Xanthoria fallax

Crawdad Slough

(NW S9 T37N R12E)

Arthonia caesia
 Caloplaca feracissima
 Candelaria concolor
 Candelariella reflexa
 Endocarpon pusillum
 Flavopunctelia soredica
 Hyperphyscia adglutinata
 Lecanora dispersa

Lecanora symmicta
 Lecanora umbrina
 Parmelia sulcata
 Parmotrema hypotropum
 Phaeophyscia pusilloides
 Phaeophyscia rubropulchra
 Physcia millegrana
 Physcia stellaris
 Punctelia rudecta
 Xanthoria fallax

Crooked Creek Woods

(SW S10 T37N R12E and
 NW S15 T37N R12E)
 Arthonia caesia
 Caloplaca feracissima
 Candelaria concolor
 Candelaria concolor var. effusa
 Cladonia coniocraea
 Cladonia conista
 Cladonia peziziformis
 Cladonia ramulosa
 Endocarpon pusillum
 Lecanora dispersa
 Lecanora symmicta
 Lepraria lobificans
 Lichenothelia sp.
 Opegrapha atra
 Parmelia sulcata
 Phaeophyscia pusilloides
 Phaeophyscia rubropulchra
 Physcia millegrana
 Physcia stellaris
 Physciella chloantha
 Xanthoria fallax

Dan McMahon Woods

(SW S16 T37N R12E)
 Arthonia caesia
 Caloplaca microphyllina
 Candelaria concolor
 Candelaria concolor var. effusa
 Cyphelium tigillare
 Endocarpon pusillum
 Lecanora dispersa
 Melanelia subaurifera
 Parmelia sulcata
 Phaeophyscia pusilloides
 Phaeophyscia rubropulchra
 Physcia millegrana
 Physcia stellaris
 Physciella chloantha
 Physconia detersa
 Xanthoria fallax

Henry DeTonty Woods

(NW S7 T37N R12E)
 Bacidia granosa
 Caloplaca feracissima
 Candelaria concolor
 Endocarpon pusillum
 Flavoparmelia caperata
 Lecanora dispersa
 Lichenothelia sp.
 Phaeophyscia pusilloides
 Phaeophyscia rubropulchra
 Physcia millegrana
 Physcia stellaris
 Verrucaria calkinsiana

Hickory Hills Woods

(NW S11 T37N R12E)
 Anisomeridium nyssigenum
 Bacidia granosa
 Caloplaca feracissima
 Caloplaca microphyllina
 Candelaria concolor
 Cladonia polycarpoides
 Cladonia ramulosa
 Endocarpon pusillum
 Hyperphyscia adglutinata
 Lecanora dispersa
 Lichenothelia sp.
 Phaeophyscia pusilloides
 Phaeophyscia rubropulchra
 Physcia millegrana
 Physcia stellaris
 Physciella chloantha
 Xanthoria fallax

Hidden Pond Woods

(SW S3 T37N R12E)
 Amandinea punctata
 Anisomeridium nyssigenum
 Arthonia caesia
 Caloplaca feracissima
 Caloplaca microphyllina
 Candelaria concolor
 Candelariella reflexa
 Cladonia coniocraea
 Cladonia conista
 Cladonia macilenta var. bacillaris
 Cladonia polycarpoides
 Cladonia ramulosa
 Cladonia rei
 Endocarpon pusillum
 Lecanora dispersa
 Lecanora symmicta
 Parmelia sulcata

Physcia millegrana
 Physcia stellaris
 Physciella chloantha

Horsecollar Slough/Tomahawk Slough

(S S7 T37N R12E)
 Anisomeridium nyssigenum
 Caloplaca feracissima
 Candelaria concolor
 Cladonia coniocraea
 Cladonia cristatella
 Cladonia cylindrica
 Cladonia ramulosa
 Endocarpon pusillum
 Flavoparmelia caperata
 Lecanora dispersa
 Lepraria lobificans
 Lichenothelia sp.
 Opegrapha atra
 Phaeophyscia rubropulchra
 Physcia millegrana

Illinois and Michigan Canal Bike

Path
 (NE S5 T37N R12E and
 NW S7 T37N R12E)
 Caloplaca feracissima
 Caloplaca squamosa
 Candelaria concolor
 Endocarpon pusillum
 Lecanora dispersa
 Opegrapha atra
 Phaeophyscia adiantola
 Phaeophyscia pusilloides
 Physcia millegrana
 Physciella chloantha

Joe's Pond

(SE S8 T37N R12E and
 NE S17 T37N R12E)
 Arthonia caesia
 Caloplaca feracissima
 Candelaria concolor
 Hyperphyscia adglutinata
 Lecanora dispersa
 Parmelia sulcata
 Phaeophyscia rubropulchra
 Physcia millegrana
 Physcia stellaris
 Physciella chloantha
 Verrucaria calkinsiana
 Xanthoria fallax

Little Red Schoolhouse/Long John Slough

(E S8 T37N R12E)
 Amandinea punctata
 Caloplaca feracissima
 Caloplaca holocarpa
 Caloplaca microphyllina
 Candelaria concolor
 Candelaria concolor var. effusa
 Candelariella reflexa
 Cladonia cristatella
 Endocarpon pusillum
 Hyperphyscia adglutinata
 Lecanora dispersa
 Lecanora symmetrica
 Parmelia sulcata
 Phaeocalicium polyporaeum
 Physcia adscendens
 Physcia millegrana
 Physcia stellaris
 Physciella chloantha
 Physconia detersa
 Punctelia rudecta
 Trapeliopsis flexuosa
 Xanthoria fallax

Maple Lake

(N S8 T37N R12E)
 Caloplaca feracissima
 Candelaria concolor
 Endocarpon pusillum
 Lecanora dispersa
 Lecanora symmetrica
 Parmelia sulcata
 Phaeophyscia pusilloides
 Physcia millegrana
 Physciella chloantha
 Xanthoria fallax

Morill Meadow

(SE S16 T37N R12E)
 Arthonia caesia
 Caloplaca feracissima
 Candelaria concolor
 Candelaria concolor var. effusa
 Cyphelium tigillare
 Endocarpon pusillum
 Hyperphyscia adglutinata
 Lecanora dispersa
 Lecanora symmetrica
 Melanelia subaurifera
 Parmelia sulcata
 Phaeophyscia pusilloides
 Phaeophyscia rubropulchra

Physcia adscendens
 Physcia millegrana
 Physcia stellaris
 Sarcogyne regularis
 Verrucaria calkinsiana
 Xanthoria fallax

Palos Fen Nature Preserve

(NE S15 T37N R12E)
 Arthonia caesia
 Caloplaca feracissima
 Candelaria concolor
 Candelaria concolor var. effusa
 Candelariella reflexa
 Cladonia conista
 Cladonia cristatella
 Cladonia macilenta var. bacillaris
 Cladonia peziziformis
 Cladonia polycarpoides
 Dermatocarpon minutum
 Endocarpon pusillum
 Flavoparmelia caperata
 Flavopunctelia flaventior
 Hyperphyscia adglutinata
 Lecanora symmetrica
 Lepraria lobifigans
 Lichenothelia sp.
 Melanelia subaurifera
 Parmelia sulcata
 Parmotrema hypotropum
 Phaeophyscia pusilloides
 Phaeophyscia rubropulchra
 Physcia adscendens
 Physcia millegrana
 Physcia stellaris
 Physciella chloantha
 Sarcogyne regularis
 Trapeliopsis flexuosa
 Trapelia coarctata
 Verrucaria calkinsiana
 Xanthoria fallax

Paw Paw Woods Nature Preserve

(SW S5 T37N R12E)
 Anisomeridium nyssigenum
 Arthonia caesia
 Bacidia granosa
 Candelaria concolor
 Cladonia coniocraea
 Cladonia conista
 Cladonia cylindrica
 Cladonia macilenta var. bacillaris
 Cladonia peziziformis
 Cladonia polycarpoides

Cladonia ramulosa
 Dermatocarpon minutum
 Endocarpon pusillum
 Flavoparmelia caperata
 Hyperphyscia adglutinata
 Lepraria lobifigans
 Leptogium cyanescens
 Lichenothelia sp.
 Parmelia sulcata
 Phaeophyscia pusilloides
 Phaeophyscia rubropulchra
 Physcia adscendens
 Physcia millegrana
 Physcia stellaris
 Protoblastena rupestris
 Pxytine subcinerea
 Staurothele diffractella
 Verrucaria calkinsiana

Pioneer Woods/Tuma Lake

(N S16 T37N R12E)
 Amandinea punctata
 Anisomeridium nyssigenum
 Arthonia caesia
 Caloplaca feracissima
 Caloplaca holocarpa
 Caloplaca microphyllina
 Candelaria concolor
 Candelariella reflexa
 Cladonia cristatella
 Cladonia cryptochlorophaea
 Cladonia peziziformis
 Cladonia polycarpoides
 Endocarpon pusillum
 Lecanora dispersa
 Lecanora symmetrica
 Lecanora umbrina
 Lepraria lobifigans
 Leptogium cyanescens
 Parmelia sulcata
 Phaeophyscia pusilloides
 Phaeophyscia rubropulchra
 Physcia millegrana
 Physcia stellaris
 Punctelia bolliana
 Sarcogyne regularis
 Trapeliopsis flexuosa
 Verrucaria calkinsiana

Red Gate Woods

(NW S7 T37N R12E)
 Caloplaca feracissima
 Candelaria concolor
 Cladonia coniocraea

Cladonia polycarpoides
 Cladonia ramulosa
 Endocarpon pusillum
 Lecanora dispersa
 Lepraria lobifigans
 Lichenothelia sp.
 Melanelia subaurifera
 Opegrapha atra
 Physcia millegrana
 Physciella chloantha
 Punctelia rudecta
 Verrucaria calkinsiana

Red Wing Slough

(NW S10 T37N R12E)
 Candelaria concolor
 Endocarpon pusillum
 Hyperphyscia adglutinata
 Opegrapha atra
 Parmelia sulcata
 Phaeophyscia pusilloides
 Phaeophyscia rubropulchra
 Physcia millegrana
 Physcia stellaris
 Physciella chloantha

Saganashkee Slough

(N & SE S17 T37N R12E and
 N S18 T37N R12E)
 Arthonia caesia
 Caloplaca feracissima
 Caloplaca microphyllina
 Candelaria concolor
 Endocarpon pusillum
 Hyperphyscia adglutinata
 Lecanora dispersa
 Opegrapha atra
 Phaeophyscia pusilloides
 Physcia millegrana
 Physcia stellaris
 Physciella chloantha
 Xanthoria fallax

Spears Woods/Boomerang Slough/Hogwash Slough

(W S3 T37N R12E and
 E S4 T37N R12E)
 Amandinea punctata
 Anisomeridium nyssigenum
 Arthonia caesia
 Bacidia granosa
 Caloplaca feracissima
 Candelaria concolor
 Candelaria concolor var. effusa

Candelariella reflexa
 Cladonia caespiticia
 Cladonia cylindrica
 Cladonia macilenta var. bacillaris
 Cladonia peziziformis
 Cladonia polycarpoides
 Cladonia ramulosa
 Endocarpon pusillum
 Flavopunctelia flaventior
 Lecanora dispersa
 Lepraria lobifigans
 Melanelia subaurifera
 Opegrapha atra
 Parmelia sulcata
 Phaeophyscia rubropulchra
 Physcia adscendens
 Physcia millegrana
 Physcia stellaris
 Physconia detersa
 Punctelia bolliana
 Punctelia rudecta
 Sarcogyne regularis
 Thelidium microcarpon
 Trapelia coarctata
 Trapeliopsis flexuosa
 Verrucaria calkinsiana

White Oak Woods

(SW S10 T37N R12E)
 Anisomeridium nyssigenum
 Arthonia caesia
 Caloplaca feracissima
 Candelaria concolor
 Cladonia furcata
 Cladonia polycarpoides
 Endocarpon pusillum
 Lecanora dispersa
 Lepraria lobifigans
 Phaeophyscia pusilloides
 Phaeophyscia rubropulchra
 Physcia adscendens
 Physcia millegrana
 Xanthoria fallax

Willow Springs Woods/Katydid Prairie

(W S4 T37N R12E)
 Amandinea punctata
 Arthonia caesia
 Caloplaca feracissima
 Candelaria concolor
 Candelaria concolor var. effusa
 Cladonia cristatella
 Cladonia furcata

Cladonia polycarpoides
 Cladonia ramulosa
 Endocarpon pusillum
 Lecanora dispersa
 Lepraria lobifigans
 Lichenothelia sp.
 Parmelia sulcata
 Phaeophyscia adiaetola
 Phaeophyscia orbicularis
 Phaeophyscia pusilloides
 Phaeophyscia rubropulchra
 Physcia adscendens
 Physcia millegrana
 Physcia stellaris
 Physciella chloantha
 Protoblastenia rupestris
 Punctelia rudecta
 Thelidium microcarpon
 Xanthoria fallax

Wolf Road Woods

(SW S8 T37N R12E and
 SE S7 T37N R11E)
 Arthonia caesia
 Caloplaca feracissima
 Candelaria concolor
 Catapyrenium lachneum
 Cladonia peziziformis
 Cladonia ramulosa
 Endocarpon pusillum
 Lecanora dispersa
 Lecanora symmetrica
 Lepraria lobifigans
 Lichenothelia sp.
 Opegrapha atra
 Parmelia sulcata
 Phaeophyscia adiaetola
 Phaeophyscia rubropulchra
 Physcia millegrana
 Physcia stellaris
 Placynthium nigrum
 Protoblastenia rupestris
 Sarcogyne regularis
 Staurothele diffractella
 Verrucaria calkinsiana

ACKNOWLEDGMENTS

This project was done in cooperation with the Forest Preserve District of Cook County. I would like to thank the staff at Camp Sagawau for all their help, Dr. Gerould Wilhelm and Linda Masters, of Conservation Design Forum, Inc., Elmhurst, Illinois, for doing thin-layer chromatography on several specimens, and for their assistance in identification and verification of specimens; Douglas Ladd, the Nature Conservancy, Missouri and Dr. Dennis Nyberg, Associate Professor, University of Illinois at Chicago, for reviewing an earlier draft of this paper.

