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BIOLOGICAL AND MEDICAL SCIENCES

A BOTANICAL SURVEY OF CUMING COUNTY: PART II, THE BRYOPHYTES: WITH ADDITIONS TO PART I, THE VASCULAR PLANTS

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Continued studies of the flora of Cuming County, Nebraska, reveal the presence of 36 species of bryophytes representing 27 genera and 17 families. The list of known vascular plants is increased by 15, and a summary of the county's flora is presented.

† † †

INTRODUCTION

This present account is the second of two parts in a floristic study of Cuming County, Nebraska. The vascular plants were presented in the first part by Churchill (1977). In addition to the annotated list of vascular plants, the first part included introductory information on the physical aspects (location, geology and soil, topography and drainage, and climate) and the floristic aspects (botanical history, past and present vegetation, and a county vegetation map).

This is the first published list concerning the bryophytes for a given Nebraska county. The only other county bryophyte study for Nebraska was Reynolds' unpublished account (1942) listing 39 mosses and 4 liverworts for Richardson County, Nebraska. Unfortunately, only a few specimens from the Richardson County study were deposited with the Nebraska State Herbarium (NEB) for documentation. The few studies on the bryophytes of the state were summarized by Elliott and Churchill (1978).

PART II: THE BRYOPHYTES

The bryophyte survey of Cuming County was conducted in the period from 1974 to 1976. The survey objective for the vascular plants (Churchill, 1977) remains the same for the bryophytes. In addition to the approximately sixty collections made by the author, two collections were made in 1947 by the late Walter Kiener.

A total of 32 mosses and 4 liverworts is recorded from Cuming County. The most numerous kinds and greatest abundance of bryophytes were encountered in the forested regions of the Elkhorn River valley. The North American affinities of the Cuming County bryophytes fall into two broad groups: 13 species (*Anomodon minor*, *Atrichum angustatum*, *A. undulatum*, *Barbula unguiculata*, *Brachythecium acuminatum*, *B. oxycladon*, *Campylium hispidulum*, *Entodon cladorrhizans*, *E. seductrix*, *Leskea gracilescens*, *Lindbergia brachyptera*, *Orthotrichum pumilum*, and *Weissia muhlenbergiana*) are restricted to eastern North America, and the remaining 23 taxa are generally widespread throughout North America. The eastern North American species are best explained by the post-glacial vegetational changes which occurred in this region, as reviewed by Wells (1970) and Wright (1970).

ANNOTATED LIST OF BRYOPHYTES

A complete annotated list is provided for the bryophytes, including habitat information, specimen citation, and location. Most of the following bryophytes have been reported only once or twice for Nebraska, with little information concerning habitat or species association. In the annotated list, the family is listed parenthetically with the first species of a genus. Habitat information is given, after which is listed the author's collection number and the particular site from which the collection was made. All collections cited are deposited in the Nebraska State Herbarium (NEB). Unless otherwise noted, nomenclature follows Crum, et al. (1973) for the mosses, and Stotler and Crandall-Stotler (1977) for the liverworts.

COLLECTION SITES

1. 1.6 km S of Beemer (Sec. 2, T22N, R5E); N-facing Elkhorn R. bluffs, *Quercus macrocarpa*-*Celtis occidentalis*-*Tilia americana*-*Ribes missouriense* woods.

2. Elkhorn R. S of Beemer (Sec. 2, T22N, R5E); *Populus deltoides* floodplain woods and adjoining *Salix* marsh sandbars.
3. 1.6 km E and 0.8 km S of West Point (NE ¼, Sec. 2, T21N, R6E); upland ravines, *Quercus macrocarpa* woods along intermittent tributary.
4. 4.8 km S and 0.4 km E of West Point (N ½, Sec. 23, T21N, R6E); W-facing upland prairie bluffs, soil sandy.
5. Off Hwy. US 275, 6.4 km SE of Beemer (Sec. 16, T22N, R6E); old sandpit lake area, *Salix-Equisetum-Juncus* marsh.
6. West off Hwy. US 275, 8.8 km S of West Point (NE ¼, Sec. 36, T21N, R6E); *Populus-Fraxinus* floodplain marsh.
7. 4 km NW of West Point, S-side of Elkhorn R. (Sec. 17, Sec. 34, T22N, R6E); sandpit lake marshes.
8. 0.8 km W of West Point at Elkhorn R. (W ½, Sec. 34, T22N, R6E); sandbars.
9. 3.2 km NW of Beemer, Elkhorn R.; sandbars and banks, Kiener collections—22918, 22920.
10. 0.8 km S of Wisner and 0.8 km W (Sec. 11, T24N, R4E); intermittent floodplain pond.

