

## LICHENS NEW TO ILLINOIS

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### ABSTRACT

Twenty-one species of lichens are reported as new to Illinois: *Anisomeridium nysaegenum*, *Caloplaca arenaria*, *C. feracissima*, *Candelariella efflorescens*, *C. xanthostigma*, *Cetraria arenaria*, *Cladonia homosekikaica*, *C. multiformis*, *Coniocybe furfuracea*, *Cystocoleus ebeneus*, *Evernia mesomorpha*, *Flavopunctelia flaventior*, *F. sore dica*, *Hypocenomyce scalaris*, *Hypotrachyna pustulifera*, *Lepraria finkii*, *L. incana*, *L. lobificans*, *Leptorhaphis atomaria*, *Saccomorpha icmalea*, and *Verrucaria calkinsiana*. An annotated checklist is included. Vouchers are filed in Illinois herbaria. Seven of the reports represent southern range extensions for species common farther north.

### INTRODUCTION

With the exception of southern Illinois (Skorepa, 1973), the lichens of Illinois have not been adequately surveyed. Many taxa reported for the state are without substantiating vouchers, and many existing vouchers from older reports have not been

examined utilizing current analytical techniques, nomenclature, and species concepts. During the compilation of a bibliography and checklist for Illinois lichens based upon literature reports (McKnight and Wilhelm, in prep.), we discovered that the 21 species listed below have not been reported from the state. Reports of *Cetraria arenaria*, *Cladonia multiformis*, *Evernia mesomorpha*, *Flavopunctelia flaventior*, *F. soredica*, *Hypocenomyce scalaris*, and *Leptorhaphis atomaria* represent southern range extensions of boreal species.

Vouchers for the reports are housed, as indicated below, in the herbaria of Eastern Illinois University (EIU), the Illinois Natural History Survey (ILLS), the Morton Arboretum (MOR), and Southern Illinois University (SIU). Nomenclature follows Egan (1986, prepublication draft), except *Lepraria* for which Brodo (1981) is recognized. Lichen substances were determined, using three solvents and the standard thin-layer chromatographic techniques (Culberson, 1972).

### ANNOTATED LIST OF NEW ILLINOIS LICHENS

*Anisomeridium nyssaegenum* (Fl. & Ev.) R. C. Harris — Jersey Co.: Stump Lake, on pecan in the open; 4 Sep 1986; *Skorepa* 5125 SIU. This corticolous species appears as tiny, often crowded, black perithecia partially immersed in a whitish gray thallus, and is almost certainly more common than our records suggest. It is distinguished from *A. bifforme* (Borr.) R. C. Harris by its narrower, more fusiform spores.

*Caloplaca arenaria* (Pers.) Müll. Arg. — Du Page Co.: Morton Arboretum, on dolomitic boulder just W of Hidden Lake woods, in full sun; 17 Nov 1986; *Wilhelm & McKnight* 14351 MOR. Grundy Co.: in Coal City at E end of Oak Street at Bowers and Sieman area on E side of Sante Fe Railroad, on old concrete foundation; 3 Aug 1986; *Wilhelm & Dritz* 14164 MOR. Lake Co.: Illinois Beach State Park, in dunes on HCl + sandstone cobble; 12 May 1986; *Wilhelm & McKnight* 13834 MOR. This species somewhat resembles *C. feracissima*, which sometimes is found as scattered apothecia without an evident thallus. The major difference between the two species is that *C. arenaria* has apothecia that are larger, deep orange, and with a paler orange rim (which see).

