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Iowa Lichens: An Annotated Listing

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The previous listings of Iowa lichens were compiled in the 1890's and early 1900's and represented collections primarily from three Iowa counties. In the intervening years, several listings of local lichens have been published. The lichen flora of Iowa as presented here consists of 74 genera with 263 species and is a compilation of previously reported species, of herbarium specimens, and of observations made by the authors. A notation of habitat follows each entry in addition to the general listing of lichens found in similar habits summarized in the discussion.

INDEX DESCRIPTORS: Lichens, lichenized fungi

Bessey (1884) published the first lichen flora of Iowa, listing those species within a 20 mile radius of Ames. Fink (1895, 1897, 1904) published the most complete lichen flora, representing primarily 3 Iowa counties. In the last 70 years Conard (1952), Frazier (1914), Juhl (1961), Juhl and Tiffany (1963, 1965), Miller (1903), Pammel (1915, 1919), Shimek (1896), Stanley (1930), Tiffany and Juhl (1964), and Wolden (1919, 1935) have made contributions to the Iowa lichen flora.

We are fully aware that for the beginning, and to a certain extent for the experienced, student of Iowa lichens much of the existing information is difficult and time consuming to obtain. This is partially because some lists are scattered in older literature which may not be available and partially because there has been a series of nomenclatorial changes over the years. In an effort to make this information more readily available, the species reported in this paper represent a compilation of the previously reported species lists and specimens in the Iowa State University and University of Iowa herbaria, supplemented by field observations of the authors. Sources of the information for the species follows each entry in the text.

For some species voucher specimens were not available; therefore, the presence of an epithet in the list does not necessarily imply the correctness of the collector's identification. Where voucher specimens existed, identifications were confirmed if possible. The nomenclature accepted in the text follows that of Hale and Culberson (1970).

KEY TO THE SOURCES FOR LICHENS REPORTED FROM IOWA

1 —Bessey, 1884; 2 —Fink, 1895; 3 —Fink, 1897; 4 —Fink, 1904; 5 —Frazier, 1914; 6 —Greene, 1907; 7 —Juhl, 1961; 8 —Juhl and Tiffany, 1963; 9 —Juhl and Tiffany, 1965; 10 —Miller, 1903; 11 —Pammel, 1915; 12 —Pammel, 1919; 13 —Shimek, 1896; 14 —Shimek, 1897; 15 —Shimek, 1899; 16 —Stanley, 1930; 17 —Tiffany and Juhl, 1964; 18 —Wolden, 1919; 19 —Wolden, 1935; 20 —Iowa State University Herbarium; 21 —Degelius, 1954; 22 —Ericksen, 1941; 23 —Fink, 1919; 24 —Hedrick, 1934; 25 —Kiener, 1944; 26 —Magnusson, 1935; 27 —Magnusson, 1944; 28 —Magnusson, 1947; 29 —Servit, 1950.

IOWA LICHENS

Acarospora Mass.

- bella* (Nyl.) Jatta, on glacial erratic, Emmet Co., **18**
citrina (Tayl.) Zahlbr., on Sioux quartzite, Lyon Co., **20**
fuscata (Schr.) Arn., on rock, Boone and Fayette Co., **3, 10, 20**
oligospora (Nyl.) Arn., on sandstone, Boone Co., **23**
smaragdula (Wahlenb. ex Ach.) Mass., on rocks, Boone, Dick-

inson and Emmet Co., **9, 20**

xanthophana (Nyl.) Jatta, on granitic rock, Bremer and Fayette Co., **3**

Alectoria Ach.

chalybeiformis (L.) S. Gray, on old wood and sandstone, Clayton and Fayette Co., **3**

Anaptychia Korb.

palmatula (Michx.) Vain., on rock, Fayette Co., **2, 6, 20**

Arthonia Ach.

dispersa (Schr.) Nyl., on tree bark, Black Hawk and Fayette Co., **2, 3, 6, 20**

lecidella Nyl., on sandstone and tree bark, Boone, Bremer, Clayton, Fayette, Johnson, Linn and Story Co., **2, 6, 10, 20**

polymorpha Ach., on tree bark, Fayette Co., **2, 6, 20**

punctiformis Ach., on tree bark, Bremer and Fayette Co., **2, 6, 20**

radiata (Pers.) Ach., very common on tree bark, Boone, Bremer, Clayton, Emmet, Fayette, Floyd, Johnson, Linn and Story Co., **2, 6, 10, 18, 20**

Arthopyrenia Mass.

alba (Schr.) Zahlbr., on tree bark, Boone, Clayton, Fayette and Story Co., **2, 6, 10, 20**

cerasi (Schr.) Mass., on oak bark, Fayette Co., **20**

hyalospora (Nyl.) Fink, on tree bark, Fayette Co., **2, 6, 20**

punctiformis (Pers.) Mass., on tree bark, Bremer and Fayette Co., **2, 6, 20**

quinqueseptata (Nyl.) Fink, on tree bark, Boone Co., **7, 10**

Arthothelium Mass.

spectabile (Flot. ex Fr.) Mass., on mosses and tree bark, Allamakee, Boone, Bremer, Clayton, Fayette, Linn and Story Co., **2, 10, 20**

Bacidia DeNot.