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THE LICHEN FLORA OF THE COOK COUNTY FOREST PRESERVES PART II: SAG VALLEY DIVISION

Richard D. Hyerczyk¹

ABSTRACT: Seventy-seven species of lichens are reported for the Forest Preserve District of Cook County's Sag Valley Division, of which 54 were vouchered. An annotated species list is provided, as well as checklists for the individual preserves within this division.

INTRODUCTION

This is the second paper in the series that started with Hyerczyk (1998), a project to document the lichenized fungi found in the 12 divisions of the Forest Preserve District of Cook County, Illinois.

SAG VALLEY DIVISION

The Sag Valley Division is approximately 3,642 hectares (9,000 acres) in size and comprises 19 individual preserves (fig. 1). It lies mainly in the Western Morainal Section of the natural divisions of the Chicago region (Swink and Wilhelm 1994). Elevations above mean sea level range from 180 meters (600 feet) to 220 meters (725 feet). The silty, loamy, clay soils are predominantly of the Ashkum and Morley series (Mapes 1979). Morainic plant communities include oak savannas, mesic woodlands, old fields, sloughs, and prairies. The Bedrock Valley Section is represented where dolomite is exposed along waterways. Average elevation is about 182 meters (600 feet). Plant communities include fens, marshes, and sedge meadows. Man-made features include the concrete of building foundations and road beds, gravel pits and dolomite quarries, wood fencing, and picnic tables.

MATERIALS AND METHODS

Between April 1991 and March 1996, 19 individual preserves were surveyed for their lichen flora. Specimens were identified following methods described in Hyerczyk (1998). In addition to the specimens deposited at the Morton Arboretum herbarium, duplicate sets were deposited at the Field Museum of Natural History, Chicago, Illinois, and at the Cook County Forest Preserve District at Camp Sagawau near

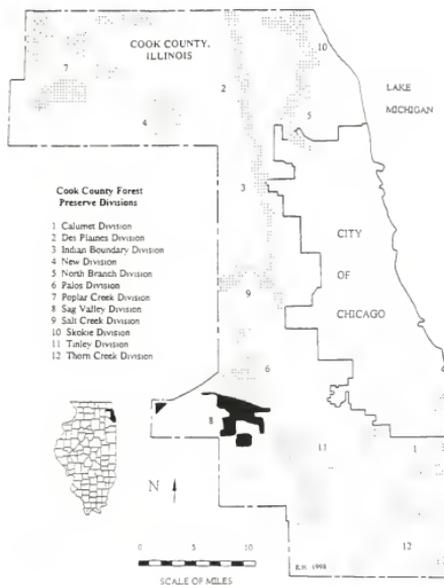


Figure 1. Sag Valley Division

¹ 5204 S. Natoma, Chicago, Illinois 60638

Lemont, Illinois. Nomenclature follows Esslinger and Egan (1995).

RESULTS

Seventy-seven species of lichens in 45 genera are reported for the Sag Valley Division. Thirty-five lichens are crustose in growth form, 21 are foliose, 16 are fruticose, 2 are gelatinous, one is squamulose, one is umbilicate, and one is veined. Of the reported taxa, 16% are common, 10% are frequent, 36% are occasional, and 38% are rare. Fifty-four taxa were vouchered specifically from the Sag Valley Division.

Several species were found on dolomite boulders and in old quarries, including *Bacidia granosa*, *Caloplaca flavovirescens*, *Dermatocarpon minutum*, *Lecanora muralis*, *Leptogium cyanescens*, *Protoblastenia rupestris*, *Sarcogyne regularis*, *Thelidium microcarpum*, *Trapelia coarctata*, and *Verrucaria calkinsiana*. Some rarer species found in a dolomite canyon at Sagawau Nature Preserve included *Caloplaca citrina*, *Collema bachmanianum*, *Lecanora rupicola*, *Lepraria lesdaimi*, and *Staurothele diffractella*.

Some species growing on weathered concrete in the picnic areas and parking lots included *Bacidia granosa*, *Caloplaca feracissima*, *Endocarpon pusillum*, *Lecanora dispersa*, and *Verrucaria calkinsiana*. As in other divisions, these species were usually found on man-made materials.

A few lignicolous species found on weathered wood rail fencing and picnic tables included *Cyphelium tigillare*, *Thelocarpon laureri*, and *Trapeliopsis flexuosa*. Some species growing on decorticate logs in shaded oak woodlands included *Cladonia cylindrica*, *C. macilenta* var. *bacillaris*, and *C. ramulosa*.

Some species were found on the trunks and lower branches of several species of trees, including *Arthonia caesia*, *Candelaria concolor*, *Flavoparmelia caperata*, *Lepraria lobificans*, *Melanella subaurifera*, *Opegrapha atra*, *Parmelia sulcata*, *Phaeophyscia pusilloides*, *P. rubropulchra*, *Physcia millegrana*, *P. stellaris*, *Punctelia rufecta*, and *Xanthoria fallax*. As with other divisions, most of these lichens were found in the sunnier locations, especially along the edges of woodlands.

In old fields where the top soil has eroded to clay, some rarer taxa were found, including *Cladina arbuscula*, *Cladonia cervicornis* subsp. *verticillata*, and *C. pleurota*. More common species found in these same habitats included *Catapyrenium squamulosum*,

Cladonia cristatella, *C. peziziformis*, and *C. polycarpoides*.

An alphabetized, annotated list of the lichenized fungi found in the Sag Valley Division follows. Generalized degree of frequency and a brief discussion of habitat is given, followed by a collection number, if applicable. All collections were made by the author, unless otherwise indicated. At the end of each entry, growth form and substrate are listed.

AMANDINEA Choisy ex Scheid. & H. Mayrh.

Amandinea punctata (Hoffm.) Coppins & Scheid.

Occasional; on weathered wooden picnic tables. (crustose; lignicolous)

ANISOMERIDIUM (Müll. Arg.) Choisy

Anisomeridium nyssigenum (Ellis & Everh.) R. C. Harris
Frequent; on the trunks of *Crataegus mollis*, *Populus deltoides*, and *Quercus alba*. (crustose; corticolous)

The conidial form of this lichen, which has been called *Sarcinulella banksiae* Sutton & Alcorn, is also found here, and is occasional on the trunks of *Crataegus mollis*, *Quercus alba*, and *Ulmus americana*. (crustose; corticolous)

ARTHONIA Ach.

Arthonia caesia (Flotow) Körber

Common; on *Cornus racemosa* and *Fraxinus americana*. (crustose; corticolous)

BACIDIA De Not.

Bacidia granosa (Tuck.) Zahlbr.

Occasional; on a shaded dolomitic canyon wall, dolomite pebbles, and on weathered concrete. Masters #26 (crustose; saxicolous)

BACIDINA Vězda

Bacidina egenula (Nyl.) Vězda

Occasional; on a shaded dolomitic canyon wall and on dolomite pebbles. Masters #29 (crustose; saxicolous)

CALOPLACA Th. Fr.

Caloplaca citrina (Hoffm.) Th. Fr.

Rare; on a shaded dolomitic canyon wall. Masters #28 (crustose; saxicolous)

Caloplaca feracissima H. Magn.

Common; on weathered concrete and dolomite where *Endocarpon pusillum* and *Lecanora dispersa* are associates. (crustose; saxicolous)

Caloplaca flavovirescens (Wulfen) Dalla Torre & Sarntn.

Rare; on weathered dolomite in a shaded ravine with *Dermatocarpon minutum*. #709 (crustose; saxicolous)

Caloplaca microphyllina (Tuck.) Hasse

Occasional; on weathered wood rail fences, wood picnic tables, and on the trunk of *Quercus rubra*. (crustose; lignicolous/corticulous)

Caloplaca sideritis (Tuck.) Zahlbr.

Rare; on a granite boulder in a shaded woodland ravine. (crustose; saxicolous)

Caloplaca vitellinula (Nyl.) H. Olivier

Rare; on weathered concrete. Horn #45 (crustose; saxicolous)

CANDELARIA A. Massal.

Candelaria concolor (Dickson) Stein

Common; on the trunks and branches of *Crataegus mollis* and *Ulmus americana*, and on weathered concrete, granite, and wood. (foliose; corticolous/lignicolous/saxicolous)

Candelaria concolor var. *effusa* (Tuck.) G. Merr. & Burnham

Frequent; on the trunks of *Populus deltoides* and *Ulmus americana*, and on weathered concrete and wood. #414 (foliose; corticolous/lignicolous/saxicolous)

CANDELARIELLA Müll. Arg.

Candelariella reflexa (Nyl.) Lettau

Rare; on the trunks and upper branches of *Crataegus mollis*. (crustose; corticolous)

CATAPYRENIUM Flotow

Catapyrenium squamulosum (Ach.) Breuss

Rare; on shallow soil over dolomite with *Danthonia spicata* and *Panicum virgatum*. (squamulose; terricolous)

CLADINA Nyl.

Cladina arbuscula (Wallr.) Hale & Culb.

Rare; on weathered clay till in an abandoned farm field growing with *Cladonia cervicornis* subsp. *verticillata*, *C. peziziformis*, and *C. polycarpoides*. #1279 (fruticose; terricolous)

CLADONIA P. Browne

Cladonia cervicornis (Ach.) Flotow subsp. *verticillata* (Hoffm.) Ahti

Rare; on weathered clay till in an old farm field. #1278 (fruticose; terricolous)

Cladonia coniocraea (Flörke) Sprengel

Occasional; on decorticate logs in shaded oak woodlands. (fruticose; lignicolous)

Cladonia conista A. Evans

Occasional; on weathered clay till. (fruticose; terricolous)

Cladonia cristatella Tuck.

Occasional; on weathered clay in abandoned fields and on decorticate logs in oak woodlands. Horn #34 (fruticose; lignicolous/terricolous)

Cladonia cylindrica (A. Evans) A. Evans

Rare; on a decorticate log in an oak woodland. #16 (fruticose; lignicolous)

Cladonia furcata (Hudson) Schrader

Rare; on sandy clay till in an oak woodland. (fruticose; terricolous)

Cladonia grayi G. Merr. ex Sandst.

Rare; on weathered clay till and old wood. Horn #33 (fruticose; lignicolous/terricolous)

Cladonia macilentata Hoffm. var. *bacillaris* (Genth) Schaerer

Occasional; on decorticate logs in mesic oak woodlands. (fruticose; lignicolous)

Cladonia peziziformis (With.) J. R. Laundon

Occasional; on weathered clay till in abandoned farm fields where *Danthonia spicata* is an associate. It has also been collected from a discarded sock. #615 (fruticose; terricolous)

Cladonia piedmontensis G. Merr.

Occasional; on weathered clay till. Horn #36 (fruticose; terricolous)

Cladonia pleurota (Flörke) Schaerer

Rare; on weathered clay till. #610 (fruticose; terricolous)

Cladonia polycarpoides Nyl.

Occasional; on weathered clay till in abandoned fields where *Danthonia spicata* is an associate. Horn #28 (fruticose; terricolous)

Cladonia ramulosa (With.) J. R. Laundon

Occasional; on decorticate logs in oak woodlands and at the base of *Quercus rubra*. #16A (fruticose; corticolous/lignicolous)

Cladonia rei Schaerer

Rare; on the lower branches of *Crataegus mollis*. #630 (fruticose; corticolous)

COLLEMA F. H. Wigg.

Collema bachmanianum (Fink) Degel.

Rare; on moss-covered dolomite. #603 (gelatinous; muscicolous)

CYPHELUM Ach.

Cypbellium tigillare (Ach.) Ach.

Rare; on an old tree branch. (crustose; lignicolous)

DERMATOCARPON Eschw.

Dermatocarpon minutum (L.) W. Mann

Occasional; on dolomite boulders in damp, shaded ravines and woodlands where *Leptogium cyanescens* is an associate. Masters #33 (umbilicate; saxicolous)

ENDOCARPON Hedwig

Endocarpon pusillum Hedwig

Common; on dolomite and weathered concrete where *Caloplaca feracissima* and *Verrucaria calkinsiana* are often associates. (crustose; saxicolous)

EVERNIA Ach.

Evernia mesomorpha Nyl.

Rare; on a lower branch of *Carya cordiformis*. Horn s.n. 1990 (fruticose; corticolous)

FLAVOPARMELIA Hale

Flavoparmelia caperata (L.) Hale

Occasional; on the trunks and upper branches of *Crataegus mollis*, *Quercus alba*, and *Q. rubra*. Horn #30A (foliose; corticolous)

FLAVOPUNCTELIA (Krog) Hale

Flavopunctelia soredica (Nyl.) Hale

Rare; on a lower branch of *Carya cordiformis*. Horn #30 (foliose; corticolous)

HYPERPHYSCIA Müll. Arg.

