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## Additional Iowa Bryophyte References

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## Additional Iowa Bryophyte References

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Fifty-five annotated references are added to the bibliography of literature on Iowa bryophytes. The references treat taxonomic, ecologic, physiologic, and phytogeographic reports on Iowa mosses, liverworts, and hornworts. The status of Iowa bryology is compared to bryology in the other states of the Upper Midwest and Great Plains. The Iowa bryophyte flora now consists of 342 bryophytes, including 277 mosses, 63 liverworts, and 3 hornworts. A total of 153 reports to the study of Iowa bryophytes have now been located and annotated.

INDEX DESCRIPTORS: Bryophytes, Hornworts, Iowa Flora, Liverworts, Mosses.

### ANNOTATED BIBLIOGRAPHY

Iowa has been ahead of many of its neighboring states in its survey of the state bryophyte flora. This is a direct result of the efforts of H.S. Conard and his students. Conard summarized Iowa bryophyte information in the form of a checklist (Conard, 1945a), a nomenclatural review (Conard, 1945b), and a history of people and publications on the flora (Conard, 1945c). Conard (1956) later updated his checklist. Since then, the publications on Iowa bryophytes and bryology have been compiled and annotated (Peck, 1976), providing access to 98 references. While preparing a bryophyte flora of Woodman Hollow (Peck, 1978a), it was necessary to produce an atlas of the Iowa bryophyte flora (Peck, 1978b) to incorporate new floristic records and incorporate current nomenclature. The atlas was used to interpret the geographical character of the flora at Woodman Hollow. The bibliography and atlas provide a means of assessing 1) the bryological activities of previous workers, 2) the types of research conducted on the flora, 3) the status of new collections as potential state or county records, and 4) a visual display of geographic and distributional data.

Similar efforts have been conducted in neighboring states over the last 5 years, or are now in progress. States in the Upper Midwest with recent bryophyte floras or bibliographies include Illinois (McCleary and Redfearn, 1979; Stotler, 1979), Minnesota (Schuster, 1977), Missouri (Gier, 1955; Redfearn, 1972), and Wisconsin (Bowers and Freckmann, 1979; Cole, Bowers, and Freckmann, 1979). Checklists of Illinois liverworts (by R. Stotler) and Minnesota mosses (by F. Bowers) are being prepared. States in the Great Plains to the west of Iowa are also active, including Kansas (Churchill, 1979b; 1980; Gier, 1949; Smith, 1966), Nebraska (Churchill, 1976a; 1977a; 1979a; 1981; Elliott and Churchill, 1978; Jacobson and Prior, 1979), Oklahoma (Mahler and Mahler, 1980), and South Dakota (Churchill, 1977b; 1979a). Churchill (1979b) has also presented summaries and additions to the Great Plains region. These state treatments, along with three manuals recently published (Conard and Redfearn, 1979; Crum, 1973; and Crum and Anderson, 1980) which provide descriptive and ecological comments on the species in our region, provide bryologists with accurate distributional data on the geography of the bryophytes which was not available 5 years ago. Consequently, interpretations on the affinities of the bryophyte flora and the ecological phenomena which account for patterns of distribution and degree of abundance can now be investigated.

Since publication of the Iowa bryophyte bibliography (Peck, 1976), 55 additional references to Iowa bryophytes have been located, including 23 produced since 1975 and 32 older references. As before, the references are annotated to clarify the title, contents, and significance. To date, a total of 153 references to Iowa bryophytes have been located and annotated. With the floristic records noted in these references, the Iowa bryophyte flora now consists of 342 bryophytes, including 277 mosses, 63 liverworts, and 3 hornworts. The purpose of this report is to provide a current statement on Iowa bryophyte literature for workers in Iowa, as well as, for workers in other states who use Iowa data for floristic analyses.

- ANDERSON, L.E. 1943. The distribution of *Tortula pagorum* (Milde) De Not. in North America. *Bryologist* 46:47-66. (Moss native to southwestern United States is entirely adventive in eastern United States; report cites an Iowa collection that is also plotted on p. 61; see Steere (1940) for a correction of this interpretation.)