acclinis (Mass.) Zahlbr., on poplar bark, Fayette Co., **2, 6**

atrorrisea (Del.) Körb., on tree bark, Fayette Co., **2, 6, 20**

baggiettoana (Mass. and DeNot.) Jatta, on earth, Fayette Co., **2, 6, 20**

effusa (Sm.) Trev., on tree bark, Fayette Co., **2, 6**

fuscrobella (Hoffm.) Bausch, on tree bark, Bremer, Clayton Dickinson, Fayette, Johnson, Linn and Winneshiek Co., **2, 6, 20**

inundata (Fr.) Körb., on inundated rock and tree bark, Boone, Bremer, Clayton, Decatur, Johnson, Poweshiek, Story and Webster Co., **2, 3, 4, 6, 10, 20**

naegeli (Hepp) Zahlbr., on wood, Boone, Cass and Story Co., **20**

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- pammellii* (Fink) Zahlbr., on rock, Boone Co., **20, 24**
rubella (Hoffm.) Mass., on tree bark, Bremer, Clayton, Delaware, Fayette, Johnson, Linn, Story and Winneshiek Co., **2, 6, 20**
sabuletorum (Schreb.) Lett., on mosses, Bremer, Clayton, Fayette and Winneshiek Co., **2, 6, 20**
schweinitzii (Tuck.) Schneid., on tree bark, Bremer, Fayette, Henry, Story and Winneshiek Co., **2, 6**
suffusa (Fr.) Schneid., on tree bark, Bremer, Clayton, Fayette, Floyd, and Winneshiek Co., **2, 6, 20**
trachona (Ach.) Lett., on rocks, Boone, Cass, Clayton, Fayette, Lucas and Story Co., **2, 4, 6, 20**
umbrina (Ach.) Bausch, on calcareous rock, Fayette and Linn Co., **2**
- Biatorella* DeNot.
fossarum (Duf. ex Fr.) Th. Fr., on calcareous rock, Fayette Co., **3**
- Buellia* DeNot.
alboatra (Hoff.) Branth and Rostr., on bark and calcareous rock, Fayette Co., **2, 3, 6, 20**
disciformis (Fr.) Mudd, on tree bark, Boone, Bremer, Clayton, Dickinson, Fayette, Linn and Shelby Co., **2, 6, 10, 15, 20**
polyspora (Will.) Vain., on tree bark, Black Hawk, Decatur and Fayette Co., **3**
pullata Tuck., on granitic rock, Fayette Co., **2, 6**
punctata (Hoff.) Mass., common on old wood, fence posts, and tree bark, Boone, Cass, Dickinson, Emmet, Fayette, Johnson, Pocohontas and Story Co., **2, 6, 7, 10, 15, 18, 20**
retrovertens Tuck., on glacial erratics, Dickinson Co., **8**
spuria (Schaer.) Anzi, on granitic rock, Boone, Bremer and Fayette Co., **2, 4, 6, 10, 20**
- Calicium* Pers.
lenticulare (Hoffm.) Fr., on oak, Fayette Co., on juniper, Boone Co., **3, 6, 20**
subtile Pers., on decorticated juniper, Fayette Co., **3**
- Caloplaca* Th. Fr.
aurantiaca (Lightf.) Th. Fr., on rock and tree bark, Boone, Bremer, Clayton, Delaware, Dickinson, Emmet, Fayette, Johnson, Linn, Poweshiek, Shelby, Story, Webster and Winneshiek Co., **2, 4, 6, 8, 10, 15, 18, 20**
camptidia (Tuck.) Zahlbr., on wood, Story Co., **20**
cerina (Ach.) Th. Fr., on rock, old wood, and tree bark, Bremer, Cass, Clayton, Dickinson, Emmet, Fayette, Johnson, Linn, Poweshiek, Shelby, Story, Webster and Winneshiek Co., **2, 4, 8, 10, 13, 15, 18, 20**
cinnabarina (Ach.) Zahlbr., on rock, Boone, Clayton, Dickinson, Emmet, Fayette, Johnson, Linn, Webster and Winneshiek Co., **2, 6, 15, 18, 20**
citrina (Hoffm.) Th. Fr., on rock, Boone, Dickinson, Fayette, Johnson and Linn Co., **2, 4, 6, 8, 20**
discolor (Will.) Fink, on old wood, Story Co., **20**
ferruginea (Huds.) Th. Fr., on tree bark and rock, Bremer, Dickinson, Fayette and Johnson Co., **2, 3, 6, 8, 20**