Hyperphyscia adglutinata (Flörke) H. Mayrh. & Poelt

Frequent; on the trunks and lower branches of *Crataegus mollis* and *Ulmus americana*. (foliose; corticolous)

LECANORA Ach.

Lecanora dispersa (Pers.) Sommerf.

Common; on weathered dolomite and concrete. #436 (crustose; saxicolous)

Lecanora muralis (Schreber) Rabenh.

Rare; on dolomite in an old quarry. Horn #46 (crustose; saxicolous)

Lecanora rupicola (L.) Zahlbr.

Rare; on a dolomitic canyon wall. Masters #27 (crustose; saxicolous)

Lecanora symmicta (Ach.) Ach.

Occasional; on the trunks of *Crataegus mollis* and *Fraxinus americana*, and on weathered wooden picnic tables. (crustose; corticolous/licnolous)

Lecanora umbrina (Ach.) A. Massal.

Rare; on a weathered wooden picnic table. (crustose; lignicolous)

LEPRARIA Ach.

Lepraria lesdainii (Hue) R. C. Harris

Rare; on a dolomitic canyon wall. Masters #34 (crustose; saxicolous)

Lepraria lobificans Nyl.

Frequent; at the bases of a variety of trees, including *Crataegus mollis*, *Quercus alba*, *Q. rubra*, and *Tilia americana*, and on weathered concrete and dolomite in damp woods. (crustose; corticolous/saxicolous)

Lepraria sp. #1 sensu MOR Herbarium

Rare; at the base of *Quercus rubra* in a closed woodland. #111 (crustose; corticolous)

LEPTOGIUM (Ach.) Gray

Leptogium cyanescens (Rabenh.) Körber

Occasional; on moss-covered dolomite boulders in shaded ravines where *Dermatocarpon minutum* is often an associate. #604 (gelatinous; saxicolous)

LICHENOTHELIA D. Hawksw.

Lichenothelia sp. sensu MOR Herbarium

Occasional; on granite boulders in shaded oak woodlands. (crustose; saxicolous)

MELANELIA Essl.

Melanelia subaurifera (Nyl.) Essl.

Rare; on a lower branch of *Carya cordiformis*. Horn #31 (foliose; corticolous)

MYELOCHROA (Asah.) Elix & Hale

Myelochroa aurulenta (Tuck.) Elix & Hale

Rare; on the trunk of *Juglans nigra* in a mesic woodland. #1384 (foliose; corticolous)

OPEGRAPHA Ach.

Opegrapha atra Pers.

Occasional; on the trunk of *Ulmus americana* in wooded floodplains. #189 (crustose; corticolous)

PARMELIA Ach.

Parmelia sulcata Taylor

Common; on the trunks and branches of *Crataegus mollis* and *Rhus glabra*, and on weathered wood rail fences. (foliose; corticolous/licnolous)

PARMOTREMA A. Massal.

Parmotrema hypotropum (Nyl.) Hale

Occasional; on the trunks of *Crataegus mollis*, *Fraxinus americana*, *Quercus macrocarpa*, and on a weathered wood rail fence. #726 (foliose; corticolous/licnolous)

PELTIGERA Willd.

Peltigera rufescens (Weiss) Humb.

Occasional; on clay beneath *Viburnum rafinesquianum* with the moss *Thuidium delicatulum*. #1206 (veined; terricolous)

PHAEOCALICIUM A. F. W. Schmidt

Phaeocalicium polyporaenum (Nyl.) Tibell

Rare; on the polyporous fungus, *Trichaptum bifforme*, which was growing on *Prunus serotina*. #1428 (crustose; fungicolous)

PHAEOPHYSCIA Moberg

Phaeophyscia adiastola (Essl.) Essl.

Occasional; on dolomite and mosses in shaded woods.
#594 (foliose; muscicolous/saxicolous)

Phaeophyscia pusilloides (Zahlbr.) Essl.

Common; on decorticate logs and at the base of *Fraxinus americana* in moist woods. Horn #26 (foliose; corticolous/lignicolous)

Phaeophyscia rubropulchra (Degel.) Essl.

Common; on decorticate logs and on the trunks of *Crataegus mollis*, *Fraxinus americana*, and *Ulmus americana*. Horn #32 (foliose; corticolous/lignicolous)

PHYSICIA (Schreber) Michaux

Physcia adscendens (Fr.) H. Olivier

Frequent; on the trunk of *Salix nigra*. #439 (foliose; corticolous)

Physcia americana G. Merr.

Rare; on the trunk of *Juglans nigra* in a mesic woodland.
#1105 (foliose; corticolous)

Physcia millegrana Degel.

Common; on the trunks and branches of *Crataegus mollis*, *Prunus serotina*, *Quercus alba*, *Salix nigra*, and *Ulmus americana*, and wood rail fences. #432 (foliose; corticolous/lignicolous)

Physcia stellaris (L.) Nyl.

Common; on the trunks and branches of *Crataegus mollis*, *Quercus alba*, *Salix nigra*, and *Ulmus americana*.
#629 (foliose; corticolous)

PHYSICIELLA Essl.

Physciella chloantha (Ach.) Essl.

Common; on the trunks of *Crataegus mollis* and *Ulmus americana* and on weathered concrete. #714 (foliose; corticolous/saxicolous)

PHYSCONIA Poelt

Physsononia detersa (Nyl.) Poelt

Occasional; on the lower branches of *Fraxinus americana* and *Salix nigra*. Horn #43A (foliose; corticolous)

POLYSPORINA Vězda

Polysporina simplex (Davies) Vězda

Rare, on a granite monument at Sagawau Canyon Nature Preserve. #743 (crustose; saxicolous)

PROTOBLASTENIA (Zahlbr.) J. Steiner

Protoblastenia rupestris (Scop.) J. Steiner

Occasional; on dolomite rubble in open fields. #415 (crustose; saxicolous)

PUNCTELIA Krog

Punctelia bolliana (Müll. Arg.) Krog

Occasional; on the trunk of *Quercus alba* in open woods.
#51 (foliose; corticolous)

Punctelia rudecta (Ach.) Krog

Frequent; on a wood rail fence and on the trunks of *Fraxinus americana* and *Quercus alba*. Horn #39 (foliose; corticolous/lignicolous)

SARCOGYNE Flotow

Sarcogyne regularis Körber

Frequent; on dolomite in full sun. (crustose; saxicolous)

STAUROTHELE Norman

Staurothele diffractella (Nyl.) Tuck.

Rare; on a dolomitic canyon wall. #600 (crustose; saxicolous)

THELIDIUM A. Massal.

Thelidium microcarpum (Leight.) A. L. Sm.

Occasional; on weathered limestone, concrete mortar, and on dolomite in shaded woods. (crustose; saxicolous)

THELOCARPON Nyl. ex Hue

Thelocarpon laureri (Flotow) Nyl.

Occasional; on a weathered wooden picnic table. #624 (crustose; lignicolous)

TRAPELIA Choisy

Trapelia coarctata (Sm.) Choisy

Occasional; on dolomite gravel in open fields with *Sarcogyne regularis* and *Verrucaria calkinsiana*. #405 (crustose; saxicolous)

TRAPELIOPSIS Hertel & Gotth. Schneider

Trapelopsis flexuosa (Fr.) Coppins & P. James

Occasional; on weathered wood rail fences and dry-rotted logs. #646 (crustose; lignicolous)

VERRUCARIA Schrader

Verrucaria calkinsiana Servit

Common; on weathered concrete with *Caloplaca feracissima* and *Endocarpon pusillum*, and on dolomite with *Protoblastenia rupestris*, *Sarcogyne regularis*, and *Trapelia coarctata*. #402 (crustose; saxicolous)

Verrucaria nigrescens Pers.

Rare; on dolomite in an old quarry. #587 (crustose; saxicolous)

XANTHORIA (Fr.) Th. Fr.

Xanthoria fallax (Hepp) Arnold

Frequent; on the trunks of *Fraxinus americana*, *Quercus alba*, and *Ulmus americana*, and on weathered wood rail fences. #428 (foliose; corticolous/lignicolous)

SAG VALLEY DIVISION LICHEN CHECKLIST

Bergman Slough/Prairie(S S19 T37N R12E and
N S30 T37N R12E)

Arthonia caesia
Candelaria concolor
Cladonia cristatella
Cladonia macilenta var. bacillaris
Cladonia peziziformis
Cladonia piedmontensis
Cladonia pleurota
Cladonia polycarpoides
Endocarpon pusillum
Parmelia sulcata
Physcia millegrana
Physcia stellaris
Physciella chloantha
Sarcogyne regularis
Trapelia coarctata
Verrucaria calkinsiana

Black Partridge Fen(N S19 T37N R11E and
NW S20 T37N R11E)

Candelaria concolor
Candelaria concolor var. effusa
Endocarpon pusillum
Phaeophyscia rubropulchra
Physcia millegrana
Physcia stellaris
Physciella chloantha
Thelidium microcarpum

Black Partridge Woods NaturePreserve

(NW S19 T37N R11E)

Anisomeridium nyssigenum
Arthonia caesia
Caloplaca feracissima
Caloplaca flavovirescens
Candelaria concolor
Cladonia polycarpoides
Cladonia ramulosa
Dermatocarpon minutum
Endocarpon pusillum
Lepraria lobificans
Lepraria sp.#1
Parmelia sulcata
Peltigera rufescens
Phaeophyscia adiaetola
Phaeophyscia pusilloides
Phaeophyscia rubropulchra
Physcia millegrana

Physcia stellaris
Physciella chloantha
Physconia detersa
Protoblastenia rupestris
Thelidium microcarpum
Verrucaria calkinsiana
Xanthoria fallax

Bouncing Bet Slough/GroundHog Slough(SW S27 T37N R12E and
N S34 T37N R12E)

Arthonia caesia
Bacidina egenula
Caloplaca feracissima
Candelaria concolor
Candelaria concolor var. effusa
Cladonia polycarpoides
Endocarpon pusillum
Hyperphyscia adglutinata
Lecanora dispersa
Phaeophyscia pusilloides
Physcia adscendens
Physcia millegrana
Physcia stellaris
Physciella chloantha
Sarcogyne regularis
Verrucaria calkinsiana

Cap Sauers Holding NaturePreserve(S19 T37N R12E,
S20 T37N R12E,
NE S24 T37N R11E, and
N S29 T37N R12E)

Amandinea punctata
Anisomeridium nyssigenum
Arthonia caesia
Caloplaca feracissima
Caloplaca sideritis
Candelaria concolor
Candelaria concolor var. effusa
Candelariella reflexa
Catapyrenium squamulosum
Cladonia coniocraea
Cladonia conista
Cladonia cristatella
Cladonia furcata
Cladonia macilenta var. bacillaris
Cladonia peziziformis
Cladonia polycarpoides
Cladonia ramulosa

Cladonia rei
Cypheium tigillare
Endocarpon pusillum
Flavoparmelia caperata
Hyperphyscia adglutinata
Lecanora dispersa
Lecanora symmicta
Lepraria lobificans
Lichenothelia sp.
Opegrapha atra
Parmelia sulcata
Parmotrema hypotropum
Peltigera rufescens
Phaeocalicium polyporaenum
Phaeophyscia adiaetola
Phaeophyscia pusilloides
Phaeophyscia rubropulchra
Physcia adscendens
Physcia americana
Physcia millegrana
Physcia stellaris
Physciella chloantha
Physconia detersa
Protoblastenia rupestris
Punctelia bolliana
Punctelia rudecta
Sarcogyne regularis
Thelidium microcarpum
Trapelia coarctata
Trapeliopsis flexuosa
Verrucaria calkinsiana
Xanthoria fallax

Cherry Hill Woods(SW S21 T37N R12E and
NW S28 T37N R12E)

Caloplaca feracissima
Candelaria concolor
Candelaria concolor var. effusa
Hyperphyscia adglutinata
Lecanora dispersa
Parmelia sulcata
Phaeophyscia pusilloides
Physcia adscendens
Physcia millegrana
Physcia stellaris
Physciella chloantha
Punctelia rudecta
Xanthoria fallax

Forty Acres Woods

(NW S27 T37N R12E)
 Anisomeridium nyssigenum
 Caloplaca feracissima
 Candelaria concolor
 Endocarpon pusillum
 Lecanora dispersa
 Lepraria lobificans
 Phaeophyscia pusilloides
 Physcia millegrana
 Verrucaria calkinsiana

Horsetail Lake

(NW S28 T37N R12E)
 Amandinea punctata
 Anisomeridium nyssigenum
 Arthonia caesia
 Caloplaca feracissima
 Candelaria concolor
 Candelaria concolor var. effusa
 Cladonia coniocraea
 Endocarpon pusillum
 Hyperphyscia adglutinata
 Lecanora dispersa
 Lepraria lobificans
 Parmelia sulcata
 Phaeophyscia rubropulchra
 Physcia adscendens
 Physcia millegrana
 Physciella chloantha
 Punctelia rudecta
 Sarcoogyne regularis
 Thelocarpon laureri
 Trapelia coarctata
 Trapeliopsis flexuosa