- BEYER, S.W. 1909. Peat deposits in Iowa. *Ann. Rept. Iowa Geol. Surv.* 19:689-733. (Reports neutral peat deposits across Iowa; acid peat formed by *Sphagnum* was noted as not present in Iowa.)
- BOWERS, F.D., and PECK, J.H. 1978. The bryophyte flora of Fremont County, Iowa. *Iowa Bird Life* 48:18-20. (Reports 19 county records, 2 state records, and a county flora of 59 bryophytes, consisting of 51 mosses, 7 liverworts, and 1 hornwort; state records are *Fissidens osmundoides* Hedw. and *Frullania brittoniae* Evans.)
- BOWERS, F.D., and PECK, J.H. 1978. Additions to the bryoflora of Iowa. *Bryologist* 81:448. (Reports one moss, *Fissidens osmundoides* Hedw., and one liverwort, *Frullania brittoniae* Evans., as state records and 19 county records from Fremont Co., Iowa; collections were made during a natural history foray of the county sponsored by the State Preserves Advisory Board.)
- BRYAN, V.S., and ANDERSON, L.E. 1957. The Ephemeraceae in North America. *Bryologist* 60:67-102. (The smallest and most delicate of mosses, *Ephemerum cohaerens* (Hedw.) Hampe is reported for 12 states, including Iowa; *Nanomitrium synoecium* (James) Lindb. is reported from Iowa and only 6 other states; other equally inconspicuous mosses occur in the same habitats and are more abundantly represented in herbaria, suggesting that the species noted here are quite rare.)
- CARVEY, K., FARRAR, D.R., and GLENN-LEWIS, D.C. 1977. Bryophytes and revegetation of coal spoils in southern Iowa. *Bryologist* 80:630-637. (Reports 29 mosses and 2 liverworts on coal spoils in microhabitats protected by vascular plants; reports 1 state record, *Sphagnum fimbriatum* Wils. ex Hook. f., 13 county records, and several species with disjunct Iowa distributions.)
- CHURCHILL, S.P. 1976. Mosses of the Great Plains: introduction and catalogue. *Prairie Naturalist* 8:44-57. (Includes Iowa mosses in the far western portion of Iowa, including the Loess Hills region; reports 96 mosses based upon literature.)
- COLBERT, J.T. 1979. Spatial relations of stem hydroids to branch hydroids in four pleurocarpus mosses. *Proc. Iowa Acad. Sci.* 86:145-148. (Reports no direct connections evident between stem and branch hydroids in Iowa material of *Climacium americanum*, *C. dendroides*, *Rhytidiadelphus triquetrus*, and *Rhytidium rugosum*.)
- CONARD, H.S. 1908. Acres of liverworts. *Plant World* 11:64-66. (Reports on the occurrence of 4 common liverworts in central Iowa; the title refers to liverwort occurrence in Pennsylvania.)
- CONARD, H.S. 1945a. The decurrent leaves of *Didymodon tophaceus*. *Bryologist* 48:27-28. (Illustrates the diagnostic leaf characters of the species with material from two Iowa localities.)
- CONARD, H.S. 1945b. *Gyroweisia reflexa* in North America. *Bryologist* 48:28-29. (Collections by Cavanagh from White Pine Hollow State Preserve, Dubuque Co., originally reported to be *Gymnostomium tenue*, here corrected by Conard as *Gyroweisia reflexa*; this is the second United States report for *G. reflexa*.)
- CONARD, H.S. 1951. *Desmatodon obtusifolius* in Iowa. *Bryologist* 54:128-130. (Provides descriptions of leaf characters to discern between *D.*

- obtusifolius*, other *Desmatodon* spp., and *Barbula unguiculata*; Iowa material provided the basis for comparison.)
