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An Annotated Bibliography to the Literature on Bryophytes in Iowa

James H. Peck
Iowa State University

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An Annotated Bibliography to the Literature on Bryophytes in Iowa

JAMES H. PECK¹

PECK, JAMES H. (Department of Botany and Plant Pathology, Iowa State University, Ames, Iowa 50011). An Annotated Bibliography to the Literature on Bryophytes in Iowa. *Proc. Iowa Acad. Sci.* 82(3-4): 198-202, 1976.

Iowa bryological literature covers a century of study. Only one previous review, now 30 years old, exists. An updated bibliography

is presented with 98 references. Of these, 47 had not been previously compiled. The references were annotated to facilitate access to, and understanding of, the references.

INDEX DESCRIPTORS: bryophytes, mosses, liverworts, hornworts, Iowa flora.

The bryophyte flora of Iowa, consisting of mosses, liverworts, and hornworts, has been reasonably well studied over the past century. The first 70 years of study were reviewed by Conard in a series of three papers in which he provided a checklist (Conard, 1945a), a nomenclatorial review (Conard, 1945b), and a chronological history of the people and publications involved (Conard, 1945c). Conard (1956) later provided an updated checklist to Iowa bryophytes. These papers also provide a basis for an introduction to Iowa bryology. In addition to being authoritative, these publications offer a rare insight into the people involved in Iowa bryological research.

In the course of my thesis research on the ecology of cryptogamic plants, it became apparent that sufficient additional publications existed to warrant an updated compilation. Thus an extensive search of the literature was undertaken. At first the period from 1945 to the present was considered, but it became evident that some earlier works existed which had not been previously treated. In order to provide a complete treatment and facilitate access to the literature, the search was thus expanded to include all references on Iowa bryophytes.

During a three-year period the libraries at Grinnell College (Grinnell), Iowa State University (Ames), Putnam Museum (Davenport), The University of Iowa (Iowa City), and the University of Northern Iowa (Cedar Falls) were visited to inspect volumes, journals, and theses. Since most of these institutions have had name changes, the current name, rather than the name at the time of the publication of the reference, was used to facilitate knowing which institution might have that holding.

Six journals contained most of the references to the literature on Iowa bryophytes. These were carefully inspected: *The Bryologist*, *The Iowa State College Journal of Science* (now called *The Iowa State Journal of Research*), *The Iowa State Geological Survey Annual Report*, *The Proceedings of the Davenport Academy of Natural Science* (no longer issued; the institution eventually became known as the Putnam Museum), *The Proceedings of the Iowa Academy of Science*, and *The University of Iowa Studies in Natural History* (known as the *Bulletin from the Laboratories of Natural History of the University of Iowa* and *The State University of Iowa Studies in Natural History*). Since the references were bound and filed under the name of the journal at

the time of publication, although the sequence eventually underwent name changes, the journal name at the time of publication was used in this list.

Theses were consulted to check for material not incorporated into published versions. Often valuable information, such as collecting localities or county-dot maps, was not published. Thus, all theses with information on Iowa bryophytes were included. A special point was made to search the theses at Iowa State University and The University of Iowa, particularly for theses which were apparently never made available in published form.

The decision to include a paper was based upon the criteria that the bryophytes be Iowa material, the material be named (scientific names), and observations be made of the material (range, habitat, localities, development, or ecology). Most references included in this paper meet all three requirements, or were of historical value. About 35 references, including five cited in Conard (1945c), failed to meet these criteria and were excluded from the present list. Additionally, two other Conard (1945c) references were excluded, as they were mimeo-lists, which eventually became available in published form.

A total of 98 references are presented, including 47 not previously compiled. Of these, 30 have been published since the Conard (1945c) review, while 17 were of prior publication. Fifty-one references are included which were treated by Conard (1945c).

Since many of the titles are not very self-explanatory, the references were annotated to aid in clarifying their contents. Also included, where necessary, are remarks clarifying the citation, such as noting a difference between the year of publication and the year for which the volume was issued. All references were cited by publication year if given on the volume. When that was not available, the year for which the volume was issued was used. For example, if an issue of the *Proceedings* was published a year later than the year of the meetings, then the year of the meetings was included in annotated remarks as "volume issued for the year . . ."

I would like to acknowledge the constructive discussions of Dean Roosa, Board Ecologist, State Preserves Advisory Board, on the need for improved access to the literature on the Iowa flora. I would like to thank Dean Roosa, Nels Lersten, Roger Landers, and John Dodd for suggesting references and offering advice. A special note of thanks must be offered to Nels Lersten and Donald Farrar for critically reading the manuscript and for making valuable comments.

It is hoped that the bibliography is relatively complete, but some references may have been overlooked, and readers are encouraged to bring them to my attention.

¹ Department of Botany and Plant Pathology, Iowa State University, Ames, Iowa 50011.

