The Lichen Flora of Livingston County, Illinois

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ABSTRACT

Sixty-one species of lichens in 33 genera are reported from Livingston County, Illinois; 27 are of the crustose growth form, 23 are foliose, nine are fruticose, one is gelatinous, and one is veined. An annotated species list, and information on the distribution and habitats for each species, is provided. Although none of these represent new additions to the lichen flora of Illinois, none were previously reported for Livingston County.

INTRODUCTION

Livingston County is located in the northern half of central Illinois, approximately 145 km (90 miles) southwest of the city of Chicago (Figure 1). It has an area of 270,404 ha (668,169 acres). Although it is the fourth largest county in Illinois, nearly 97% of it is devoted to farming and agriculture, leaving very little left in the way of natural areas. According to Schwegman (1973), the entire county lies in the Grand Prairie Division of Illinois' natural divisions: the Grand Prairie Section. Topography is flat to gently rolling with the elevation averaging around 200 m (656 feet). The climate of north central Illinois is considered temperate (Bair, 1992). January temperature averages -1.27° C (29.7° F) maximum to -10.4° C (13.3° F) minimum. July temperature averages 29.7° C (85.5° F) maximum to 18.11° C (64.6° F) minimum. Almost 89 cm (35 inches) of precipitation falls in one year, including 63 cm (25 inches) of snow.

The presettlement descriptions of Livingston County indicated that European settlers found it to be "principally prairie land," adding that "timber is found along the Vermilion River and its branches." Scattered groves of trees were rare, "not exceeding 6% of the area," and consisted principally of "different varieties of oak, elm, maple and walnut ... while ash, cottonwood, whitewood, and some other varieties are not uncommon" (The History of Livingston County, 1878).

The scarcity of suitable substrates, along with occasional prairie fires, probably restricted the lichen flora to the narrow band of woods along the Vermilion River. Today timbered communities still exist in a few localities along the Vermilion River; the prairie has been replaced by corn and soybeans.

Hyerczyk (1996) reported 77 lichens from nearby Putnam County, and Skorepa (1970) reported nine species from adjacent La Salle county and two from nearby Marshall County, but nothing in the literature could be found on Livingston County. Since no

studies of the lichen flora of Livingston County, Illinois are known, this study was undertaken to document it, and to provide information of distribution and habitats of these fungi.

METHODS

Between 1991 and 1996 seven trips were made into Livingston County to collect voucher specimens and information on the distribution and habitats of these fungi: December, 1991; May, 1992; July and August, 1993; June, November and December, 1996.

Six sites were surveyed, including Humiston Woods Nature Center near the city of Pontiac and Sunbury Railroad Prairie State Nature Preserve near Budd, as well as Oak Lawn cemetery near Dwight, Rooks Creek cemetery near Graymount, Sunnyslope cemetery near Saunemin, and Union cemetery near Odell. A few miscellaneous collections were made near Chatsworth, Graymount, Loretto, and Pontiac (Figure 1).

Spot tests for lichen chemical substances were made on collected specimens using sodium hypochlorite (C) and potassium hydroxide (KOH). Thin-layer chromatography following Culberson (1972) was used to verify secondary-product chemistry on several of the *Cladoniae*. Specimens were identified using keys by Brodo (1988), Hale (1979), and Wilhelm (1995), and have been deposited at the Morton Arboretum Herbarium (MOR), Lisle, Illinois.

RESULTS

Sixty-one species of lichens in 33 genera are reported from Livingston County, Illinois. Twenty-seven are of the crustose growth form, 23 are foliose, nine are fruticose, one is gelatinous, and one is veined (Appendix 1). Thirty-four were considered to be rare, 19 were occasional, four were frequent, and four were common. Nearly 42% were generally found on corticolous substrates, 30% were saxicolous, 20% were lignicolous, and 8% were terricolous.