- CONARD, H.S. 1952. The 1952 Botanical Foray of Iowa Lakeside Laboratory, II. Bryophytes. *Asa Gray Bull.* n. s. 1:306-307. (Casual account of bryophytes and habitats visited by Iowa botanists at Gitchee Manitou State Preserve, Lyon Co., Iowa Lakeside Laboratory, Dickinson Co., and wooded slopes and outcrops in Winneshiek Co.)
- CRUM, H.A. 1956. *Lindbergia brachyptera* in North America. *Bryologist* 59:203-212. (More collections of this moss are known from Iowa than from any other state in North America, being the result of H.S. Conard's efforts to systematically collect the Iowa bryophytes; Conard found the moss in 39 counties mainly as a reward for sorting through mixed collections of *Orthotrichum obtusifolium* and *Frullania* spp.; map on p. 209 and specimens cited on p. 210.)
- CRUM, H. 1966. A taxonomic account of the genus *Thelia*. *Can. Natl. Mus. Nat. Hist. Bull.* 216:123-127. (Description, taxonomy, and distribution of taxa in eastern North America; includes *T. asprella* from Iowa collections.)
- CRUM, H.A., and ANDERSON, L.E. 1955. Taxonomic studies in the Funariaceae. *Bryologist* 58:1-15. (Comments presented on Iowa collection of *Physcomitrium pyriforme* var. *serratum* by Blagg on p. 7.)
- CRUM, H.A., LERSTEN, N.R., and CRUM, G.H. 1976. *Sphagnum* taxa and their distribution in Iowa. *Proc. Iowa Acad. Sci.* 83:98-101. (Reports 13 taxa in 13 localities from 9 Iowa counties, including 4 species and 3 varieties as new to Iowa; reports 4 new stations in 3 counties where *Sphagnum* was previously unknown; H.A. Crum examined all specimens, making this essentially a revision of *Sphagnum* in Iowa; state records were *S. compactum* DC. ex Lam. & DC., *S. fimbriatum* Wils. ex Hook. f., *S. squarrosum* Crome, and *S. warnstorffii* Russ.; new varieties were *S. recurvum* P.-Beauv. var. *amblyphyllum* (Russ.) Warnst., *S. recurvum* P.-Beauv. var. *recurvum*, and *S. subsecundum* Nees ex Sturm var. *subsecundum*.)
- CURRIER, P.J. 1979. Floristic composition and primary productivity of the post-drawdown vegetation of Eagle Lake Marsh, Hancock County, Iowa. M.S. thesis, Iowa State University, Ames. (Reports on presence, frequency, and biomass of *Riccia fluitans*.)
- DELGADILLO, C.M. 1975. Taxonomic revision of *Aloina*, *Aloinella*, and *Crossidium* (Musci). *Bryologist* 78:245-303. (A widely dispersed species, is noted for a solitary occurrence in Iowa in Fig. 22 which shows *Aloina rigida* var. *rigida* in southwestern Iowa.)
- FRYE, T.C. 1949. *Atrichum selwyni* and remarks about related species. *Bryologist* 52:201-207. (Reports that material from Mississippi River region which had previously been reported as *A. selwyni* was actually *A. undulatum* var. *altecristatum* Ren. & Card.; cites specimens from 7 counties in Iowa.)
- HAYDEN, A. 1941. A supplement to the flora of Clay and Palo Alto counties. *Quart. Rept. Iowa Cooper. Wildl. Res. Unit, Apr.-Jun., 1941.* p. 5-26. (Reports 5 liverworts and 41 mosses along with additional reports of flowering plants.)
- HORTON, D.G., and VITT, D.H. 1976. Morphological characters, relative to distribution, and taxonomic consideration of the genus *Climacium* in North America. *Can. J. Bot.* 54:1872-1883. (Includes Iowa material in survey; discusses relations of *C. americanum* and *C. dendroides*, with Iowa in the sympatric zone of the 2 species; descriptions and ecology included.)