*Caloplaca feracissima* Magn. — Champaign Co.: University of Illinois campus, W side of Wright Street, on HCl + flagstone; 28 Aug 1986; *McKnight & Wilhelm* 4980 MOR. Clark Co.: N side of Westfield Road about 5 miles W of Clarksville, on concrete in ravine; T12N R13W S30; 6 Mar 1975; *Whiteside s.n.* EIU. Cook Co.: Poplar Creek Preserve, S side of Shoe Factory Road, on dolomitic cobble on gravelly kame; 10 Apr 1986; *Wilhelm* 13609 MOR. Du Page Co.: Morton Arboretum, on flagstone; 22 Jan 1986; *Wilhelm* 13322 MOR. Grundy Co.: in Coal City at E end of Oak Street at Bowers and Sieman area on E side of Sante Fe Railroad, on old concrete foundation; 3 Aug 1986; *Wilhelm & Dritz* 14167 MOR. Kane Co.: in St. Charles, at Pottawatomie Park, on concrete mortar of retaining wall; 22 Mar 1986; *Wilhelm* 13339 MOR. Lake Co.: Illinois Beach State Park, on old concrete in dunes; 12 May 1986; *Wilhelm & McKnight* 13843b MOR. This species is distinguished from other members of this complicated genus by its tiny yolk-yellow apothecia with lighter-colored margins, a thallus which is scant and black (or absent altogether), and a narrow spore isthmus. Our observations on its habitat correspond to those of Brodo (1968). It is common,

at least in northern Illinois, on concrete, especially sidewalks and flagstone, and on other HCl+ substrates — usually in full sun and often in disturbed or artificial habitats; *Lecanora dispersa* is a common associate.

*Candelariella efflorescens* R. C. Harris & Buck — Du Page Co.: in Darien along S side of Plainfield Road opposite Woodcreek Road, on old cedar railing fence; 13 Aug 1986; *Wilhelm* 14157 MOR. Kane Co.: W of St. Charles, W of Randall Road, N of Dean Street, on *Juglans nigra* in flood plain of Ferson's Creek; 17 May 1986; *Wilhelm* 13867 MOR. Kankakee Co.: SE of Hopkins Park about 1 mile N of county line, on *Quercus velutina* in savanna; 21 May 1986; *Wilhelm* 13879 MOR. Lake Co.: Illinois Beach State Park, on *Quercus velutina*; 12 May 1986; *Wilhelm & McKnight* 13862 MOR. This species, described only recently (1978), resembles *Candelaria concolor* var. *effusa* except that it is wholly sorediate, without any evidence of a thallus. Although infrequent, this bright yellow species is probably more widespread than current records suggest.

*Candelariella xanthostigma* (Pers. ex Ach.) Lett. — Coles Co.: NW side of Lake Charleston, at top of hill prairie on bark at base of *Quercus alba*, T12N R9E S24 NW; 17 Oct 1978; *McKnight* 495 MOR. Du Page Co.: in Darien along S side of Plainfield Road opposite Woodcreek Road, on old cedar railing fence; 13 Aug 1986; *Wilhelm* 14158 MOR. Gallatin Co.: Pounds Hollow, N end of recreation area just E of dam, on *Quercus velutina*; 11 Apr 1987; *Wilhelm* 14709 MOR. Kane Co.: Johnson's Mound Forest Preserve, at base of *Quercus macrocarpa*; 22 Mar 1986; *Wilhelm* 13352 MOR. Kankakee Co.: just N of Iroquois County Conservation Area, on *Quercus alba*; 21 May 1986; *Wilhelm* 13882 MOR. Kendall Co.: just S of Plano at Boy Scout camp W of River Road along Little Fox River, on *Quercus alba*; 1 Jun 1986; *Wilhelm* 13952 MOR. Lake Co.: Chain O'Lakes State Park, in picnic area, growing on *Quercus rubra*; 20 Aug 1986; *Wilhelm* 14222 MOR. McHenry Co.: E edge of Spring Grove, at the NW corner of Wilmot & Main, growing on *Juglans nigra*; 20 Aug 1986; *Wilhelm* 14234 MOR. Ogle Co.: Castle Rock State Park, 1/4 mile S of Wilderness Road and 250 feet E of Route 2, on *Populus deltoides*, in prairie remnant atop ridge; 12 Aug 1986; *McKnight* 4950 MOR. This crustose species is characterized by its yellow, KOH — thallus consisting of scattered corticate granules; it is probably more widespread in Illinois than our records indicate.

