

Notes on Indiana Liverworts—V¹

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A grant from the Indiana Academy of Science through the American Association for the Advancement of Science enabled the writer to collect in seven state parks in Indiana during the past summer and to visit the University of Illinois to study the Indiana collections made by E. J. Hill. The new distribution records from this trip and from collections sent to the writer by Dr. Winona H. Welch are reported here. Except for the E. J. Hill collections, all specimens listed here are in the DePauw University herbarium.

Blepharostoma trichophyllum (L.) Dum. Fountain Co.: on sandstone, Portland Arch, Aug. 17, 1952, Wagner 3052 in part. This minute species has been reported in Indiana from two other counties, Montgomery and Putnam. In all cases, it was found growing on wet sandstone.

Cephalozia connivens (Dicks.) Lindb. Porter Co.: Dunes State Park, July 16, 1912, E. J. Hill 27.1912.

C. media Lindb. Fountain Co.: on sandstone Portland Arch, Aug. 17, 1952, Wagner 3052 in part; Porter Co.: Dunes State Park, June 22, 1907, E. J. Hill 24.1907 in part.

Odontoschisma denudatum (Mart.) Dum. Porter Co.: Dunes State Park, June 26, 1907, E. J. Hill 24.1907 in part. First report for Indiana; the collection contains typical plants with denuded stem tips and gemmae.

O. prostratum (Swarz.) Trevis was reported by the writer for three counties in Indiana (Wagner 2) on the basis of fragments found among other bryophytes. A further study of *O. prostratum*, essentially a coastal plain species which reaches its best development here in Florida where it grows on rotten wood, places the Indiana records somewhat in doubt. During the past summer considerable quantity of an *Odontoschisma* with distinct ventral leafless flagelliform branches was collected on sandstone at Turkey Run (Wagner 3051). It agrees with the above species in all vegetative characters except its smaller leaf size. The cell size, however, is within the range of typical *O. prostratum*. These collections are tentatively referred to *O. prostratum*, although the discovery of fertile material may show that it is a distinct taxon, probably a variety.

Lophocolea cuspidata (Nees) Limpr. Fountain Co.: on sandstone, Portland Arch, Aug. 17, 1952, Wagner 3052 in part.

Chiloscyphus pallescens (Ehrh.) Dum. Washington Co.: on damp limestone with *Conocephalum*, W. D. Gray 1131.

C. polyanthus (L.) Corda. Jefferson Co.: Clifty Falls State Park, with *Cololejeunea biddlecomiae*, Sept. 12, 1952, Wagner 3043. Previously reported in Indiana from Martin and Wells counties.

Harpanthus scutatus (Web. & Mohr) Spruce. Fountain Co.: on sandstone, Portland Arch, Aug. 17, 1952, Wagner 3053 in part. This species is recognized by the large underleaves which are long-lingulate triangular and not bilobed. The previous Indiana record was based on fragmentary

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material from Putnam County. The excellent material found at Portland Arch reduces doubts which the writer held concerning the Putnam County record.

Geocalyx graveolens (Schrad.) Nees. Lake Co.: Oct. 27, 1898, E. J. Hill 367.1898.

Plectocolea crenuliformis (Aust.) Mitten. Lake Co.: Liverpool, Oct. 27, 1898, E. J. Hill 370.1898 (as *Nardia crenulata*). This is the first report of this species in Indiana north of Fountain County.

Diplophyllum albicans (L.) Dum. was reported for Indiana (Frye and Clark) based on a collection by Drexler no. 1424 at Turkey Run State Park. During the writer's stay at Turkey Run, an intensive search was made for this species, but all field checks and all determinations made to date have yielded only the common *D. apiculatum*. *Diplophyllum albicans*, as the writer understands it, is a northern alpine species. Its natural occurrence anywhere in Indiana, even as a relic at Turkey Run, would be surprising. It should be readily identified by the whitish costa-like row of cells on upper and lower lobes of the leaves.

Porella pinnata L. Posey Co.: on birch, Hovey Lake, Aug. 5, 1952, Wagner 3048.

