

# MACROLICHEN FLORA OF JACKSON COUNTY, ILLINOIS

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## ABSTRACT

Keys, habitat descriptions, and abundance information are provided for the 84 species of macrolichens documented by voucher specimens from Jackson County, Illinois. Brief descriptions of more than 25 additional macrolichen taxa not known from the county but occurring in other counties in the region also are included.

## INTRODUCTION

This paper is a floristic treatment of the macrolichens of Jackson County, Illinois. It includes information concerning their habitats and abundance within the county; also included is a key to the genera of Jackson County macrolichens, and keys to species for each genus in which more than one species is represented. For macrolichens known commonly from nearby counties, but not recorded specifically from Jackson County, brief descriptions are included under the taxon which they most closely resemble.

No previous work has been devoted specifically to Jackson County lichens, though several Jackson County collections are cited in Skorepa (1966, 1973 & 1977). Stotler (1976) conducted a study of saxicolous bryophyte and macrolichen associations in Little Grand Canyon, a natural area in the southwestern sector of the county. Winterringer & Vestal (1956) described the rock-ledge vegetation of southern Illinois, though none of their sampling study areas were located within Jackson County. Skorepa's (1973) dissertation on the taxonomy and ecology of the lichens of southern Illinois is perhaps one of the most interesting and insightful lichenological floristic works to date, but it contains only desultory references to Jackson County.

With an area exceeding 1554 square kilometers (600 square miles), Jackson County is the largest county in southern Illinois. According to Voigt and Mohlenbrock (1964) this county is physiographically one of the most diverse in southern Illinois, and contains examples of plant communities, topography, and substrates representative of much of the region.

According to Schwegman (1973), four of the six natural divisions described for southern Illinois occur in Jackson County. Most of the northern half of the county is in the Southern Till Plain Division. The extreme northwestern edge of the county and a small portion in the Pine Hills are in the Ozark Division, while most of the dissected southern sector is in the Shawnee Hills Division. A broad zone along the western edge of the county is in the Lower Mississippi River Bottomlands Division.

The macrolichen flora of Jackson County, Illinois is known to consist of 84 species, nearly all of which have phytogeographic affinities to the eastern United States. Our own studies of the region suggest, however, that the macrolichen floras of Jackson County and southern Illinois have more in common with those of the Missouri Ozark region rather than with those parts of the midwest which were heavily glaciated and supported tall grass prairie in the presettlement era. Data regarding the macrolichens of DuPage County in northern Illinois (Wilhelm & Lampa, unpublished data) and Bennett Spring State Park in southwestern Missouri (Ladd & Wilhelm, 1983) reveal a Sorensen coefficient of similarity (Sorensen, 1948) of 0.43 between the lichen floras of Jackson County and DuPage County, and a coefficient of 0.68 between Jackson County and Bennett Spring State Park. Both areas are about equally remote from Jackson County.

## SUBSTRATES

There are three major substrates available for macrolichen colonization in Jackson County: saxicolous, terricolous, and corticolous. Some species of macrolichens inhabit lignicolous substrates as well. Sound and undecayed lignin is inhabited by several lichen species otherwise characteristic of corticolous substrates. As lignin decays it tends to be inhabited by those lichens which frequent terricolous substrates. Lignin does not in and of itself provide the substrate for a discrete macrolichen community in Jackson County. Although Skorepa (1973) listed *Cladonia bacillaris* and *C. coniocraea* as occurring on lignin only, we have found them occasionally on lightly shaded sandstone as well.

*Saxicolous substrates* consist primarily of sandstone walls, ledges, and boulders. Limited exposures of limestone occur near Grand Tower and along Kinkaid Creek, as well as minor outcrops in a few other areas. The few shale exposures in the county rapidly weather into masses of small resistant flakes and are too unstable for lichen colonization.

*Terricolous substrates* consist of humus, decayed wood, and soils derived from alluvium, loess, glacial till, and the weathering of sandstone, limestone, and shale. Some upland sites in the county have cherty soils with a high proportion of chert residuum. Detailed discussions on the geology and soils of Jackson County can be found in Harris, *et al.* (1977), Klubek, *et al.* (1983), and Mohlenbrock (1983).

*Corticolous substrates* available for macrolichens in the county are extensive and varied. In presettlement times much of Jackson County was forested (Schwegman, 1973). Some fairly extensive prairie areas occurred in the northeastern portion of

the county, and smaller prairie, glade, and savanna areas were interspersed throughout the county. A complex of small hill prairies occurred along the Mississippi River in the southwestern part of the county. Forests and more open vegetation types provided an array of moisture, light intensity, and exposure conditions, all of which factors create a wide range of conditions for macrolichen development.

Post-settlement disruptions of the natural vegetation, including clearing, post-clearing successional processes, introduction of Old World plant species, fire suppression, and air pollution, have resulted in now greatly altered vegetation patterns in the county.

The extent to which anthropogenics have had an effect on the autochthonous lichen flora is uncertain; indeed, the relationship between present patterns of corticolous macrolichen occurrence and that existing in presettlement times is impossible to ascertain. It is interesting to note, however, that several taxa, such as *Physcia millegrana*, almost invariably occur on trees in disrupted or disturbed communities, with autecological patterns similar to those of our weedy vascular flora. Many other lichens, such as *Anzia colpodes*, are found only in communities which exhibit a high degree of natural floristic integrity.

## THE FLORA

The body of this work begins with a key to the genera of macrolichens of Jackson County, followed by an alphabetically arranged series of generic entries. The generic entries contain keys to species where necessary and are followed by species entries which provide information regarding each species' abundance and habitat within the county. The species entries also include morphological and chemical information relevant to lichen identification. Species concepts and nomenclature, for the most part, follow Hale (1979), as do the standards for measuring lobe width and abbreviations for reagents used in chemical tests. If the names used by Hale (1969) are different from those employed in his second edition, they are provided as a synonym under the species entry to which it is relevant. For each species listed from the county a representative voucher is cited, along with the standard acronym, as used by Index Herbariorum, of the institution at which the specimen is housed. In a few cases, specimens cited by Skorepa (1966 & 1977) could not be located in the herbarium of Southern Illinois University. Skorepa (1973) infers that they are at either the University of Tennessee, the University of Wisconsin, or in his personal herbarium.

## KEY TO THE GENERA

- A. Thallus gelatinous, dark brown to blackish or dark slate gray; medulla absent.
  - B. Thallus suberustose, not distinctly lobed; on limestone. . . . *Placynthium*
  - B. Thallus foliose and distinctly lobed; on various substrates.
    - Thallus gray to brown; surface smooth or finely wrinkled but never pustulate, often shiny; isidia present, or thallus with fine coralloid branches. . . . *Leptogium*
    - Thallus black to blackish-olive, or if brown then without isidia, never with coralloid branches; surface flat to pustulate, dull; isidia present or absent. . . . *Collema*
- A. Thallus not gelatinous, variously colored; medulla present.
  - C. Thallus squamulose or fruticose.
    - D. Thallus distinctly fruticose.
      - E. Thallus strongly flattened and two-sided; squamules absent. . . . *Ramalina*