festiva (Ach.) Zw., on rock, Dickinson and Webster Co., **9, 20**
holocarpa (Hoffm.) Wade, on old wood, Dickinson, Fayette and Floyd Co., **2, 6, 15, 27**
microphyllina (Tuck.) Hasse, common on old wood, Emmet, Fayette, Floyd, Johnson and Story Co., **2, 6, 18, 20**
modesta (Zahlbr.) Fink, on rock, Boone Co., **20**
murorum (Hoffm.) Th. Fr., on rock, Dickinson Co., **3, 6, 20**
- sideritis* (Tuck.) Zahlbr., on granitic rock, Boone, Bremer, Emmet, Fayette and Johnson Co., **2, 6, 10, 18**
pollinii (Mass.) Jatta, on trees, Fayette Co., **6, 27**
ulmorum (Fink) Fink, common on American elm and occasionally on other tree bark, Boone, Cass, Dickinson, Emmet, Fayette and Story Co., **6, 9, 10, 20, 27**
vitellinula (Nyl.) Oliv., on rock, Boone, Dickinson, Fayette, Johnson and Linn Co., **2, 4, 6, 10, 15**
- Candelaria* Mass.
concolor (Dicks.) B. Stein, on tree bark, wood, and rock, Allamakee, Boone, Bremer, Cass, Clayton, Dickinson, Emmet, Fayette, Floyd, Fremont, Johnson, Linn, Louisa, Lyon, Muscatine, Webster and Winneshiek Co., **2, 3, 6, 9, 10, 15, 18, 20**
fibrosa (Fr.) Müll. Arg. on tree bark, Boone Co., **20**
- Candelariella* Müll. Arg.
aurella (Hoffm.) Zahlbr., on rock, Fayette, Johnson, Linn and Lyon Co., **2, 13**
vitellina (Ehrh.) Müll. Arg., on rock and trees, Boone, Dickinson, Emmet, Fayette, Lyon and Poweshiek Co., **4, 9, 10, 13, 20**
- Cetraria* Ach.
ciliaris Ach., on wood, Bremer, Clayton, Fayette, Johnson and Winneshiek Co., **2, 5, 6, 20**
- Cladina* (Nyl.) Harm.
arbuscula (Wallr.) Hale and W. Culb., on old stumps and earth, Boone and Emmet Co., **6, 9, 20**
rangiferina (L.) Harm., on earth, Clayton, Fayette and Muscatine Co., **2, 5, 6, 16, 20**
- Cladonia* Wigg.
bacillaris (Ach.) Nyl., on decaying stumps and earth, Dickinson and Emmet Co., **2, 10, 16, 20**
caespiticia (Pers.) Flörke, on earth and sandstone, Boone, Emmet and Johnson Co., **2, 4, 6, 10, 19, 20**
capitata (Michx.) Spreng., on old stumps, earth, and sandstone, Boone, Bremer, Clayton, Emmet, Fayette, Johnson, Linn, Poweshiek and Webster Co., **2, 4, 6, 10, 15, 18, 20**
cariosa (Ach.) Spreng., on earth and decayed wood, Boone, Emmet, Johnson, Poweshiek and Lucas Co., **2, 3, 5, 6, 16, 19, 20**
chlorophaea (Flörke ex Summ.) Spreng., on earth and sandstone, Boone and Poweshiek Co., **4, 6, 10, 20**
coccifera (L.) Willd., on earth, Clayton Co., **2, 3, 6**
coniocraea (Flörke) Spreng., on decayed wood and earth, Boone, Iowa, Fayette and Poweshiek Co., **4, 6, 9, 10, 20**
cristatella Tuck., on old stumps and logs, Boone, Bremer, Clayton, Emmet, Fayette, Johnson, Linn, Poweshiek, Story and Winneshiek Co., **2, 4, 10, 15, 16, 19, 20**
didyma (Fée) Vain., on old stumps, Dickinson, Fayette and Johnson Co., **2, 6, 15, 20**
fimbriata (L.) Fr., on earth and old logs, Boone, Bremer, Clayton, Dickinson, Emmet, Fayette, Johnson, Linn and Winneshiek Co., **2, 6, 10, 15, 16, 18, 20**
furcata (Huds.) Schrad., on earth, Boone, Fayette, Mahaska, Poweshiek, Webster and Winneshiek Co., **2, 4, 6, 10, 16, 20**
gracilis (L.) Willd., on earth, Dickinson, Emmet, Fayette, Johnson, Poweshiek and Winneshiek Co., **2, 4, 6, 15, 16, 19, 20**
macilentia Hoffm., on old logs, Fayette, Linn and Winneshiek

