

THE LICHEN FLORA OF ROCKY BRANCH NATURE PRESERVE  
CLARK COUNTY, ILLINOIS

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ABSTRACT

A study of the lichen population of 14 varied sites in the Rocky Branch Nature Preserve, located in east-central Illinois, was carried out. Sixty-eight lichen species and two forms and one variety were collected in the preserve. The collection of 22 additional species from Clark and Coles Counties is reported.

INTRODUCTION

Rocky Branch Nature Preserve is located in Clark County (Sections 29 and 30, T12N, R12W) six miles northwest of Marshall, Illinois. This 130 acre tract, which was purchased by the Illinois Chapter of the Nature Conservancy and placed under the trusteeship of Eastern Illinois University, is maintained as a natural area for instructional and research purposes. A unique feature of Rocky Branch is the exposed sandstone rock outcroppings. Earlier floristic studies of this preserve have dealt primarily with vascular plants (Stover, 1930; Ebinger and Parker, 1969; Ebinger and Hellinga, 1970; Ebinger and Hughes, 1971) or bryophytes (Vaughan, 1941; Arzeni, 1947). Prior work on the lichens of central Illinois has been extremely limited, dating almost entirely from the nineteenth century and limited largely to Peoria, Menard, and Fulton counties (Brendel (1887), Willey (1877), and Wolf and Hall (1878)). No reports of previous lichen collections from Clark County or adjacent counties have been encountered in the literature.

Fourteen locations in the Rocky Branch Nature Preserve were selected as representative of the diverse habitats found within the preserve. Each location is characterized by a distinctive lichen species, or association of lichen species, and will be referred to as a habitat. The position of each habitat is indicated on a map of the preserve (Fig. 1). The map was originally prepared by Dr. John E. Ebinger in connection with a survey of the vascular plants, and stakes remaining from this study were used in

plotting locations on the map. Acknowledgement is also made to Dr. Ebinger for the identification of many of the herbaceous vascular plants and to Dr. Charles Arzeni for the identification of the bryophytes.

For each habitat a study was made of the physical characteristics, light conditions, and associated vascular plants and bryophytes. Direction of exposure to light was determined by a Hunter pocket compass and light intensity was measured by use of a Weston illumination light meter (Model 756) with quartz filter that measures light intensities ranging from 0 to 10,000 foot candles. These readings are recorded in Tables 1 and 2. For each habitat, readings were taken in both winter (January 23, 1971) with no leaf cover and summer (June 16, 1971) with leaf cover present. Duplicate readings were taken at the same location in each habitat and at approximately the same time of day. It should be emphasized that the times given are approximate, for it required about one hour to cover all 14 stations. Control light readings in full sunshine were taken at the beginning of each set of readings, and these readings are placed in parentheses in conjunction with the time of day. The resulting time gap explains why a few of the readings are greater than the listed control. Light meter readings were recorded in foot candles, and all readings were taken at central standard time.

CALOPLACA CERINA-ENDOCARPON PUSILLUM HABITAT  
(Location #1)

On a concrete well-covering near an abandoned house, the crustose lichens Caloplaca cerina, Endocarpon pusillum, Bacidia trachona, and Verrucaria rupestris occur sparingly. The concrete well-covering is normally quite shaded due to the close proximity of the abandoned house and the nearby trees, and only occasionally received some direct sunlight. A similar habitat, a concrete bridge abutment near the entrance to Rocky Branch Nature Preserve, was also examined for lichens. Growing on it were Lecanora dispersa, Bacidia trachona, both crustose species, and the small foliose Physcia orbicularis f. albociliata. Both of these concrete formations are rather xeric and are restricted largely to crustose species.

GRAPHIS SCRIPTA-TRYPETHELIUM VIRENS HABITAT  
(Location #2)

Carpinus caroliniana Walt., a characteristic understory tree in East-Central Illinois, is abundant along Rocky Branch and is conspicuous because of its smooth and ridged gray bark. The crustose lichens Graphis scripta, Arthonia caesia, and Trypethelium virens predominate on the trunk and branches of this species. Additional lichens observed less abundantly on this tree were several small foliose species (Physcia millegrana, P. stellaris, P. orbicularis, and Candelaria concolor) and two crustose species (Pertusaria xanthodes and Lepraria aeruginosa). Of the 25 Carpinus trees examined at random, only three were found not to have any lichen growth on the trunk. For a particular lichen species the abundance, placement, and colony size were quite variable, although generally there was a greater abundance where direct sunlight was absent from the trunk and branches. Light meter readings for this habitat were taken at a Carpinus tree with unusually profuse lichen growth, particularly of Trypethelium virens and Graphis scripta. These light readings indicate

that the lichens at this location are quite shaded in both winter and summer. A comparison of the lichen flora of Carpinus caroliniana was made with that of Fagus grandifolia Ehrh., a larger tree that tends to occur in more open areas of the forest, but also having a smooth gray bark. The lichen growth was less abundant on Fagus, but Graphis scripta and Trypethelium virens were again the most commonly noted species. Additional species observed less frequently on Fagus were Pertusaria xanthodes, Lepraria aeruginosa, Parmelia caperata and Physcia orbicularis f. rubropulchra, the latter two foliose taxa.