It should be noted that over 40% of the collection came from Humistan Woods Nature Center. This was the largest site surveyed, and also had many more substrates and habitats available for lichens to colonize, which may explain the high number of species (Appendix 2). Fewer species were found at the remaining study sites, a fact that may be attributed to their smaller land area and scarcity of available substrates and habitats (Appendix 3).

A comparison of the Livingston County flora with that of surrounding counties finds some similarity. This area of Illinois is largely in the Grand Prairie Division, and is mainly rural in character. Many of the same species of lichens are found throughout the four county region in the few natural areas that remain. For Skorepa's (1970) paper, both of the species that he reported from Marshall County, and eight of the nine that he reported for La Salle County, were also found in Livingston County. In addition, over 60% of the species found in Livingston County are also known from Putnam County (Hyerczyk, 1996).

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APPENDIX 1

What follows is an annotated list of the lichenized fungi from Livingston County, Illinois, arranged alphabetically by genera and their species. Presence, along with a brief description of habitat, is followed by the growth form and substrate(s) of each species, which are listed in brackets []. Locations of collections are abbreviated, and are identified by a capital letter following the collection number: HW (Humistan Woods Nature Center), SRP (Sunbury Railroad Prairie Nature Preserve), OL (Oak Lawn Cemetery), RC (Rooks Creek Cemetery), SS (Sunny Slope Cemetery), U (Union Cemetery). Miscellaneous collections are identified by the name of the nearest city preceding the description of habitat. All collections were made by the author. Nomenclature and authorities follow Esslinger & Egan (1995).

AMANDINEA Choisy ex Scheid. & H. Mayrh.

Amandinea punctata (Hoffm.) Coppins & Scheid. Frequent; on the lower trunk of *Tilia americana* (270-U); near Loretto on a wooden fence post (301); on a weathered wood rail fence (1462-HW). [CRUSTOSE / CORTICOLOUS - LIGNICOLOUS].

ANISOMERIDIUM (Müll. Arg.) Choisy

Anisomeridium nyssigenum (Ellis & Everh.) R. C. Harris. Rare; on the lower trunk of *Quercus macrocarpa* in a mesic oak woodland (1433-HW). [CRUSTOSE / CORTICOLOUS].

ARTHONIA Ach.

Arthonia caesia (Flotow) Körber. Occasional; on the lower trunk of *Prunus serotina* in a mesic woodland (866-HW). It is also found on *Carya ovata*, *Gleditsia triacanthos* and *Ulmus americana*. [CRUSTOSE/CORTICOLOUS].

BACIDIA De Not.

Bacidia granosa (Tuck.) Zahlbr. Occasional; on gravel in damp, shady areas. (888-HW). [CRUSTOSE/SAXICOLOUS].

BACIDINA Vêzda

Bacidina egenula (Nyl.) Vêzda. Occasional; on gravel in damp, shady areas (1476-SRP). [CRUSTOSE/SAXICOLOUS].

CALOPLACA Th. Fr.

- Caloplaca atroalba (Tuck.) Zahlbr. Occasional; near Graymount on a dolomite conglomerate in Rooks Creek (373); on dolomite boulders along the Vermilion River (1470-HW). [CRUSTOSE/SAXICOLOUS].
- Caloplaca feracissima H. Magn. Common; on gravel (1430-SRP), near Chatsworth on gravel (1480) and on a wooden railroad tie (1481); on concrete (293-U); on concrete (295-HW). [CRUSTOSE/LIGNICOLOUS - SAXICOLOUS].
- Caloplaca holocarpa (Hoffm. ex Ach.) M. Wade. Occasional; near Pontiac at the base of *Populus deltoides* (298) and on a wooden bridge deck (864). [CRUSTOSE/CORTICOLOUS LIGNICOLOUS].
- *Caloplaca lithophila* H. Magn. Occasional; on a dolomite headstone (1437-RC). [CRUSTOSE/SAXICOLOUS].

- *Caloplaca microphyllina* (Tuck.) Hasse. Rare; on a weathered wood rail fence (1478-SS). [CRUSTOSE/LIGNICOLOUS].
- *Caloplaca schaereri* (Flörke) Zahlbr. Rare; on a granite boulder along the shore of the Vermilion River (1493-HW). [CRUSTOSE/SAXICOLOUS].