- IRELAND, R.R. 1969a. Taxonomic studies on the genus *Atrichum* in North America. *Can. J. Bot.* 47:353-368. (Includes all Iowa taxa in discussion, but points out that a collection of *A. crispum* var. *crispum* by Conard from Coggon Bog, Linn Co., is the western most station for North America, but is quite disjunct from its occurrence to the east; Fig. 1 on p. 355.)
- IRELAND, R. 1969. A taxonomic revision of the genus *Plagiothecium* for North America north of Mexico. *Can. Natl. Mus. Nat. Sci. Pub. Bot.* 1:1-118. (Monographic treatment which includes Iowa material.)
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- LOWY, B. 1950. *Climacium americanum* in Iowa. *Bryologist* 53:289-292. (Notes diagnostic leaf and peristome teeth characters in Iowa material of *C. americanum* and *C. dendroides*; reports that populations in only 2 of Iowa's 34 counties with *Climacium* product sporophytes.)
- MILLER, N. G. 1976. Quaternary Fossil bryophytes in North America: a synopsis of the record and some phytogeographic implications. *J. Hattori Bot. Lab.* 41:73-85. (Includes Iowa specimens from interglacial deposits which were earlier reported by Holzinger and by Steere; see Peck (1976) for annotated references by these workers.)
- MILLER, N. G. 1980. Quaternary fossil bryophytes in North America: catalog and annotated bibliography. *J. Hattori Bot. Lab.* 47:1-34. (Includes Iowa fossil Pleistocene moss records; list arranged by species; documents discussion presented in Miller (1976); notes that many of the Iowa species are extinct and not known from deposits in other states.)
- MORRILL, J. B. 1950. Mosses in liquid air. *Bryologist* 53:163-164. (Contradicts report by Lipman (1936); H. S. Conard verified that the test organism was *Brachythecium acuminatum*, not *Brachythecium cyrtophyllum* as reported at first; the protonema which Lipman thought had survived liquid air temperatures actually came from buds and stems through their regeneration, not from restitution of protonema; samples of Lipman's material were examined by Conard, and Morrill duplicated the experiments with material of both species.)
- O'KEEFE, J. A. 1980. Some aspects of the ecological physiology of bryophytes of the prairie. M. S. thesis, Iowa State University, Ames. (Study of bryophytes in 4 prairies in Iowa; ecological aspects investigated were the influences of light intensity, soil moisture, and bryophyte occurrence to the frequency and abundance of bryophytes; physiological aspects investigated included photosynthetic rate versus light intensity and temperature; potential use of bryophytes to control soil erosion under different herbicide schedules was conducted in plots; floristic efforts recorded 34 bryophytes, including 30 mosses, 3 liverworts, and 1 hornwort at Freda Haffner Kettlehole Prairie, Dickinson Co., 11 mosses at Cayler Prairie, Dickinson Co., 6 mosses at Kalsow Prairie, Pocahontas Co., and 8 mosses at Black's Prairie, Story Co.; reported 11 county records and 4 state records, including *Barbula convoluta* Hedw., *Bryum klinggraeffii* Schimp. ex Klinggr., *Leptodictyum laxirete* (Card. & Ther.) Broth., and *Pottia davilliana* (Sm. ex Drake) C. Jens.)
- PECK, J. H. 1976. An annotated bibliography to the literature on bryophytes in Iowa. *Proc. Iowa Acad. Sci.* 82:198-202. (Lists 98 annotated references to Iowa bryology and bryophytes.)
- PECK, J. H. 1977. New state and county bryoflora records from Iowa. *Bryologist* 80:352-353. (Reports 5 species and 1 variety as new to Iowa and 18 county records from a survey of state preserves in Dickinson, Hancock and Webster counties; state records are *Barbula cancellata* C. Muell., *Calliergon cordifolium* (Hedw.) Kindb., *Sphagnum recurvatum* P.-Beauv. var. *amblyphyllum* (Russ.) Warnst., *Sphagnum squarrosum* Crome, *Sphagnum warnstorffii* Russ., and *Geocalyx graveolans* (Schrad.) Nees.)