It is worth noting that Trypethelium virens was observed growing only on the trunk and branches of Carpinus and Fagus, and only at Rocky Branch. Skoropa (1973) reports this lichen as typically growing on Carpinus along creeks in mesic woods. Both Brodo (1968), in his study of the lichens of Long Island, and Johnson (1959), in his treatment of the Trypetheliaceae of Mississippi, give Fagus as a common substratum for Trypethelium virens, but do not mention Carpinus. Brodo makes the observation that this lichen is never found on well-illuminated trunks. On the other hand, Graphis scripta is fairly abundant on Carya ovata (Mill.) K. Koch and occasionally on other trees such as Quercus alba L., while Arthonia caesia frequents a number of species of trees. Both Graphis scripta and Arthonia caesia appear to be common in east-central Illinois.

LEPRARIA AERUGINOSA RACODIUM RUPESTRE HABITAT  
(Location #3)

A large northwestern-facing sandstone cliff located on the south side of Rocky Branch Creek harbors an association of Lepraria aeruginosa and Racodium rupestre. These lichens are quite abundant and cover an area extending approximately 60 yards in length. The powdery whitish-gray crustose thallus of Lepraria contrasts markedly with the black filaments of Racodium, one of the few lichens in which the form of the thallus is provided by the alga. Racodium is found in two other shaded locations in Rocky Branch Nature Preserve in lesser amounts, but has not been observed elsewhere in east-central Illinois. In contrast, Lepraria is common in this portion of Illinois and is especially abundant in the preserve, occupying a variety of habitats such as old wood, tree trunks, mosses, soil, and sandstone. On the cliff selected as the typical habitat for the association of these two lichens, Lepraria is present in both shaded and sunny locations, although it appears to be most abundant in shade. Racodium, in contrast, seems to be restricted primarily to shaded locations. The inclined angle of the cliff plus the canopy formed by the surrounding trees result in a densely shaded location most of the time.

BAEOMYCES ABSOLUTUS HABITAT  
(Location #4)

Only a small portion of a north-facing sandstone cliff bordering Rocky Branch Creek possesses the unique association of Baeomyces absolutus Tuck., one of the pink mushroom lichens, and Sphagnum palustre L., bog moss. Two additional species of Sphagnum have been recorded from this location, S. tenerum Sull & Lesq. and S. squarrosum Crome (Arzeni, 1947.) This lichen, as well as the bog moss, is unique for this portion of Illinois, and they dominate a very moist and well-shaded cliff face, in company with

other mosses and liverworts. Baeomyces, with its light pink apothecia, is quite noticeable on the dark orange-brown sandstone. This lichen occurs at various levels on the cliff face. Near the base of the cliff it grows in association with algae, higher up with foliose liverworts, and still higher it is associated with Sphagnum and other mosses. A colony of Baeomyces that measured 55 cm. in length and 45 cm. in width was selected as the location for light meter readings. This colony faces a northerly direction and is shaded by Fagus grandifolia and Carpinus caroliniana. The readings indicate that this colony of Baeomyces absolutus is growing in a heavily shaded location.

Baeomyces absolutus is found sporadically on more or less vertical sandstone outcroppings throughout the western portion of Rocky Branch Nature Preserve. Nowhere else is Sphagnum associated with it and in fact Sphagnum is restricted to location #4. Most of these other colonies of Baeomyces are growing in drier and less shaded locations than at the habitat selected as typical for this species and tend to have smaller colony size with less abundant apothecia. Fink (1935) regarded this lichen as rare and reported for it a rather limited geographic range in the United States from West Virginia to eastern Missouri, southward to northern Alabama. The population at Rocky Branch is at, or certainly near, the northern edge of its range in this country. A recent paper by Brizuela and Guzman (1971) reports this species from several locations in Mexico, and Skorepa (1973) indicates that it is known southward to Brazil and the West Indies and also in Japan.

CLADINA SUBTENUIS-CLADONIA FURCATA HABITAT  
(Location #5)

On a hilltop on the south side of Rocky Branch Creek, large mats of two reindeer mosses, Cladina subtenuis and Cladonia furcata var. furcata are abundant. Cladina subtenuis, with its yellowish-grey podetia that lack squamules, contrasts, with the squamulate, dark green, more robust podetia of C. furcata. At this location one aggregation of these two species measured approximately 25 yards long and 15 yards wide. They occur primarily where the hilltop slopes downward and less frequently in level areas, where herbaceous vegetation and trees predominate. The light meter readings indicate that this area receives near maximum sunlight in the winter, but in the summer it is partly shaded by the surrounding trees. Although both Cladonia furcata var. furcata and C. subtenuis are frequent elsewhere in Rocky Branch, few areas demonstrate as well the growth potential of these two species.

This hilltop area is bordered by a few trees of Fagus grandifolia Ehrh. and Quercus alba L., and it is interspersed with trees of Carya glabra (Mill.) Sweet and seedlings of Liriodendron tulipifera L. and other species of trees. Among the lichens can be found dense mats of mosses, notably Dicranum scoparium Hedw., Leucobryum glaucum (Hedw.) Schimp., and Polytrichum ohioense R. & C. Additional lichen species found in this habitat are Cladonia cristatella and C. chlorophaea. The most prominent herbaceous seed plants are Solidago nemoralis Ait., Liatris aspera Michx., Antennaria plantaginifolia (L.) Hook., Potentilla simplex Michx., Andropogon scoparium Michx., Agrostis hyemalis (Walt.) BSP., and Panicum huachucae Ashe.