P. platyphylla (L.) Lindb. Warren Co.: on sycamore, Hanging Rock Camp, May 27, 1951, W. H. Welch 11720; Decatur Co.: on elm, W. D. Gray 1052; Clark Co.: on limestone, Nine Penny Creek, W. D. Gray 1023.

Frullania eboracensis Gottsche. Clark Co.: on base of beech tree, W. D. Gray 1084; Fountain Co.: on sugar maple, Portland Arch, Aug. 17, 1952, Wagner 3050.

Frullania riparia Hampe. Jefferson Co.: on limestone, Clifty Falls State Park, Sept. 12, 1952, Wagner 3040.

Frullania squarrosa (R. Bl. & Nees) Dum. Posey Co.: on American ash, five miles southeast of New Harmony, on U. S. 460, Aug. 5, 1952, Wagner 3046.

Cololejeunea biddlecomiae (Aust.) Evans. Fountain Co.: on sandstone, Portland Arch, Aug. 17, 1952, Wagner 3049. Although reported from eleven counties in Indiana, this species has not been found within the state north of Fountain, Montgomery, Madison and Randolph counties. It does occur as far north of Indiana as Ontario, although the genus is primarily a tropical one.

Fossombronina foveolata Lindb. Putnam Co.: East Fern on clay soil along road, shade, June 10, 1947, W. H. Welch 11440.

Pellia epiphylla (L.) Corda. Lake Co.: April 28, 1904, E. J. Hill 5.1904; Fountain Co.: on sandstone, Portland Arch, Aug. 17, 1952, Wagner 3055.

Metzgeria conjugata Lindb. This species is known in Indiana only from Turkey Run State Park in Parke County. According to Frye and Clark (1), it has been reported from such widely scattered places as Maine, Florida, California, Alaska, New Zealand, South America, Africa and Asia. This indicates that features of the microclimate may be responsible for its limited distribution in Indiana. The writer has searched for this species in other parts of the state since starting work on the Indiana liverworts in 1945. To date, no additional sites have been found, although

a thorough check was made last summer at Fern near Greencastle, a most logical place for the species. It was found at Turkey Run in varying abundance in all ravines north of Sugar Creek.

The sites at Turkey Run which produced the best growth of *Metzgeria* seemed to involve at least two factors, light and humidity. The best colonies were at the bottoms of deep ravines but nevertheless received direct sunlight for some portion of the day. Good growth occurred where the ravines were relatively wide and never in the very narrow portions.

After examining seven ravines at Fern, it seems probable the *Metzgeria conjugata* does not grow there because the ravines are not deep enough to provide the required humidity. Several places were examined which were comparable to the sites at Turkey Run in exposure to light, in the presence of associated species and in composition of the substrate but the *Metzgeria* could not be found.

Inasmuch as this species is found from Alaska to Florida, the gross aspects of the climate would seem not to be important in its Indiana distribution.

Riccardia pinguis (L.) S. F. Gray. Lake Co.: Liverpool, Aug. 18, 1902, E. J. Hill 163.1902.

Conocephalum conicum (L.) Dum. Washington Co.: damp limestone, W. D. Gray 1131.

Preissia quadrata (Scop.) Nees. Montgomery Co.: on soil over sandstone, The Shades State Park, Aug. 14, 1952, Wagner 3047.

Reboulia hemisphaerica (L.) Raddi. Fountain Co.: moist sandstone, Portland Arch, Oct. 17, 1942, G. N. Jones 15539.

Ricciocarpus natans (L.) Corda. Clark Co.: May 7, 1898, L. M. Umback.

Anthoceros laevis L. Lake Co.: near Gary, Sept. 23, 1898, E. J. Hill 270.1898.

Literature Cited

1. FRYE, T. C., and L. CLARK. 1937-1946. Hepaticae of North America. Univ. of Washington Pub. in Biology 6:1-733.
2. WAGNER, K. A. 1946. Additions to the Hepatic Flora of Indiana. Bryologist 49:125-126.