- Co., **2, 6, 16**
parasitica (Hoffm.) Hoffm., on decaying logs, Boone and Fayette Co., **2, 6, 10, 20**
pyxidata (L.) Hoffm., on soil or decaying wood, Boone, Bremer, Clayton, Emmet, Fayette, Johnson, Lee, Linn, Muscatine, Poweshiek, Story, Webster and Winneshiek Co., **2, 4, 6, 16, 18, 20**
squamosa (Scop.) Hoffm., on decaying wood, Clayton, Emmet, Fayette and Lee Co., **2, 6, 16, 19**
symphyrcarpia (Ach.) Fr., on earth, Boone and Fayette Co., **2, 6, 10, 16, 20**
uncialis (L.) Wigg., on soil, **2, 6, 16**
verticillata (Hoffm.) Schaer., on earth and decaying wood, Emmet and Fayette Co., **2, 6, 16, 19, 20**
- Collema* Wigg.
conglomeratum Hoffm., on dead trees, Bremer, Clayton, Fayette, Muscatine and Winneshiek Co., **2, 6, 20**
crispum (Huds.) Wigg., on earth and loose calcareous rock, Fayette and Winneshiek Co., **2, 6, 20, 21**
cristatum (L.) Wigg., on calcareous rock, Fayette Co., **6, 20, 24**
flaccidum (Ach.) Ach., on trees and calcareous rock, Clayton, Fayette and Linn Co., **2, 6, 20**
nigrescens (Huds.) DC., on trees and sandstone, Boone and Fayette Co., **2, 4, 6, 10, 20**
subfarvum (Müll. Arg.) Degel., on dead trees, Fayette Co., **21**
tenax (Sw.) Ach., on calcareous rock and earth, Boone, Bremer, Clayton, Fayette, Floyd and Johnson Co., **2, 4, 6, 10, 20, 21**
tunaeformae (Ach.) Ach., on calcareous rock, Boone and Fayette Co., **2, 6, 20, 21**
- Coniocybe* Ach.
pallida (Pers.) Fr., on trees, Fayette Co., **2, 6, 20**
- Conotrema* Tuck.
urceolatum (Ach.) Tuck., on trees, Fayette Co., **3, 6**
- Cyphelium* Ach.
tigillare (Ach.) Ach., on old wood, Boone, Clayton, Dickinson, Emmet, Fayette, Johnson and Story Co., **2, 15, 17, 18, 20**
- Dermatina* Almq.
pyrenocarpa (Nyl.) Zahlbr., on trees, Dubuque Co., **20**
- Dermatocarpon* Eschw.
hepaticum (Ach.) Th. Fr., on calcareous rock and earth, Cass, Dickinson, Fayette, Fremont and Story Co., **2, 6, 15, 20**
miniatum (L.) Mann, on Sioux quartzite and calcareous rock, Boone, Clayton, Delaware, Dickinson, Fayette, Johnson, Linn, Lyon and Muscatine Co., **2, 5, 6, 15, 20**
tuckermanii (Rav.) Zahlbr., on tree bark, Fayette Co., **2, 6**
- Dimelaena* Norm.
oreina (Ach.) Norm., very common on Sioux quartzite and glacial erratics, Bremer, Dickinson, Emmet, Fayette, Johnson, Lynn and Sioux Co., **6, 20**
- Dimerella* Trev.
lutea (Dicks.) Trev., on tree bark, Fayette Co., **2, 6**
- Diploschistes* Norm.
actinostomus (Pers.) Zahlbr., on granitic rock, Fayette Co., **2, 6**
gypsaceus (Ach.) Nyl., on calcareous earth, Fayette Co., **2, 6**
scruposus (Schreb.) Norm., on sandstone, Boone and Clayton Co., **2, 4, 6, 10, 20**
- Co., **2, 4, 6, 10, 20**
- Endocarpon* Hedw.
pusillum Hedw., on calcareous rock and earth, Boone, Bremer, Cass, Clayton, Dickinson, Fayette, Fremont, Johnson, Lyon, Poweshiek and Story Co., **2, 4, 6, 10, 15, 20**
- Evernia* Ach.
prunastri (L.) Ach., on red cedar, old wood and tree bark, Fayette Co., **2, 3, 6**
- Fulgensia* Mass. and DeNot.
fulgens (Sw.) Elenk., on rock, Dickinson Co., **9**
- Graphis* Adans.
scripta (L.) Ach., common tree bark, Allamakee, Boone, Bremer, Cass, Clayton, Dickinson, Emmet, Fayette, Floyd, Henry, Johnson, Linn, Muscatine, Shelby, Story, Webster and Winneshiek Co., **2, 6, 7, 10, 15, 20**
- Haematomma* Mass.
puniceum (Sm. ex Ach.) Mass., on trees, Fayette Co., **2, 3**
- Heppia* Naeg.
lutosa (Ach.) Nyl., on calcareous earth, Fayette Co., **3, 6, 20**
- Heterodermia* Trev.
galactophylla (Tuck.) W. Culb., on granitic rock and tree bark, Emmet and Fayette Co., **2, 19, 20**
granulifera (Ach.) W. Culb., on trees, Bremer, Fayette, Johnson, Linn, Shelby and Story Co., **2, 6**
hypoleuca (Mühl.) Trev., on tree bark, Boone, Bremer, Fayette and Johnson Co., **2, 6, 10**
- Ionaspis* Th. Fr.
epulotica (Ach.) Th. Fr., Boone and Webster Co., **20**
- Lecania* Mass.
erysibe (Ach.) Mudd, on calcareous rock, Fayette Co., **2, 6, 20**
- Lecanora* Ach.
calcareae (L.) Somm., on calcareous rock, Fayette Co., **2, 6, 20**
chrysoleuca (Sm.) Ach., common on Sioux quartzite and occasionally other rock, Bremer, Fayette and Lyon Co., **2, 5, 6, 15, 20**
cinerea (L.) Somm., on rock, Clayton, Dickinson, Emmet, Fayette and Poweshiek Co., **3, 4, 6, 15, 19**
contorta (Hoffm.) J. Stein., on calcareous rock, Fayette Co., **2**
dispersa (Pers.) Somm., on rock, Dickinson Co., **8**
gibbosula Magn., on granitic rock, Bremer and Fayette Co., **2**
hageni (Ach.) Ach., common on calcareous rock, old cement, and old wood, Cass, Dickinson, Emmet, Fayette, Johnson, Linn and Story Co., **2, 6, 15, 18, 20**
hypoptoides Nyl., on wood, Dickinson Co., **8, 20**
iowensis Fink, on rock, Boone and Fayette Co., **8, 24**
 muralis (Schreb.) Rabenh., on Sioux quartzite and other rock, Boone, Bremer, Dickinson, Fayette, Lyon and Poweshiek Co., **2, 4, 6, 9, 10, 15, 20**
pallida (Schreb.) Rabenh., on trees, Clayton and Fayette Co., **2, 3, 6, 20**
polytropa (Echr.) Rabenh., on rock, Dickinson Co., **9**
subfusca (L.) Ach., on trees and rocks, Boone, Bremer, Clayton, Emmet, Fayette, Henry, Johnson, Linn, Shelby and Winneshiek Co., **2, 6, 10, 18, 20**