CLADONIA VERTICILLATA HABITAT  
(Location #6)

Only a few small specimens of Cladonia verticillata, the ladder lichen, were found on this sparsely vegetated hilltop, located on the south side of Rocky Branch Creek. The light meter readings indicated that this location receives nearly the maximum sunlight available at all times of the day. Other species of Cladonia observed in this habitat were C. bacillaris, C. chlorophaea, C. cristatella, C. capitata, C. furcata var furcata, C. polycarpoides, and C. piedmontensis. Associated plants were several mosses (Bryum caespiticium (Hedw.), Leucobryum glaucum Schimp), sedges (Carex hirsutella Mack., Carex artitecta Mack.), grasses (Aristida dichotoma Michx., Andropogon scoparius Michx., and Danthonia spicata (L.) Beauv.) and herbaceous dicots (Aster pilosus Willd., Solidago nemoralis Ait., Solidago juncea Ait., Potentilla simplex Michx., Antennaria plantaginifolia (L) Hook., Liatris aspera Michx., Hypericum punctatum Lam., Cirsium vulgare (Savi) Tenore, and Lespedeza virginica (L.) Britt.)

Cladonia verticillata is perhaps the rarest of the larger lichens in the preserve, since only five small colonies of this easily recognized species were found at this location, in addition to one very small colony being observed on the north side of Rocky Branch Creek in the habitat selected as typical for Cladonia cristatella (#11).

PARMELIA-PHYSCIA HABITAT  
(Location #7)

The oak and hickory wooded hilltop on the south side of Rocky Branch Creek selected for this habitat contains an abundance of foliose lichens growing on trees. The rather widely spaced trees on this hilltop, which slopes to the north and west, produce a partially shaded to almost open habitat, with the ground covered sporadically by mats of mosses, predominantly Dicranum scoparium Hedw., Leucobryum glaucum (Hedw.) Schimp., Polytrichum ohioense R. & C., and Atrichum angustatum (Brid.) Bry. Eur., and several lichens, notably Cladonia polycarpoides, C. chlorophaea and C. cristatella. A quadrat measuring 90 feet long and 39 feet wide was set up on this hilltop and the number of trees occurring in this quadrat were counted and surveyed for lichen growth. It contained 85 trees, all of which had lichens growing on them, and most of them had foliose species. The trees in this quadrat included several species of Quercus, several species of Carva, and Acer saccharum Marsh.; understory trees were Cornus florida L. and Ostrya virginiana (Mill.) K. Koch. Quercus alba L. was the most abundant tree with 25 present.

Parmelia caperata (L.) Ach., a sizable yellowish-green foliose lichen, occurs in large masses on the basal portion of many trees in this habitat, while Parmelia rudecta Ach., a very abundant large bluish-gray foliose species was found to be more versatile in the heights of the tree trunk it occupies. These two foliose lichens are common on many trees species in this habitat but seem to produce the largest colonies and to be of the greatest frequency on the rough-bark oaks. In addition to Parmelia caperata and P. rudecta, the foliose lichens recorded as occurring in this habitat on the trunk and branches of trees are Parmelia aurulenta, P. livida, P.

reticulata, Physcia millegrana, P. orbicularis, P. stellaris, P. tribooides, Heterodermia speciosa, Pyxine sorediata and Candelaria concolor. Crustose lichens include Graphis scripta, Pertusaria pustulata, and Lep-raria aeruginosa. For this habitat the light meter readings were taken near two trees, one supporting Parmelia caperata at the base, and the other tree supporting P. rudecta a few feet above ground level. The tree supporting Parmelia caperata had the lichen on all sides of the tree. In contrast Parmelia rudecta occurred as rosettes a few feet above the ground on the north side of the trunk, and only this position was used for a light reading.

The readings for Parmelia caperata are quite variable, suggesting that this species grows well in both shaded and sunny conditions, since the appearance of the lichen was similar in both conditions. For Parmelia rudecta, however the readings indicate a more shaded condition.

#### LECIDEA ALBOCAERULESCENS HABITAT (Location #8)

A large wedge of sandstone approximately 5 feet long and 3 feet wide, located on the east side of Rocky Branch Creek, was selected for the typical habitat of Lecidea albocaerulescens, a conspicuous crustose species. This west-facing rock lies a few feet above the creek and occupies a moist situation, which is shaded, except at mid-day, by the surrounding hillside and trees of Acer saccharum Marsh. and Carpinus caroliniana Walt. The light meter readings indicate that this habitat is well-shaded for most of the day, especially in summer. Growing also on this rock are several mosses (Brachythecium oxycladon (Brid.) J. & S., Brachythecium salebrosum (W. & M.) Bry. Eur., Hypnum curvifolium Hedw., Bartramia pomiformis Hedw., and Plagiothecium mullerianum Schimp.).

Colonies of this lichen are scattered throughout Rocky Branch on shaded rocks, but this colony is probably the largest of this species in the preserve. Although this noticeable lichen is described as very common in New England and other parts of eastern U.S., locally it has been noted in only one other location in addition to Rocky Branch, a rocky woodland approximately two miles northwest of Rocky Branch.