CANDELARIA A. Massal.

- Candelaria concolor (Dickson) Stein. Common; on the trunk of Fraxinus quadrangulata (278-U); near Pontiac on Celtis occidentalis (294); near Dwight on F. quadrangulata (306). [FOLIOSE/CORTICOLOUS].
- Candelaria concolor var. effusa (Tuck.) G. Merr. & Burnham. Occasional; near Pontiac on the trunk of *Juniperus virginiana* (865). [FOLIOSE / CORTICOLOUS].

CANDELARIELLA Müll. Arg.

- Candelariella aurella (Hoffm.) Zahlbr. Rare; near Pontiac on a wooden bridge deck (862). [CRUSTOSE/LIGNICOLOUS].
- Candelariella reflexa (Nyl.) Lettau. Rare; on a weathered wood rail fence in a shaded oak woodland (1432-HW). [CRUSTOSE/LIGNICOLOUS].
- *Candelariella xanthostigma* (Ach.) Lettau. Rare; on the lower trunk of *Quercus macrocarpa* (870-HW). [CRUSTOSE/CORTICOLOUS].

CLADONIA P. Browne

- *Cladonia coniocraea* (Flörke) Sprengel. Rare; on a moss covered decorticate log in a mesic oak woodland (874-HW). [FRUTICOSE/LIGNICOLOUS].
- Cladonia cryptochlorophaea Asah. Rare; on weathered clay along a sunny path (880-HW). [FRUTICOSE / TERRICOLOUS].
- *Cladonia didyma* (Fée) Vainio. Rare; on a decorticate log in a mesic oak woodland (875-HW). [FRUTICOSE/LIGNICOLOUS].
- Cladonia furcata (Hudson) Schrader. Rare; on weathered clay along a sunny path (884-HW). [FRUTICOSE / TERRICOLOUS].
- Cladonia macilenta var. bacillaris (Genth) Schaerer. Rare; on moss covered decorticate logs in a mesic oak woodland (876-HW). [FRUTICOSE/LIGNICOLOUS].
- *Cladonia peziziformis* (With.) J. R. Laundon. Rare; on weathered clay in a park-like picnic area (1461-HW). [FRUTICOSE / TERRICOLOUS].
- *Cladonia ramulosa* (With.) J. R. Laundon. Rare; on a decorticate log in a mesic oak woodland (1435-HW). [FRUTICOSE/LIGNICOLOUS].
- Cladonia subulata (L.) F. H. Wigg. Rare; on a decorticate log in a mesic oak woodland (886-HW). [FRUTICOSE/LIGNICOLOUS].
- *Cladonia symphycarpa* (Flörke) Fr. Rare; on moss covered clay along a sunny path (883-HW). [FRUTICOSE / TERRICOLOUS].

CYPHELIUM Ach.

Cyphelium tigillare (Ach.) Ach. Rare; on a weathered wood rail fence (1478-SS). [CRUSTOSE/LIGNICOLOUS].

ENDOCARPON Hedwig

Endocarpon pusillum Hedwig. Occasional; on limestone gravel (292-U). It is also found on weathered concrete. [CRUSTOSE/SAXICOLOUS].

FLAVOPARMELIA Hale

Flavoparmelia caperata (L.) Hale. Rare; on a decorticate log in a mesic woodland (885-HW). [FOLIOSE/LIGNICOLOUS].

FLAVOPUNCTELIA (Krog) Hale

Flavopunctelia soredica (Nyl.) Hale. Rare; on the lower trunk of *Quercus rubra* (889-OL). [FOLIOSE / CORTICOLOUS].

GRAPHIS Adans.

Graphis scripta (L.) Ach. Rare; on the trunk of *Carya ovata* in a mesic woodland (867-HW). It is also found on the lower trunks of *Acer saccharum* and *Celtis occidentalis*. [CRUSTOSE/CORTICOLOUS].