McCloughry Springs

(SW S22 T37N R12E)
 Arthonia caesia
 Caloplaca feracissima
 Candelaria concolor
 Dermatocarpon minutum
 Endocarpon pusillum
 Lecanora dispersa
 Lepraria lobificans
 Lepraria sp.#1
 Leptogium cyanescens
 Parmelia sulcata
 Phaeophyscia pusilloides
 Phaeophyscia rubropulchra
 Physcia millegrana
 Physciella chloantha
 Punctelia rudecta
 Verrucaria calkinsiana

McGinnis Slough

(S4 T36N R12E and
 SW S33 T37N R12E)
 Arthonia caesia
 Caloplaca feracissima
 Caloplaca microphyllina
 Candelaria concolor
 Cladonia cristatella
 Cladonia grayi
 Cladonia piedmontensis
 Evernia mesomorpha
 Flavoparmelia caperata
 Flavopunctelia soredica
 Lecanora dispersa
 Melanelia subaurifera
 Parmelia sulcata
 Phaeophyscia adistola
 Phaeophyscia rubropulchra
 Physcia millegrana
 Physcia stellaris
 Physciella chloantha
 Thelocarpon laureri
 Xanthoria fallax

Paddock Woods

(SW S23 T37N R12E)
 Arthonia caesia
 Caloplaca feracissima
 Candelaria concolor
 Cladonia coniocraea
 Cladonia cylindrica
 Cladonia macilenta var. bacillaris
 Cladonia ramulosa
 Endocarpon pusillum
 Lecanora dispersa
 Lepraria lobificans
 Lichenothelia sp.
 Parmelia sulcata
 Phaeophyscia pusilloides
 Phaeophyscia rubropulchra
 Physcia millegrana
 Physcia stellaris
 Punctelia rudecta

Palos Park Woods

(SE S22 T37N R12E)
 Caloplaca feracissima
 Candelaria concolor
 Endocarpon pusillum
 Lecanora dispersa
 Parmelia sulcata
 Physcia millegrana

Papoose Lake

(SE S28 T37N R12E)
 Amandinea punctata
 Arthonia caesia
 Caloplaca feracissima
 Caloplaca microphyllina
 Candelaria concolor
 Endocarpon pusillum
 Lecanora dispersa
 Lecanora symmetrica
 Lecanora umbrina
 Parmelia sulcata
 Phaeophyscia pusilloides
 Physcia millegrana
 Physcia stellaris
 Physciella chloantha
 Trapeliopsis flexuosa
 Xanthoria fallax

Quarries – along the south side of the Sag Canal

(SE S13 T37N R11E)
 Caloplaca feracissima
 Candelaria concolor
 Caloplaca vitellinula
 Endocarpon pusillum
 Lecanora dispersa
 Lecanora muralis
 Lecanora symmetrica
 Lichenothelia sp.
 Opegrapha atra
 Phaeophyscia rubropulchra
 Physcia adscendens
 Physcia millegrana
 Physcia stellaris
 Physciella chloantha
 Sarcoogyne regularis
 Verrucaria calkinsiana
 Verrucaria nigrescens
 Xanthoria fallax

Sagawau Canyon Nature Preserve

(SW S13 T37N R11E)
 Amandinea punctata
 Anisomeridium nyssigenum
 Arthonia caesia
 Bacidia granosa
 Bacidina egenula
 Caloplaca citrina
 Caloplaca feracissima
 Candelaria concolor
 Cladonia cristatella
 Collema bachmanianum
 Dermatocarpon minutum

Endocarpon pusillum
 Lecanora dispersa
 Lecanora rupicola
 Lepraria lesdainii
 Lepraria lobificans
 Leptogium cyanescens
 Parmelia sulcata
 Parmotrema hypotropum
 Phaeophyscia adiatola
 Phaeophyscia rubropulchra
 Physcia adscendens
 Physcia millegrana
 Physcia stellaris
 Physciella chloantha
 Polysporina simplex
 Staurothele diffractella
 Trapeliopsis flexuosa
 Verrucaria calkinsiana
 Xanthoria fallax

Sag Quarries

(SW S13 T37N R11E and SE S14 T37N R11E)

Anisomeridium nyssigenum
 Arthonia caesia
 Caloplaca feracissima
 Candelaria concolor
 Endocarpon pusillum
 Lecanora dispersa
 Lichenothelia sp.
 Phaeophyscia pusilloides
 Physcia adscendens
 Physcia millegrana
 Physciella chloantha
 Xanthoria fallax

Swallow Cliff Woods/ Laughing Squaw Slough

(SE S21 T37N R12E and NE S28 T37N R12E)
 Amandinea punctata
 Anisomeridium nyssigenum
 Caloplaca feracissima
 Caloplaca microphyllina
 Candelaria concolor
 Dermatocarpon minutum
 Endocarpon pusillum
 Flavoparmelia caperata
 Lecanora dispersa
 Lichenothelia sp.
 Myelochroa aurulenta
 Parmelia sulcata
 Parmotrema hypotropum
 Physcia millegrana
 Physcia stellaris
 Physconia detersa
 Punctelia bolliana
 Punctelia rufecta
 Verrucaria calkinsiana

Tampier Lake and Slough

(S S25 T37N R11E, SW S30 T37N R11E, S31 T37N R12E, and S36 T37N R11E)
 Arthonia caesia
 Caloplaca feracissima
 Candelaria concolor
 Candelaria concolor var. effusa
 Cladina arbuscula
 Cladonia cervicornis var. verticillata

Cladonia conista
 Cladonia cristatella
 Cladonia peziziformis
 Cladonia polycarpoides
 Endocarpon pusillum
 Hyperphyscia adglutinata
 Lecanora dispersa
 Parmelia sulcata
 Phaeophyscia pusilloides
 Physcia adscendens
 Physcia millegrana
 Physcia stellaris
 Physciella chloantha
 Sarcogyne regularis
 Trapelia coarctata
 Verrucaria calkinsiana

Teason's Woods

(NW S21 T37N R12E)

Bacidia granosa
 Caloplaca feracissima
 Candelaria concolor
 Candelaria concolor var. effusa
 Endocarpon pusillum
 Hyperphyscia adglutinata
 Lecanora dispersa
 Parmelia sulcata
 Phaeophyscia rubropulchra
 Physcia adscendens
 Physcia millegrana
 Physcia stellaris
 Thelidium microcarpum
 Xanthoria fallax

ACKNOWLEDGMENTS

This project was done in cooperation with the Forest Preserve District of Cook County. I would like to thank the staff at Camp Sagawau for all their help, Dr. Gerould Wilhelm and Linda Masters of Conservation Design Forum, Elmhurst, Illinois, for doing thin-layer chromatography on several specimens and their assistance in identification and verification of specimens; and Dr. Dennis Nyberg, Associate Professor, University of Illinois at Chicago, for reviewing an earlier draft of this paper.

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THE LICHEN FLORA OF THE COOK COUNTY FOREST PRESERVES PART III: NORTH BRANCH DIVISION

Richard D. Hyerczyk¹

ABSTRACT: Twenty-seven species of lichens are reported for the Forest Preserve District of Cook County's North Branch Division, of which three were vouchered. An annotated species list is provided, as well as checklists for the individual preserves within this division.

INTRODUCTION

This is the third paper in the series that started with Hyerczyk (1998), a project to document the lichenized fungi found in the 12 divisions of the Forest Preserve District of Cook County, Illinois.

NORTH BRANCH DIVISION

The North Branch Division is approximately 667 hectares (1,650 acres) in size and comprises 11 individual preserves (fig. 1). It is located in the Chicago Lake Plain Section of the natural divisions of the Chicago region (Swink and Wilhelm 1994), and runs about 13 kilometers (8 miles) north to south in a narrow band along both sides of the North Branch of the Chicago River. Average elevation above sea level is about 186 meters (615 feet). Plant communities include prairies, oak savannas, and floodplains. Man-made features include wood rail fencing, picnic tables, and concrete road beds.

MATERIALS AND METHODS

Between April 1993 and October 1995, 11 individual preserves were surveyed for their lichen flora. Specimens were identified following methods described in Hyerczyk (1998). In addition to the specimens deposited at the Morton Arboretum herbarium, a set of specimens was deposited in the herbarium at the Chicago Botanic Garden, Glencoe, Illinois. Nomenclature follows Esslinger and Egan (1995).

RESULTS

Twenty-seven lichen taxa in 19 genera are reported for the North Branch Division. Fifteen lichens are foliose in growth form, 11 are crustose, and one is

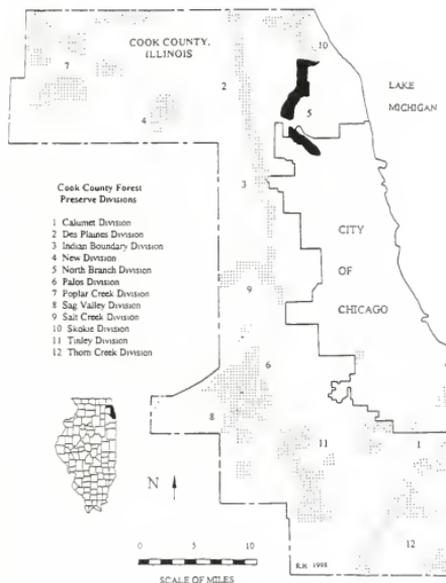


Figure 1. North Branch Division

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fruticose. Of the reported taxa, 30% are common, 26% are frequent, 22% are occasional, and 22% are rare. Three species were vouchered specifically from the North Branch Division.

This division is the smallest in acreage for the entire Cook County forest preserve system, and the low number of lichens reported here reflects this. Many substrates that are available in other divisions are lacking here, such as glacial erratics, dolomite outcroppings, and even decorticate logs. Also, most of these preserves are shaded and lack a variety of trees for substrate.

Weathered concrete provided habitat for species such as *Caloplaca feracissima*, *Endocarpon pusillum*, *Lecanora dispersa*, *Phaeophyscia cernoborskyi*, and *Verrucaria calkinsiana*. These species are usually found on man-made substrates. A few species were found on weathered wood fencing, such as *Amandinea punctata*, *Caloplaca holocarpa*, *Lecanora symmicta*, and *Thelocarpon laureri*. Most of these were found rarely, however, because of scarcity of substrate. On trees growing in open situations, lichens such as *Anisomeridium nyssigenum*, *Arthonia caesia*, *Candelaria concolor*, *Cladonia macilenta* var. *bacillaris*, *Parmelia sulcata*, *Phaeophyscia rubropulchra*, *Physcia millegrana*, *P. stellaris*, *Punctelia rudecta*, and *Xanthoria fallax* were found.

An alphabetized, annotated list of the lichenized fungi found in the North Branch Division follows. Generalized degree of frequency and a brief discussion of habitat is given, followed by a collection number, if applicable. All collections were made by the author. At the end of each entry, growth form and substrate are listed.

AMANDINEA Choisy ex Scheid. & H. Mayrh.

Amandinea punctata (Hoffm.) Coppins & Scheid.

Rare; on a weathered wood rail fence. #789 (crustose; lignicolous)

ANISOMERIDIUM (Müll. Arg.) Choisy

Anisomeridium nyssigenum (Ellis & Everh.) R. C. Harris

Occasional; on the trunk of *Quercus alba*. (crustose; corticolous)

ARTHONIA Ach.

Arthonia caesia (Flotow) Körber

Frequent; on the trunk of *Carya ovata*. (crustose; corticolous)

BACIDIUM De Not.

Bacidia granosa (Tuck.) Zahlbr.

Occasional; on dolomite rubble. (crustose; saxicolous)

CALOPLACA Th. Fr.

Caloplaca feracissima H. Magn.

Common; on weathered concrete with *Endocarpon pusillum*. (crustose; saxicolous)

Caloplaca holocarpa (Hoffm. ex Ach.) M. Wade

Rare; on a weathered wood rail fence. (crustose; lignicolous)

CANDELARIA A. Massal.

Candelaria concolor (Dickson) Stein

Common; on the trunks and branches of *Crataegus mollis* and *Fraxinus americana*, and on a weathered wood rail fence. (foliose; corticolous/lignicolous)

Candelaria concolor var. *effusa* (Tuck.) G. Merr. & Burnham

Frequent; on the trunks and branches of *Ulmus americana*. (foliose; corticolous)

CLADONIA P. Browne

Cladonia macilenta Hoffm. var. *bacillaris* (Genth) Schaerer

Rare; on the upper branches of *Crataegus mollis*. (fruticose; corticolous)

ENDOCARPON Hedwig

Endocarpon pusillum Hedwig

Frequent; on weathered concrete. (crustose; saxicolous)

HYPERPHYSICIA Müll. Arg.

Hyperphyscia adglutinata (Flörke) H. Mayrh. & Poelt

Frequent; on the trunks and branches of *Crataegus mollis* and *Fraxinus americana*. (foliose; corticolous)

LECANORA Ach.

Lecanora dispersa (Pers.) Sommerf.

Common; on weathered concrete. (crustose; saxicolous)

Lecanora symmicta (Ach.) Ach.

Occasional; on weathered wooden fences. (crustose; lignicolous)

PARMELIA Ach.

Parmelia sulcata Taylor

Frequent; on the lower branches of *Crataegus mollis*. (foliose; corticolous)

PHAEOPHYSICIA Moberg

Phaeophyscia cernoborskyi (Nádv.) Essl.