#### DERMATOCARPON MINIATUM HABITAT (Location #9)

On the west side of Rocky Branch Creek Dermatocarpon miniatum, the only umbilicate lichen encountered in this area, is found abundantly on a sandstone ledge protruding from an east-facing hillside, the ledge kept rather moist most of the time by natural springs. The summer light meter readings indicate this location is rather shaded all day, although in winter there is considerable sunlight. Associated plants growing on the rock ledge at this habitat are several bryophytes (Plagiochila asplenoides (L.) Dumort., Brachythecium salebrosum (W. & M.) Bry. Eur., Eurhynchium serrulatum (Hedw.) Kindb., Plagiothecium mullerianum Schimp., Porella platyphylloidea (Schwein.) Lindb.) and a fern (Polystichum acrostichoides (Michx.) Schott.)

Dermatocarpon miniatum is found sporadically in Rocky Branch on rock outcroppings, most commonly in shaded ravines. This distinctive lichen has

been observed in only three other locations in the vicinity: in the same rocky woodland two miles northwest of Rocky Branch in which Lecidea albocaerulescens grows, on a shaded rock ledge in Coles County near Charleston, and a very small stand on a rock outcropping at Rattlesnake Hollow northwest of Effingham, in Effingham County.

LEPRARIA AERUGINOSA-CLADONIA CHROLOPHAEA HABITAT  
(Location #10)

On a south-facing sandstone cliff that receives varying amounts of sunshine and moisture Lepraria aeruginosa and Cladonia chlorophaea predominate, accompanied by smaller quantities of Baeomyces absolutus, Lecidea albocaerulescens, and Dermatocarpon miniatum. This cliff, approximately eighty yards long borders the north side of Rocky Branch Creek and has been notched and grooved by stream action and portions of it are shaded by trees. Dermatocarpon miniatum, Baeomyces absolutus, and Lecidea albocaerulescens grow on the more shaded and damp areas of the exposed rock, while Lepraria aeruginosa and Cladonia chlorophaea occupy those areas with more light and less moisture. Cladonia chlorophaea typically grows on soil, and its growth on rock is not as luxuriant. Since the light conditions in this habitat are extremely variable, three locations were selected for light meter readings: shaded, partially shaded, and sunny. The winter light readings indicate this location receives abundant sunlight, while summer light readings indicate the area, even at mid-day, is rather shaded. Associated bryophytes on this rock outcrop are Leucobryum glaucum (Hedw.) Schimp., Polytrichum piliferum Hedw., Platygyrium repens (Brid.) Bry. Eur., Brachythecium salebrosum (W. & M.) Bry. Eur., and Porella pinnata L.

CLADONIA CRISTATELLA HABITAT  
(Location #11)

Cladonia cristatella, the red-cap lichen, is very abundant in an upland field region located on the north side of Rocky Branch Creek and abounds in exposed areas where the herbaceous vegetation is sparse. The light meter readings indicate that this location receives maximum sunlight most of the day. Associated plants include bryophytes (Cephalozia media (Lindb.), Ditrichum pallidum (Hedw.) Hampe, Atrichum angustatum (Brid.) Bry. Eur.) and several species of herbs (Andropogon scoparius Michx., Solidago nemoralis Ait., Danthonia spicata (L.) Beauv., Antennaria plantaginifolia (L.) Hook., Erigeron pulchellus Michx., and Potentilla simplex Michx.). Seedlings of Quercus imbricaria Michx. and Quercus velutina Lam. were also present.

CYPHELIUM TIGILLARE-CANDELARIA CONCOLOR-  
PHYSICIA MILLEGRANA HABITAT  
(Location #12)

The crustose lichen Cyphegium tigillare, often frequent on old fence posts, and two small foliose lichens, Candelaria concolor and Physcia millegrana, are the most prominent of the several lichen species that have produced a heavy growth on the trunk of a large Quercus rubra L., located in an isolated position in an upland field on the north side of Rocky Branch Creek. Other species present on this tree are Parmelia rudecta, P. caperata, Arthonia caesia, and Physcia stellaris. Parmelia rudecta and P. caperata,

two foliose species commonly forming large rosettes on oak trees, are present only as small rosettes near the base of the tree. Arthonia caesia, a crustose species, is found only on the north side of the tree up to a height of five feet where lower light intensities predominate, while Candelaria concolor, Physcia stellaris, and P. millegrana are found on all sides of the tree trunk at heights ranging up to fifteen feet from the ground. The light meter readings for this habitat are reported for all sides of the tree, in order to give some idea of the varying light conditions present around the trunk as light intensities change throughout the day. These readings indicate that the tree trunk is exposed to abundant sunlight on almost every side of the tree throughout the day.

CLADONIA CHLOROPHAEA HABITAT  
(Location #13)

On the north side of Rocky Branch a shaded and sparsely vegetated south-facing slope was selected as the typical habitat for Cladonia chlorophaea, one of the pyxie-cup lichens. The light meter readings indicate a shaded condition in the summer with considerable sunlight available in the winter. The forest floor of this habitat is quite open and rather sparsely vegetated. Associated plants include mosses (Ditrichum pallidum (Hedw.) Hampe, Atrichum angustatum (Brid.) Bry. Eur., Bryum caespiticium Hedw.), two grasses (Panicum dichotomum L., Panicum microcarpon Muhl.) and herbaceous composites (Solidago nemoralis Ait., Erigeron pulchellus Michx.). Additional lichen species found in this habitat are Cladonia cristatella, C. polycarpoides, and C. coniocraea. In this shaded habitat Cladonia cristatella occurs very sparsely in contrast to the dense growth of it observed in the nearby open upland field. (Location #11).