HYPERPHYSCIA Müll. Arg.

Hyperphyscia adglutinata (Flörke) Mayrh. & Poelt. Occasional; on the lower trunk of *Fraxinus quadrangulata* (273-U). [FOLIOSE / CORTICOLOUS].

LECANORA Ach.

Lecanora dispersa (Pers.) Sommerf. Common; on gravel (1474-SRP); on weathered concrete (291-U); near Pontiac on a wooden bridge deck (861). [CRUSTOSE / LIGNICOLOUS - SAXICOLOUS].

Lecanora muralis (Schreber) Rabenh. Rare; on concrete. (1431-SS). [CRUSTOSE / SAXICOLOUS].

Lecanora strobilina (Sprengel) Kieffer. Occasional; on the lower trunk of Carya ovata (1463- HW); on a weathered wood rail fence (1473-U). [CRUSTOSE / CORTICOLOUS - LIGNICOLOUS].

LEPRARIA Ach.

Lepraria lobificans Nyl. Rare; on the lower trunk of *Quercus macrocarpa* (868-HW). It is also found on the lower trunks of *Celtis occidentalis*, *Fraxinus americana* and *Quercus alba*. [CRUSTOSE/CORTICOLOUS].

LEPTOGIUM (Ach.) Gray

Leptogium cyanescens (Rabenh.) Körber. Rare; near Graymount on a dolomite conglomerate along the shore of Rooks Creek (374). [GELATINOUS / SAXICOLOUS].

LICHENOTHELIA D. Hawksw.

Lichenothelia sp. Rare; on a pink granite boulder (1492-HW). [CRUSTOSE / SAXICOLOUS].

MYELOCHROA (Asah.) Elix & Hale

Myelochroa aurulenta (Tuck.) Elix & Hale. Rare; on a dead *Fraxinus* sp. in a mesic woodland (882-HW). [FOLIOSE/CORTICOLOUS].

OPEGRAPHA Ach.

Opegrapha atra Pers. Rare; on the lower trunk of *Ulmus americana* in a mesic woodland (1434-HW). [CRUSTOSE/CORTICOLOUS].

PELTIGERA Willd.

Peltigera rufescens (Weiss) Humb. Rare; on moss covered clay along a sunny path (878-HW) and on weathered clay in a park-like picnic area (1464-HW). [VEINED / TERRICOLOUS].

PERTUSARIA DC.

Pertusaria pustulata (Ach.) Duby. Rare; on the lower trunk of *Carya ovata* in a mesic woodland (881-HW). [CRUSTOSE/CORTICOLOUS].

PHAEOPHYSCIA Moberg

Phaeophyscia cernohorskyi (Nádv.) Essl. Occasional; on a marble headstone in a cemetery (1436-RC). [FOLIOSE/SAXICOLOUS].

Phaeophyscia ciliata (Hoffm.) Moberg. Occasional; on the trunk of *Fraxinus quadrangulata* (288-U) and on a marble headstone (287-U); on a dolomite headstone (858-OL). [FOLIOSE/CORTICOLOUS - SAXICOLOUS].

Phaeophyscia orbicularis (Necker) Moberg. Occasional; on a marble headstone (379-OL). [FOLIOSE / SAXICOLOUS].

Phaeophyscia rubropulchra (Degel.) Essl. Frequent; on the trunk of *Fraxinus quadrangulata* (281-U); on the trunk of *F. quadrangulata* (873-HW). [FOLIOSE / CORTICOLOUS].

PHYSCIA (Schreber) Michaux

Physcia adscendens (Fr.) H. Olivier. Occasional; on *Fraxinus quadrangulata* (282-U); on a dolomite headstone (855-OL). [FOLIOSE/CORTICOLOUS - SAXICOLOUS].

Physcia aipolia (Ehrh. *ex* Humb.) Fürnr. var. *aipolia*. Rare; on the lower trunk of *Ulmus americana* (1472-HW). [FOLIOSE/CORTICOLOUS].