- Anderson, J. P. 1905. Thalloid liverworts of Decatur County. *Iowa Naturalist* 1:33-34. (Reports five liverworts and three hornworts; habitats.)
- Anderson, J. P. 1906. The flora of Lake Wabonsie. *Iowa Naturalist* 2:9-10. (Reports one liverwort; Fremont County.)
- Becker, S. A. 1966. The effect of certain physico-chemical factors on spore germination of *Anthoceros laevis*. M.S. thesis, The University of Iowa, Iowa City. (Material obtained in Cedar County.)
- Becker, S. A. 1968. A light and electron microscopic study of sporogenesis in the liverworts *Odontoschisma prostratum* and *Frullania eboracensis*. Ph.D. thesis, The University of Iowa, Iowa City. (Material gathered from three counties in eastern Iowa.)
- Bessey, C. E. 1884. Preliminary lists of the protophytes, zygophytes, oophytes, carpophytes, and bryophytes of the Ames flora. *Bull. Dept. Bot., Iowa Agric. Coll., Ames, Iowa*. pp. 133-150. (Reports 33 mosses, 5 liverworts, 1 hornwort.)
- Blagg, B. 1927. Preliminary list of Iowa mosses. *Proc. Iowa Acad. Sci.* 34:125-132. (Reports 103 mosses; keys to families.)
- Blagg, B. 1928a. Additional notes on Iowa mosses. *Proc. Iowa Acad. Sci.* 35:113-116. (Reports 52 mosses as new state records.)
- Blagg, B. 1928b. In Grannis Hollow. *Bryologist* 31:98-100. (Reports 12 mosses as new state records; Fayette County.)
- Blagg, B. 1929. Additional notes on Iowa mosses. *Proc. Iowa Acad. Sci.* 36:137-139. (Reports new state, county, collector records; localities.)
- Blagg, B. 1930. Additional notes on Iowa mosses—1929-1930. *Proc. Iowa Acad. Sci.* 37:96-98. (Reports 19 mosses and 9 liverworts as new state records.)
- Cavanagh, L. M. 1921. Notes on the genus *Catharinea* in Iowa. *Proc. Iowa Acad. Sci.* 28:223-224. (Presents a discussion of leaf variations in three species of *Catharinea* = *Atrichum*.)
- Cavanagh, L. M. 1929a. Mosses new to Iowa. *Bryologist* 32:112-113. (Reports state records; habitats and county occurrence.)
- Cavanagh, L. M. 1929b. Notes on Iowa mosses, I. *Proc. Iowa Acad. Sci.* 36:133-135. (Reports 15 species new to state; notes on three other species.)
- Cavanagh, L. M. 1930. Notes on Iowa mosses, II. *Proc. Iowa Acad. Sci.* 37:98-100. (Revises Bessey (1884); notes errors in Iowa bryophyte literature.)
- Cavanagh, L. M. 1931. Notes on Iowa mosses, IV. *Proc. Iowa Acad. Sci.* 38:129-132. (Reports 14 new species for state, including an early *Sphagnum* collection. According to Conard (1945c, p. 166), "Notes on Iowa mosses, III" does not exist; he indicates that Shimek convinced Cavanagh to consider Cavanagh (1929a) as "III," which is chronologically inappropriate.)
- Cavanagh, L. M. 1932. Notes on Iowa mosses, V. *Proc. Iowa Acad. Sci.* 39:53-55. (Reports eight state records and four county records.)
- Cavanagh, L. M. 1934. Notes on Iowa mosses, VI. *Proc. Iowa Acad. Sci.* 41:97-102. (Reports 24 species new to state; discussion of *Fabronia* species; notes errors in Iowa bryophyte literature.)
- Clambey, G. K. 1975. A survey of wetland vegetation in north-central Iowa. Ph.D. thesis, Iowa State University, Ames. (Includes quantitative study of presence and cover data on two liverworts and one moss at 12 localities in nine counties; phenological observations; habitats and associates.)
- Conard, H. S. 1912. Ferns and liverworts of Grinnell and vicinity. *Proc. Iowa Acad. Sci.* 19:105-106. (Reports seven liverworts; habitats; Poweshiek County.)
- Conard, H. S. 1932a. A boreal moss community. *Proc. Iowa Acad. Sci.* 39:57-61. (Reports 55 mosses and 11 liverworts on north-facing slopes, 9 mosses on south-facing slopes, and 4 mosses in a white pine grove; White Pine Hollow State Forest Preserve, Dubuque County.)
- Conard, H. S. 1932b. Mosses of Pine Hollow, Iowa. *Bryologist* 35:28-30. (Reports 86 mosses and 12 liverworts; White Pine Hollow State Forest Preserve, Dubuque County.)
- Conard, H. S. 1935. Mosses and soil erosion. *Iowa State Coll. J. Sci.* 9:347-351. (Reports experiments on water holding potential of mosses; lists 24 mosses and 3 liverworts significant in soil erosion control in Iowa, noting their shade tolerance, substrate preference, and substrate pH.)
- Conard, H. S. 1938a. The fir forest of Iowa. *Proc. Iowa Acad. Sci.* 45:69-72. (Reports 13 species that occur within Iowa fir forests.)
- Conard, H. S. 1938b. One hundred Iowa mosses. *Proc. Iowa Acad. Sci.* 45:63-68. (Sets of material were sent to 10 herbaria of deposit; names, habitats, and some localities listed.)
- Conard, H. S. 1941a. Liverworts of the so-called unglaciated area of Iowa. *Proc. Iowa Acad. Sci.* 47:91-95. (Reports 17 liverworts; extensive phytogeographic discussion; volume was issued for the year 1940.)
- Conard, H. S. 1941b. Thirty Iowa liverworts. *Proc. Iowa Acad. Sci.* 47:97-99. (Sets of material sent to 10 herbaria of deposit; names, habitats and localities listed; volume was issued for the year 1940.)
- Conard, H. S. 1942. The liverworts of Iowa. *Proc. Iowa Acad. Sci.* 49:191-195. (Reports 56 liverworts and 7 hornworts; annotated list with comments on county of occurrence, collecting localities, habitats, and corrections of the Iowa liverwort literature.)
- Conard, H. S. 1943. Thirty-five Iowa mosses. *Proc. Iowa Acad. Sci.* 50:181-183. (Sets of material sent to 10 herbaria of deposit; names, county of occurrence, habitats, and some localities.)
- Conard, H. S. 1945a. The Atracheata (Bryophyta) of Iowa, I: The species and their geographical distribution in the state. *Bryologist* 48:70-82. (Reports 274 mosses, 55 liverworts, and 4 hornworts; state distribution noted by county occurrence.)
- Conard, H. S. 1945b. The Atracheata (Bryophyta) of Iowa, II: Iowa mosses in print: A critique of the species reported for the state. *Bryologist* 48:103-109. (Reports errors and misidentifications for the taxa reported for Iowa.)
- Conard, H. S. 1945c. The Atracheata (Bryophyta) of Iowa, III: Mosses and persons in Iowa: A summary of the literature of mosses in Iowa. *Bryologist* 48:161-170. (History of the study of bryophytes of Iowa in chronological order, with publications cited and evaluated; 58 references.)
- Conard, H. S. 1947a. Phenology of mosses in Iowa. *Proc. Iowa Acad. Sci.* 53:141-146. (Reports 248 mosses, 57 liverworts, and 4 hornworts; notes time of occurrence of gametangia, spike stage, calyptra, mature sporophyte; issued for the year 1946.)
- Conard, H. S. 1947b. Twenty-five more mosses and liverworts from Iowa. *Proc. Iowa Acad. Sci.* 54:65-66. (Sets of material sent to 10 herbaria of deposit; names, localities, and habitats; includes 22 mosses and 5 liverworts.)