- E. Thallus with rounded podetia; squamules present or absent.
  - F. Thallus branched, anchored by a central stalk, with a distinct dense central cord; squamules absent. . . . *Usnea*
  - F. Podetia (thallus) simple or branched, usually fistulose, without a distinct central cord; squamules present or absent.
    - Podetia much-branched and characterized by a dull, fibrous, ecorticate surface; squamules absent. . . . *Cladina*
    - Podetia simple or branched, the cortex continuous, areolate, sorediate, or decorticate, but not fibrous as above; squamules present or absent. . . . *Cladonia*
- D. Thallus squamulose.
  - Squamules flat, brown, dark beneath, appressed. . . . *Dermatocarpon*
  - Squamules more or less erect, white or yellowish beneath, not appressed. . . . *Cladonia*
- C. Thallus distinctly foliose to umbilicate.
  - G. Perithecia present; thallus umbilicate and centrally attached; upper surface brown to gray or blackish. . . . *Dermatocarpon*
  - G. Perithecia absent; thallus not umbilicate; upper surface variously colored.
    - H. Thallus densely fibrous or tomentose beneath and with evident veins; lobes broad; upper surface dark brown. . . . *Peltigera*
    - H. Thallus never both densely fibrous-tomentose and with evident veins beneath; lobes various; upper surface variously colored.
      - I. Thallus orange, yellow, yellowish-green, or yellowish-gray, never ciliate.
        - J. Thallus orange; upper cortex K + deep purple. . . . *Xanthoria*
        - J. Thallus not orange; upper cortex K - .
          - K. Lobes finely divided into segments less than 1 mm broad; medulla P - .
            - Thallus sorediate, adnate on corticolous substrates; rhizines present. . . . *Candelaria*
            - Thallus without diaspores, tightly appressed to saxicolous substrates; rhizines absent. . . . *Lecanora*
          - K. Lobes evidently broader than 1 mm, not finely divided; medulla P + red or orange.
            - Thallus sorediate or with coarse sub-sorediate pustular isidia; upper cortex dull; lobes broad and blunt; corticolous or saxicolous . . . . *Pseudoparmelia*
            - Thallus esorediate; isidia absent, or if present then small and fine; upper cortex shiny; lobes prevailingly narrow and strap-like; saxicolous. . . . *Xanthoparmelia*
  - I. Thallus without an orange or yellowish-green tint, or if rarely so then the lobe margins distinctly long ciliate.
    - L. Upper surface distinctly grayish, the cortex characteristically broken by white pores; medulla C + red. . . . *Parmelia*
    - L. Upper surface of various tints, the cortex lacking white pores; medulla (in our species) C - or C + yellowish.
      - M. Thallus lobes relatively broad, mostly more than 5 mm; lower surface usually with a broad rhizine-free zone near the margin. . . . *Parmotrema*
      - M. Thallus lobes prevailingly less than 5 mm broad; rhizines, if present, extending nearly or quite to the margin.
        - N. Rhizines nearly or quite absent; thallus lobes confluent and tightly adnate to the substrate.
          - Cortex K + yellow, whitish mineral gray; saxicolous. . . . *Dirinaria*
          - Cortex K -, brown or brownish-gray; corticolous. . . . *Physciopsis*
        - N. Rhizines usually present and obvious; otherwise without the above combination of characters.
          - O. Lower surface white, light tan, or suffused with orange.
            - P. At least some soralia marginal or apical, linear or crescent-shaped; lower surface fibrous to smooth and corticate, typically with a few long rhizines projecting along the margins. . . . *Heterodermia*
            - P. Soralia laminal, marginal, or absent, not linear; lower surface smooth and corticate; rhizines not noticeably projecting.
              - Q. Thallus gray, the lobes mostly more than 3 mm broad; medulla C + red. . . . *Parmelia*

- Q. Thallus whitish-gray to light brown, the lobes mostly less than 2 mm broad; medulla C - .  
 Upper cortex K - ; soredia absent. . . . *Anaptychia*  
 Upper cortex K + yellow, or if K - , then sorediate. . . . *Physcia*
- O. Lower surface dark gray to blackish throughout, or light-colored near the margins only.  
 R. Lobes narrow and linear, appearing thick and inflated; lower surface densely black-tomentose. . . . *Anzia*  
 R. Lobes various, not appearing thick and inflated; lower surface not densely black-tomentose.  
 S. Medulla distinctly yellow and the cortex K - , or salmon-colored and the cortex K + yellow; thallus sorediate and usually pruinose. . . . *Pyxine*  
 S. Medulla white (and cortex K - or K + yellow), or diffusely pale yellow (and cortex K + yellow), or bright red or orange (and the cortex K - ), but not distinctly yellow or salmon; soredia and pruina present or absent.  
 T. Upper surface conspicuously foveolate, reticulate-ridged, especially on the lobes. . . . *Pseudoparmelia*  
 T. Upper surface smooth, without strong reticulate markings.  
 U. Thallus mineral gray or grayish green; cortex K + yellow; pruina absent.  
 Medulla usually pale yellow and K + yellow or yellow turning red; rhizines simple; soredia present, or if absent the medulla P + orange. . . . *Parmelina*  
 Medulla white, K - , P - ; some of the rhizines branched; soredia and isidia absent. . . . *Hypotrachyna*  
 U. Thallus whitish-gray to light tan, brownish-gray, or brown; cortex K - ; pruina absent or present.  
 Pruina conspicuous; soredia in linear marginal soralia. . . . *Physconia*  
 Pruina absent or only faintly developed; soredia various or absent, but not in linear soralia. . . . *Phaeophyscia*

### *Anaptychia* Koerb.

*Anaptychia palmulata* (Michx.) Vain.

Cortex K - ; without diaspores

Medulla K - , C - , KC - , P -

Occasional on the bases of deciduous trees, shaded sandstone, and on moss over rocks and trees. Some authors spell the epithet "palmatula". Wilhelm 8440 MOR.

### *Anzia* Stizenb.

*Anzia colpodes* (Ach.) Stizenb.

Cortex K + yellow; without diaspores

Medulla K - , C - , KC - , P -

Rare on the trunks of oak trees in mature closed forests. Hatcher 1365s SIU.

Skorepa (1966) reported *Coccocarpia cronia* (Tuck.) Vain. from Jackson County, but his specimen (#1504) could not be found; this specimen is not cited in his dissertation (Skorepa, 1973). It is known from nearby counties, and differs notably from *Anzia colpodes* in that it is isidiate.

*Candelaria* Mass.*Candelaria concolor* (Dicks.) B. Stein

Cortex K - ; sorediate

Medulla K - , C - , KC - , P -

Very common on a wide variety of deciduous trees and on cedar, in towns, residential areas, and along roadsides and forest edges; often associated with *Parmelia rudecta* and *Physcia millegrana*. Wilhelm 8334 MOR.

*Cladina* (Nyl.) Harm.*Cladina subtenuis* (Abb.) Hale & W. Culb.

Podetia K - , C - , KC - , P + red; without diaspores

Frequent on sandstone and well-drained soils in exposed to lightly shaded situations. = *Cladonia subtenuis* (Abb.) Evans. Wilson 2667 SIU.

A larger, pure white species, *C. rangiferina* (L.) Harm., is known from southern Illinois and has been cited from Jackson County [as *Cladonia rangiferina* (L.) Wigg.] by Stotler (1976); however, no confirming specimens have been found. It should be sought in well-drained acidic soils.

Skorepa (1966) cited *Cladonia sylvatica* (L.) Hoffm. from Jackson County, but no confirming specimens have been located. Nomenclaturally this translates into *Cladina arbuscula* (Wallr.) Hale & W. Culb., which we have collected from elsewhere within the region. It is similar to *C. subtenuis* but is characterized by the strongly secund ultimate branches. The only *Cladina* species included in Skorepa (1973) are *C. subtenuis* and *C. rangiferina*.