- varia* (Ehrh.) Ach., on tree bark and old wood, Black Hawk, Boone, Bremer, Clayton, Emmet, Fayette and Johnson Co., **2, 3, 6, 10, 18, 20**
- versicolor* (Pers.) Ach., on granitic rock, Dickinson, Fayette and Winneshiek Co., **3, 6, 20**
- Lecidea* Ach.
- carnulenta* (Tuck.) Fink, on decorticated wood, Black Hawk and Fayette Co., **3, 6, 20**
- decipiens* (Hedw.) Ach., on calcareous earth, Bremer, Dickinson, Fayette, Fremont and Winneshiek Co., **2, 3, 6, 15, 20**
- elabens* Fr., on tree bark and old wood, Emmet and Fayette Co., **2, 6, 18**
- enteroleuca* Ach., on tree bark and rock, Fayette, Floyd, Poweshiek and Shelby Co., **2, 4, 6, 15**
- fuscescens* Somm., on wood, Boone Co., **20**
- granulosa* (Ehrh.) Ach., on calcareous soil, Clayton and Fremont Co., **2, 3, 6, 20**
- lucida* (Ach.) Ach., on bark, Cass and Dickinson Co., **20**
- myriocarpoides* Nyl., on old wood, Dickinson, Fayette and Floyd Co., on rock, Poweshiek Co., **2, 4, 15**
- peliaspis* (Tuck.) Zahlbr., on tree bark, Fayette Co., **2, 6**
- russellii* Tuck., on calcareous rock, Bremer, Clayton, Dickinson, Fayette and Winneshiek Co., **2, 3, 6, 20**
- symmicta* (Ach.) Ach., on old wood, Dickinson, Fayette and Floyd Co., **2, 20**
- varians* Ach., on tree bark, Fayette and Winneshiek Co., **2, 6**
- Lempholemma* Körb. ex Zahlbr.
- umbella* (Tuck.) Zahlbr., on calcareous rock, Fayette Co., **2, 6**
- Lepraria* Ach.
- membranacea* (Dicks.) Vain., common on soil, wood, rocks, and tree bark, Boone, Cass, Dubuque, Story and Webster Co., **4, 10, 20**
- Leptogium* S. Gray
- chloromelum* (Sw. ex Ach.) Nyl., on mossy and calcareous rock, Boone, Clayton and Fayette Co., **2, 4, 6, 10, 20**
- cyanescens* (Ach.) Körb., on rock, Webster Co., **20**
- corticola* (Tayl.) Tuck., on tree bark, Boone, Bremer, Clayton, Fayette and Linn Co., **2, 6, 10, 20**
- lichenoides* (L.) Zahlbr., on mossy rock and dead wood, Boone, Bremer, Clayton and Fayette Co., **2, 6, 10**
- plicatile* (Ach.) Leight., on calcareous rock, Clayton, Fayette and Johnson Co., **2, 6**
- saturninum* (Dicks.) Nyl., on tree bark, Clayton and Fayette Co., **2, 6**
- Leptoraphis* Korb.
- epidermidis* (Ach.) Th. Fr., on tree bark, Dickinson Co., **9, 20**
- Lobaria* Schreb.
- pulmonaria* (L.) Hoffm., on tree bark, Clayton Co., **2, 3, 6**
- Melaspilea* Nyl.
- demissa* (Tuck.) Zahlbr., on tree bark, Dickinson and Fayette Co., **2, 6, 15, 20**
- Micarea* Fr.
- trisepta* (Naeg.) Wetm., on hickory bark, Boone, Cass and Story Co., **20**
- Microthelia* Körb.
- micula* Körb., on prickly ash, Fayette Co., **3, 6**
- thelena* (Ach.) Trev., on tree bark, Bremer and Fayette Co., **2, 6**
- Mycocalicium* Vain.
- parietinum* (Ach.) Vain., on decorticated wood, especially red cedar, Fayette Co., **6, 20**
- Opegrapha* Ach.
- atra* Pers., on bark, Cass Co., **20**
- pulicaris* (Hoffm.) Schrad., on tree bark, Boone, Dickinson, Fayette, Floyd, Johnson, Linn, Story and Webster Co., **2, 6, 10, 15, 20**
- vulgata* (Ach.) Ach., on bark, Cass Co., **20**
- Pannaria* Del.
- microphylla* (Sw.) Mass., on rock, Clayton and Emmet Co., **2, 16, 18**
- pityrea* (DC.) Degel., on wood and rock, Cerro Gordo, Clayton, Emmet and Johnson Co., **3, 18**
- rubiginosa* (Thunb. ex Ach.) Del., on calcareous rock, Bremer, Clayton, Fayette, Johnson, Linn and Winneshiek Co., **2**
- Parmelia* Ach.
- aurulenta* Tuck., on tree bark and rock, Dickinson and Emmet Co., **9, 18, 20**
- borreri* (Sm.) Turn., common on tree bark, Boone, Bremer, Clayton, Dickinson, Emmet, Fayette, Fremont, Shelby, Story and Winneshiek Co., on rock from Poweshiek Co., **2, 4, 5, 6, 10, 15, 18, 20**
- caperata* (L.) Ach., common on tree bark and rock, Boone, Bremer, Clayton, Dickinson, Emmet, Fayette, Fremont, Shelby, Story and Winneshiek Co., on rock, Poweshiek Co., **2, 4, 5, 6, 10, 15, 18, 20**
- cestrata* Ach., on tree bark and rock, Bremer, Clayton, Emmet, Fayette, Floyd, Johnson and Linn Co., **2, 6, 15, 18, 20**
- conspersa* (Ach.) Ach., very common on rock, Bremer, Clayton, Emmet, Fayette, Lyon, Poweshiek and Story Co., **2, 4, 5, 6, 15, 19, 20**
- crinita* Ach., on tree bark and rock, Boone, Bremer, Clayton, Dickinson, Fayette, Floyd, Johnson, Linn and Story Co., **2, 4, 6, 9, 10, 15**
- olivacea* (L.) Ach., on tree bark, Fayette, Floyd and Dickinson Co., **2, 6, 15**
- perforata* (Jacq.) Ach., on tree bark, Bremer, Clayton, Dickinson, Fayette, Johnson, Linn and Story Co., **2, 6, 15**
- perlata* (Huds.) Ach., on tree bark, Emmet, Shelby and Story Co., **2, 6, 19**
- quercina* (Willd.) Vain., on tree bark, Boone, Bremer, Clayton, Fayette, Johnson, Linn, Shelby, Story and Winneshiek Co., **2, 10**
- redecta* Ach., on sandstone, Boone, Emmet and Story Co., **6, 10, 20**
- saxatilis* (L.) Ach., on tree bark and rock, Bremer, Clayton, Emmet, Fayette, Johnson, Linn, Story and Winneshiek Co., **2, 6, 18, 20.**
- Peltigera* Willd.
- canina* (L.) Willd., on shaded earth, Boone, Bremer, Cerro Gordo, Clayton, Delaware, Dickinson, Emmet, Fayette, Guthrie, Iowa, Johnson, Lee, Linn, Muscatine, Shelby, Story and Winneshiek Co., **2, 4, 5, 6, 9, 10, 15, 18, 20, 25**
- evansiana* Gyeln., on shaded earth in oak forest, Iowa Co., **25**
- horizontalis* (Huds.) Baumg., on shaded earth, Boone and Emmet Co., **2, 6, 19**