Rare; on a weathered concrete sewer pipe along the Chicago River. #1300 (foliose; saxicolous)

Phaeophyscia ciliata (Hoffm.) Moberg

Occasional; on the lower branches of *Tilia americana* and *Fraxinus americana*. (foliose; corticolous)

Phaeophyscia pusilloides (Zahlbr.) Essl.

Common; at the bases of *Fraxinus americana* and *Quercus alba*. (foliose; corticolous)

Phaeophyscia rubropulchra (Degel.) Essl.

Common; on the trunk of *Ulmus americana*. (foliose; corticolous)

PHYSICIA (Schreber) Michaux

Physicia adscendens (Fr.) H. OlivierFrequent; on the lower branches of *Salix* sp. (foliose; corticolous/lignicolous)*Physicia millegrana* Degel.Common; on a weathered wood rail fence and on the trunks and lower branches of *Crataegus mollis*, *Fraxinus americana*, *Quercus rubra*, and *Ulmus americana*. (foliose; corticolous/lignicolous)*Physicia stellaris* (L.) Nyl.Common; on a weathered wood rail fence and on the lower branches of *Salix* sp. (foliose; corticolous/lignicolous)

PHYSICIELLA Essl.

Physiciella chloantha (Ach.) Essl.Common; on the trunks and lower branches of *Ulmus americana*. (foliose; corticolous)

PHYSCONIA Poelt

Physconia detersa (Nyl.) PoeltOccasional; on the lower branches of *Fraxinus americana*. (foliose; corticolous)

PUNCTELIA Krog

Punctelia rudecta (Ach.) KrogOccasional; on *Quercus alba*. (foliose; corticolous)

THELOCARPON Nyl. ex Hue

Thelocarpon laureri (Flotow) Nyl.

Rare; on a weathered wooden fence post. #1276 (crustose; lignicolous)

VERRUCARIA Schrader

Verrucaria calkinsiana Servit

Rare; on concrete. (crustose; saxicolous)

XANTHORIA (Fr.) Th. Fr.

Xanthoria fallax (Hepp) ArnoldFrequent; on the trunks of *Populus deltoides* and *Ulmus americana*. (foliose; corticolous)

NORTH BRANCH DIVISION LICHEN CHECKLIST

Bunker Hill/Oxbow Prairie

(E S31 T41N R12E and

SW S32 T41N R12E)

*Amandinea punctata**Arthonia caesia**Caloplaca feracissima**Candelaria concolor**Candelaria concolor* var. *effusa**Hyperphyscia adglutinata**Lecanora dispersa**Lecanora symmicta**Parmelia sulcata**Phaeophyscia ciliata**Phaeophyscia pusilloides**Phaeophyscia rubropulchra**Physcia adscendens**Physcia millegrana**Physcia stellaris**Physiciella chloantha**Punctelia rudecta**Xanthoria fallax*Caldwell Woods/Whealan Pool

(SW S32 T41N R13E)

*Caloplaca feracissima**Caloplaca holocarpa**Candelaria concolor**Candelaria concolor* var. *effusa**Lecanora dispersa**Phaeophyscia pusilloides**Physcia millegrana**Physiciella chloantha*Edgebrook Woods

(NW S4 T40N R13E)

*Caloplaca feracissima**Candelaria concolor**Endocarpon pusillum**Phaeophyscia pusilloides**Physcia millegrana*Forest Glen Woods

(NE S9 T40N R13E)

*Caloplaca feracissima**Candelaria concolor**Endocarpon pusillum**Lecanora dispersa**Parmelia sulcata**Phaeophyscia ciliata**Phaeophyscia pusilloides**Phaeophyscia rubropulchra**Physcia millegrana**Physcia stellaris**Physconia detersa*Indian Road Woods

(SW S4 T40N R13E)

*Bacidia granosa**Caloplaca feracissima**Lecanora dispersa**Phaeophyscia pusilloides**Phaeophyscia rubropulchra**Physcia millegrana*Labagh Woods East and West

(NW S10 T40N R13E)

*Caloplaca feracissima**Candelaria concolor**Candelaria concolor* var. *effusa**Hyperphyscia adglutinata**Lecanora dispersa**Parmelia sulcata**Phaeophyscia pusilloides**Physcia adscendens**Physcia millegrana**Physcia stellaris**Physiciella chloantha**Physconia detersa**Punctelia rudecta**Thelocarpon laureri**Xanthoria fallax*

Linne Woods

(SW S17 T41N R12E)
 Anisomeridium nyssigenum
 Arthonia caesia
 Caloplaca feracissima
 Candelaria concolor
 Lecanora dispersa
 Phaeophyscia rubropulchra
 Physcia millegrana
 Physciella chloantha

Miami Woods/Indigo Prairie

(E S19 T41N R12E)
 Anisomeridium nyssigenum
 Arthonia caesia
 Caloplaca feracissima
 Candelaria concolor
 Cladonia macilenta var. bacillaris
 Endocarpon pusillum
 Hyperphyscia adglutinata
 Parmelia sulcata
 Phaeophyscia cernohorskyi
 Phaeophyscia rubropulchra
 Physcia adscendens

Physcia millegrana
 Physciella chloantha
 Verrucaria calkinsiana
 Xanthoria fallax

St. Paul Woods

(E S19 T41N R12E)
 Bacidia granosa
 Caloplaca feracissima
 Candelaria concolor
 Candelaria concolor var. effusa
 Lecanora dispersa
 Phaeophyscia pusilloides
 Phaeophyscia rubropulchra
 Physcia millegrana
 Physcia stellaris
 Physciella chloantha

Sauganash Prairie

(NW S10 T40N R13E)
 Arthonia caesia
 Caloplaca feracissima
 Candelaria concolor
 Endocarpon pusillum

Lecanora dispersa
 Parmelia sulcata
 Phaeophyscia ciliata
 Phaeophyscia pusilloides
 Phaeophyscia rubropulchra
 Physcia adscendens
 Physcia millegrana
 Physcia stellaris
 Physciella chloantha

Wayside Woods/Railroad Prairie

(SE S18 T41N R12E)
 Caloplaca feracissima
 Candelaria concolor
 Candelaria concolor var. effusa
 Hyperphyscia adglutinata
 Lecanora dispersa
 Lecanora symmetrica
 Phaeophyscia rubropulchra
 Physcia adscendens
 Physcia millegrana
 Physcia stellaris
 Physciella chloantha
 Xanthoria fallax

ACKNOWLEDGMENTS

This project was done in cooperation with the Forest Preserve District of Cook County. I would like to thank them for granting me permission to study the lichen flora at the North Branch Division and Skokie Division sites. I would also like to thank Dr. Gerould Wilhelm and Linda Masters of Conservation Design Forum, Inc., Elmhurst, Illinois, for doing thin-layer chromatography on several specimens, and for their assistance in identification and verification of specimens.

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- Hyerczyk, Richard D. 1998. The lichen flora of the Cook County forest preserves, part I: Palos Division. *Erigenia* 16:37-46.
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THE LICHEN FLORA OF THE COOK COUNTY FOREST PRESERVES PART IV: SKOKIE DIVISION

Richard D. Hyerczyk¹

ABSTRACT: Fifty-five species of lichens are reported for the Forest Preserve District of Cook County's Skokie Division, of which 53 were vouchered. An annotated species list is provided, as well as checklists for the individual preserves within this division.

INTRODUCTION

This is the fourth paper in the series that started with Hyerczyk (1998), a project to document the lichenized fungi found in the 12 divisions of the Forest Preserve District of Cook County, Illinois.

SKOKIE DIVISION

The Skokie Division is approximately 1,356 hectares (3,350 acres) in size and comprises 12 individual preserves (fig. 1). It runs about 8 kilometers (5 miles) north to south along the North Branch of the Chicago River and the Skokie River, on both east and west sides. According to Swink & Wilhelm (1994), it lies mainly in the Chicago Lake Plain Section of the natural divisions of the Chicago region, and, to a lesser extent, in the Western Morainial Section.

The Chicago Lake Plain Section is represented in the eastern side of the division along the Skokie River and Lagoons and the lower portion of the Chicago River. Elevations above mean sea level are about 180 meters (600 feet). Plant communities include mesic woodlands, wet prairies, and marshes. The western Morainial Section is represented along the upper portion of the Chicago River. Elevations there range from 188 meters (620 feet) to 205 meters (675 feet). Morainial plant communities include mesic woodlands, prairies, and oak savannas. Man-made features in the Skokie Division include concrete road beds, picnic tables, and wood rail fences.

MATERIALS AND METHODS

Between April 1993 and October 1995, 12 individual preserves were surveyed for their lichen flora. Specimens were identified following methods described



Figure 1. Skokie Division

in Hyerczyk (1998). In addition to the specimens deposited at the Morton Arboretum herbarium, a set of specimens was deposited in the herbarium at the Chicago Botanic Garden, Glencoe, Illinois. Nomenclature approximates Esslinger and Egan (1995).

RESULTS

Fifty-five species of lichens in 33 genera are reported for the Skokie Division. Twenty-four lichens are foliose growth forms, 24 are crustose, and 7 are fruticose. Of the reported taxa, 31% are common, 13% are frequent, 18% are occasional, and 38% are rare. Fifty-three species were vouchered specifically from the North Branch Division.

In the mesic oak savannas of the preserves along the upper portions of the Chicago River, rotted and decorticate logs were more common than in other sections of this division. Some species growing on these substrates included *Cladonia coniocraea*, *C. cylindrica*, *C. didyma*, *C. macilenta* var. *bacillaris*, *C. ramulosa*, and *C. rei*.

Some species growing on weathered concrete in the picnic areas and parking lots included *Bacidia granosa*, *Bacidina egenula*, *Caloplaca feracissima*, *Endocarpon pusillum*, *Lecanora dispersa*, and *Verrucaria calkinsiana*. As in other divisions, these species are usually found on man-made materials.

In a few preserves, granite erratics or landscape boulders were found, providing habitat for some rarer species, including *Dimelaena oreina*, *Physcia subtilis*, *Xanthoparmelia cumberlandia*, and *Xanthoria* sp.#1.

Wooden picnic tables and weathered wood rail fencing along horse trails, provided habitat for *Caloplaca cerina*, *C. microphyllina*, *Candelariella reflexa*, *Cyphelium tigillare*, *Lecanora umbrina*, *Trapeliopsis flexuosa*, and *Xanthoria polycarpa*.

An alphabetized, annotated list of the lichenized fungi found in the Skokie Division follows. Generalized degree of frequency and a brief discussion of habitat is given, followed by a collection number, if applicable. All collections were made by the author, unless otherwise indicated. At the end of each entry, growth form and substrate are listed.

AMANDINEA Choisy ex Scheid. & H. Mayrh.

Amandinea punctata (Hoffm.) Coppins & Scheid.

Common; on weathered wood picnic tables and on wood rail fences. (crustose; lignicolous)

ANISOMERIDIUM (Müll. Arg.) Choisy

Anisomeridium nyssigenum (Ellis & Everh.) R. C. Harris

Frequent; on the trunk of *Quercus alba*. #1119 (crus-

tose; corticolous).

The conical form of this lichen, which has been called *Sarcinulella banksiae* Sutton & Alcorn, is also represented here. It is occasional on the trunks of *Crataegus mollis* and *Quercus alba*. #1376 (crustose; corticolous)

ARTHONIA Ach.

Arthonia caesia (Flotow) Kőrber

Common; on the smooth bark of *Carya ovata*. #825 (crustose; corticolous)

BACIDIA De Not.

Bacidia granosa (Tuck.) Zahlbr.

Occasional; on weathered concrete and dolomite rubble. #1287 (crustose; saxicolous)

BACIDINA Vězda

Bacidina egenula (Nyl.) Vězda

Rare; on weathered concrete. #1313 (crustose; saxicolous)

CALOPLACA Th. Fr.

Caloplaca cerina (Hedwig) Th. Fr.

Rare; on a weathered wood rail fence. #808 (crustose; lignicolous)

Caloplaca feracissima H. Magn.

Common; on weathered concrete with *Endocarpon pusillum*. #837 (crustose; saxicolous)

Caloplaca holocarpa (Hoffm. ex Ach.) M. Wade

Rare; on weathered wood rail fences. #797 (crustose; lignicolous)

Caloplaca microphyllina (Tuck.) Hasse

Occasional; on weathered wood rail fences. #796 (crustose; lignicolous)

Caloplaca sp.#3 sensu MOR

Rare; on a weathered wood rail fence. #863 (crustose; lignicolous)

CANDELARIA A. Massal.

Candelaria concolor (Dickson) Stein

Common; on the trunks and branches of *Crataegus mollis* and *Fraxinus americana*, and on weathered wood rail fences and wood picnic tables. #822 (foliose; corticolous/lignicolous)

Candelaria concolor var. *effusa* (Tuck.) G. Merr. & Burnham

Common; on the trunks and branches of *Fraxinus americana* and *Ulmus americana* in open woods. #820 (foliose; corticolous)

CANDELARIELLA Müll. Arg.

Candelariella reflexa (Nyl.) Lettau

Common; on weathered wood rail fences and on the lower branches of *Fraxinus americana*. #793, #832 (crustose; corticolous/lignicolous)

CLADONIA P. Browne

Cladonia coniocraea (Flörke) Sprengel
Occasional; on decorticate logs in shaded, damp woods. #1113 (fruticose; lignicolous)

Cladonia cristatella Tuck.