Physcia millegrana Degel. Common; on *Platanus occidentalis* (277-U); near Pontiac on *Fraxinus quadrangulata* (296); near Dwight on *F. quadrangulata* (304). [FOLIOSE / CORTICOLOUS].

Physcia stellaris (L.) Nyl. Frequent; near Pontiac on *Acer* sp. (297); on *Fraxinus quadrangulata* (285-U); near Dwight on *F. quadrangulata* (305). [FOLIOSE / CORTICOLOUS].

PHYSCIELLA Essl.

Physciella chloantha (Ach.) Essl. Occasional; on the trunk of *Fraxinus quadrangulata* (279-U); on a marble headstone (857-OL). [FOLIOSE / CORTICOLOUS - SAXICOLOUS].

PHYSCONIA Poelt

Physconia detersa (Nyl.) Poelt. Frequent; near Dwight on the trunk of *Fraxinus quadrangulata* (302); on a dolomite headstone (854-OL); on a lower branch of *Ulmus americana* (1471-HW). [FOLIOSE/CORTICOLOUS - SAXICOLOUS].

Physconia kurokawae Kashiw. Rare; on a dolomite headstone (275-U) and on *Fraxinus quadrangulata* (276-U). [FOLIOSE/CORTICOLOUS - SAXICOLOUS].

PUNCTELIA Krog

Punctelia bolliana (Müll. Arg.) Krog. Rare; on *Fraxinus quadrangulata* (274-U). [FOLIOSE/CORTICOLOUS].

Punctelia missouriensis Wilhelm & Ladd. Rare; on the lower trunk of Liriodendron tulipifera (860-OL). [FOLIOSE/CORTICOLOUS].

Punctelia rudecta (Ach.) Krog. Occasional; on the lower trunk of Liriodendron tulipifera (378-OL). [FOLIOSE/CORTICOLOUS].

RIMELIA Hale & Fletcher

Rimelia reticulata (Taylor) Hale & Fletcher. Rare; at the base of *Carya ovata* (1465-HW). [FOLIOSE/CORTICOLOUS].

SARCOGYNE Flotow

Sarcogyne regularis Körber. Rare; on dolomite gravel (1429-SRP). [CRUSTOSE / SAXICOLOUS].

THELOCARPON Nyl. ex Hue

Thelocarpon laureri (Flotow) Nyl. Rare; on a weathered wooden fence (1475-SRP). [CRUSTOSE/LIGNICOLOUS].

VERRUCARIA Schrader

Verrucaria calkinsiana Servít. Occasional; on limestone gravel (290-U). [CRUSTOSE/SAXICOLOUS].

XANTHORIA (Fr.) Th. Fr.

Xanthoria fallax (Hepp) Arnold Occasional; on *Fraxinus quadrangulata* (284-U); near Dwight on *F.quadrangulata* (303); on a marble headstone (856-OL). [FOLIOSE / CORTICOLOUS - SAXICOLOUS].

Xanthoria sp. #1 *sensu* MOR herbarium. Occasional; on a marble headstone (286-U); on a dolomite headstone (853-OL). [FOLIOSE / SAXICOLOUS].

APPENDIX 2

Humiston Woods Nature Center is a remnant hardwood forest of the Vermilion River system. The Vermilion River and Wolf Creek form the outer boundaries of this 120 ha (300 acre) private preserve. A variety of habitats are found here including mesic woodlands with *Acer saccharum* Marshall, *Celtis occidentalis* L., *Fraxinus americana* L., *Quercus rubra* L., and *Staphylea trifolia* L.; wooded floodplains of the Vermilion River and Wolf Creek with *Tilia americana* L. and *Ulmus americana* L.; and oak-hickory woods with *Carya ovata* (Mill.) K. Koch, *Quercus alba* L., and *Q. macrocarpa* Michx. The majority of lichens found here were growing on the trunks and lower branches of living trees, as well as on decorticate logs, but some were also found on weathered wood rail fencing, boulders, gravel, concrete and weathered clay. A total of 45 species were found.