- malacea* (Ach.) Funck, on shaded earth, Emmet Co., **20**
polydactyla (Neck.) Hoffm., on shaded earth, Emmet, Fayette, Iowa and Linn Co., **2, 6, 19, 20, 25**
praetextata (Flörbe ex Somm.) Vain., on shaded earth in oak forest, Iowa Co., **25**
rufescens (Weis.) Humb., earth along shady hillsides, Iowa, **6**
scabrosa Th. Fr., on shaded earth, Emmet and Fayette Co., **2, 20**
spuria (Ach.) DC., on clay banks and shaded earth, Boone, Bremer, Fayette and Johnson Co., **2, 4, 6, 10, 20**
- Pertusaria* DC.
ambigens (Nyl.) Tuck., on tree bark, Fayette Co., **2, 6**
leioplaca (Ach.) DC., on tree bark, Fayette Co., **2, 6, 20**
multipuncta (Turn.) Nyl., on tree bark, Boone, Bremer, Fayette, Johnson, Linn and Story Co., **2, 6, 20**
pertusa (L.) Tuck., on tree bark, Fayette Co., **2, 6**
pustulata (Ach.) Duby, on tree bark, Bremer, Emmet, Fayette, Floyd and Linn Co., **2, 6, 18, 20, 22**
velata (Turn.) Nyl., on tree bark, Boone, Bremer, Clayton, Fayette, Johnson, Linn, Shelby, Story and Winneshiek Co., **2, 4, 6, 10, 20**
- Phaeographis* Müll. Arg.
dendritica (Ach.) Müll. Arg., common on dead plum trees, Emmet Co., **18**
eulectra (Tuck.) Zahlbr., on tree bark, Clayton and Fayette Co., **2, 6, 20**
inusta (Ach.) Müll. Arg. on tree bark, Story Co., **17, 20**
- Physcia* (Schreb.) DC.
ascendens (Th. Fr.) Oliv., on bark, Fayette Co., **20**
aipolia (Ehrh.) Hampe, on bark, Fremont Co., **20**
albicans (Pers.) Thoms., on bark, Webster Co., **20**
albinea (Ach.) Nyl., on rock, Emmet Co., **19, 20**
caesia (Hoffm.) Hampe, on tree bark and rock, Boone, Bremer, Dickinson, Emmet, Fayette, Johnson, and Lyon Co., **6, 10, 13, 15, 19, 20**
ciliata (Hoffm.) Du Rietz, on tree bark and rock, Allamakee, Boone, Bremer, Clayton, Emmet, Fayette, Johnson, Linn, Louisa, Shelby, Story and Winneshiek Co., **2, 6, 10, 18, 20**
clementi (Sm.) Maas G., on tree bark, Boone Co., **6, 10**
millegrana Degel., on tree bark and wood, Boone and Emmet Co., **9, 20**
orbicularis (Neck.) Poetsch, on tree bark, Boone Co., **20**
stellaris (L.) Nyl., common tree bark and rock, Allamakee, Boone, Bremer, Clayton, Delaware, Dickinson, Emmet, Fayette, Floyd, Johnson, Linn, Louisa, Muscatine, Poweshiek, Shelby, Story and Winneshiek Co., **2, 4, 5, 6, 9, 10, 15, 18, 20**
tenella (Scop.) DC., on bark, Story Co., **20**
tribacia (Ach.) Nyl., on tree bark, Bremer, Clayton, Emmet, Fayette, Johnson, Linn and Story Co., **2, 6, 18, 20**
tribacoides Nyl., on tree bark, Boone Co., **20**
- Physciopsis* Choisy
elaeina (Sm.) Poelt, common on tree bark, Boone, Clayton, Dickinson, Emmet, Fayette, Floyd, Johnson, Linn, Shelby, Story and Winneshiek Co., **2, 6, 10, 15, 18, 20**
syncolla (Tuck. ex Nyl.) Poelt, on tree bark, Boone, Dickinson and Emmet Co., **9, 20**
- Physconia* Poelt
grisea (Lam.) Poelt, on tree bark, Boone Co., **20**
- pulverulenta* (Schreb.) Poelt, on tree bark and rock, Boone, Bremer, Clayton, Emmet, Fayette, Johnson, Linn and Story Co., **2, 4, 6, 10, 18, 20**
- Placynthium* S. Gray
nigrum (Huds.) S. Gray, on rocks, Boone, Bremer, Clayton, Fayette and Winneshiek Co., **2, 3, 4, 6, 10, 20**
petersii (Nyl.) Burnh., on calcareous rock, Fayette Co., **2, 6**
- Polyblastia* Mass.
bryophila Lönnr., on mosses, Webster Co., **20**
- Polyblastiopsis* Zahlbr.
floridana Fink, on moss and sandstone, Webster Co., **20**
lactea (Mass.) Zahlbr., on tree bark, Fayette Co., **2, 6**
- Pyrenopsis* Nyl.
pulvinata (Schaer.) Th. Fr., on calcareous rock, Fayette and Johnson Co., **2, 6, 20**
- Pyrenula* Ach.
glabrata (Ach.) Mass., on tree bark, Emmet and Fayette Co., **2, 6, 19, 20**
leucoplaca (Wallr.) Körb., on tree bark, Fayette Co., **2, 6, 20**
nitida (Weig.) Ach., on tree bark, Boone, Fayette, Henry, Linn and Muscatine Co., **2, 6, 10, 20**
- Pyxine* Fr.
sorediata (Ach.) Mont., on tree bark and rock, Fayette and Johnson Co., **2, 4, 6**
- Ramalina* Ach.
calicaris (L.) Fr., on tree bark, Bremer, Delaware, Dickinson, Emmet, Fayette, Henry, Johnson and Poweshiek Co., **2, 4, 6, 15, 20**
farinacea (L.) Ach., on sandstone, Boone, Clayton and Fayette Co., **2, 4, 6, 10, 20**
fastigata (Pers.) Ach., on tree bark and rock, Boone, Bremer, Clayton, Emmet, Fayette, Johnson, Linn, Shelby and Winneshiek Co., **2, 4, 6, 10**
fraxinea (L.) Ach., on sandstone and tree bark, Boone, Bremer, Clayton, Emmet, Johnson, Linn, Shelby, Story and Winneshiek Co., **2, 6, 10, 18**
- Rinodina* (Ach.) S. Gray
bischoffii (Hepp) Mass., on rock, Dickinson, Fayette and Lyon Co., **3, 6, 20**
exigua (Ach.) S. Gray, on old wood, Boone and Fayette Co., **2, 10, 20**
finkii Magn., on bark, Bremer Co., **28**
milliaria Tuck., on tree bark, Boone, Delaware, Fremont, Lucas and Story Co., **9, 20**
ocellata (Hoffm.) Arn., on rock, Dickinson, Emmet, Lyon and Webster Co., **9, 20**
polyspora Th. Fr., on granitic rock, Bremer Co., **28**
pyrina (Ach.) Arn., on old boards, Fayette Co., **28**
subplumbea Magn., on bark, Bremer Co., **28**
tephrapsis (Tuck.) Herre, on sandstone, **6**
- Sarcogyne* Flot.
regularis Körb., on rock, Fayette Co., **26**
simplex (Dav.) Nyl., on calcareous rock, Bremer, Clayton, Fayette and Johnson Co., **2, 3, 6, 20**