*Cladonia* Wigg.

1. Podetia elongated, usually slender and much-branched; squamules present or absent.
2. At least some squamules present, particularly toward the base and on the lower branches of the podetia; podetia grayish.
  - Podetia unbranched or very sparsely branched, UV + blue-white, P - ; primary squamules numerous. . . . *C. squamosa*
  - Podetia repeatedly branched, UV - , P + red; primary squamules absent or inconspicuous. . . . *C. furcata*
2. Squamules absent, even at the base; podetia yellowish green.
  - Cortex dull and continuous; medulla UV - ; common. . . . *C. caroliniana*
  - Cortex shiny and areolate (particularly in the distal portions); medulla UV + white; rare. . . . *C. uncialis*
1. Podetia simple, cup-like, proliferating, or absent, but never much-branched; always arising from persistent basal squamules.
3. Podetia chronically absent or less than 4 mm long.
  - 4. Apothecia common, sessile or nearly so; squamules notably incised. . . . *C. caespiticia*
  - 4. Apothecia absent or uncommon, only sterile squamules present; squamules essentially entire or merely lobulate.
    - 5. Squamules yellowish-green, with a distinct yellowish cast beneath, P - .
      - Squamules in flat open mats, C - beneath. . . . *C. robbinsii*
      - Squamules in dense, rounded, subglobose mounds, C + green beneath. . . . *C. strepsilis*
    - 5. Squamules mineral grayish-green to brownish, white beneath, P + red (rarely yellow) or P - .
      - 6. Squamules K - , UV + bright white.
        - Squamules P + yellow beneath, rare. . . . *C. atlantica*
        - Squamules P - , common. . . . *C. squamosa*
      - 6. Squamules K + yellow or red beneath; UV - .

7. Squamules prevailing less than 5 mm long, K + yellow turning red beneath.  
 . . . *C. polycarpoides*
7. Squamules mostly more than 5 mm long, K + yellow or dingy beneath.  
 Squamules P + red beneath. . . . *C. apodocarpa*  
 Squamules P - beneath. . . . *C. cariosa*
3. Podetia manifest, usually more than 4 mm long.
8. Podetia forming distinct cups.  
 Apothecia and/or pycnidia brown; thallus greenish mineral gray; very common.  
 . . . *C. chlorophaea*  
 Apothecia and/or pycnidia red; thallus yellowish-green; uncommon. . . . *C. pleurota*
8. Podetia not forming distinct cups.
9. Podetia farinose-sorediate, unbranched, tapering to pointed tips.  
 Squamules tiny, less than 1 mm long; pycnidia, if present, red; podetia P - .  
 . . . *C. bacillaris*  
 Squamules large, 2-5 mm long; pycnidia, if present, brown; podetia P + red.  
 . . . *C. coniocraea*
9. Podetia esorediate, branched or unbranched, usually tipped with apothecia.
10. Squamules very small, mostly less than 1 mm long; apothecia light brown or tan;  
 podetial axis often appearing twisted. . . . *C. capitata*
10. Squamules mostly more than 1 mm long; apothecia dark brown or absent; podetial  
 axis not twisted.  
 Surface of podetia K - , distinctly squamulose, UV + blue-white. . . . *C. squamosa*  
 Surface of podetia K + yellow turning red, nearly or quite without squamules,  
 UV - . . . . *C. polycarpoides*

### *Cladonia apodocarpa* Robb.

Squamules K + yellow to dingy, C - , KC - , P + red; without diaspores

Occasional on sandstone and mossy soil in well-drained upland forests. Typically the squamules are very large, often to 1 cm long, chalky white beneath, and with no podetia present. Ladd & Wilhelm 9486 MOR, which specimen contains norstictic acid as well as fumarprotocetraric acid and atranorin.

Another species known from the region, *C. clavulifera* Vain., is sometimes sterile but the squamules react K - and are generally much smaller than those of *C. apodocarpa*. See discussion under *C. polycarpoides*.

### *Cladonia atlantica* Evans

Squamules K - , C - , KC - , P + yellow; without diaspores

Known only from shaded mossy sandstone along Degognia Creek. Ladd & Wilhelm 9494 MOR.

### *Cladonia bacillaris* (Ach.) Nyl.

Squamules K - or K + dingy, C - , KC - , P - or P + yellowish; podetia covered with farinose soredia

Occasional on logs and stumps in upland forests; rarely on lightly shaded sandstone. Ladd & Wilhelm 9488 MOR.

A similar species, *C. pityrea* (Flk.) Fr., with a P + red reaction, occurs on decorative logs in the region and should be sought in Jackson County; see also the comments under *C. coniocraea*.

Skorepa (1966) reported *C. decorticata* (Flk.) Spreng. from Jackson County but no Jackson County specimens could be located, nor is it cited in his dissertation (1973). It differs from *C. bacillaris* in having brown pycnidia.

*Cladonia caespiticia* (Pers.) Flk.

Squamules K - , C - , KC - , P + red; without diaspores

Rare on logs and mossy, well-drained soil in upland forests. The brown apothecia are sessile on the squamules or minutely stipitate on short podetia. Hatcher 1284s SIU.

*Cladonia capitata* (Michx.) Spreng.

Podetia K - (or K + dingy brown), C - , KC - , P + red; without diaspores

Common on well-drained soils, sandstone, tree bases, and decorticate logs. This species has the smallest squamules of any *Cladonia* in the region, and is easily recognized by the furrowed, often twisted podetia. Skorepa's (1966) report of *C. caespiticia* (Skorepa 1133 SIU) should be referred here. Wilhelm 8310 MOR.

*Cladonia cariosa* (Ach.) Spreng.

Squamules K + yellow, C - , KC - , P + yellow; without diaspores

Rare; known only from a single collection made at Fountain Bluff. Ladd s.n., 17 March, 1976 MOR.

*Cladonia caroliniana* (Schwein.) Tuck.

Podetia K - , C - , KC - , P - ; without diaspores

Frequent on exposed, xeric, sandstone ledges. Skorepa 1154 SIU.

*Cladonia chlorophaea* (Flk.) Spreng.

Podetia K - or K + yellowish, C - , KC - , P - or P + red; sorediate

Very common on rocks, dry sandy soil, mossy tree bases, and shaded decorticate logs in upland forests; also on sandy and clay soils in old worn out fields and eroded ditch banks. Skorepa's (1966 & 1973) reports of *C. verticillata* (Skorepa 1064 SIU) should be referred here. Wilhelm 8327 MOR.

This species includes several morphologies which in their extremes seem different from one another. In southern Illinois and Missouri material, however, these extremes are linked by specimens exhibiting an apparent continuum of gradations to the point where making consistent distinctions between the elements becomes impractical if not impossible. In Jackson County there are two chemical segregates: *C. cryptochlorophaea* Asah. (cryptochlorophaeic acid, with or without atranorin) and *C. grayi* Merr. ex Sandst. (grayanic acid), the latter of which is the common element. Both segregates are represented by forms with and without fumarprotocetraric acid. *C. chlorophaea*, in a strict sense, yet unknown from Jackson County, contains only fumarprotocetraric acid.

An esorediate species with cortical patches on the podetia, *C. pyxidata* (L.) Hoffm., itself perhaps not fully distinct from *C. chlorophaea*, occurs very rarely in the region and might be sought in Jackson County. If the apothecia or pycnidia are overlooked or absent, *C. pleurota* might key here. It is usually KC + yellow and contains usnic acid.

*Cladonia coniocraea* (Flk.) Spreng.