Cladonia chlorophaea is found throughout Rocky Branch on a variety of substrates and in association with a number of other lichens, with Cladonia furcata, a soil-inhabiting species, a common associate in many locations, and it is undoubtedly the most common species of Cladonia in the preserve. Cladonia chlorophaea occurs with the greatest frequency on soil in shaded locations, disappearing gradually as it spreads outward into exposed areas. When this lichen occurs on sandstone or on the basal portion of tree trunks, however, usually only a few of the cup-shaped podetia are present.

PARMELIA HYPOPSILA HABITAT  
(Location #14)

Found on only one large sandstone outcropping in Rocky Branch is a colony, approximately one meter square, of Parmelia hypopsila, with its yellowish foliose thallus and numerous brown apothecia. This conspicuous lichen has not been observed elsewhere in this portion of Illinois. The light meter readings show this location is exposed to nearly maximum sunlight all day, although a few trees of Sassafras albidum (Nutt.) Nees, Quercus imbricaria Michx., and Quercus velutina Lam. border the outcropping. Additional lichens growing on the same rock outcropping with Parmelia hypopsila are Physcia orbicularis, Cladonia chlorophaea, C. coniocraea, Bacidia trachona, and Acrospora fuscata. Associated bryophytes growing on this rock are Platygyrium repens (Brid.) Bry. Eur., Atrichum angustatum (Brid.) Bry. Eur., and Cephalozia media Lindb.



LIST OF LICHENS COLLECTED

The seventy-one lichens collected at Rocky Branch Nature Preserve in Clark County are recorded without indicating the specific location. Some additional collections of these species, primarily from Coles County, are also given.

- Acarospora fuscata (Schrad.) Arn. Clark Co.: March 6, 1975. Coles County: 3 miles east of Charleston, March 13, 1975. On sandstone.
- Arthonia caesia (Flot.) Korb. Clark Co.: July 24, 1970; Coles County: on Carpinus, Carya and other tree species.
- Bacidia schweinitzii (Tuck.) Schneid. Clark Co.: Nov. 26, 1973. Coles Co.: Fox Ridge State Park, Feb. 14, 1974. On tree bark
- Baeomyces absolutus Tuck. Clark Co.: Aug. 20, 1970. On sandstone.
- Bacidia trachona (Ach.) Lett. Clark Co.: April 12, 1970. On sandstone.
- Buellia polyspora (Will.) Vain. Clark Co.: On Rhus, March 6, 1975. Coles Co.: Lincoln Log Cabin State Park, Sept., 1973. Collected by R. Valentino. On tree bark.
- Caloplaca cerina (Ehrh.) T. Fries. Clark Co.: April 11, 1970. Rocky Hollow, June 17, 1969. On concrete and rocks.
- Candelaria concolor (Dicks.) Stein. Clark Co.: July 24, 1970; Coles Co.: Lakeview Park, Nov., 1968. On tree bark.
- Candelaria concolor (Dicks.) Stein var. effusa (Tuck.) Merrill and Burnh. Clark Co.: July 24, 1970. Coles Co.: Near E.I.U. Campus, Sept., 1973. On tree bark.
- Cladina subtenuis (Abb.) Hale & W. Culb. Clark Co.: July 24, 1970. Rocky Hollow, June 17, 1969. On soil.
- Cladonia bacillaris (Ach.) Nyl. Clark Co.: Oct. 17, 1970. On old wood.
- Cladonia caespiticia (Pers.) Flk. Coles Co.: Lakeview Park, March, 1969. Clark Co.: July 16, 1970. On soil.
- Cladonia capitata (Michx.) Spreng. Clark Co.: July 24, 1970. Coles Co.: Lakeview Park, Nov., 1969. On soil.
- Cladonia chlorophaea (Flk.) Spreng. Clark Co.: July 16, 1970. Coles Co.: Lakeview Park, March 1, 1969. On soil. (Note: no attempt was made to differentiate the chemical variants of this lichen.)
- Cladonia coniocraea (Flk.) Spreng. Clark Co.: July 24, 1970. Coles Co.: Walker's Ford Road, Sept., 1973. Collected by R. Valentino. On soil, wood, and sandstone.
- Cladonia conista (Ach.) Robb. Clark Co.: Dec. 6, 1969. On soil.
- Cladonia cristatella Tuck. Clark Co.: July 16, 1970. Coles Co.: Lakeview Park, Nov., 1969. On soil and wood.
- Cladonia cylindrica (Evans.) Evans. Clark Co.: Date of collection not recorded. On sandstone. Coles Co.: 3 miles east of Charleston, March 13, 1975. On granite boulder.
- Cladonia furcata (Huds.) Schrad. Clark Co.: July 24, 1970. Rocky Hollow, June 16, 1969. Coles Co.: Lakeview Park, Nov. 1968. On soil.
- Cladonia piedmontensis Merr. Clark Co.: July 16, 1970. Coles Co.: Lincoln Log Cabin Park, Sept. 24, 1974. On soil.
- Cladonia pleurota (Flk.) Schaer. Clark Co.: July 16, 1970. Rocky Hollow, June 17, 1969. On soil. Apparently very rare.
- Cladonia polycarpoides Nyl. Clark Co.: July 16, 1970. Rocky Hollow, June 17, 1969. Coles Co.: Lakeview Park, March 1, 1969. On soil.