- Staurothele* Norm.
fissa (Tayl.) Zw., on calcareous rock, Clayton, Fayette, Johnson and Linn Co., **2, 6, 20**
- Stereocaulon* Hoffm.
paschale (L.) Hoffm., on rock riprap, Poweshiek Co., **4**
- Teloschistes* Norm.
chrysophthalmus (L.) Th. Fr., on tree bark, red cedar, old wood and rock, Bremer, Clayton, Dickinson, Emmet, Shelby, Story and Winneshiek Co., **2, 6, 9, 15, 18, 20**
- Thelidium* Mass.
pyrenophorum (Ach.) Mudd, on calcareous rock, Dickinson, Fayette and Johnson Co., **2, 6, 15**
- Thelocarpon* Nyl.
laureri (Flot.) Nyl., on old wood, Bremer, Delaware and Fayette Co., **3, 20**
- Thrombium* Wallr.
epigaeum (Pers.) Wallr., on clay, Fayette Co., **3, 6**
- Toninia* Th. Fr.
aromatica (Turn.) Mass., on mosses, Boone and Story Co., **20**
- Trimmathele* Norm.
umbellulariae Herre, on trees, Boone and Kossuth Co., **20**
- Usnea* P. Br. ex Adans.
angulata Ach., on juniper, Fayette and Winneshiek Co., **2, 6, 20**
cavernosa Tuck., substrate and county unknown, **2, 6**
ceratina Ach., on tree bark, Fayette Co., **3, 6**
florida (L.) Wigg., on tree bark, Bremer, Clayton, Fayette, Johnson, Linn, Shelby and Winneshiek Co., **2, 6, 20**
hirta (L.) Wigg., on tree bark, Fayette Co., **2, 6**
mutabilis Stirt., on shaded rock, Boone Co., **20**
strigosa (Ach.) A. Eat., on tree bark, Dickinson and Emmet Co., **9, 20**
- Verrucaria* Schrad.
finkiana Serv., on rock, Fayette Co., **29**
fuscella (Turn.) Ach., on rock, Boone, Black Hawk, Dickinson, Johnson and Poweshiek Co., **2, 3, 4, 6, 10, 15, 20**
iowensis Serv., on rock, Fayette Co., **29**
muralis Ach., on calcareous rock, Black Hawk, Boone, Cass, Dickinson, Fayette, Johnson, Poweshiek and Story Co., **2, 3, 4, 6, 20**
nigrescens Pers., on rock, Boone, Cass, Dickinson, Emmet, Johnson, Linn and Story Co., **2, 4, 6, 9, 10, 20**
virens Nyl., on rock, Webster Co., **20**
viridula (Schrad.) Ach., on granitic rock, Boone Co., **4, 6, 10, 20**
- Xanthoria* (Fr.) Th. Fr.
candelaria (L.) Th. Fr., common on tree bark, old wood, and rock, Boone, Bremer, Clayton, Dickinson, Emmet, Fayette, Floyd, Henry, Shelby and Story Co., **2, 6, 10, 15, 18, 20**
elegans (Link) Th. Fr., on rock, Clayton, Dickinson, Fayette, Johnson, Linn, Lyon and Winneshiek Co., **2, 5, 6, 13, 15, 20**
fallax (Hepp) Arn., on tree bark, Allamakee, Boone, Cass, Dickinson, Emmet, Fremont and Story Co., **9, 20**
parietina (L.) Th. Fr., common on tree bark, Boone, Bremer, Cass, Delaware, Dickinson, Emmet, Fayette, Henry, Mus-