*Cetraria arenaria* Kärnef. — Lake Co.: Illinois Beach State Park, on sand dunes at mouth of Dead River, T45N R12W S2 N; 9 Oct 1985; *Schwegman s.n.* ILLS. Illinois Beach State Park, N of Dead River, W of lookout tower; 12 May 1986; *Wilhelm & McKnight* 13855 MOR. This large brown to olive fruticose lichen, with a tan lower surface and abundant dark marginal spinules, is called the Bullwinkle lichen because of its fancied resemblance to moose antlers. Kärnefelt (1979) suggests that in presettlement times this species was probably more common in prairies; however, it is difficult to imagine how it could have survived under the dense graminoid vegetation and regular fires which characterized the tallgrass prairies of Illinois. At Illinois Beach State Park it is locally frequent on undisturbed, antedunal ridges in association with *Andropogon scoparius*, *Arabis lyrata*, *Arctostaphylos uva-ursi* var. *coactilis*, *Arenaria stricta*, *Artemisia caudata*, *Carex richardsonii*, *C. umbellata*, *Draba reptans*, *Helianthus occidentalis*, *Juniperus horizontalis*, *Opuntia humifusa*, *Smilacina stellata*,

*Solidago speciosa*, and *Sorghastrum nutans*. The notable lack of a graminoid fuel matrix suggests that this habitat sustained only desultory fires in the presettlement period, though the dune savannas immediately west no doubt burned regularly. Farther north, this species is not uncommon on undisturbed sand dunes along the shores of Lake Michigan, although it disappears rapidly following disturbance.

*Cladonia homosekikaica* Nuno — Lake Co.: Illinois Beach State Park, on sandy humus in the dunes region; 12 May 1986; *Wilhelm & McKnight 13856* MOR, US. This species is evidently new to North America, known heretofore only from Asia (Culberson, 1986) and Iceland (Culberson & Kristinsson, 1969). Our specimens resemble coarse specimens of *C. grayi*, except that many of the podetia have extensive corticate patches. It grows with mosses and vascular plants which are modal to the low, stabilized dunes of the southwestern shore of Lake Michigan, so our assumption is that it is autochthonous there. Repeated chromatographic analysis demonstrates the presence of fumarprotocetraric and homosekikaic acids, and atranorin, whereas the *C. rei* with which it grew contains homosekikaic acid only. Interestingly, however, neither Culberson *et al.* (1977) nor Culberson & Kristinsson (1969) mention atranorin in association with fumarprotocetraric and homosekikaic acids.

*Cladonia multiformis* G. K. Merr. — Du Page Co.: NE of West Chicago, Timber Ridge Forest Preserve, on soil; Mar 1984; *Lampa 84* MOR. This species is best identified by the small holes which perforate the cup membrane. The nearest reported population of this boreal lichen is in central Wisconsin (Thomson, 1984).

*Coniocybe furfuracea* (L.) Ach. — Clark Co.: Wolf Den Hollow, 2 miles S of Clark Center, in flood plain on exposed *Quercus* root, T10N R13W S12 SW; 18 Oct 1978; *McKnight 438* MOR. This species forms a thin, powdery, yellow-green crust, with tiny, slender-stalked apothecia which are easily overlooked.

*Cystocoleus ebeneus* (Dillw.) Th. — Clark Co.: Rocky Branch Nature Preserve; 2 Jul 1970; *Wiedman s.n.* EIU; this collection was reported erroneously as *Racodium rupestre* by Wiedman and Whiteside (1975). Rocky Branch Nature Preserve, on shaded sandstone walls, T12N R12W S29 & S30; 17 Oct 1978; *McKnight 430* MOR. **Hardin Co.:** Panther Hollow, on dry vertical north-facing sandstone wall above confluence with Buckhart Hollow; 13 Apr 1987; *McKnight 5220* MOR. It forms a black filamentous layer on sandstone walls and occasionally on trees near the sandstone. When viewed microscopically, the green algal filaments appear rigid, dark and opaque because of the enveloping fungal hyphae. This species is rarely mentioned in North American literature.