Podetia K - or K + dingy yellowish brown, C - , KC - , P + red; sorediate

Uncommon on shaded sandstone, mosses over sandstone, and decorticate logs.



This species is characterized by the slenderly conic podetia arising from the surface of large squamules. Wilhelm 8412 MOR.

Another species, *C. cylindrica* (Evans) Evans, is known from the region and may occur in Jackson County. It differs from *C. coniocraea* in having much smaller, incised basal squamules and in possessing grayanic acid. Another species, *C. pityrea* (Flk.) Fr., is known from the region and differs from *C. coniocraea* in having podetia with granular soredia and smaller, incised primary squamules.

*Cladonia cristatella* Tuck.

Podetia K - , C - , KC - , or KC + yellowish, P + yellow; without diaspores

Frequent on decorticate logs and sandy soil in dry upland forests and old fields; rarely on sandstone. Wilhelm 8316 MOR.

*Cladonia furcata* (Huds.) Schrad.

Podetia K - , C - , KC - , P + red; without diaspores

Common on shaded to exposed, moist or dry sandstone, and on slopes in dry upland forests. This species, which in most respects looks like a reindeer moss (*Cladina*), is easily identified by its scattered podetial squamules. It often forms extensive mats with *Cladina subtenuis*. Wilhelm 8325 MOR.

*Cladonia piedmontensis* Merr.

Podetia K - , C - , KC - , or KC + faint yellowish, P - ; without diaspores

Uncommon on lightly shaded, mossy, sandstone ledges and outcrops. Ladd & Wilhelm 9500 MOR.

Although almost always found with podetia, in the sterile state this species could be confused with *C. robbinsii*, but the latter species has much larger squamules, sometimes 1 cm or more long.

*Cladonia pleurota* (Flk.) Schaer.

Podetia K - , C - , KC + yellowish, P - ; sorediate

Known only on the basis of a poor specimen collected on soil beneath shrubs at the edge of a sandstone bluff. Hatcher 1392s SIU.

*Cladonia polycarpoides* Nyl.

Podetia K + yellow turning red, C - , KC - , P + yellow to orange; without diaspores

Frequent on road and ditch banks, and on well-drained rocky soil in upland forest and in old fields. Including *C. symphycarpa* (Ach.) Fr. (Skorepa, 1966) and *C. subcartosa* Nyl. of Skorepa (1966 & 1973). Wilhelm 8326 MOR.

A similar species, *C. clavulifera* Vain., has been cited from the county by Skorepa (1966) and Stotler (1976), but we have been unable to locate specimens. It differs from *C. polycarpoides* in having a K - podetial reaction.

*Cladonia robbinsii* Evans

Squamules K - , C - , KC - , or KC + faint yellow, P - ; without diaspores

Occasional on sandstone or among mosses over sandstone; usually in light shade. See also the discussion under *C. piedmontensis*. Wilhelm 11945 MOR.

*Cladonia squamosa* (Scop.) Hoffm.

Podetia K -, C -, KC -, P -, UV + blue-white; without diaspores

Locally frequent on dry or moist sandstone ledges and on mossy sandstone outcrops; often in light shade. Wilhelm 8384 MOR.

*Cladonia strepsilis* (Ach.) Vain.

Squamules K -, C + green, P + yellow; without diaspores

Uncommon on xeric sandstone exposures. This species usually occurs as compact subglobose mounds of squamules. Ladd & Wilhelm 9489 MOR.

*Cladonia uncialis* (L.) Wigg.

Podetia K -, C -, KC -, P -, medulla UV + bright white; without diaspores

Rare; among mosses over sandstone. Hatcher 1363s SIU.

*Collema* Wigg.

1. Thallus saxicolous. . . . . *C. flaccidum*
1. Thallus corticolous.
  2. Thallus lobes narrow and linear, less than 1 mm wide; apothecia abundant; isidia absent (although upper surface may appear quite warty and pustulate). . . . . *C. conglomeratum*
  2. Thallus lobes broad and rounded, 2-5 mm wide; apothecia absent; isidia present.
    - Surface of lobes pustulate and ridged, dull olive-brown. . . . . *C. furfuraceum*
    - Surface of lobes flat and sublustrous, blackish-brown. . . . . *C. subflaccidum*

*Collema conglomeratum* Hoffm.

Thallus K -, C -, KC -, P -; without diaspores

Uncommon on exposed trunks and branches of post oaks and white oaks; often associated with *Dermatocarpon tuckermanii*. The small apothecia are usually abundant, often obscuring the thallus. Ladd & Wilhelm 9497 MOR.

*Collema flaccidum* (Ach.) Ach.

Thallus K -, C -, KC -, P -; isidiate

Frequent on shaded, often moist sandstone and mosses over sandstone. Ladd & Wilhelm 9487 MOR.

*Collema furfuraceum* (Arn.) Du Rietz

Thallus K -, C -, KC -, P -; isidiate

Common on shaded trunks of deciduous trees and cedars. Morphologically this species is essentially indistinguishable from its saxicolous relative, *C. flaccidum*. Wilhelm 8459 MOR.

*Collema subflaccidum* Degel.

Thallus K -, C -, KC -, P -; isidiate

Occasional on shaded trunks of deciduous trees in upland forests. = *C. subfurfuraceum* (Muell. Arg.) Degel. Wilhelm 8459a MOR.

*Dermatocarpon* Eschw.

1. Thallus corticolous on deciduous trees in upland forests, densely rhizinate. . . . *D. tuckermantii*
1. Thallus saxicolous or terricolous, with or without rhizines.  
Thallus rhizinate, of small, closely adnate squamules on calcareous or arenaceous soils;  
uncommon. . . . *D. lachneum*  
Thallus, without rhizines, umbilicate to loosely squamulose on rock; common. . . . *D. miniatum*

*Dermatocarpon lachneum* (Ach.) A.L. Sm.

Cortex K - ; without diaspores

Medulla K - , C - , KC - , P -

Characteristic of thin soil pockets on exposed limestone ledges, habitats which are rare in Jackson County. Including *D. hepaticum* (Ach.) Th. Fr. Wilhelm 8432 MOR.

*Dermatocarpon miniatum* (L.) Mann

Cortex K - , without diaspores

Medulla K - , C - , KC - , P -

A common and characteristic species of shaded or exposed, moist or dry, sandstone and limestone ledges, cliffs, walls, and beds of temporary streams. Wilhelm 8322 MOR.

A closely related species, *D. fluviatile* (G. Web.) Th. Fr. has a thallus which is less umbilicate and turns bright green when wet. Skorepa (1966) cited his #1855, as *D. aquaticum* (Weiss) Zahlbr., from Degognia Hollow, but we could not locate the specimen and it was not cited in his dissertation. Skorepa (1973) reports that *D. miniatum* occurs in two growth forms, with those from carbonate substrates tending to be umbilicate, while those from sandstone more often form irregular squamulose rosettes which he says resemble *D. fluviatile*.

*Dermatocarpon tuckermantii* (Rav.) Zahlbr.

Cortex K - , without diaspores

Medulla K - , C - , KC - , P -

Uncommon on exposed to lightly shaded trunks of deciduous trees in open upland forests, especially post oak and white oak, often growing with *Collema conglomeratum*. Skorepa (1973) mentions having seen this species on dolomite in Tennessee, and we see it regularly on dry carbonate rock in Missouri. Wilhelm 8317 MOR.

*Dirinaria* (Tuck.) Clem.*Dirinaria frostii* (Tuck.) Hale & W. Culb.