- catine, Shelby and Story Co., **2, 6, 15, 18, 20**
polycarpa (Ehrh.) Oliv., on tree bark, Allamakee, Boone, Bremer, Clayton, Dickinson, Emmet, Fayette, Floyd, Johnson, Linn, Shelby and Story Co., **2, 6, 9, 10, 15, 18, 20**

DISCUSSION

Since the lichen flora was recorded at an early date, one wonders if it might be possible to detect changes in the flora at specific collecting sites by comparing the early reports with observations made by the authors at the same collecting sites. Unfortunately, this is not possible for the whole lichen flora since exact collecting sites within counties were not recorded. However, there is one specific site, the Sioux quartzite outcrop in northwestern Iowa, at which Shimek (1896) did intensive collecting. We have collected there on several occasions and have examined numerous pieces of quartzite from the site. We found all of the species that Shimek indicated to be common. However, *Candelariella aurella*, *C. vitellina*, *Lecanora cinerea*, and *Xanthoria elegans*, which Shimek found rarely, we did not find at all. In addition, we found *Acarospora citrina*, *A. fuscata*, and *Caloplaca cinnabarina*. None of these species are reported by Shimek. We cannot evaluate these differences at this time.

In the preceding list of lichens the substrate from which the species is reported is indicated. Unfortunately, this does not indicate which lichens are usually associated with each other. Therefore, we have included the following groups of the more common lichens and have indicated their usual habitats. These groupings are generalizations, and intensive collecting is likely to furnish exceptions.

Lichens of Sioux Quartzite

Acarospora citrina, *A. fuscata*, *Caloplaca cerina*, *C. cinnabarina*, *Candelariella aurella*, *C. vitellina*, *Dermatocarpon miniatum*, *Lecanora cinerea*, *L. muralis*, *L. rubina*, *Parmelia conspersa*, *Physcia caesia*, *Dimelaenia oreina*, and *Xanthoria elegans*

Lichens of Exposed Earth and Loess Bluffs

Bacidia muscorum, *Cladonia fimbriata*, *C. pyxidata*, *Dermatocarpon hepaticum*, *Endocarpon pusillum*, *Lecidea decipiens*, and *L. granulosa*

Lichens of Partially Shaded Earth

Cladonia cariosa, *C. gracilis*, *C. fimbriata*, *C. pyxidata*, *Collema tenax*, *Peltigera canina*, and *Toninia aromatica*

Lichens of Exposed Granite

Acarospora citrina, *A. fuscata*, *Buellia pullata*, *B. spuria*, *Caloplaca cerina*, *C. cinnabarina*, *C. murorum*, *C. vitellinula*, *Dermatocarpon miniatum*, *Lecanora calcarea*, *L. cinerea*, *L. hageni*, *L. muralis*, *L. rubina*, *L. subfusca*, *Parmelia conspersa*, *P. olivacea*, *Physcia caesia*, *P. stellaris*, *Rinodina oreina*, and *R. bischoffii*

Lichens of Shaded Granite

Caloplaca aurantiaca, *Collema tunaeformae*, *Dermatocarpon miniatum*, *Parmelia caperata*, *P. crinita*, *P. saxatilis*, *Physcia ciliata*, *Physconia pulverulenta*, *Ramalina calicaris*, and *Toninia aromatica*

Lichens of Exposed Limestone and Sandstone

Bacidia trachona, *Caloplaca cerina*, *C. cinnabarina*, *C. vitellinula*, *Dermatocarpon hepaticum*, *Endocarpon pusillum*, *Lecanora calcarea*, *L. hageni*, *Lecidea russelli*, *Rinodina bischoffii*, and *Verrucaria nigrescens*

Lichens of Moist Limestone and Sandstone

Bacidia inundata, *B. trachona*, *Buellia alboatra*, *Caloplaca citrina*, *Collema tunaeformae*, *Dermatocarpon miniatum*, *Lepraria membranacea*, *Leptogium chloromelum*, *L. plicatile*, and *Verrucaria muralis*

Lichens of Well Rotted Logs and Wood

Cladonia cristatella, *C. fimbriata*, *C. gracilis*, *C. macilenta*, and *Peltigera canina*

Lichens of Well Weathered Boards and Wood

Buellia punctata, *Caloplaca cerina*, *C. microphyllina*, *Lecanora hageni*, *L. varia*, and *Thelocarpon laureri*

Lichens of Trees with Rough Bark

Arthonia lecideella, *Bacidia fuscorubella*, *Buellia alboatra*, *Caloplaca aurantiaca*, *C. cerina*, *C. ulmorum*, *Candelaria concolor*, *Graphis scripta*, *Lecanora subfusca*, *Lecidea enteroleuca*, *Opegrapha pulicharis*, *Parmelia borreri*, *P. caperata*, *P. crinita*, *P. perforata*, *P. saxatilis*, *Pertusaria leioplaca*, *P. pustulata*, *P. velata*, *Physcia ciliata*, *P. stellaris*, *P. tribacea*, *Physciopsis elaeina*, *Physconia pulverulenta*, *Pyrenula nitida*, *Theloschistes chrysophthalmus*, *Xanthoria candelaria*, *X. parietina*, and *X. polycarpa*

Lichens of Trees with Smooth Bark

Arthonia radiata, *A. dispersa*, *A. lecideella*, *Arthopyrenia alba*, *Bacidia trisepta*, *B. fuscorubella*, *Caloplaca cerina*, *C. ulmorum*, *Graphis scripta*, *Lecanora subfusca*, *Lecidea enteroleuca*, *Physciopsis elaeina*, *Pyrenula nitida*, *Xanthoria candelaria*, *X. parietina*, and *X. polycarpa*

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