Occasional; on weathered wood rail fences. #831 (fruticose; lignicolous)

Cladonia cylindrica (A. Evans) A. Evans

Occasional; on decorticate logs in shaded damp woods growing with *Cladonia coniocraea*. #807 (fruticose; lignicolous)

Cladonia didyma (Fée) Vainio

Rare; on decorticate logs in a shaded woodland dominated by *Quercus alba*. #1115 (fruticose; lignicolous)

Cladonia macilentata Hoffm. var. *bacillaris* (Genth)

Schaerer

Frequent; on decorticate logs and on the lower branches of *Crataegus mollis*. #1293 (fruticose; corticolous/lignicolous)

Cladonia ramulosa (With.) J. R. Laundon

Occasional; on decorticate logs in damp, shaded woods. #830 (fruticose; lignicolous)

Cladonia rei Schaerer

Rare; on a decorticate log. #1303 (fruticose; lignicolous)

CYPHELIUM Ach.

Cyphelium tigillare (Ach.) Ach.

Rare; on a weathered wood rail fence. #1378 (crustose; lignicolous)

DIMELAENA Norman

Dimelaena oreina (Ach.) Norman

Rare; on a granite boulder in a sunny, open field with *Physcia subtilis*. #1301 (crustose; saxicolous)

ENDOCARPON Hedwig

Endocarpon pusillum Hedwig

Frequent; on weathered concrete with *Caloplaca feracissima*. #1295 (crustose; saxicolous)

FLAVOPARMELIA Hale

Flavoparmelia caperata (L.) Hale

Occasional; on the upper branches of *Fraxinus americana* in open woods. #1116 (foliose; corticolous)

FLAVOPUNCTELIA (Krog) Hale

Flavopunctelia flaventior (Stirton) Hale

Rare; on the upper branches of *Fraxinus americana* in a wooded floodplain. #1292 (foliose; corticolous)

Flavopunctelia soledica (Nyl.) Hale

Rare; on the upper branches of *Fraxinus americana* in a wooded floodplain. #1117 (foliose; corticolous)

HYPERPHYSICIA Müll. Arg.

Hyperphyscia adglutinata (Flörke) H. Mayrh. & Poelt

Frequent; on the trunks and branches of *Crataegus mollis* and *Fraxinus americana*. #1314 (foliose; corticolous)

LECANORA Ach.

Lecanora dispersa (Pers.) Sommerf.

Common; on weathered concrete. #839 (crustose; saxicolous)

Lecanora strobilina (Sprengel) Kieffer

Occasional; on the trunks of *Quercus rubra*. #1377 (crustose; corticolous)

Lecanora symmetrica (Ach.) Ach.

Common; on the trunks of *Fraxinus americana* and on weathered wooden picnic tables. #836 (crustose; corticolous/lignicolous)

Lecanora umbrina (Ach.) A. Massal.

Rare; on a weathered wood rail fence. #799 (crustose; lignicolous)

LEPRARIA Ach.

Lepraria lobificans Nyl.

Common; on the lower trunks of *Quercus alba* in shaded woods. #844 (crustose; corticolous)

MELANELIA Essl.

Melanelia subaurifera (Nyl.) Essl.

Rare; on the upper branches of *Fraxinus americana* in a wooded floodplain. #1289 (foliose; corticolous)

MYELOCHROA (Asah.) Elix & Hale

Myelochroa aurulenta (Tuck.) Elix & Hale

Rare; on the upper branches of *Fraxinus americana* in a wooded floodplain. #1108 (foliose; corticolous)

OPEGRAPHIA Ach.

Opegrapha varia Pers.

Rare; on the trunk of *Populus deltoides*. #819 (crustose; corticolous)

PARMELIA Ach.

Parmelia sulcata Taylor

Common; on the lower branches of *Crataegus mollis* and *Fraxinus americana*. #821 (foliose; corticolous)

PHAEOPHYSCIA Moberg

Phaeophyscia ciliata (Hoffm.) Moberg

Frequent; on the lower branches of *Tilia americana* and *Fraxinus americana*. #1286 (foliose; corticolous)

Phaeophyscia pusilloides (Zahlbr.) Essl.

Common; at the base of *Quercus alba*. #826 (foliose; corticolous)

Phaeophyscia rubropulchra (Degel.) Essl.

Common; on the trunks and lower branches of *Ulmus americana*. #834 (foliose; corticolous)

PHYSICIA (Schreber) Michaux

Physcia adscendens (Fr.) H. Olivier

Common; on a weathered wood rail fence and on the lower branches of *Quercus rubra* and *Salix* sp. #798 (foliose; corticolous/lignicolous)

Physcia millegrana Degel.

Common; on a weathered wood rail fence and on the trunks and lower branches of *Crataegus mollis*, *Fraxinus americana*, *Quercus rubra*, and *Ulmus americana*. #823 (foliose; corticolous/lignicolous)

Physcia stellaris (L.) Nyl.

Common; on a weathered wood rail fence and on the lower branches of *Salix* sp. #802 (foliose; corticolous/lignicolous)

Physcia subtilis Degel.

Rare; on a granite boulder in a sunny open field with *Dimelaena oreina*. #1302 (foliose; saxicolous)

PHYSICIELLA Essl.

Physicella chloantha (Ach.) Essl.

Common; on the trunks and lower branches of *Ulmus americana*. #1315 (foliose; corticolous)

PHYSICONIA Poelt

Physiconia detersa (Nyl.) Poelt

Frequent; on the lower branches of *Fraxinus americana* and *Salix* sp. #1291 (foliose; corticolous)

PUNCTELIA Krog

Punctelia rudecta (Ach.) Krog

Rare; at the base of an open grown *Quercus alba*. #847 (foliose; corticolous)

RIMELIA Hale & Fletcher

Rimelia reticulata (Taylor) Hale & Fletcher

Rare; on the lower branches of *Crataegus mollis* and *Fraxinus americana* in a wooded floodplain. #1317 (foliose; corticolous)

RINODINA (Ach.) Gray

Rinodina archaea (Ach.) Arnold

Rare; on the lower branches of *Carya ovata*. #848 (crustose; corticolous)

THELOCARPON Nyl. ex Hue

Thelocarpon laureri (Flotow) Nyl.

Rare; on a weathered wood rail fence. (crustose; lignicolous)

TRAPELOPSIS Hertel & Gotth. Schneider

Trapeliopsis flexuosa (Fr.) Coppins & P. James

Frequent; on weathered wood rail fences. #795 (crustose; lignicolous)

VERRUCARIA Schrader

Verrucaria calkinsiana Servit

Occasional; on dolomite and concrete rubble. #1277 (crustose; saxicolous)

XANTHOPARMELIA (Vainio) Hale

Xanthoparmelia cumberlandia (Gyelnik) Hale

Rare; on granite landscape boulders. Wilhelm #15153 (foliose; saxicolous)

XANTHORIA (Fr.) Th. Fr.

Xanthoria fallax (Hepp) Arnold

Common; on the trunks of *Ulmus americana* and *Salix* sp. and on weathered wood rail fences. #800 (foliose; corticolous/lignicolous)

Xanthoria polycarpa (Hoffm.) Rieber

Occasional; on a weathered wood rail fence and on the lower branches of *Fraxinus americana*. #806 (foliose; corticolous/lignicolous)

Xanthoria sp. #1 sensu MOR

Rare; on granite landscape boulders. #828 (foliose; saxicolous)

SKOKIE DIVISION LICHEN CHECKLIST

Blue Star Memorial Woods/Nixon Woods

(NE S36 T42N R12E)

Amandinea punctata

Caloplaca feracissima

Candelaria concolor

Candelaria concolor var. *effusa*

Candelariella reflexa

Cladonia cristatella

Lecanora dispersa

Parmelia sulcata

Phaeophyscia pusilloides

Phaeophyscia rubropulchra

Physcia adscendens

Physcia millegrana

Physcia stellaris

Physicella chloantha

Trapeliopsis flexuosa

Xanthoria fallax

Chicago Botanic Garden

(W S1 T42N R12E and

NE S2 T42N R12E)

Amandinea punctata

Bacidia granosa

Caloplaca feracissima

Candelaria concolor

Candelaria concolor var. *effusa*

Hyperphyscia adglutinata

Lecanora dispersa
 Lecanora symmetrica
 Parmelia sulcata
 Phaeophyscia ciliata
 Phaeophyscia pusilloides
 Physcia adscendens
 Physcia millegrana
 Physcia stellaris
 Physciella chloantha
 Physconia detersa
 Xanthoparmelia cumberlandia
 Xanthoria fallax
 Xanthoria sp.#1
 Verrucaria calkinsiana

Chipilly Woods

(NW S11 T42N R12E)
 Anisomeridium nyssigenum
 Amandinea punctata
 Arthonia caesia
 Bacidia granosa
 Caloplaca feracissima
 Candelaria concolor
 Cladonia coniocraea
 Cladonia cylindrica
 Cladonia didyma
 Cladonia macilenta var. bacillaris
 Cladonia ramulosa
 Cladonia rei
 Endocarpon pusillum
 Flavoparmelia caperata
 Flavopunctelia sooredica
 Lecanora dispersa
 Lecanora symmetrica
 Lepraria lobificans
 Parmelia sulcata
 Phaeophyscia rubropulchra
 Physcia adscendens
 Physcia millegrana
 Physcia stellaris

Erickson Woods

(NW S19 T42N R13E)
 Amandinea punctata
 Caloplaca feracissima
 Caloplaca microphyllina
 Candelaria concolor
 Lecanora dispersa
 Lecanora symmetrica
 Phaeophyscia pusilloides
 Physcia millegrana
 Trapeliopsis flexuosa
 Xanthoria fallax

Glenview Woods/Harms Woods

(E S8 T41N R12E and
 W S9 T41N R13E)
 Amandinea punctata
 Arthonia caesia
 Bacidia egenula
 Caloplaca cerina
 Caloplaca feracissima
 Caloplaca holocarpa
 Caloplaca microphyllina
 Caloplaca sp.#3
 Candelaria concolor
 Candelaria concolor var. effusa
 Candelariella reflexa
 Cladonia coniocraea
 Cladonia cylindrica
 Cladonia didyma
 Cladonia macilenta var. bacillaris
 Cyphelium tigillare
 Endocarpon pusillum
 Flavoparmelia caperata
 Hyperphyscia adglutinata
 Lecanora dispersa
 Lecanora strobilina
 Lecanora symmetrica
 Lecanora umbrina
 Lepraria lobificans
 Parmelia sulcata
 Phaeophyscia ciliata
 Phaeophyscia pusilloides
 Phaeophyscia rubropulchra
 Physcia adscendens
 Physcia millegrana
 Physcia stellaris
 Physciella chloantha
 Physconia detersa
 Verrucaria calkinsiana
 Xanthoria fallax
 Xanthoria polycarpa

Skokie Lagoons

(W & SE S12 T42N R12E and
 E S13 T42N R12E {& R13E ??}
 and W S18 T42N R13E and NW
 S19 T42N R13E)
 Arthonia caesia
 Caloplaca feracissima
 Candelaria concolor
 Lecanora dispersa
 Parmelia sulcata
 Phaeophyscia pusilloides
 Physcia millegrana
 Physcia stellaris
 Physciella chloantha

Trapeliopsis flexuosa
 Xanthoria fallax

Somme Prairie Grove

(SE S4 T42N R12E)
 Anisomeridium nyssigenum
 Arthonia caesia
 Candelaria concolor
 Candelaria concolor var. effusa
 Hyperphyscia adglutinata
 Lecanora symmetrica
 Lepraria lobificans
 Opegrapha varia
 Parmelia sulcata
 Phaeophyscia pusilloides
 Physcia adscendens
 Physcia millegrana
 Physciella chloantha
 Xanthoria fallax

Somme Prairie Nature Preserve

(SE S4 T42N R12)
 Amandinea punctata
 Anisomeridium nyssigenum
 Arthonia caesia
 Bacidia granosa
 Caloplaca feracissima
 Candelaria concolor
 Candelaria concolor var. effusa
 Candelariella reflexa
 Dimelaena oreina
 Flavoparmelia caperata
 Flavopunctelia flaventior
 Hyperphyscia adglutinata
 Lecanora dispersa
 Lecanora strobilina
 Lecanora symmetrica
 Melanelia subaurifera
 Myelochroa aurulenta
 Parmelia sulcata
 Phaeophyscia ciliata
 Phaeophyscia pusilloides
 Phaeophyscia rubropulchra
 Physcia adscendens
 Physcia millegrana
 Physcia stellaris
 Physcia subtilis
 Physciella chloantha
 Physconia detersa
 Rimelia reticulata
 Rinodina archaea
 Xanthoria fallax
 Xanthoria polycarpa

Somme Woods

(S S3 T42N R12E)
 Amandinea punctata
 Arthonia caesia
 Caloplaca feracissima
 Candelaria concolor
 Candelaria concolor var. effusa
 Candelariella reflexa
 Cladonia macilenta var. bacillaris
 Lecanora dispersa
 Lecanora symmicta
 Lepraria lobifigans
 Parmelia sulcata
 Physcia millegrana
 Physcia stellaris

Sunset Ridge Woods

(SE S11 T42N R12E)
 Anisomeridium nyssigenum
 Arthonia caesia
 Candelaria concolor
 Candelaria concolor var. effusa
 Cladonia cylindrica
 Endocarpon pusillum
 Lepraria lobifigans
 Parmelia sulcata
 Phaeophyscia ciliata
 Phaeophyscia rubropulchra
 Physcia millegrana

Tower Road Woods

(NE S13 T42N R12E)
 Amandinea punctata
 Caloplaca feracissima
 Candelaria concolor
 Candelaria concolor var. effusa
 Candelariella reflexa
 Cladonia cristatella
 Endocarpon pusillum
 Lecanora dispersa
 Lecanora symmicta
 Parmelia sulcata
 Physcia millegrana
 Physcia stellaris
 Physciella chloantha
 Physconia detersa
 Trapeliopsis flexuosa

Turnbull Woods

(NE S1 T42N R12E)
 Amandinea punctata
 Arthonia caesia
 Caloplaca feracissima
 Caloplaca microphyllina
 Candelaria concolor
 Candelaria concolor var. effusa
 Candelariella reflexa

Cladonia macilenta var. bacillaris
 Cladonia ramulosa
 Endocarpon pusillum
 Lecanora dispersa
 Lecanora symmicta
 Lepraria lobifigans
 Parmelia sulcata
 Phaeophyscia rubropulchra
 Physcia adscendens
 Physcia millegrana
 Physcia stellaris
 Physciella chloantha
 Physconia detersa
 Punctelia rudecta
 Thelocarpon laureri
 Trapeliopsis flexuosa
 Xanthoria fallax
 Xanthoria polycarpa

ACKNOWLEDGEMENTS

This project was done in cooperation with the Forest Preserve District of Cook County. I would like to thank them for granting me permission to study the lichen flora at the North Branch Division and Skokie Division sites. I would also like to thank Dr. Gerold Wilhelm and Linda Masters of Conservation Design Forum, Inc., Elmhurst, Illinois, for doing thin-layer chromatography on several specimens, and for their assistance in identification and verification of specimens.