- Cladonia verticillata (Hoffm.) Schaer. Clark Co.: Dec. 6, 1969; July 16, 1970. Coles Co.: Lincoln Log Cabin State Park. Sept., 1973. On soil. Very rare in both locations.
- Cyphellium tigillare Ach. Clark Co.: July 16, 1970. On dead limb of Quercus. Coles Co.: 2 miles east of Charleston, Jan. 15, 1970. On fence post.
- Dermatocarpon minutum (L.) Mann. Clark Co.: Sept. 7, 1970. Effingham Co.: Rattlesnake Hollow, Aug. 15, 1969. Coles Co.: The Rocks, Sept. 30, 1970. Collected by A. Parker. On sandstone cliffs.
- Endocarpon pusillum Hedw. Clark Co.: March 6, 1975. On concrete well-covering.
- Graphis scripta (L.) Ach. Clark Co.: Nov. 1, 1970. Coles Co.: Nov., 1969. On Carpinus, Fagus, Carya, and other trees.
- Heterodermia obscurata (Nyl.) Trev. Clark Co.: July 24, 1970. Coles Co.: Walker's Ford Road, South of Charleston, Sept., 1973. Collected by R. Valentino. On tree bark.
- Heterodermia pseudospeciosa (Kurok.) W. Culb. Clark Co.: Oct. 17, 1970; Coles Co.: Walker's Ford Road south of Charleston, Sept., 1973. Collected by R. Valentino.
- Lecanora chlorotera Nyl. Clark Co.: Nov. 1, 1970. On tree bark.
- Lecanora conizaea (Ach.) Nyl. Clark Co.: Oct. 17, 1970. On Quercus.
- Lecanora dispersa (Pers.) Somm. Clark Co.: July 16, 1970. Coles Co.: Lakeview Park, Jan. 18. On limestone rocks and concrete.
- Lecidea albocaulerulescens (Wulf.) Ach. Clark Co.: April 12, 1970. On sandstone.
- Lecidia crytidia Tuck. Clark Co.: July 2, 1970. On sandstone.
- Lepraria aeruginosa (Wigg.) Sm. Clark Co.: July 24, 1970. On bark and sandstone.
- Leptogium cyanescens (Ach.) Korb. Clark Co.: May 22, 1971; Oct. 21, 1974. On Nyssa and Quercus.
- Mycocalicium albonigrum (Nyl.) Fink. Clark Co.: July 2, 1970. On Carpinus associated with Arthonia caesia. Collected only once.
- Parmelia aurulenta Tuck. Clark Co.: July 16, 1970. Coles Co.: Lakeview Park, Oct. 3, 1974. On bark.
- Parmelia boilliana Mull. Arg. Clark Co.: July 16, 1970. Coles Co.: 4 miles south of Charleston, Feb. 26, 1975. On Carya and other tree bark.
- Parmelia caperata (L.) Ach. Clark Co. July 16, 1970. Coles Co.: Lincoln Log Cabin State Park, Sept., 1973. Collected by R. Valentino. On Quercus and other trees.
- Parmelia hypopsila Mull. Arg. Clark Co.: July 16, 1970. On sandstone. Rarc.
- Parmelia hypotropa Nyl. Clark Co.: July 12, 1971. Coles Co.: Near Lake Charleston, Feb. 17, 1974. Collected by M. Zaloudek. On tree bark.
- Parmelia livida Tayl. Clark Co.: Oct. 12, 1974. Collected by Christine Wheeler. On tree bark. Coles Co.: On Gleditsia on E.I.W. Golf Course.
- Parmelia reticulata Tayl. Clark Co.: Oct. 12, 1974. Collected by Cynthia Gill. On tree bark. Jan. 2, 1975. On rock.
- Parmelia rudecta. Ach. Clark Co.: July 24, 1970. Rocky Hollow, June 17, 1969. Coles Co., Lakeview Park, Nov. 1969. On tree bark.
- Parmelia saxatilis (L.) Ach. Clark Co.: Mar. 6, 1975. On Quercus. Collected only once.

