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The Foliose and Fruticose Lichen Flora of Linn County, Iowa

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Thirty-one species in 10 genera of foliose and fruticose lichens are reported for Linn County, including 3 lichens previously unreported for Iowa: *Cladonia nemoxya*, *Physcia luganensis*, and *Physcia rubropulchra*. Information on substrate and abundance of each species is included.

INDEX DESCRIPTORS: Lichens, *Cladonia nemoxya*, *Physcia luganensis*, *Physcia rubropulchra*.

There have been few published reports of lichen collections in Iowa. Fink's (1895, 1897) and Shimek's (1897) work was centered in north-eastern Iowa, Juhl's (1961) study covered central Iowa, and Shimek (1899) and Wolden (1935) worked in northwestern Iowa. Malone and Tiffany (1978) have provided a much more complete listing of lichens for the entire state. It is important that a thorough survey of Iowa lichens be available as suitable lichen habitats are being reduced by increased urbanization, pollution, and agriculture. This paper is a contribution toward such an evaluation of the lichen flora of Iowa.

Linn County is in east-central Iowa and contains both urban and rural areas. Cedar Rapids is the major city and center of industry; urbanization and associated pollution have been responsible for the elimination of some lichens around Cedar Rapids (Jerry Saunders, Dept. of Env. Management, Univ. of Texas at San Antonio, unpublished data). Much of the rest of the county is agricultural. Suitable habitats for lichens include deciduous woodlands (primarily oak-hickory) which are extensive along the Cedar and Wapsipinicon Rivers, soils including sandy prairie soils in maintained prairie areas at Rock Island Preserve and Matsell Bridge County Park, and limestone outcroppings along the rivers.

METHODS AND MATERIALS

Most of the lichens discussed in this paper were collected by the author from the following sites: Pinicon Ridge County Park, Rock Island County Preserve, Seminole Valley Park, Matsell Bridge County Park, Squaw Creek County Park, and Palisades-Kepler State Park, as well as several other small wooded sites near Cedar Rapids (Fig. 1). Samples in the Coe College lichen herbarium collected from Linn County were also examined and verified. Most of these lichens were collected by Robert Drexler and Jerry Saunders.

Identification was confirmed in the laboratory through microscopic examination and chemical tests with the use of keys by Hale (1969) and Thomson (1963, 1967). Nomenclature follows Hale and Culberson (1970). Voucher packets have been deposited in the Coe College lichen herbarium.

RESULTS AND DISCUSSION

Thirty-one species of foliose and fruticose lichens in 10 genera were found. Table 1 lists these along with comments on abundance, substrate, and location of those lichens determined to be rare. Lichens found at only 1 site are listed as rare, although they may be locally abundant at that site. Lichens found at 2 sites are listed as not common, at 3 sites as moderately common, at 4-5 sites as common, and at 6 or more sites as very common. The genus *Physcia* is the most abundant genus in this area and is found on both trees and rocks. *P. adiantola* and *P. stellaris* are the 2 species most commonly found throughout the county. *Candelaria concolor* is also extremely common on bark but only rarely found on rocks.

This list includes 3 species not previously reported in Iowa: *Cladonia*

nemoxya, *Physcia luganensis*, and *Physcia rubropulchra*. Thomson (1967) describes *C. nemoxya* as circumpolar boreal to temperate and it has been reported in the midwest from Wisconsin (Brodo, 1967). Esslinger (1973) reported *Physcia luganensis* among *P. orbicularis* herbarium material from Minnesota and Nebraska. Superficially, *P. luganensis* resembles *P. orbicularis* but has labriform soralia and a white to pale lower surface rather than the laminal to marginal soralia and dark brown to black lower surface of *P. orbicularis*. *Physcia rubropulchra* was delimited as a species by Moberg (1974). It differs from *P. orbicularis* and *P. adiantola* primarily in the presence of a red medulla rather than a white one. Thomson (1963) and Esslinger (1977) show the distribution of *P. rubropulchra* as primarily eastern in the United States, extending as far west as Minnesota and Oklahoma.

In addition, *Physcia adscendens*, reported from Fayette County by Malone and Tiffany, is also present in Linn County. *P. adscendens* is