Cortex K + yellow; sorediate

Medulla K - , C - , KC - , P -

Uncommon on lightly shaded dry sandstone, usually on vertical faces protected by overhanging ledges. Hale & Culberson (1970) credit Hale & W. Culberson with having placed this species into *Dirinaria*, though Hale (1969 & 1979) credits the combination to Awasthi. Wilson 2664 SIU.

*Heterodermia* Trev.

1. Lower surface ecorticate and fibrous, tinted with orange, the tinted zones K+ purple. . . . *H. obscurata*
1. Lower surface corticate and smooth, white to tan, not K+ purple.  
     Soralia strongly crescent-shaped on the margins of the lobe tips; medulla K+ yellow; rhizines projecting beyond the lobe margins. . . . *H. speciosa*  
     Soralia nearly or quite continuous along the lobes and creases of the thallus; medulla K+ yellow turning red; rhizines not projecting beyond the lobe margins. . . . *H. albicans*

*Heterodermia albicans* (Pers.) Swinse. & Krog

Cortex K+ yellow; sorediate

Medulla K+ yellow turning red, C-, KC-, P+ yellow-orange

Uncommon on trunks of deciduous trees. Local reports of *H. domingensis* (Ach.) Trev. probably should be referred here. = *Anaptychia revenelii* (Tuck.) Zahlbr. Skorepa 4002 SIU.

*Heterodermia obscurata* (Nyl.) Trev.

Cortex K+ yellow, the lower surface K+ purple where pigmented; sorediate

Medulla K+ yellow, C-, KC-, P+ yellow

Occasional on bark of deciduous trees in upland forests. = *Anaptychia obscurata* (Nyl.) Vain. Hatcher 970s SIU.

*Heterodermia speciosa* (Wulf.) Trev.

Cortex K+ yellow; sorediate

Medulla K+ yellow, C-, KC-, P+ yellow

Common on trunks and branches of deciduous trees in open forests; also on sandstone and among mosses over sandstone. = *Anaptychia speciosa* (Wulf.) Mass., = *Heterodermia tremulans* (Muell. Arg.) W. Culb. of Skorepa (1973). Wilhelm 8377 MOR.

*Hypotrachyna* (Vain.) Hale*Hypotrachyna livida* (Tayl.) Hale

Cortex K+ yellow; without diaspores

Medulla K-, C-, KC+ rose, P-

On upper branches of canopy trees in upland forests; frequent but seldom collected. = *Parmelia livida* Tayl. Wilhelm 8376 MOR.

*Lecanora* Ach.*Lecanora muralis* (Schreb.) Ach.

Cortex K-; without diaspores

Medulla K-, C-, KC-, P-

Known only from exposed sandstone boulders in a pasture near Cora. Ladd 9502 MOR.

A similar species, *Dimelaena oreina* (Ach.) Norm., is known from the region and might be sought in Jackson County. It differs in having a medulla which reacts C+ red, and may be spotted in the field by the black apothecial disks; the disks of *Lecanora muralis* are yellowish-tan to brown.

*Leptogium* S. Gray

1. Lobes flat, the surfaces shiny, without wrinkles.
2. Lobes finely coralloid-branched; thallus without isidia. . . . *L. tenuissimum*
2. Lobes without coralloid branches; thallus isidiate.  
     Thallus olive-brown; lobes about 1-2 mm wide; apothecia common. . . . *L. dactylinum*  
     Thallus slate-gray; lobes usually 3-4 mm wide; apothecia very rare. . . . *L. cyanescens*
1. Lobes usually more or less convoluted; surfaces shiny or dull, manifestly wrinkled.
3. Lobes finely dissected into slender isidioid or fimbriate segments. . . . *L. lichenoides*
3. Lobes blunt and rounded, the surfaces often finely isidiate.  
     Lobes coarsely foveolate-wrinkled into strong ridges and furrows; thallus brownish-gray. . . . *L. milligranum*  
     Lobes finely reticulate-wrinkled; thallus slate-gray. . . . *L. austroamericanum*

*Leptogium austroamericanum* (Malme) Dodge

Thallus K -, C -, KC -, P -; isidiate

Frequent on lower trunks and bases of deciduous trees in open forests; rarely on shaded mossy rocks. Wilhelm 8458 MOR.

*Leptogium cyanescens* (Ach.) Koerb.

Thallus K -, C -, KC -, P -; isidiate

Common on shaded, moist, bare or mossy sandstone, and on shaded lower trunks of deciduous trees. Wilhelm 8321 MOR.

*Leptogium dactylinum* Tuck.

Thallus K -, C -, KC -, P -; isidiate

Known locally only from a shaded mossy tree trunk, though throughout the region this is typically a species of shaded, often mossy carbonate rocks. Wilhelm 8425 MOR.

*Leptogium lichenoides* (L.) Zahlbr.

Thallus K -, C -, KC -, P -; isidiate by lobular dissection

Occasional among mosses over rock in moist shaded sites. The thallus often blends with the moss cushion and is easily overlooked. Ladd & Wilhelm 9485 MOR.

*Leptogium milligranum* Sierk

Thallus K -, C -, KC -, P -; isidiate

Occasional on trunks of deciduous trees and cedars in open forests and along roadsides and fencerows. Hale (1969 & 1979) spelled the epithet "millegranum". Skorepa 823 SIU.

*Leptogium tenuissimum* (Dicks.) Fr.

Thallus K -, C -, KC -, P -; isidiate by coralloid branching

Included here solely on the basis of the report by Skorepa (1973), who cites his #3872 from Little Grand Canyon; he recorded it from the bases of white oaks and on moss in dry upland woods.

*Parmelia* Ach.

1. Thallus beset with simple to coralloid isidia. . . . *P. rudecta*
1. Thallus without isidia, though sometimes densely lobulate.  
     Thallus sorediate. . . . *P. subrudecta*  
     Thallus without soredia. . . . *P. hypoleucites*

*Parmelia hypoleucites* Nyl.

Cortex K + yellow; without diaspores  
 Medulla K -, C + red, KC + red, P -

Uncommon on sandstone walls and ledges; rarely on trunks of deciduous trees.  
 Ladd s.n., 3.Mar.76 MOR.

A morphologically similar species with a C - medullary reaction, *P. bolliana* Muell. Arg., is known from corticolous substrates in the region.

*Parmelia rudecta* Ach.

Cortex K + yellow; isidiate  
 Medulla K -, C + red, KC + red, P -

Abundant on trees and rocks in open or shaded situations throughout the county.  
 This is one of the most common and widely distributed macrolichens in the county.  
 Wilhelm 8318 MOR.

*Parmelia subrudecta* Nyl.

Cortex K + yellow; sorediate  
 Medulla K -, C + red, KC + red, P -

Frequent on deciduous trees in open forests; rarely on shaded sandstone. This species is seldom collected, perhaps because of its resemblance to the ubiquitous *P. rudecta*. Wilhelm 8300 MOR.

*Parmelina* Hale

1. Thallus without soredia or isidia; apothecia common. . . . *P. galbina*
1. Thallus isidiate or sorediate; apothecia very rare.  
     Thallus isidiate, lobes about 1 mm wide; tightly adnate on siliceous rocks. . . . *P. obsessa*  
     Thallus sorediate, lobes 2 mm or more wide; rather loosely adnate on trees and rocks. . . . *P. aurulenta*

*Parmelina aurulenta* (Tuck.) Hale

Cortex K + yellow; sorediate  
 Medulla K - or K + yellow, C -, KC -, P -

Common on open and shaded deciduous trees and cedars; also on shaded rocks.  
 = *Parmelia aurulenta* Tuck. Wilhelm 8364 MOR.