*Evernia mesomorpha* Nyl. — Du Page Co.: West Du Page Woods Preserve, N of Gary's Mill Road at Elsen's Hill, on bark; Mar 1984; *Lampa 167* MOR. **Lake Co.:** Illinois Beach State Park, on *Juniperus horizontalis* in dune area just N of lookout tower at Dead River; 12 May 1986; *Wilhelm & McKnight 13854* MOR. This primarily boreal species is infrequent locally on the trunks of *Crataegus* and *Fraxinus*. Although *E. mesomorpha* is very rare in Illinois, it is common on *Larix* and *Picea* in bogs in northern Michigan and Wisconsin and has been reported from extreme southeastern Wisconsin (Thomson, 1984). All previous reports of *Evernia* from Illinois (Brendel,

1887; Wiedman, 1971; Mertz, 1972) are based upon the original citation of *Evernia jubata* by Brendel (1882) from "vicinity of Peoria". The specimen (Brendel *s.n.*) in the University of Illinois Herbarium (ILL), upon which this report is based, is actually *Bryoria furcellata*.

*Flavopunctelia flaventior* (Stirt.) Hale — Coles Co.: Charleston, EIU golf course, on bark; 21 Sep 1977; *Whiteside s.n.* EIU. 0.5 mile E of Weiler Farm, in brushy old field; 25 Nov 1976; *Slaughter s.n.* EIU. Du Page Co.: Morton Arboretum at Meadow Lake, on a planted specimen of *Quercus palustris*, dbh 21 inches; 10 Dec 1984; *Wilhelm 12423 MOR*. Iroquois Co.: Iroquois County Conservation Area, just S of county line road, on *Quercus velutina*; 21 May 1986; *Wilhelm & Johnson 13895 MOR*. Kane Co.: W of St. Charles, W of Randall Road, N of Dean Street, on *Juglans nigra* in flood plain of Ferson's Creek; 17 May 1986; *Wilhelm 13869 MOR*. Lake Co.: Illinois Beach State Park, in savanna on *Quercus*; 28 Sep 1985; *Wilhelm 13093 MOR*. The nearest reported population of this species is in Racine County, Wisconsin (Culbertson, 1955). This species is no doubt in most of our northeastern counties — it grows abundantly on *Larix* toward the center of Volo Bog in Lake County. Although sometimes confused with the more common *Pseudoparmelia caperata*, it is easily distinguished by its pseudocyphellae and C+ red medullá.

*Flavopunctelia soredica* (Nyl.) Hale — Coles Co.: Fox Ridge State Park, 8 miles S of Charleston, on bark; 14 Oct 1975; *Whiteside s.n.* EIU. Fox Ridge State Park, on bark; 30 Sep 1982; *Wilcer s.n.* EIU. Du Page Co.: West Du Page Woods Forest Preserve, N of Gary's Mill Road at Elsen's Hill, on bark; Mar 1984; *Lampa 21a MOR*. Lake Co.: Illinois Beach State Park, in savanna on *Quercus*; 28 Sep 1985; *Wilhelm 13096 MOR*. These records represent significant range extensions for this species, which heretofore has been reported only from as far south in the Great Lakes region as Dunn and Chippewa counties in west central Wisconsin (Culbertson, 1960). This yellow-green foliose species, long known as *Parmelia ulophyllodes* (Vain.) Sav., is very similar to *Flavopunctelia flaventior*, even to the point of containing lecanoric acid (C+ bright red), but is far less common and differs by the absence of white pores (pseudocyphellae) on the upper cortex.

*Hypocenomyce scalaris* (Ach.) M. Choisy — Lake Co.: W of Lake Forest about 1 mile N of Route 60 and E of Milwaukee Railroad, on limb of *Quercus macrocarpa*; 3 Jul 1986; *Wilhelm 14038 MOR*. This species is characterized by crowded, cucullate squamules and by the C+ red (lecanoric acid) soredia on the lower surface. This report represents a southern range extension for the species.