ANNOTATED LIST

MUSCI

- Amblystegium serpens* (Hedw.) B.S.G. Amblystegiaceae. On shaded bank among grasses. Associated with *Barbula unguiculata* and *Leptodictyum trichopodium*. 8272 (site 10).
- A. varium* (Hedw.) Lindb. On shaded soil, with *Leptodictyum trichopodium*. 8276 (site 1).
- Anomodon minor* (Hedw.) Fuernr. Thuidiaceae. Shaded, on trees of *Quercus macrocarpa* and *Ulmus* sp.; once on soil. Associated with *Leskea gracilescens* and *Brachythecium oxycladon*. 4860, 5521, 8274 (site 1).
- Atrichum angustatum* (Brid.) B.S.G. Polytrichaceae. Shaded on soil among grasses. 8280 (site 1).
- A. undulatum* (Hedw.) P.-Beauv. Shaded on soil. 4777 (site 2).
- Barbula unguiculata* Hedw. Pottiaceae. Shaded on moist ground. Associated with *Amblystegium serpens*, *Funaria hygrometrica*, and *Leptodictyum trichopodium*. 2809-b (site 1) and 8273 (site 10).

- Brachythecium acuminatum* (Hedw.) Aust. Brachytheciaceae. On trunk of *Quercus macrocarpa*. Associated with *Leskea gracilescens*. 4175-b (site 1).
- B. oxycladon* (Brid.) Jaeq. & Sauerb. Shaded to partly exposed places on ground of forest and prairie. 7932 (site 3) and 5494 (site 4).
- B. salebrosum* (Web. & Mohr) B.S.G. Shaded on soil. Associated with *Atrichum undulatum* and *Plagiomnium cuspidatum*. 4777-b, 5508 (site 3).
- Bryum algovicum* Sendtn. ex C. Muell. Bryaceae. On shaded partly sandy ground. 7933 (site 3).
- B. argenteum* Hedw. Partly shaded on disturbed ground among grasses. 5518 (site 1).
- B. caespiticium* Hedw. Exposed on dry to moist ground in prairie and marsh. 2819 (site 4) and 3514 (site 5).
- Campylium hispidulum* (Brid.) Mitt. Amblystegiaceae. Shaded on decaying log. 8284 (site 1).
- Ceratodon purpureus* (Hedw.) Brid. Ditrichaceae. Exposed on sandy prairie roadcut and on shaded moist soil. 2810 (site 1), and 5493 (site 4).
- Dicranella varia* (Hedw.) Schimp. Dicranaceae. On moist sandy-loess soil. 7937 (site 3).
- Entodon cladorrhizans* (Hedw.) C. Muell. Entodontaceae. Shaded on decaying log. Associated with *Frullania inflata* and *Plagiomnium cuspidatum*. 8282 (site 1).
- E. seductrix* (Hedw.) C. Muell. Shaded base of *Quercus macrocarpa* and on decaying log. Associated with *Platygyrium repens*. 2807, 5524-a, 5527-a (site 1).
- Eurhynchium hians* (Hedw.) Sande Lac. Brachytheciaceae. On moist soil. 2810-a (site 1).
- Funaria hygrometrica* Hedw. Funariaceae. Shaded on moist ground. Associated with *Barbula unguiculata* and *Ceratodon purpureus*. 2809-a (site 1).
- Leptobryum pyriforme* (Hedw.) Wils. Bryaceae. Shaded on wet soil along tributary. 7934 (site 4).
- Leptodictyum riparium* (Hedw.) Warnst. Amblystegiaceae. Shaded on moist soil-covered decaying log. 5490 (site 6).
- L. trichopodium* (Schultz) Warnst. Shaded on soil. Approaching *L. riparium* in part, 8277 (site 1) and 8271 (site 10).
- Leskea gracilescens* Hedw. Leskeaceae. On bark of trees. 4175-a (site 1).

Lindbergia brachyptera (Mitt.) Kindb. Leskeaceae. Shaded on decaying log. 8281 (site 1); this collection exhibited the rather uncommon feature of forked papilla as discussed by Crum (1956).

Orthotrichum pumilum Sw. Orthotrichaceae. On bark of *Quercus macrocarpa*. 5522 (site 1).

Physcomitrium pyriforme (Hedw.) Hampe. Funariaceae. On moist sandy soil. 3605 (site 7).