*Parmelina galbina* (Ach.) Hale

Cortex K + yellow; without diaspores  
 Medulla K + yellow turning red or darkening; C -, KC -, P + orange

Frequent on limbs and upper trunks of deciduous trees in upland forests. =  
*Parmelia galbina* Ach. Wilhelm 8428 MOR.

*Parmelina obsessa* (Ach.) Hale

Cortex K + yellow; isidiate

Medulla K + deeper yellow, C -, KC -, P + orange

Locally frequent on lightly shaded sandstone boulders and ledges. = *Parmelia obsessa* Ach. Ladd & Wilhelm 9484 MOR.

*Parmotrema* Mass.

1. Thallus yellowish-green, isidiate; saxicolous. . . . *P. madagascariaceum*

1. Thallus mineral gray, without isidia; corticolous or saxicolous.

2. Soredia absent.

Medulla K + yellow turning red.

. . . *P. euryacum*

Medulla K - .

. . . *P. michauxianum*

2. Soredia present.

Lower surface with a white or light tan rhizine-free zone near the margins; norstictic acid present. . . . *P. hypotropum*

Lower surface black or dark brown, and more or less rhizinate to the margins; salazinic acid present. . . . *P. reticulatum*

*Parmotrema euryacum* (Hue) Hale

Cortex K + yellow; without diaspores

Medulla K + yellow turning red, C -, KC -, P + orange

Known only from a single collection from the trunk of a bluff top cedar tree. This collection was originally cited as *P. michauxianum* (Zahlbr.) Hale (Skorepa 1966). Not treated by Hale (1969). Skorepa 460 SIU.

Another species known from the region, *P. perforatum* (Jacq.) Mass., would key here but differs in that there is a broad bare white zone along the lower margin of the thallus, and the thallus is very loosely adnate to suberect.

*Parmotrema hypotropum* (Nyl.) Hale

Cortex K + yellow; sorediate

Medulla K + yellow turning red, C -, KC -, P + orange

Common on trunks and limbs of mature trees, and on lightly shaded ledges and boulders in dry upland forests. = *Parmelia hypotropa* Nyl. Wilhelm 8343 MOR.

Skorepa (1973) indicates that all his specimens of *Parmotrema hypotropum* from southern Illinois contain stictic acid, a datum which, if true, would imply that all southern Illinois material is referable to *P. hypoleucinum* (B. Stein) Hale. This observation is at variance with our own. All of our Jackson County specimens contain only norstictic acid. We do have *P. hypoleucinum* from the region, but it apparently is uncommon.

*Parmotrema madagascariaceum* (Hue) Hale

Cortex K + yellow; isidiate

Medulla K -, C - or C + rose, KC + rose, P -

Uncommon on shaded or exposed vertical sandstone, often on canyon walls. This species superficially resembles a *Xanthoparmelia*, but is easily distinguished by the prominent marginal cilia. = *Parmelia madagascariacea* (Hue) Abb. Wilhelm 8379 MOR.

All of the Jackson County specimens, and most material from the region, react C -, KC + rose in the medulla. Hale (1965 & 1979) included all C-specimens in

*Parmelia xanthina* (Muell.Arg.) Vain. According to Almeda & Dey (1973), specimens reacting KC + rose (gyrophoric acid) should display a C + "very faint pink, fast-fading" medullary reaction and should be included in *P. madagascariacea* (Hue) Abb. In the Jackson County material the reaction is so ephemeral as to be all but undetectable; nevertheless, gyrophoric acid is present in the Jackson County specimen and in others we have from the region. Of the two species, Skorepa (1973) recorded only *P. madagascariacea* from southern Illinois.

*Parmotrema subtinctorium* (Zahlbr.) Hale, an inconspicuously ciliate, mineral gray, isidiate species, is occasional on lightly shaded deciduous trees in the region and should be sought in Jackson County.

*Parmotrema michauxianum* (Zahlbr.) Hale

Cortex K + yellow; without diaspores

Medulla K -, C -, KC + rose, P + red

While this species is occasional elsewhere in the region, it is included here solely on the basis of the reports by Skorepa (1973 & 1977) who cites his #6425 from Devil's Den. It is occasional on deciduous trees in upland woods.

*Parmotrema reticulatum* (Tayl.) Choisy

Cortex K + yellow; sorediate

Medulla K + yellow turning red, C -, KC -, P + orange or red

Occasional on bark of deciduous trees and lightly shaded sandstone in upland forests. = *Parmelia reticulata* Tayl. Hatcher 1288s SIU.

### *Peltigera* Willd.

Upper cortex dull to sublustrous, tomentose, at least on the lobes; lower surface with pale or darkening, distinct, narrow, raised veins; rhizines numerous. . . . *P. canina*

Upper cortex lustrous, smooth, without tomentum; lower surface with dark, indistinct, broadly flattened veins; rhizines few to absent. . . . *P. polydactyla*

*Peltigera canina* (L.) Willd.

Cortex K -; without diaspores

Medulla K -, C -, KC -, P -

Frequent on thin soils over sandstone, often among mosses, as well as on humus and rocky soil on slopes in dry upland forests; occasionally in well-drained shaded mowed areas. Including *P. praetextata* (Somm.) Vain., which is called *P. canina* var. *rufescens* f. *innovans* (Koerb.) Thoms. by Thomson (1950), and is segregated by the "isidia" which develop on regenerated portions of torn thallus. Thomson refers most of the Illinois material to *P. canina* var. *rufescens* (Weiss) Mudd. Wilhelm 8324 MOR.

*Peltigera polydactyla* (Neck.) Hoffm.

Cortex K -; without diaspores

Medulla K -, C -, KC -, P -

Known only from lightly shaded mossy soil over sandstone at the head of a small tributary canyon along Degognia Creek. Including *P. elisabethae* Gyl., which is called *P. polydactyla* f. *microphylla* Anders by Thomson (1950), and is segregated by the "isidia" which develop on regenerated portions of torn thallus. Ladd & Wilhelm 9490 MOR.



*Phaeophyscia* Moberg

1. Medulla bright red or orange. . . . *P. rubropulchra*
1. Medulla white.
  2. Fine colorless hairs present on margins of upper cortex. . . . *P. cernohorskyi*
  2. Cortical hairs absent.
    3. Soredia absent; lobe margins with erect flattened isidioid lobules. . . . *P. imbricata*
    3. Soredia present; lobe margins without lobules.
 

Soralia coarse and rather diffuse along the margins and over the surfaces of the lobes; saxicolous or rarely corticolous. . . . *P. adlastola*

Soralia powdery, delimited, round and capitate, mostly at the ends of small lobes, corticolous. . . . *P. pusilloides*

*Phaeophyscia adlastola* (Essl.) Essl.

Cortex K - ; sorediate

Medulla K - , C - , KC - , P -

Common on moist to dry shaded rocks, often over mosses, and on mossy tree bases; rarely on trees in upland forests. Local reports of *Phaeophyscia orbicularis* (Neck.) Moberg [= *Physcia orbicularis* (Neck.) Poetsch.] either should be referred here or to *Phaeophyscia rubropulchra*. Wilhelm 8439 MOR.

*Phaeophyscia cernohorskyi* (Nadv.) Essl.