*Hypotrachyna pustulifera* (Hale) Skorepa — Gallatin Co.: Pounds Hollow, on dry bluff top with *Pseudoparmelia texana*; Nov 1967; *Skorepa 3987 SIU*. Pounds Hollow, on cedar twigs, on bluff just off Rim Rock Trail; 8 Sep 1984; *Parker 2597 MOR*. This species, characterized by its notably pustular isidia, is morphologically identical to *H. formosana*, but differs in that it lacks lichexanthone and is, therefore, UV-. Previous Illinois reports of *H. formosana* are referable here.

*Lepraria finkii* (B. de Lesd.) R. C. Harris — Du Page Co.: W side of Morton Arboretum near Hemlock Hill, on bark at base of *Quercus rubra*; 25 Jan 1986; *Wilhelm*

13326 MOR. Gallatin Co.: Pounds Hollow, on sandstone rock in mesic woods; 28 Apr 1984; *Parker* 2259 MOR. Jackson Co.: Giant City State Park, NE of Makanda on S side of Makanda Road (Sec. 27), on shaded vertical sandstone; 28 Jan 1981; *Wilhelm* 8309 MOR. (same location as previous collection) at base of tree; 28 Jan 1981; *Wilhelm* 8308 MOR. Johnson Co.: Cedar Falls, near Ozark, shaded base of *Liriodendron*; 14 Sep 1966; *Skorepa* 2412 SIU. Kane Co.: in Moosehart along N side of Mill Creek just W of Route 31, on south-facing vertical limestone; 22 Mar 1986; *Wilhelm* 13362 MOR. W of Geneva, N of Hughes Road at Johnson's Mound Forest Preserve, at base of *Quercus macrocarpa*; 22 Mar 1986; *Wilhelm* 13351 MOR. Kankakee Co.: Kankakee River State Park, along Davis Creek on *Quercus macrocarpa*; 21 May 1986; *Wilhelm & Johnson*<sup>1</sup> 3896 MOR. Kendall Co.: E of Yorkville, S side of Van Emmon Road, growing on *Tilia americana* on east-facing slope; 12 Jun 1986; *Wilhelm* 13966 MOR. Lake Co.: along ravine immediately N of Fort Sheridan, on base of *Quercus alba*; 11 Apr 1986; *Wilhelm* 13619 MOR. La Salle Co.: Starved Rock State Park, on sandstone along St. Louis Canyon trail; 8 May 1986; *Wilhelm* 13831 MOR. Lee Co.: 100 yards S of Rock River and 200 feet W of Route 2, at base of sandstone bluff on bark of *Betula lutea*, T22N R9E S13 SW SW; 15 Jul 1986; *McKnight* 4906 MOR. Ogle Co.: Castle Rock State Park on bark at base of *Quercus*, 150 feet E of Route 2, 1/4 mile S of Wilderness Road; 12 Aug 1986; *McKnight* 4946 MOR. Castle Rock State Park, E side of Castle Rock on shaded sandstone outcrops; 15 Jul 1986; *McKnight* 4912 MOR. Castle Rock State Park, at base of sandstone outcrop along Rock River 1/4 mile SW from intersection of Wilderness Road and Route 2; 19 Aug 1986; *McKnight* 4969 MOR. Sangamon Co.: just N of Springfield at rest area near marker 102 along I-55, on bark at base of *Quercus velutina*; 20 Apr 1986; *Wilhelm* 13743 MOR. Union Co.: Devil's Bake Oven, on bark of *Juniperus virginiana*; 16 May 1974; *Brooks* 100 SIU. Pine Hills, McGee Hill at base of chert slope; 16 Apr 1971; *Stotler* 2187 SIU. Will Co.: S of Naperville at Knoch Knolls Park, on bark near base of *Quercus rubra*; 28 May 1986; *Wilhelm & Murray* 13944 MOR. Williamson Co.: SE of Carbondale, S of Devil's Kitchen Lake on tree base; 14 May 1974; *Heil s.n.* SIU. This lichen is apparently common throughout the state on various saxicolous and corticolous substrates in mesic sites. Many of the previous reports of *Lepraria* from Illinois are probably referable to this species. Our material has atranorin, constictic acid, stictic acid, and zeorin, which matches the chemistry of *L. finkii* as described by Brodo (1981).