- PECK, J. H. 1978a. Bryoflora of Woodman Hollow, Iowa. *Bryologist* 81:454-457. (Reports the largest bryoflora for a single locality in Iowa; flora consists of 142 bryophytes, including 117 mosses, 23 liverworts, and 2 hornworts; reports 2 state records (*Barbula cancellata* C. Muell. and *Geocalyx graveolans* (Schrad.) Nees) and 84 county records from a state preserve in Webster Co.)
- PECK, J. H. 1978b. A restatement of Conard's Iowa bryophyte flora with modern nomenclature, additional reports, and county-dot maps. *Contr. Univ. Wisconsin-LaCrosse Herbarium* 21:1-90. (Notes 337 bryophytes, including 271 mosses, 63 liverworts, and 3 hornworts; available from University Bookstore, Memorial Union, Iowa State University, Ames.)
- PECK, J. H. 1980a. *Bryoxiphium norvegicum* in Iowa. *Bryologist* 83:535. (Reports moss as a state record from two localities in Allamakee County; this phytogeographically interesting moss is considered to be a Tertiary relict known from widely spaced localities in non-glaciated North America and the Driftless Area of Iowa, Minnesota, and Wisconsin.)
- PECK, J. H. 1980b. Life history and reproductive biology of ferns in Woodman Hollow, Webster County, Iowa. Ph.D. dissertation, Iowa State University, Ames. (Reports on phytogeographic relations of Woodman Hollow bryophytes and the possibility of Woodman Hollow's bryoflora being of pre-hypsithermal but post-glacial origin; Iowa county distribution maps presented for many rare species in the flora.)
- PRIOR, P. V. 1952. The effect of 2,4-D on two mosses. *Bryologist* 55:48-50. (Reports results from tests made for 4 weeks with 8 concentrations of "Weedeth" on 4.5 x 5.5 cm plots of *Brachythecium salebrosum* and *Mnium cuspidatum* in the lawn at Iowa Lakeside Laboratory, Milford, Iowa; no unfavorable reactions were noted to the mosses using recommended levels for lawn treatment.)
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- annual events at Goose Lake, Hamilton County, Iowa. Ph.D. dissertation, Iowa State University, Ames. (Ecological observations on the frequency, abundance, and phenology of three marsh bryophytes, *Drepanocladus* sp., *Riccia fluitans*, and *Ricciocarpus natans*, along with vascular plant observations.)
- SCHUSTER, R. M. 1953. Boreal Hepaticae, a manual of the liverworts of Minnesota and adjacent regions. Amer. Midl. Nat. 49:257-684. (References to Iowa specimens throughout the text; comments on the taxonomy of many of the rarer Iowa liverworts; dot maps include some Iowa specimens.)
- SCHUSTER, R. M. 1957. Boreal Hepaticae, a manual of the liverworts of Minnesota and adjacent regions, II Ecology. Amer. Midl. Nat. 57:203-299. (Included comments on Iowa specimens and habitats throughout text.)
- SCHUSTER, R. M. 1958. Notes on the nearctic Hepaticae VI. Phytogeographical relationships of critical species in Minnesota and adjacent areas of the Great Lakes. Rhodora 60:209-234, 243-256. (Reports on Iowa material, particularly specimens from the Driftless Area of Iowa; ecological and historical factors are considered in explaining disjunctive patterns.)
- SCHUSTER, R. M. 1977. Boreal Hepaticae, a manual of the liverworts of Minnesota and adjacent regions. Bryophytorum Bibliotheca 11. (Reprint of Schuster's three part work on Minnesota liverworts which includes numerous references to Iowa specimens and localities along with comments on the ecology, taxonomy, and phytogeography of Iowa bryophytes.)
- STEERE, W. C. 1937a. *Bryoxiphium norvegicum*, the sword moss, as a preglacial and interglacial relic. Ecology 18:346-358. (Discusses the taxonomy, ecology, and phytogeography of this interesting moss; predicts that it might be found in Iowa; see Peck (1980a) for its discovery in Iowa.)