Cortex K - ; sorediate

Medulla K - , C - , KC - , P -

Uncommon on exposed tree trunks in fields, fencerows, and along forest edges. Not treated by Hale (1969). Ladd & Wilhelm 9498 MOR.

An esorediate species with colorless cortical hairs on the margins of the apothecia, *P. hirtella* Essl., is frequent in the area and should be sought in Jackson County.

*Phaeophyscia imbricata* (Vain.) Essl.

Cortex K - ; thallus densely lobulate

Medulla K - , C - , KC - , P -

Occasional on shaded sandstone, among mosses over sandstone, and on mossy tree bases in upland forests. Because the lower surface of this species can be white towards the margins it may initially be mistaken for a *Physcia*, but the upper cortex is K - while that of most *Physcia* species is K + yellow. = *Physcia lacinulata* Muell.Arg. Ladd 9501 MOR.

Two other species of *Phaeophyscia* are quite common in the region and should be sought in Jackson County. Both *P. ciliata* (Hoffm.) Moberg and *P. hirtella* Essl. are esorediate corticolous species without copious marginal lobules. The latter two taxa are very similar morphologically, except that *P. hirtella* has numerous fine transparent cortical hairs on the lobe margins and apothecial rims.

*Phaeophyscia pusilloides* (Zahlbr.) Essl.

Cortex K - ; sorediate

Medulla K - , C - , KC - , P -

While this species is fairly common northward and westward, it apparently is quite rare in Jackson County. Not treated by Hale (1969). Skorepa 1001 SIU.

A similar species, *Physciopsis adglutinata* (Flk.) Choisy, (= *Physcia elaeina* of Skorepa, 1973) occurs in the region and differs in being smaller, very tightly appressed to the substrate, and without rhizines.

*Phaeophyscia rubropulchra* (Degel.) Moberg

Cortex K - ; sorediate

Medulla K + dark purple, C - , KC - , P -

Frequent on the lower and mid-trunks of deciduous trees in all types of forest; also on shaded rocks and among mosses over rocks. = *Physcia orbicularis* (Neek.) Poetsch. of Hale (1969), in part. Ladd 9505 MOR.

*Physcia* (Schreb.) DC.

1. Thallus without soredia (or isidia).

2. Medulla K - .

. . . *P. stellaris*

2. Medulla K + yellow.

Thallus saxicolous; lobes tending to be longer than wide.

. . . *P. phaea*

Thallus corticolous; lobes about as wide as long.

. . . *P. aipolia*

1. Thallus sorediate.

3. Lobes very finely branched or divided, less than 0.5 mm wide; soredia more or less granular.

Thallus usually corticolous; soredia somewhat erect and appearing lobulate; medulla K - .

. . . *P. millegrana*

Thallus saxicolous; soredia granular; medulla K + yellow.

. . . *P. subtilis*

3. Lobes narrow but not finely divided, usually more than 0.5 mm wide; soredia powdery.

Soredia in laminal soralia; cortex K + yellow.

. . . *P. americana*

Soredia marginal on the lobe tips; cortex K - .

. . . *P. chloantha**Physcia aipolia* (Ehrh.) Hampe

Cortex K + yellow; without diaspores

Medulla K + yellow, C - , KC - , P + yellow

Uncommon on exposed deciduous trees in fields, along fence rows, and in small towns. Some specimens of *P. stellaris* might key here if care is not taken, when applying the medullary spot test, to be certain that it is indeed atranorin from the medulla which has provided the positive yellow reaction and not atranorin bleeding over from the cortex into the exposed medulla test site. Hatcher 1258s SIU.

Another species known from the area, *P. alba* (Fee) Muell. Arg., is much smaller, with lobes scarcely 1 mm wide, but otherwise morphologically similar to *P. aipolia*.

*Physcia americana* Merr.

Cortex K + yellow; sorediate

Medulla K + yellow, C - , KC - , P + yellow

Common on trees in upland forests, as well as on lightly shaded sandstone ledges and boulders. = *Physcia tribacoides* Nyl. Wilhelm 8375 MOR.

*Physcia chloantha* Ach.

Cortex K - ; sorediate

Medulla K - , C - , KC - , P -

Uncommon on deciduous trees and cedars. Not treated by Hale (1969). Hatcher 1277s SIU.

This species might be confused with *Phaeophyscia pusilloides*, but the latter has capitate rather than hooded, crescent-shaped soralia, lobes mostly less than 1 mm wide, and a black undersurface. See also the comments regarding *Physciopsis adglutinata* under *Phaeophyscia pusilloides*.

*Physcia millegrana* Degel.

Cortex K + yellow; sorediate

Medulla K -, C -, KC -, P -

Common on shaded to exposed bark and wood, particularly in residential areas, small towns, along roadsides, in floodplains, and on old wood fence posts; uncommon in natural communities. This species also occurs rarely on shaded sandstone. Wilhelm 8335 MOR.

*Physcia phaea* (Tuck.) Thoms.

Cortex K + yellow; without diaspores

Medulla K + yellow, C -, KC -, P + yellow

Rare on sandstone along creeks in upland forests. Skorepa 4800 SIU.

Also in the region, *P. halei* Thoms. has much narrower lobes (less than 0.5 mm wide) than *P. phaea*; both grow on siliceous rocks. *P. subtilis* would key here if the granular soredia are overlooked.

*Physcia stellaris* (L.) Nyl.

Cortex K + yellow; without diaspores

Medulla K -, C -, KC -, P -

Common on limbs and exposed trunks of trees in old fields, upland forests, along roadsides, and even in small towns. Wilhelm 8338 MOR.

*Physcia subtilis* Degel.

Cortex K + yellow; sorediate

Medulla K + yellow, C -, KC -, P + yellow

Locally frequent on exposed to lightly shaded sandstone boulders and ledges. Wilhelm 8378 MOR.

*Physciopsis* Choisy*Physciopsis syncolla* (Tuck.) Poelt

Cortex K -; without diaspores

Medulla K -, C -, KC -, P -

While this species is frequent elsewhere in the region, it is included here solely on the basis of the report by Skorepa (1973), who cites his #6529 from Grand Tower. It is particularly frequent on elms, cottonwoods, and hickories, along streams, in disturbed open woods, or in residential areas.

A similar species, *Physciopsis adglutinata* (Flk.) Choisy, [= *Physcia elacina* of Skorepa (1973)] is frequent in the region and differs in having small laminal soralia. See also the comments under *Phaeophyscia pusilloides*.

*Physconia* Poelt*Physconia detersa* (Nyl.) Poelt

Cortex K -; sorediate

Medulla K -, C -, KC -, P -

Occasional on trees, rocks, and mosses over rocks. = *Physcia grisea* (Lam.) Zahlbr. Wilhelm 8315 MOR.

*Placynthium* S. Gray*Placynthium nigrum* (Huds.) S. Gray

Thallus K - , C - , KC - , P - ; isidiate

On exposed limestone; known only from Devil's Bake Oven south of Grand Tower and from an outcrop along Kinkaid Creek. Not treated by Hale (1969). Skorepa 4110 SIU.