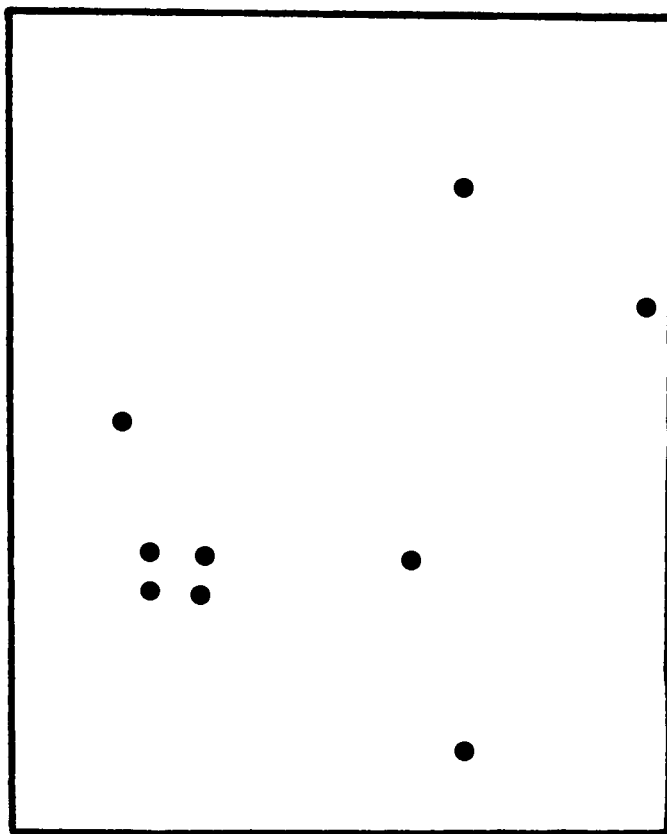


Figure 1. Collection sites in Linn County.

Table 1. Foliose and fruticose lichens found in Linn County.

Species	Substrate	Abundance
<i>Candelaria concolor</i> (Dicks.) B. Stein	corticolous, rarely saxicolous	very common
<i>Cladonia chlorophaea</i> (Flörke ex Somm.) Spreng.	terricolous, sandy soil	not common
<i>Cladonia coniocraea</i> (Flörke) Spreng.	corticolous	rare Sec 8 Twp 83N R7W
<i>Cladonia macilenta</i> Hoffm.	terricolous, sandy soil	not common, only 1° thallus found
<i>Cladonia nemoxyna</i> (Ach.) Nyl.	terricolous, sandy soil	rare Sec 23 Twp 84N R8W
<i>Cladonia subcariosa</i> Nyl.	terricolous, sandy soil	rare Sec 8 Twp 83N R7W
<i>Dermatocarpon minutum</i> (L.) Mann	saxicolous, limestone	mod. common
<i>Parmelia aurulenta</i> Tuck.	corticolous	mod. common
<i>Parmelia bolliana</i> Mull. Arg.	corticolous, occasionally on moss over rock	not common
<i>Parmelia caperata</i> (L.) Ach.	corticolous	common
<i>Parmelia margaritata</i> Hue	corticolous	rare Pinicon Ridge Pk.
<i>Parmelia rudecta</i> Ach.	corticolous	common
<i>Parmelia subaurifera</i> Nyl.	corticolous	rare Squaw Creek Pk.
<i>Peltigera canina</i> (L.) Willd.	terricolous	rare Palisades-Dows Preserve
<i>Peltigera spuria</i> (Ach.) DC	terricolous, sandy soil	rare Sec 8 Twp 83N R7W
<i>Physcia adiastrata</i> Essl.	corticolous + on moss over rock	very common
<i>Physcia adscendens</i> (Th. Fr.) Oliv.	corticolous	rare Ellis Pk.
<i>Physcia aipolia</i> (Ehrh.) Hamp	corticolous	common
<i>Physcia ciliata</i> (Hoffm.) DuRoi	corticolous	very common
<i>Physcia luganensis</i> Meresch	corticolous	not common
<i>Physcia millegrana</i> Degel.	corticolous	very common
<i>Physcia orbicularis</i> (Neck.) Poetsch	corticolous + saxicolous limestone	common
<i>Physcia rubropulchra</i> (Degel.) Moberg	corticolous	common
<i>Physcia stellaris</i> (L.) Nyl.	corticolous + saxicolous limestone	very common
<i>Physcia tribacoides</i> Nyl.	corticolous	not common
<i>Physciopsis elaeina</i> (Sm.) Poelt	corticolous	common
<i>Physciopsis syncolla</i> (Tuck. ex Nyl.) Poelt	corticolous	common
<i>Physconia grisea</i> (Lam.) Poelt	corticolous	common
<i>Physconia pulverulenta</i> (Schreb.) Poelt	corticolous	common
<i>Pyxine soredata</i> (Ach.) Mont.	corticolous	rare Pinicon Ridge Pk.
<i>Xanthoria fallax</i> (Hepp) Arn.	corticolous	very common

described by Thomson (1963) as "primarily a species of southern Canada . . . lacking in the prairie and plains states." Thomson and Hale (1969) both show the range of this species extending as far south as Minnesota and Wisconsin in the Midwest.

Esslinger (1977) discussed the differences between *Physcia orbicularis*, a western species, and *P. adiastrata*, an eastern species. He

showed the 2 to be roughly sympatric in North and South Dakota and Minnesota; I am now showing them to be sympatric in Iowa as well.

With 3 previously unreported species found in just 1 county in Iowa, more extensive collection should result in further new reports for the state and would surely help in compiling a more complete description of the lichens in Iowa.

ACKNOWLEDGEMENTS

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