

Proceedings of the Iowa Academy of Science

Volume 70 | Annual Issue

Article 15

1963

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Recommended Citation

Juhl, Karen K. and Tiffany, Lois H. (1963) "Notes on the Lichen Flora of Boone and Webster Counties, Iowa," *Proceedings of the Iowa Academy of Science*, 70(1), 68-70.

Available at: <https://scholarworks.uni.edu/pias/vol70/iss1/15>

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Notes on the Lichen Flora of Boone and Webster Counties, Iowa

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Abstract. Numerous collections of lichens have been made during the past several years from a variety of habitats in Boone and Webster counties. This progress report summarizes some of the authors' general observations on the lichen flora of this area.

In contrast with the records of many groups of plants, little information is available concerning the lichen flora of central Iowa. Fink and King collected in the area, especially at the Ledges, in the summer of 1903. These collections were listed by Miller (1) and are in the Iowa State University herbarium. Bessey (2), in a preliminary list of cryptograms occurring within a radius of 20 miles of Ames, included 24 species of lichens. It seems probable that at least a portion of these may have been collected in the Ledges area. More recently, Juhl (3) reported on the larger and more prevalent lichens in the central area. Since then, numerous collections have been made at various sites in Boone and Webster counties.

The sandstone outcrops forming the "ledges" at Ledges State Park are also a prominent topographic feature at Dolliver and Woodman Hollow State Parks. These rocks support three distinct groups of lichens. On dry, exposed sandstone sites, 24 species in 12 genera of crustose lichens have been collected. In areas where the rock face was moistened by seepage or by the close proximity to a stream, four species in two closely related genera of foliose lichens were the common inhabitants. Both of these genera, *Collema* and *Leptogium*, have blue-green algal associates. In sheltered sites where the rock was weathered into coarse soil or where soil had washed onto the rock, species of *Cladonia* were well developed.

Two larger lichens, both fruiticose, have been collected from sandstone at the Ledges. *Usnea* and *Ramalina* were first reported by Bessey in 1884 and later by Miller. No additional collections of these genera have been recorded since the Fink and King collections in the summer of 1903.

Observations of a somewhat limited number of specimens on granite boulders from the Wisconsin glacial drift sheet revealed that the lichen flora on this substrate seems to be a group of crustose lichens similar to those occurring on sandstone.

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The bark of trees supports a varied flora of crustose and foliose lichens. Four genera of foliose lichens and 13 genera of crustose lichens have been collected. Although a greater variety of crustose lichens was found, foliose lichens were much more obvious because of the number of species of *Physcia* developing on bark. Single species of *Physcia* are found on a wide range of woody hosts. In contrast to this situation, tree-inhabiting species of *Xanthoria* and *Caloplaca* are quite host specific, occurring only on species of *Populus*.

Species of *Cladonia* and *Peltigera*, both large lichens, commonly grow on soil in sunny, exposed sites. They occur intermingled with mosses, and are invariably present in dry cuts and on hilltops in undisturbed areas. *Parmelia* thalli may also be found in such places, but fruiting structures are not often formed on the thalli in such sites. *Toninia* may also be found on the soil or as an epiphyte on mosses.

The lichen thalli examined in the course of these studies were quite variable in external form and extent under various environmental conditions, as would be expected. The ascocarps of the lichen fungi are quite stable, and may be a useful and stable feature for identification and delimitation of species, especially under environmental conditions where the traditional distinctions of crustose, fruticose and foliose thallus form (4,5) is obscured or modified.

The following key to the genera encountered thus far in this study is an attempt to indicate how ascocarp features may be thus utilized in identification.

1. Podetia present (thallus two-fold of primary crustose thallus which often disappears, secondary thallus of erect podetia) and usually hollow
-----*Cladonia*
1. Podetia absent----2
 2. Fruiting structures unknown, thallus very rudimentary----*Crocynia*
 2. Fruiting structures known, thallus usually of definite form----3
 3. Asci borne in a perithecium or a locule----4
 4. Asci borne separately in individual locules in a stroma
-----*Arthothelium*
 4. Asci in groups----5
 5. Ascospores non-septate----6
 6. Thallus foliose, ascocarp wall light in color, ascocarps completely immersed
-----*Dermatocarpon*
 6. Thallus crustose----7
 7. Ascospores thick walled
-----*Pertusaria*
 7. Ascospore thin walled, ascocarp opening by a small pore to becoming open and dislike
-----*Verrucaria*
 5. Ascospores septate----8
 8. Ascospore with transverse septa only
-----*Pyrenula*
 8. Ascospores with transverse and longitudinal septa
-----*Endocarpon*
 3. Asci borne in an apothecium
 9. Apothecia elongate to linear, black, embedded in thallus
-----10
 10. Hymenium with true paraphyses
-----*Graphis*
 10. Branched and anastomosing pseudoparaphyses
-----*Opegrapha*

9. Apothecia generally rounded, not linear----11
 11. Asci soon breaking down, ascospore released in a mass, ascocarp stalked ----*Calicium*
 11. Asci persistent----12
 12. Ascospores non-septate----13
 13. Thallus foliose or fruticose----14
 14. Thallus fruticose, usually with central solid core ----*Usnea*
 14. Thallus foliose----15
 15. Lower side of thallus jet black, rhizoids present ----*Parmelia*
 15. Lower side of thallus buff, tan or white ----*Candelaria*
 13. Thallus crustose----16
 16. Spores very large, 1 or 2 per ascus----*Mycoblastus*
 16. Spores not large, at least 8 ascospores per ascus---17
 17. Asci never more than 8-spored, thallus rarely yellow ----*Lecanora*
 17. Asci polysporous, spores minute ----*Acarospora*
 12. Ascospores septate----18
18. Ascospores generally with a single transverse septum----19
 19. Ascospores polarilocular----20
 20. Ascospores hyaline
 21. Thallus typically foliose to squamulose, usually on trees ----*Xanthoria*
 21. Thallus crustose ----*Caloplaca*
 20. Ascospores pigmented
 22. Thallus foliose, usually on trees ----*Physcia*
 22. Thallus crustose----23
 23. Thalline exciple present ----*Rinodina*
 23. Proper exciple only ----*Buellia*
 19. Ascospores not polarilocular ----*Lecidea*
18. Ascospores with more than 1 transverse septum----24
 24. Ascospores with 1-several transverse septa----25
 25. Large foliose thallus, on soil commonly ----*Peltigera*
 25. Thallus crustose----26
 26. Thallus warty, squamulose or coralloid ----*Toninia*
 26. Thallus crustose, smooth ----*Bacidia*
 24. Ascospores with both longitudinal and transverse septa----27
 27. Thallus foliose, dull, black or brown, upper cortex absent or at most poorly developed----*Collema*
 27. Thallus shiny, typically slate-blue, rarely dark brown; upper cortex distinct, cellular ----*Leptogium*

Literature Cited

1. Miller, Katy A. 1903. Proc. Iowa Acad. Sci. 11:139-146.
2. Bessey, Charles E. 1884. Iowa State Coll., Ames, Dept. of Botany Bulletin, Nov.: 142-143.
3. Juhl, Karen. 1961. Proc. Iowa Acad. Sci. 68:132-138.
4. Fink, Bruce. 1935. The lichen flora of the United States. Univ. Mich. Press, Ann Arbor.
5. Hale, Mason E., Jr. and W. L. Culberson. 1960. Bryol. 63:137-172.