*Pseudoparmelia* Lynge1. Thallus mineral gray, the lobe surfaces reticulate-ridged. . . . *P. crozalsiana*

1. Thallus yellowish-green, the lobe surfaces not distinctly ridged.

Thallus evidently sorediate with fully open soredia; without gyrophoric acid; typically corticolous. . . . *P. caperata*Thallus with large pustular isidia or appearing coarsely incipiently sorediate; with or without gyrophoric acid; almost always saxicolous, at least locally. . . . *P. baltimorensis**Pseudoparmelia baltimorensis* (Gyel. & For.) Hale

Cortex K - ; isidiate

Medulla K - , C - or C + red, KC - or KC + rose, P + red

Characteristic on sandstone ledges and boulders in light to moderate shade; more rarely on the bases of deciduous trees in upland forests. Many of our local specimens contain gyrophoric acid, but even in these specimens positive reagent tests can be hard to obtain. The coarse pustular isidia separate this species from members of the genus *Xanthoparmelia* with which it often grows. = *Parmelia caperata* (L.) Hale, in part, of Hale (1969). Wilhelm 8323 MOR.

*Pseudoparmelia caperata* (L.) Hale

Cortex K - ; sorediate

Medulla K - , C - , KC - , P + red

Common on tree trunks and branches in upland forests, along roadsides, and even in small towns; more rarely on sandstone. = *Parmelia caperata* (L.) Ach., in part, of Hale (1969). Wilhelm 8301 MOR.

*Pseudoparmelia crozalsiana* (B. de Lesd. ex Harm.) Hale

Cortex K + yellow; sorediate

Medulla K + yellow, C - , KC - , P + orange

Locally frequent on deciduous trees and cedars in upland forests and along country roadsides. = *Parmelia crozalsiana* B. de Lesd. ex Harm. Wilhelm 8441 MOR.

*Pyxine* Fr.

Soredia laminal in round soralia; lobes typically with a conspicuous patch of dense pruina just in front of the tips; medulla yellow; cortex K - and UV + bright yellow. . . . *P. caesiopruinosa*

Soredia in laminal and marginal soralia; lobes without pruina or with a diffuse patch near the tips; medulla salmon-orange; cortex K + yellow and UV - . . . . *P. sorediata*

*Pyxine caesiopruinosa* (Nyl.) Imsh.

Cortex K - , UV + bright yellow; sorediate

Medulla K - , C - , KC - , P -

Common on trees in upland forest, along roadsides and streams, and in residential areas and small towns; rarely on shaded sandstone. Wilson 2673 SIU.

*Pyxine sorediata* (Ach.) Mont.

Cortex K + yellow; sorediate

Medulla K - (or darkening), C -, (or darkening), KC -, P -

Frequent on lower and mid-trunks of trees in upland forests and along country roadsides; occasionally on shaded sandstone. Wilhelm 8442 MOR.

*Ramalina* Ach.*Ramalina intermedia* Nyl.

Cortex K - ; sorediate

Medulla K -, C -, KC -, P -

Rare on shaded vertical sandstone. Wilson 2548 SIU.

Another species known from the region, *R. americana* Hale, lacks soredia (and isidia) and grows on trees.

*Usnea* P. Br. ex Adans.

Soredia and isidia absent; apothecia often present.

. . . *U. strigosa*

Soredia or isidia present; apothecia absent.

. . . *U. mutabilis*

*Usnea mutabilis* Stirt.

Cortex K - ; isidiate/sorediate

Medulla K -, C -, KC -, P -

Known locally only from a collection made on vertical sandstone in an upland forest. Elsewhere in the area, however, this species more typically is found on corticolous substrates. Stotler 1686 SIU.

Another sorediate species, *U. herrei* Hale, has a white medulla, rather than red as is *U. mutabilis*; the medulla of the former reacts K + yellow turning red. It is known from the region and might be sought in Jackson County. Rare in the region of *U. rubicunda* Stirt., with a reddish cortex on the older portions of the thallus and a medulla which reacts K + yellow.

*Usnea strigosa* (Ach.) Eat.

Cortex K - ; without diaspores (although sometimes densely fibrillose)

Medulla K - or K + red, C -, KC -, P + yellow or orange

Uncommon on trees and shaded sandstone in upland forests. Wilson 2662 SIU.

*Xanthoparmelia* (Vain.) Hale

## 1. Thallus isidiate.

Lower surface tan to light brown.

. . . *X. plittii*

Lower surface black or essentially so.

. . . *X. conspersa*

## 1. Thallus without isidia.

2. Lower surface tan to light brown.

. . . *X. cumberlandia*

2. Lower surface black or essentially so.

Stictic acid present.

. . . *X. hypopsila*

Salazinic acid present.

. . . *X. tasmanica*

*Xanthoparmelia conspersa* (Ach.) Hale

Cortex K - ; isidiate

Medulla K + yellow turning red, C -, KC -, P + orange

Locally frequent on exposed to lightly shaded sandstone. = *Parmelia conspersa* (Ach.) Hale. Wilhelm 8381 MOR.

*Xanthoparmelia cumberlandia* (Gyél.) Hale

Cortex K - ; without diaspores

Medulla K + yellow turning red, C - , KC - , P + orange

Occasional on exposed to lightly shaded sandstone. = *Parmelia cumberlandia* (Gyél.) Hale. Wilhelm 8382a MOR.

Also known from the region, and probably in Jackson County, is *Xanthoparmelia taractica* (Krempf.) Hale. It differs from *X. cumberlandia* in having salazinic acid instead of stictic acid.

*Xanthoparmelia hypopsila* (Muell. Arg.) Hale

Cortex K - ; without diaspores

Medulla K + yellow turning red, C - , KC - , P + orange

While this species is common in the region, our only Jackson County record is based upon the report by Skorepa (1973) who cites his #1702, from Little Grand Canyon. = *Parmelia hypopsila* Muell. Arg. Skorepa 961 SIU, cited in Skorepa (1966) as *Parmelia stenophylla* (Ach.) Heug., probably should be referred here, but we have not tested it for stictic acid.

Also known from the region is *Xanthoparmelia hypomelaena* (Hale) Hale. It is morphologically identical to *X. hypopsila*, but contains fumarprotocetraric acid instead of stictic and norstictic acids, and has a K - medulla.

*Xanthoparmelia plittii* (Gyél.) Hale

Cortex K - ; isidiate

Medulla K + yellow turning red, C - , KC - , P + orange

Uncommon on exposed or lightly shaded sandstone expanses. = *Parmelia plittii* Gyél. Wilhelm 8382 MOR.

Also frequent in the region, though as yet unknown from Jackson County, is *Xanthoparmelia subramigera* (Gyél.) Hale. It is morphologically identical to *X. plittii*, but has fumarprotocetraric acid instead of stictic and norstictic acids, and has a K - medulla.

*Xanthoparmelia tasmanica* (Hook. & Tayl.) Hale

Cortex K - , without diaspores

Medulla K + yellow turning red, C - , KC - , P + orange

Locally frequent on exposed or lightly shaded sandstone. = *Parmelia tasmanica* Hook. & Tayl. Wilhelm 8401 MOR.

*Xanthoria* (Fr.) Th. Fr.

Lobes narrow and dissected, about 0.5 mm wide; soredia in marginal or sublaminar soralia.

. . . *X. candelaria*

Lobes broader and sparingly branched, fully 1 mm or more wide; soredia in more or less hooded soralia at the lobe tips.

. . . *X. fallax*

*Xanthoria candelaria* (L.) Th. Fr.

Cortex K + purple; sorediate

Medulla K -, C -, KC -, P -

Common on exposed tree trunks and rocks, often in full sun. Wilhelm 8437 MOR.

*Xanthoria fallax* (Hepp) Arn.

Cortex K + purple; sorediate

Medulla K -, C -, KC -, P -

Uncommon on exposed trunks of deciduous trees. Although all of the Jackson County specimens are corticolous, this species also occurs on saxicolous substrates elsewhere in the region. Wilhelm 1043a MOR.

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