Plagiomnium cuspidatum (Hedw.) T. Kop. (*Mnium c.*) Mniaceae. On shaded ground, over logs, and base of tree trunks. Associated with *Atrichum undulatum*, *Brachythecium oxycladon*, *Entodon cladorrhizans* and *Frullania inflata*. 4778, 5500 (site 3) and 8283 (site 1). Nomenclature follows Koponen (1968).

Platygyrium repens (Brid.) B.S.G. Hypnaceae. Shaded on decaying logs. 2807-b, 5527-b (site 1) and 7935 (site 3).

Pohlia wahlenbergii (Web. & Mohr) Andr. Bryaceae. Shaded on sandy tributary bank. 7941 (site 3).

Polytrichum juniperinum Hedw. Polytrichaceae. Exposed on sandy prairie roadcut. 4748 and 5492 (site 4).

Weissia controversa Hedw. Pottiaceae. Exposed in partly sandy grazed prairie. Associated with *Weissia muhlenbergiana*. 5496-b (site 4).

W. muhlenbergiana (Sw.) Reese & Lemmon. (*Astomum m.*) Exposed in partly sandy grazed prairie. Associated with *Weissia controversa*. 5496-a (site 4). Nomenclature follows Reese and Lemmon (1965).

HEPATICAE

Frullania inflata Gott. Jubulaceae. Shaded on bark of *Juglans nigra* and on decaying log. Associated with *Entodon cladorrhizans*, *Lindbergia brachyptera* and *Plagiomnium cuspidatum*. 5523, 8461 (site 1).

Mannia fragrans (Balbis) Frye et Clark. Aytoniaceae. Shaded on steep bank among grasses. 7938 (site 3).

Riccia frostii Aust. Ricciaceae. Exposed riparian banks, on sandy soil. 4706 (site 2), 4810 (site 8), and *Kiener 22918* (site 9).

Ricciocarpos natans (L.) Corda. Ricciaceae. Partly shaded among marsh plants and exposed on sandbars. 1102 (site 6) – aquatic form, and *Kiener 22920* (site 9) – land form.

ADDITIONS TO PART I, THE VASCULAR PLANTS

The following list was compiled from the collections made

by Larry Ediman and deposited by him with the Nebraska State Herbarium (NEB). Many collections are significant either in that they are new additions to Cuming County (15 species) or verification of some species thought to be rare within the county. All collections have been verified or determined by the author. Citation remains the same for habitat information (Churchill, 1977), but with the family listed parenthetically for each species.

Adiantum pedatum L. Polypodiaceae. (EDF). This verifies an earlier collection from Cuming County by L. Bruner in July, 1880.

Berteroa incana (L.) DC. Brassicaceae. (DG; I).

Brassica kaber (DC.) L. C. Wheeler. Brassicaceae. (DG; I).

Cephalanthus occidentalis L. Rubiaceae. (M-FF). The last collection from Cuming County was made by H. J. Webber in 1889.

Coreopsis palmata Nutt. Asteraceae. (TBP).

Corylus americana Walt. Betulaceae. (EDF).

Erythronium albidum Nutt. Liliaceae. (EDF).

Gypsophila paniculata L. Caryophyllaceae. (DG; I).

Juncus effusus L. Juncaceae. (M).

J. marginatus Rostk. Juncaceae. (M).

Lychnis alba Mill. Caryophyllaceae. (DG; I).

Penstemon digitalis Nutt. Scrophulariaceae. (TBP).

Petalostemon candidum Michx. Fabaceae. (TBP).

Ribes americanum Mill. Saxifragaceae. (FF).

Setaria faberi Herrm. Poaceae. (DG; I).

Sporobolus neglectus Nash. Poaceae. (DG).

Viola pubescens Ait. var. *pubescens*. Violaceae. (EDF).

SUMMARY

The known flora of Cuming County, Nebraska, can be characterized as consisting of five vegetation zones: Eastern Deciduous Forest, Floodplain Forest and Prairie, Tallgrass Bluestem Prairie, and Sandhills Prairie. The number of species encountered in this study totals 542 and is distributed among the following groups: Bryophyta 36 (Musci 32, Hepaticae 4), Equisetophyta 3, Polypodiophyta 3, Pinophyta 1,

Magnoliophyta 499 (Liliatae 154, Magnioidatae 345). Of the Magnoliophyta, the five largest families in terms of species numbers were: Poaceae 79, Asteraceae 74, Cyperaceae 40, Fabaceae 34, and Brassicaceae 20.

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