- STEERE, W. C. 1937b. Critical bryophytes from the Keweenaw Peninsula, Michigan. Rhodora 39:1-14, 33-46. (Considers phytogeographic problems of disjunct species in eastern North America centered around the Great Lakes; Pleistocene relictual hypotheses are considered; discusses several Iowa specimens which he considered best explained by historical factors, such as *Frullania bolanderi* Aust. on p. 11 and Map 5.)
- STEERE, W. C. 1939. *Gyroweissia tenuis* in North America. Bryologist 42:16-23. (First report of this species in North America; this paper provides background to the report by Conard (1945) of this species in Iowa; Steere notes that it occurs in phytogeographically interesting regions, such as the Bruce Peninsula (Ontario) and the Keweenaw Peninsula (Michigan); critical differences between this rare species and the common *Gymnostomum calcareum* are presented.)
- STEERE, W. C. 1940. *Tortula* in North America north of Mexico. Bryologist 43:12-23, 45-56, 76-86, 98-109. (Corrects Anderson (1943): Native species in southwestern United States is *Tortula barramii*, whereas material from eastern North America, including Iowa, is *Tortula mucronifolia*, not adventive populations of the southwestern species.)
- STEERE, W. C. 1976. Ecology, phytogeography, and floristics of arctic Alaskan bryophytes. J. Hattori Bot. Lab. 41:47-72. (Lists a series of mosses which occur in Alaska and are disjunct from populations to the south in the Driftless Area, including Iowa; Steere refers to these species as an anomalous relict element (Umiat Syndrome) in the Alaskan flora.)
- STEERE, W. C. 1979. Taxonomy and phytogeography of bryophytes in Boreal and Arctic North America. pp. 123-157. In G. C. S. Clarke and J. G. Duckett. Bryophyte Systematics. Academic Press, New York. (Reports that the occurrence of *Seligeria pusilla* in the high arctic and in northern Iowa (Driftless Area) without intervening populations reflects glaciation, climatic changes, and persistence of relict populations; see Map 11 on p. 143.)
- VANDER ZEE, D. 1977. Gitchie Manitou Preserve—flora, ecology, and management. M. S. thesis, Iowa State University, Ames. (Reports 10 mosses on the xeric rock outcrops of Sioux quartzite.)
- VINJE, J. M., and VINJE, M.M. 1955. Preliminary aerial survey of microbiota in the vicinity of Davenport, Iowa. Amer. Midl. Nat. 54:418-432. (Reports fragments of *Sphagnum* leaves trapped on gravity slides set out at an airport at Mt. Joy, just north of Davenport, Iowa; *Sphagnum* populations have not been reported from Scott County; suitable *Sphagnum* habitats do exist 5 miles to the north along the Wapsipinicon River.)
- VITT, D. H. 1973. A revision of the genus *Orthotricum* in North America north of Mexico. Bryophytorum Bibliotheca 1. (Iowa specimens noted in text, citations, and maps.)
- VITT, D. H. 1976. The genus *Seligeria* in North America. Lindbergia 3:241-275. (Taxonomic and geographic affinities of 3 Iowa mosses: *S. pusilla*, *S. campylopoda*, and *S. donniana*; Iowa populations are disjuncts; *S. donniana* reported from Iowa for the first time.)
- WELCH, W. H. 1960. A monograph of the Fountinalaceae. Mortinus Nijhoff, The Hague, Netherlands. (Includes *Fontinalis duriaei*, the only species of this group in Iowa; cites Iowa specimens from the single Iowa locality in Ft. Defiance State Park, Emmet County; provides description, distribution, and relation to other species.)
- WYNNE, F. E. 1944. Studies in *Drepanocladus* IV. Taxonomy. Bryologist 47:147-189. (Reports Iowa specimens of *D. aduncus* on p. 157 and Map 1, *D. uncinatus* on p. 167 and Map 4, and *D. revolvens* on p. 173 and Map 5.)

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