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BIRD TAKES A "LICHEN" TO A NEST

Linda Masters¹ and Floyd Swink²

On May 9, 1991, a pair of blue-gray gnatcatchers was discovered in the Morton Arboretum, flying back and forth to their nest in a small tree. According to *A Field Guide to the Birds* (Peterson 1980) the blue-gray gnatcatcher "suggests a miniature Mockingbird. A tiny slender mite, smaller than a Chickadee, blue-gray above and whitish below, with a narrow white eye-ring and a long black-and-white tail, which is often cocked like a wren's tail and flipped about."

The gnatcatcher's nest was about 4 meters from the ground on a horizontal branch of a Japanese tree lilac [*Syringa reticulata* (Blume) Hara = *S. amurensis* Rupr. var. *japonica* (Maxim.) Franch. & Sav.]. These trees are in a row just southwest of the gatehouse on the west side; the nest was in the northeastern most tree. *The Audubon Society Field Guide to North American Birds, Eastern Region* (1977) describes the blue-gray gnatcatcher's nest and eggs as follows: "4 or 5 pale blue, brown-spotted eggs in a small, beautifully made cup of plant down and spider web, decorated with flakes of lichen and fastened to a horizontal branch at almost any height above ground."

On May 24, 1991, the nest at the Arboretum was blown out of the tree by a violent windstorm, but much of the nest was retrieved. True to the habit of this bird, the nest was built from grass, spider webs, and bits of

lichen thallus. In this case, the only lichen the gnatcatchers used was *Parmelia sulcata* Taylor, a broad-lobed foliose lichen that is found in the Arboretum on the upper surfaces of tree branches, where the gnatcatchers obtained their nest-building material. Similar lichens, such as *Punctelia rufecta* (Ach.) Krog and *P. bolliana* (Müll. Arg.) Krog, are also common in the Arboretum; however, they grow on the lower trunks of large oaks, where they are less accessible to foraging gnatcatchers.

The small circular nest was about 6.5 cm in diameter and about 3.5 cm deep. It was constructed so that the bits of lichen thallus were oriented prevalently with their upper surfaces facing outward. Kentucky blue grass (*Poa pratensis* L.) lined the nest, and intertwining the grass and the lichen thalli was spider web material. Though the gnatcatcher's nest did not last through the season, a voucher specimen of *Parmelia sulcata* in the Morton Arboretum herbarium remains as a record of this event (Masters & Swink #74).

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DESCHAMPSIA FLEXUOSA (L.) TRIN.: ADDITION TO THE FLORA OF ILLINOIS

James F. Steffen¹

Staff at the Chicago Botanic Garden are in the process of restoring a 40-hectare oak woodland/savanna complex on the northeastern edge of the Garden, which is located in Glencoe, Cook County, Illinois. This site varies from wet savanna and upland swamp dominated by *Quercus bicolor*, through mesic woodland dominated by *Q. rubra* and *Q. alba*, to drier oak openings dominated by *Q. alba*. A baseline inventory of a 36.4-hectare section of this complex conducted by the author and Steve Lorig in 1994 resulted in a list of 223 vascular plant taxa.

During the summer of 1995, several collections of the genus *Poa* were made in the relatively well-vegetated understory of the oak openings along the moraine to see if any native blue grasses might have been missed during the preliminary inventory. One of the specimens collected in June (Chicago Botanic Garden Herbarium, #783) turned out to be in the genus *Deschampsia*, but it did not fit the description of *D. caespitosa* (L.) P. Beauv. var. *glauca* (Hartm.) Lindm., the only *Deschampsia* listed in *Plants of the Chicago Region* (Swink and Wilhelm 1994). Instead, it was *Deschampsia flexuosa* (L.) Trin., which is a northern species that was previously unrecorded from Illinois (Mohlenbrock 1986). This led to an important question: Is *Deschampsia flexuosa* a rare native confined in Illinois to this site, or is it a recent adventive?

It was found growing in an oak opening with an understory dominated by *Carex pensylvanica*. Other immediate associates were the native species *Danthonia spicata*, *Solidago juncea*, *Lonicera prolifera*, *Luzula multiflora*, *Aster lateriflorus*, *Potentilla simplex*, *Prenanthes alba*, and *Agrimonia gryposepala*, and the weeds *Poa compressa* and *Dactylis glomerata*.

Deschampsia flexuosa, often associated with woodlands, has a distribution closely allied with the Great Lakes shoreline and the Appalachian Mountains, with scattered records outside these areas (Dore and McNeill 1980, Hitchcock 1971). The populations closest to Illinois inhabit the shore of Green Bay in Wisconsin (Fassett 1951) and the southwest coast of lower Michi-

gan (Voss 1972). The occurrence of this new population in a relatively conservative habitat close to the shore of Lake Michigan suggests that this could be a remnant native population.

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NOTES ON SOME WOODY PLANT SPECIES NATURALIZED IN ILLINOIS

John E. Ebinger¹ and William McClain²

ABSTRACT: Individuals of *Caragana arborescens* (Siberian pea shrub), *Cornus mas* (Cornelian cherry dogwood), *Rhodotypos scandens* (jetbead), *Sorbaria sorbifolia* (false spiraea), and *Phellodendron amurense* (Amur cork tree) have been found naturalized in Illinois. Presently Siberian pea shrub and jetbead are a problem in at least one natural area, and may become major plant problems in the future.

Exotic species constitute one of the most serious threats to natural communities (Bratton 1982, Harty 1986, McKnight 1993). Numerous articles have been written about exotics, documenting their spread from cultivation, speculating on their impact on plant communities, and describing various control measures. From 1981 to the present, over 50 articles related to the management or spread of exotic plants have been published in the *Natural Areas Journal* (Paddock 1992).

In the past few decades there has been increased concern over the introduction of non-native species into the Illinois flora. Henry and Scott (1980) reported that there has been a dramatic increase in the number of alien species in the Illinois vascular plant flora since European settlement. Exotic species presently constitute nearly 30% of the vascular plant species known to occur in the state, and each year more are reported. In some instances these "new introductions" have completely altered the plant communities in which they occur (Bratton 1982, Ebinger 1983, Nuzzo 1994). Most of the concern involves herbaceous species, but at present woody species make up about 13% of the alien flora in Illinois. Many of the woody exotics are not particularly weedy, and rarely are encountered in natural communities. A few, however, such as *Robinia pseudoacacia** (black locust) and *Lonicera maackii* (Amur honeysuckle), have become major plant pests and are expensive to control (McClain 1996).

Over the past few years the authors have been examining some species of exotic shrubs in natural communities in Illinois. Recently, *Acer ginnala* (Amur

maple) was found around roadside plantations (Ebinger and McClain 1991), *Calycanthus floridus* (strawberry shrub) occurred as an understory component in a hillside forest in Jersey County (McClain et al. 1992), and *Forsythia suspensa* (Thunb.) Vahl (weeping forsythia) was found naturalized in a canyon at Matthiessen State Park in LaSalle County (McClain and Ebinger 1995). Whether these species will become problems in the future is not known, but *Acer ginnala* is rapidly expanding into open successional habitats.

Five other exotic woody species have been studied in recent years. Two of them, *Caragana arborescens* (Siberian pea shrub) and *Rhodotypos scandens* (jetbead), are becoming problems in some natural communities. It is also possible that the other three, *Cornus mas* L. (Cornelian cherry dogwood), *Sorbaria sorbifolia* (L.) A. Braun (false spiraea), and *Phellodendron amurense* Rupr. (Amur cork tree), will become management problems, although so far only a few naturalized individuals of each species have been found. Following is a detailed discussion of each of these five species.

CARAGANA ARBORESCENS (Siberian pea shrub)

This upright shrub with greenish, glabrous twigs has alternate, even-pinnately compound leaves. It is a native of Asia that is rarely encountered as an ornamental in Illinois. Being a relatively large shrub, it is not well adapted to present-day foundation plantings, and the small yellow flowers are not particularly showy. Mohlenbrock (1986) reported that this species had escaped from cultivation and was spreading, being

* Except where authorities are included with the plant name, nomenclature follows Mohlenbrock (1986).

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naturalized in Menard, Perry, Sangamon, and Winnebago counties.

One small colony of Siberian pea shrub was observed at Harlow Hills Nature Preserve in Winnebago County (NE S5 T44N R2E). This colony consisted of one large shrub 5 m tall and nearly 5 m across with more than 30 stems from the base (Ebinger #26708, EIU), along with numerous seedlings extending to 10 m from the parent plant (Ebinger #26709, EIU). Most of the seedlings were less than 50 cm tall, but some individuals up to 2 m in height were found. More than 300 pea shrub individuals were observed in this area.

The entire colony was in a shallow ravine, about 10 m wide, at the edge of a prairie remnant. The other woody plants in the ravine were mostly exotics as well, and included *Ulmus pumila* (Siberian elm), *Rhamnus cathartica* (common buckthorn), *Lonicera maackii*, *Lonicera tatarica* (Tartarian honeysuckle), and *Morus alba* (white mulberry). Individuals of Siberian pea shrub were not found in prairie vegetation, but were restricted to the wooded ravine. It appears that seeds were dispersed by gravity and possibly by runoff water, as all seedlings were found under the parent shrub and on the lower side of the ravine.

CORNUS MAS (Cornelian cherry dogwood)

This shrub or small tree to 7 m tall has small yellow flowers in short-stalked umbels that are subtended by an involucre of 4 yellowish bracts. It is a native of southern Europe and Asia that is commonly planted in Illinois as a specimen plant in yards and in foundation plantings around larger buildings (Flint 1983). It is also used along the interstate highway system, where large plantations are fairly common.

Mohlenbrock (1986) does not include this species in his flora, though recently DeJarnett (1993) found it naturalized at Pere Marquette State Park in Jersey County. The population covered a rectangular-shaped area about 20 m long by 15 m wide along both sides of the Dogwood Trail, on a hill just above the visitor center (SE S9 T6N R13W). The colony consisted of 31 relatively large individuals, some exceeding 5 m in height, numerous smaller shrubs, mostly about 2 m tall (Ebinger #26487, EIU), and scattered 1- to 3-year-old seedlings (Ebinger #26488, EIU). Most of the larger individuals were multiple-stemmed from the base, many stems having basal diameters of 4–15 cm. These shrubs probably represent surviving members of an original

planting, and may be more than 50 years old. One of these individuals had a basal trunk 20 cm in diameter and two branches 8 and 10 cm dbh. The smaller shrubs probably represent individuals that had become established from seeds. They were extremely common near the base of the hill. The seedlings, most of which were less than 50 cm tall, were scattered under the larger plants.

According to McClain (1983) and McClain and Anderson (1990), this hillside at Pere Marquette State Park was covered with prairie vegetation and scattered large individuals of *Juniperus virginiana* (red cedar) in the 1930s. At present, a heavily disturbed, open forest covers the hillside. In the area of the Cornelian cherry dogwood population the dominant trees were *Platanus occidentalis* (sycamore), *Ulmus americana* (American elm), and *Gleditsia triacanthos* (honey locust). Individuals of *Platanus occidentalis* averaged 50 cm dbh; the other trees were between 20 and 25 cm dbh. Understory tree species included *Viburnum prunifolium* (black haw), *Cercis canadensis* (redbud), *Asimina triloba* (pawpaw), and *Cornus florida* (flowering dogwood). The shrub layer was dominated by the introduced *Lonicera maackii*; there were also scattered individuals of *Symphoricarpos orbiculatus* (coralberry) and *Rhus aromatica* (fragrant sumac).