- Parmelia subaurifera Nyl. Clark Co.: Jan. 2, 1975. On fallen branch. Collected only once.
- Parmelia subtinctoria Zahlbr. Clark Co.: July 16, 1970. On Quercus. Collected only once.
- Peltigera canina (L.) Willd. Clark Co.: July 24, 1970. Rocky Hollow, June 17, 1969. Coles Co.: Lakeview Park, Sep. 1973. Collected by R. Valentino. On soil and over mosses.
- Physcia aipolia (Ehrh.) Hampe. Clark Co.: March 6, 1975. On tree bark.
- Physcia millegrana Degel. Clark Co.: July 24, 1970. Rocky Hollow, June 17, 1969. On tree bark. Coles Co.: Shiloh Cemetery, Feb. 26, 1975. On sandstone tombstone.
- Physcia orbicularis (Neck.) Poetsch. Clark Co.: July 16, 1970; Coles Co.: West edge of Charleston, Dec. 11, 1973. On tree bark.
- Physcia orbicularis (Neck.) Poetsch. f. albociliata (Bouly de Lesd.) Thoms. Clark Co.: July 16, 1970. On concrete abutment. Coles Co.: Shiloh Cemetery, Feb. 26, 1975. On marble tombstone.
- Physcia orbicularis (Neck.) Poetsch. f. rubropulchra Degel. Clark Co.: July 16, 1970. Coles Co.: Lakeview Park, Dec. 11, 1973. Collected by R. Valentino. On tree bark.
- Physcia stellaris (L.) Nyl. Clark Co.: July 16, 1970. Coles Co.: Lakeviewpark, Nov., 1969. On tree bark.
- Physcia tribacoides Nyl. Clark Co.: July 24, 1970. Coles Co.: Lakeview Park, March 11, 1971. On tree bark.
- Physconia grisea (Lam.) Poelt. Clark Co.: Sep. 25, 1974. On Quercus. Coles Co.: west edge of Charleston, Feb. 26, 1975. On Ulmus. Shiloh Cemetery, Feb. 26, 1975. On marble tombstone.
- Pertusaria multipuncta (Turn.) Nyl. Clark Co.: July 24, 1970. On tree bark.
- Pertusaria xanthodes Mull. Clark Co.: July 16, 1970. Rocky Hollow, June 17, 1969. Coles Co.: Lakeview Park, Nov., 1968. On Carya.
- Pertusaria velata (Turn.) Nyl. Clark Co.: May 22, 1971. On tree bark.
- Pyrenula nitida (Weig.) Ach. Clark Co.: Oct. 21, 1974. On bark. Coles Co.: Fox Ridge State Park, Oct. 9, 1973. On bark.
- Pyxine caesioprunicosa (Nyl.) Imsh. Clark Co.: July 21, 1970. Coles Co.: Near Lincoln Log Cabin State Park, Sept. 1973.
- Pyxine sorediata (Ach.) Mont. Clark Co.: Oct. 21, 1974. On tree bark. Coles Co.: Lakeview Park, Oct. 3, 1974. On Quercus.
- Racodium rupestre Pers. Clark Co.: July 2, 1970. On sandstone cliff, associated with Lepraria aeruginosa.
- Rinodina milliaria Tuck. Clark Co.: July 16, 1970. Coles Co.: Shiloh Cemetery, Feb. 20, 1975. On tree bark.
- Rinodina ocellata (Hoffm.) Arn. Clark Co.: Apr. 3, 1967. On sandstone.
- Sarcogyne clavus (Ram.) Kremp. Clark Co.: July 16, 1970. On sandstone.
- Trapelia coarctata (Turn ex Sm.) Choisy. Coles Co.: 3 miles east of Charleston, March 13, 1975. On sandstone.
- Trypethelium virens Tuck. Clark Co.: July 9, 1970. On Carpinus and Fagus.
- Verrucaria rupestris Schrad. Clark Co.: Apr. 11, 1971. On concrete well-covering.
- Xanthoria fallax (Hepp.) Arn. Clark Co.: March 6, 1975. On shingles of deserted house. Coles Co.: West edge of Charleston, July 15, 1971. On tree bark.

The following list records 22 species collected in Coles County or in areas of Clark County other than Rocky Branch Nature Preserve. It is possible that future collections of lichens from Rocky Branch may reveal the presence of many of these species.

- Arthothelium distendens (Nyl.) Mull. Arg. Coles Co.: Fox Ridge State Park, Feb. 14, 1974. On tree bark.
- Bacidia umbrina (Ach.) Bausch. Coles Co.: Shiloh Cemetery, May 14, 1975. Collected by Randy Nyboer. On marble tombstone.
- Buellia punctata (Hoffm.) Mass. Coles Co.: Jan. 16, 1969. On dead wood.
- Caloplaca holocarpa (Hoffm.) Wadco. Coles Co.: Walker's Ford Road south of Charleston, Feb. 26, 1975. On concrete bridge. April 4, 1975. On tree stump.
- Caloplaca microphyllina (Tuck.) Hassc. Clark Co.: NE of Clarksville, March 6, 1975. Coles Co.: Walker's Ford Road south of Charleston, Feb. 26, 1975. On fence posts.
- Catillaria chalybeia (Borr.) Mass. Clark Co.: Rocky Hollow, June 17, 1969. On sandstone.
- Cladonia apodocarpa Robb. Coles Co.: Lakeview Park, Feb. 26, 1975. On soil.
- Lecanora hageni (Ach.) Ach. Coles Co.: Walker's Ford Road south of Charleston, Apr. 4, 1975. On stump.
- Lecidea cyrtidia Tuck. Coles Co.: Lakeview Park, Mar. 20, 1974. Collected by M. Zaloudek. On rock.
- Leptogium lichenoides (L.) Zahlbr. Coles Co.: The Rocks, Sept. 25, 1973. Growing over sandstone outcropping with mosses.
- Leptogium tenuissimum (Dicks.) Fr. Coles Co.: The Rocks, Sep. 24, 1973. Growing over sandstone outcropping with mosses.
- Parmelia crozalsiana B. de Lesd. ex Harm. Clark Co.: North of Clarksville, March 6, 1975. On Quercus. Coles Co.: 3 miles east of Charleston, Feb. 13, 1975. On Juglans.
- Parmelia cumberlandia (Gyeln.) Hale. Coles Co.: 5 miles SE of Charleston, Sep. 24, 1974. Collected by D. Robb. On sandstone rock.
- Parmelia galbina Ach. Coles Co.: Walker's Ford Road south of Charleston, Apr. 4, 1975. On Quercus.
- Parmelia subrudecta Nyl. Clark Co.: Clarksville Road, March 6, 1975. On Celtis.
- Peltigera praetextata (Florke ex Somm.) Vain. Coles Co.: Fox Ridge State Park, Aug. 1, 1973. On soil.
- Physcia adscendens (Th. Fr.) Oliv. Coles Co.: Shiloh Cemetery. Feb. 26, 1975. On marble tombstone.
- Physcia endococcinea (Korb) Th. Fr. Coles Co.: Shiloh Cemetery. Feb. 26, 1975. On marble tombstone.
- Physciopsis elaeina (Sw.) Poelt. Coles Co.: West edge of Charleston, Feb. 26, 1975. On Ulmus.
- Physciopsis syncolla (Tuck. ex Nyl.) Poelt. Coles Co.: West edge of Charleston. On Ulmus.
- Rhizocaron distinctum Th. Fr. Coles Co.: 5 miles east of Charleston, March 13, 1975. On sandstone.
- Verrucaria aethiobola Wahlenb. ex Ach. Coles Co.: Near Lake Charleston, Feb. 17, 1974. Collected by M. Zaloudek. On rock.