*Lepraria incana* (L.) Ach. — Kendall Co.: just S of Plano at Boy Scout camp W of River Road, along the Little Fox River, growing on *Quercus alba*; 1 Jun 1986; *Wilhelm* 13948 MOR. Lake Co.: N edge of Fort Sheridan, in ravine on *Quercus rubra*; 22 Mar 1987; *Wilhelm* 14674 MOR. Washington Co.: 5 miles S of Nashville, E side of Route 127, at base of *Quercus alba*; 8 May 1986; *Wilhelm* 13741 MOR. This species, though evidently much less frequent in Illinois, is very similar to *L. finkii* but contains only atranorin and zeorin (Brodo, 1981).

*Lepraria lobificans* Nyl. — Gallatin Co.: Pounds Hollow, on large sandstone boulder in upland woods E of Pounds Lake; 28 Apr 1984; *Parker* 2265 MOR. Pounds Hollow, in low beech forest on moist vertical shaded sandstone; 5 May 1984; *Wilhelm* 11954 MOR. Pounds Hollow, at base of *Quercus velutina* on bluff opposite Rimrock Trail; 18 Apr 1986; *Wilhelm & Parker* 13689 MOR. Jackson Co.: Pomona Natural Bridge,

on vertical shaded sandstone; 4 Jun 1966; *Skorepa* 2247 SIU. Pope Co.: Jackson Hollow, in mesic woods on vertical shaded sandstone; 18 Apr 1968; *Skorepa* 4199 SIU. This plant is frequent in southern Illinois, usually on shaded vertical sandstone exposures in natural areas. The rounded, granular-squamulose margins of the thallus are distinctive. Brodo (1968) described *Lepraria zonata* and indicated that it is characterized by the presence of fumarprotocetraric acid and atranorin. Brodo (1981) treated *L. zonata* again and suggested that similar morphologies with either fumarprotocetraric or protocetraric acids may be named *L. lobificans* Nyl., and that the name *L. zonata* should be restricted to those plants with alecatorialic acid. All of our Illinois material contains protocetraric acid and atranorin.

*Leptorhaphis atomaria* (Ach.) Szat. --- Du Page Co.: Morton Arboretum, on *Populus maximowiczii* (assessioned in 1963) in Japanese group at AA-61,45,35; 4 Feb 1987; *Wilhelm & Hedborn* 14607 MOR. This inconspicuous and nondescript crustose species appears as a white patch with scattered, tiny black perithecia. It is distinguished from *L. epidermidis* by notably blunt-tipped spores. A circumboreal species, Harris (1973) indicates that it usually is found on *Populus*. It is unclear whether the Arboretum population was brought in with nursery stock or was naturally established.

*Saccomorpha icmalea* (Ach.) Coppins & P. James --- Du Page Co.: Morton Arboretum, at Hidden Lake on rotten limb at S end of "long marsh"; 6 Mar 1987; *Wilhelm* 14621 MOR. Will Co.: Lorenzo, on oak wood in field; 24 Nov 1968; *Skorepa & Vermoch* 5217 SIU. *Skorepa* (1970) reported the Will County specimen as *Lecidea uliginosa*, a C- species. According to Wetmore (1985), *S. icmalea* has gyrophoric acid and reacts C+ red; TLC revealed gyrophoric acid in both specimens which reacted C+ pink. Wetmore (1986) reports the species from as near as the Indiana Dunes National Lakeshore.

*Verrucaria calkinsiana* Serv. --- Lake Co.: Illinois Beach State Park, on HCl+ cobble between antedunes about 200 yards N of Dead River; 12 May 1986; *Wilhelm & McKnight* 13855 MOR. Our interpretation of this collection, with a thick, dirty gray thallus and only partially immersed, black perithecia, is based upon the description by Brodo (1981).

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