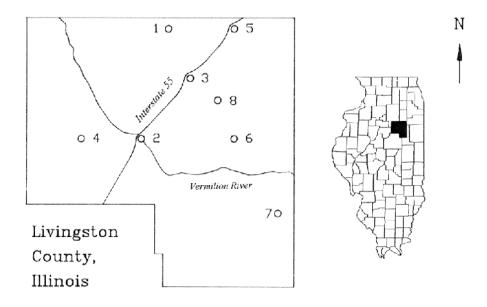
- Growing on trees: Anisomeridium nyssigenum, Arthonia caesia, Candelaria concolor, Candelariella xanthostigma, Flavoparmelia caperata, Graphis scripta, Lecanora strobilina, Lepraria lobificans, Myelochroa aurulenta, Opegrapha atra, Pertusaria pustulata, Phaeophyscia cernohorskyi, P. ciliata, P. rubropulchra, Physcia aipolia, P. millegrana, P. stellaris, Physciella chloantha, Physconia detersa, Punctelia bolliana, P. rudecta, Rimelia reticulata, and Xanthoria sp. #1;
- ...on decorticate logs: Cladonia didyma, C. macilenta var. bacillaris, C. ramulosa, and C. subulata;
- ...on weathered wood rail fencing: Amandinea punctata, Caloplaca holocarpa, Candelariella reflexa, and Xanthoria fallax;
- ...on rocks or concrete: Bacidia granosa, Bacidina egenula, Caloplaca atroalba, C. feracissima, C. schaereri, Endocarpon pusillum, Lecanora dispersa, and Lichenothelia sp.:
- ...on weathered clay: Cladonia coniocraea, C. cryptochlorophaea, C. furcata, C. peziziformis, C. symphycarpa, and Peltigera rufescens.

APPENDIX 3

Sunbury Railroad Prairie State Nature Preserve is a remnant 5 ha (12 acre) prairie that runs along an abandoned railroad line. Gravel and weathered wood were the most common substrates available here for lichens. A total of 9 species were found.

- Growing on gravel: Bacidina egenula, Caloplaca feracissima, Endocarpon pusillum, Lecanora dispersa, Sarcogyne regularis, and Verrucaria calkinsiana;
- ...on a wooden fence post and a sign: Amandinea punctata, Physcia stellaris, and Thelocarpon laureri.
- In the four cemeteries, weathered concrete, dolomite and marble headstones, and trees such as *Fraxinus quadrangulata* Michx., *Juglans nigra* L., *Juniperus virginiana* L., *Liriodendron tulipifera* L., *Platanus occidentalis* L., and *Quercus rubra* L., were the most common substrates available for lichens. A total of 24 species were found.
- Growing on headstones: Caloplaca lithophila, Phaeophyscia cernohorskyi, P. ciliata, P. orbicularis, Physcia adscendens, Physconia detersa, P. kurokawae, and Xanthoria sp. #1;
- ...on concrete: Caloplaca feracissima, Endocarpon pusillum, Lecanora dispersa, and Lecanora muralis;
- ...on wood rail fencing: Caloplaca microphyllina, Cyphelium tigillare, and Lecanora strobilina;
- ...on tree trunks: Candelaria concolor, Candelaria concolor var. effusa, Flavopunctelia soredica, Hyperphyscia adglutinata, Physcia millegrana, Physciella chloantha, Punctelia missouriensis, P. rudecta, and Xanthoria fallax.

Figure 1. Location of collection sites within Livingston County, Illinois.



No.	Nearest City
1. Sunbury Railroad Prairie Nature Preserve	Budd
2. Humistan Woods Nature Center	Pontiac
3. Union Cemetery	Odell
4. Rooks Creek Cemetery	Graymount
5. Oak Lawn Cemetery	Dwight
6. Sunnyslope Cemetery	Saunemin
7	Chatsworth
8	
Loretto	