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FIGURE I  
MAP OF THE WESTERN PORTION  
OF  
ROCKY BRANCH NATURE PRESERVE

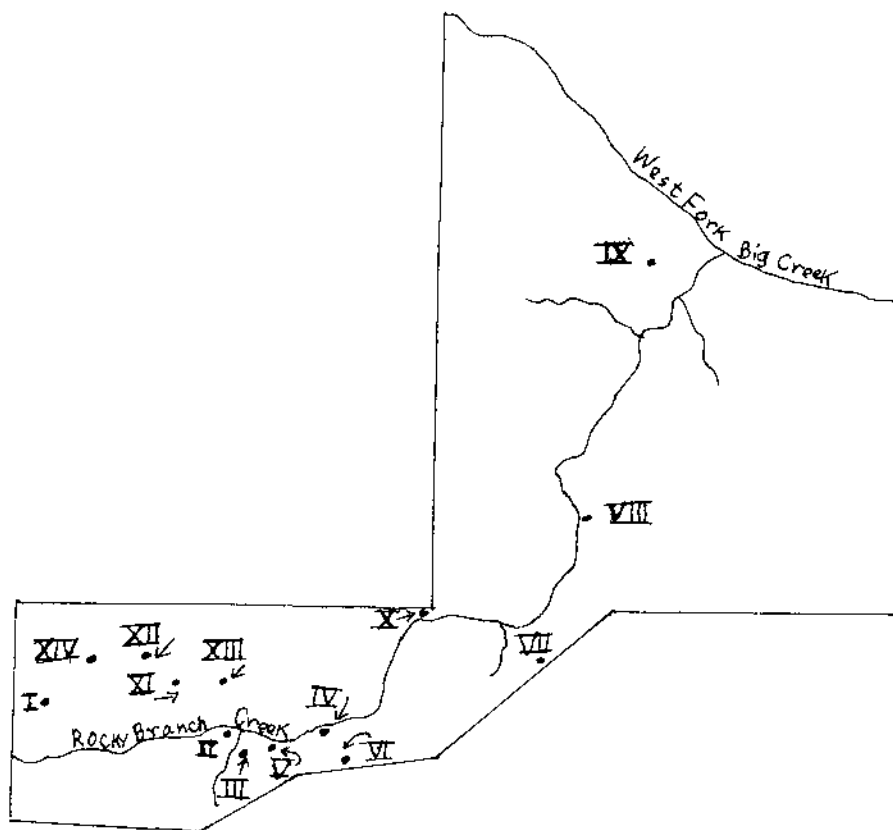


TABLE I  
LIGHT INTENSITY READINGS

Location	January 23, 1971		June 16, 1971		
	8:30 a.m. (500)*	12 noon (5000)*	3:30 p.m. (770)*	8:30 a.m. (5500)*	
1	170	540	400	210	
				350 (shade) 850 (sun)	
2	170	310	200	150	
				140	
3	60	100	100	23	
				26	
4	140	210	200	150	
				140	
5	340	4100	750	2000	
				7300	
6	380	4500	690	5000	
				9300	
7	240 (north) 420 (east) 340 (south) 240 (west)	400 (north) 4300 (east) 3500 (south) 600 (west)	330 (north) 710 (east) 570 (south) 520 (west)	360 (north) 650 (east) 2800 (south) 250 (west)	450 (north) 340 (east) 470 (south) 1800 (west)
				1200 (north) 160 (east) 1700 (south) 1600 (west)	
P. reducta	220	400	450	200	
				310	
				550	

\* Control readings taken in full sunshine.

TABLE II  
LIGHT INTENSITY READINGS

Location	January 23, 1971		June 16, 1971	
	8:30 a.m. (500)*	12 noon (5000)*	3:30 p.m. (770)*	8:30 a.m. (3500)*
8	220	1900	410	85
9	180	4500	260	35
10	130	1600	220	70
Shaded				130
10				24
Part-shaded	240	2500	550	150
10				200
Sunny	850	6000	770	800
11	440	5000	710	6200
				10,000+
12	280 (north)	500 (north)	310 (north)	4500 (north)
	440 (east)	6000 (east)	520 (east)	7000 (east)
	400 (south)	5000 (south)	620 (south)	3500 (south)
	250 (west)	3000 (west)	800 (west)	850 (west)
13	340	5000	510	630
				1400
14	285	3500	770	1100
				10,000+
				4200

\* Control readings taken in full sunshine.