Occasional naturalized individuals of Cornelian cherry dogwood were found associated with plantations in other parts of the state. One individual (Ebinger #26471, EIU) was in a wooded area next to a Cornelian cherry dogwood plantation along interstate highway I-57 in Marion County, about 7 miles north of Salem (S11 T3N R2E). Also, a Cornelian cherry dogwood seedling (Ebinger #26473, EIU) was found in the grassy area of the Edgewood interchange of the same interstate in Effingham County (S29 T6N R5E); again, a plantation was nearby. Seedlings and small plants were found associated with Cornelian cherry dogwood plantings on the campus of Eastern Illinois University, in Coles County. Near one plantation, numerous germinating seedlings were observed (Ebinger #26518, EIU), and near another planting a two-year-old seedling was collected (Ebinger #26519, EIU).

RHODOTYPOS SCANDENS (jetbead)

This small deciduous shrub, less than 2 m tall, has opposite, serrate leaves, with showy, 4-merous flowers and shiny, black, beadlike drupes produced in clusters of

four at the twig ends (Ebinger 1993). A native of China and Japan, jetbead is occasionally planted in Illinois, probably more commonly so earlier in this century. Mohlenbrock (1986) reported it as rarely escaped from cultivation, being naturalized in DuPage County, and Swink and Wilhelm (1994) mention a collection in 1978 by Wayne Lampa at the Waterfall Glen Forest Preserve in DuPage County.

Recently, Jim Heim, a natural areas biologist from the Division of Natural Heritage, Illinois Department of Natural Resources, found jetbead growing at the Starved Rock Nature Preserve in LaSalle County (S19 and S20 T33N R2E). The population was in an upland oak-hickory forest dominated by *Quercus alba* (white oak), with *Q. velutina* (black oak), *Q. rubra* (red oak), and *Carya ovata* (shagbark hickory) as common associates. The forest had been extensively disturbed in the past, and many large individuals of *Robinia pseudoacacia* were common. *Rhamnus cathartica* was the most abundant understory tree; others were *Celtis occidentalis* (hackberry), *Ulmus rubra* (slippery elm), *Viburnum prunifolium* (black haw), and *Prunus serotina* (wild black cherry).

The jetbead population was found in an area 75 m by 500 m along the south side of the forest. Here it was the most common understory shrub, averaging 1837.5 individuals/ha, based on a random sample of eight circular plots 0.01 ha in size. Other shrub species included *Ribes missouriense* (Missouri gooseberry) and *Lonicera maackii*. Although many jetbead individuals were on the flat uplands, more individuals were encountered along the slopes of shallow ravines, where they commonly excluded all other vegetation. This species appears to be very shade tolerant, as many seedlings were found beneath and around the parent plants. The plants produce large quantities of seed. Although the species was extremely common near the south edge of the preserve, occasional individuals were observed throughout much of the uplands. Originally, jetbead was planted as an ornamental along a lane that once led to some cabins in the Starved Rock Nature Preserve.

SORBARIA SORBIFOLIA (false spiraea)

This species is an upright shrub to 2 m tall, with alternate, odd-pinnately compound leaves. A native of northern Asia from the Ural region of China to Japan, it is occasionally planted in Illinois, and was reported as adventive in Ogle County by Swink and Wilhelm

(1994). During a recent vegetation survey, Mike Jones of the Natural Land Institute in Rockford found a small colony of this species at the Lowden-Miller State Forest in Ogle County (SE S32 T23N R10E). It covered an area about 30 m by 35 m in a plantation of *Pinus resinosa* (red pine), about 800 m north of the Hay Road parking lot at the southern edge of the forest. The largest false spiraea plants (Ebinger #26710, EIU) grew near a large depression in the ground, which was probably the remains of a house foundation; the original colony was likely part of the foundation planting. The colony has expanded, and an examination of many individuals indicates that all members of the present colony were root sprouts from an extensive horizontal root system of the original population. No flowering or fruiting individuals were observed. The largest individuals of the colony had basal stem diameters of 2.4 cm and 11 annual rings. Density averaged 4.9 stems/m².

The false spiraea colony was mainly in the shallow depression and was heavily shaded. Along with the *Pinus resinosa*, there were scattered individuals of *Fraxinus pennsylvanica* (green ash), *Acer negundo* (box elder), *Ulmus rubra*, *Celtis occidentalis*, and *Prunus serotina*. Most of these trees were 20–30 cm dbh. The woody understory was sparse except for the false spiraea and a few individuals of *Rhamnus cathartica* and *Corylus americana* (hazelnut). The herbaceous layer was dominated by *Alliaria petiolata* (garlic mustard), *Laportea canadensis* (stinging nettle), *Pilea pumila* (clearweed), *Polygonum virginianum* (woodland knotweed), and *Glechoma hederacea* (creeping Charlie).

PHELLODENDRON AMURENSE (Amur cork tree)

This small tree to 12 m tall has opposite, odd-pinnately compound leaves with 5–13 leaflets. The yellow green flowers are in long, pubescent, terminal panicles. The black drupes, which are about 1 cm across, have a strong turpentine odor (Ebinger 1993). This native of eastern Asia is occasionally planted, and it has been reported as escaped in DuPage County (Swink and Wilhelm 1994). Within the past few years individuals of this species have been occasionally found in flower beds and waste areas on the campus of Eastern Illinois University, in Coles County, and rarely at private residences (Ebinger #25199, EIU).

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A FAMILY INDEX TO THE ILLUSTRATED FLORA OF ILLINOIS

Joanna Turner and George Yatskievych¹

It has been 31 years since the first volume of Robert Mohlenbrock's monumental series *The Illustrated Flora of Illinois* was published. Certainly one of the most ambitious state-level floristic projects ever conceived, this ongoing series is also one of the most comprehensive. When completed, it will include treatments of all vascular, nonvascular, and even algal groups. Each species will be keyed, described, mapped for Illinois, and illustrated with line drawings.

Thirteen volumes of the *Illustrated Flora* have been published thus far. They have been of great value not only to Illinois botanists, but to those in other Midwestern states. The treatment of angiosperm families follows a system of evolutionary classification proposed by Robert Thorne that varies significantly from the "Engler and Prantl" and "Cronquist" systems used in most other floristic manuals. For this reason, and because several volumes remain to be completed, it has not always been easy to locate the correct volume and page number for a given plant family. We have found it expedient to compile an index to published families in the flora, along with a bibliography of the parts published to date.

In the index (table 1), parts are numbered as in the bibliography. Treatments of both Cyperaceae and Poaceae are split into two parts. The second portion of Cyperaceae (the genus *Carex*) remains unpublished, but will probably appear in 1998. At that point, treatments of all monocots and pteridophytes will have appeared, as well as a selection of dicot families, with the gymnosperms and remaining dicots remaining to be published. The published portions of the flora (including *Carex*) cover 91 vascular plant families (56% of the total families) and about 1390 species (49% of the total species).

BIBLIOGRAPHY OF PARTS PUBLISHED TO DATE

(All parts have been published by Southern Illinois University Press, Carbondale)

- Part 1. Mohlenbrock, R. H. 1967. *The Illustrated Flora of Illinois*. Ferns. xv, 191 pp.
- Part 2. Mohlenbrock, R. H. 1970a. *The Illustrated Flora of Illinois*. Flowering Plants. Flowering Rush to Rushes. xiii, 272 pp.
- Part 3. Mohlenbrock, R. H. 1970b. *The Illustrated Flora of Illinois*. Flowering Plants: Lilies to Orchids. xiii, 288 pp., 1 map.
- Part 4. Mohlenbrock, R. H. 1972. *The Illustrated Flora of Illinois*. Grasses. Bromus to Paspalum. xvii, 332 pp., 1 map.
- Part 5. Mohlenbrock, R. H. 1973. *The Illustrated Flora of Illinois*. Grasses. Panicum to Danthonia. xix, 378 pp., 1 map.
- Part 6. Mohlenbrock, R. H. 1976. *The Illustrated Flora of Illinois*. Sedges. Cyperus to Scleria. xiii, 192 pp., 1 map.
- Part 7. Mohlenbrock, R. H. 1978. *The Illustrated Flora of Illinois*. Flowering Plants. Hollies to Loasas. xiii, 315 pp., 1 map.
- Part 8. Mohlenbrock, R. H. 1980. *The Illustrated Flora of Illinois*. Flowering Plants. Willows to Mustards. xiii, 286 pp., 1 map.
- Part 9. Mohlenbrock, R. H. 1981. *The Illustrated Flora of Illinois*. Flowering Plants. Magnolias to Pitcher Plants. xiii, 261 pp., 1 map.
- Part 10. Mohlenbrock, R. H. 1982. *The Illustrated Flora of Illinois*. Flowering Plants. Basswoods to Spurges. xii, 234 pp., 1 map.
- Part 11. Mohlenbrock, R. H., and P. M. Thompson, Jr. 1987a. *The Illustrated Flora of Illinois*. Flowering Plants. Smartweeds to Hazelnuts. xiii, 228 pp., 1 map.
- Part 12. Dodd, J. J. 1987b. *The Illustrated Flora of Illinois*. Diatoms. xii, 477 pp., 1 map.
- Part 13. Mohlenbrock, R. H. 1990. *The Illustrated Flora of Illinois*. Flowering Plants. Nightshades to Mistletoe. xi, 224 pp., 1 map.
- Part 14. Mohlenbrock, R. H. In press. *The Illustrated Flora of Illinois*. Flowering Plants. Sedges. *Carex*. [Expected 1998]

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TABLE 1. An index to the families of vascular plants and diatoms published in *The Illustrated Flora of Illinois*.

Family	Part	Pages	Family	Part	Pages
Achnanthaceae (diatoms)	12:	71-83	Loasaceae	7:	289-295
Alismaceae	2:	23-52	Lycopodiaceae	1:	23-33
Annonaceae	9:	11-13	Magnoliaceae	9:	6-10
Aquifoliaceae	7:	6-15	Malvaceae	10:	13-59
Araceae	2:	124-137	Marsilaceae	1:	170-171
Aristolochiaceae	9:	13-21	Menispermaceae	9:	34-40
Bacillariaceae (diatoms)	12:	279-325	Moraceae	10:	85-101
Berberidaceae	9:	170-182	Najadaceae	2:	115-123
Betulaceae	11:	180-201	Naviculaceae (diatoms)	12:	84-224
Biddulphiaceae (diatoms)	12:	29-30,33	Nelumbonaceae	9:	233-235
Brassicaceae	8:	101-267	Nymphaeaceae	9:	224-233
Burmanniaceae	3:	178-179	Ophioglossaceae	1:	62-74
Butomaceae	2:	22-23	Orchidaceae	3:	180-264
Cabombaceae	9:	235-239	Osmundaceae	1:	76-83
Calycanthaceae	9:	21-23	Papaveraceae	9:	182-223
Campanulaceae	13:	150-181	Passifloraceae	7:	268-272
Capparidaceae	8:	89-99	Platanaceae	11:	109-113
Celastraceae	13:	182-198	Poaceae		
Ceratophyllaceae	9:	239-241	<i>Bromus</i> to <i>Paspalum</i>	4:	1-316
Cistaceae	7:	247-268	<i>Panicum</i> to <i>Danthonia</i>	5:	1-359
Commelinaceae	2:	172-187	Polemoniaceae	13:	121-149
Convolvulaceae	13:	72-102	Polygonaceae	11:	5-105
Corylaceae	11:	201-210	Polypodiaceae	1:	84-169
Coscinodiscaceae (diatoms)	12:	15-29, 31-34	Pontederiaceae	2:	187-194
Cucurbitaceae	7:	272-289	Potamogetonaceae	2:	67-109
Cuscutaceae	13:	102-121	Primulaceae	7:	138-191
Cymbellaceae (diatoms)	12:	230-251	Ranunculaceae	9:	40-170
Cyperaceae			Resedaceae	8:	99-101
<i>Cyperus</i> to <i>Scleria</i>	6:	1-179	Rhamnaceae	10:	118-136
<i>Carex</i>		in press	Ruppiaceae	2:	109-111
Dioscoreaceae	3:	146-150	Salicaceae	8:	6-85
Ebenaceae	7:	122-125	Salviniaceae	1:	171
Elaeagnaceae	10:	136-143	Santalaceae	13:	98-199, 200
Elatinaceae	7:	66-70	Sapotaceae	7:	133-137
Entomoneidaceae (diatoms)	12:	225-229	Sarraceniaceae	9:	242-244
Epithemiaceae (diatoms)	12:	271-278	Saururaceae	9:	30-33
Equisetaceae	1:	42-61	Selaginellaceae	1:	34-36
Ericaceae	7:	70-121	Smilacaceae	3:	128-146
Eunotiaceae (diatoms)	12:	59-70	Solanaceae	13:	7-72
Euphorbiaceae	10:	148-216	Sparganiaceae	2:	155-163
Fagaceae	11:	114-180	Sterculiaceae	10:	11-13
Fragilariaceae (diatoms)	12:	35-58	Styracaceae	7:	125-132
Gomphonemaceae (diatoms)	12:	252-270	Surirellaceae (diatoms)	12:	326-340
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Lemnaceae	2:	138-154	Zannichelliaceae	2:	111-114
Liliaceae	3:	11-128			

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LITERATURE CITATIONS

In Text:

Braun (1950) or Parks et al. (1968) or (Mohlenbrock 1970, 1990) or (Swink and Wilhelm 1994; Young 1994).

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