- Conard, H. S. 1951. The moss clinic. *Bryologist* 54:70-71. (Describes gathering of bryologists who worked during summer at Iowa Lakeside Laboratory, Dickinson County, under Dr. H. S. Conard for many years.)
- Conard, H. S. 1952. The vegetation of Iowa: An approach toward a phytosociological account. *State Univ. Iowa Stud. Nat. Hist.* 19(4):1-166. (Comments on bryophyte taxa as to localities and habitats are to be found throughout, but see especially chapters 6-8.)
- Conard, H. S. 1956. Mosses and liverworts of Iowa. *Proc. Iowa Acad. Sci.* 63:345-354. (Updates Conard (1945a); reports 293 mosses, 61 liverworts, and 4 hornworts; state distribution indicated by county occurrence.)
- Conard, H. S. 1971. The moss clinic, concluded. *Bryologist* 74:442-443. (Describes the significant impact the members of the clinic made in bryology, and the importance of the clinic in their study; held for many years during the summer at Iowa Lakeside Laboratory, Dickinson County.)
- Conard, H. S., and B. O. Wolden. 1932. A key to the mosses of the Okoboji region. *Univ. Iowa Stud. Nat. Hist.* 14(7): 1-27. (Reports 132 mosses and 16 liverworts; keys to fertile and sterile material; covers the northwestern portion of the state.)
- Craft, I. H. 1943. Areolar organization of some of the Marchantiaceae. M.S. thesis, The University of Iowa, Iowa City. (Presents morphological-anatomical data on representatives of three genera; material collected in eastern Iowa.)
- Craigg, E. J. 1933. Mosses of Allamakee County, Iowa. M.A. thesis, Grinnell College, Grinnell. (Reports 68 species and varieties from a *Taxus* covered slope, 29 species in mesic woods, 38 species in a white pine grove, and 17 species in a white birch-juniper covered hillside; 93 species and varieties in all were collected; 10 species new to the state were noted; included a quantitative-comparative bryofloristic study, bryophyte associations, and habitat-substratum restrictions.)
- Crum, G. H. 1972. Flora of a sand prairie in Black Hawk County, Iowa. *Proc. Iowa Acad. Sci.* 78:81-87. (Reports two mosses, including *Sphagnum*.)
- Drexler, R. V. 1942. A preliminary list of bryophytes of Linn County, Iowa. *Proc. Iowa Acad. Sci.* 49:197-204. (Reports 92 mosses, 17 liverworts, and 1 hornwort.)
- Drexler, R. V. 1943. Additions and notes to the bryophyte flora of Linn County, Iowa. *Proc. Iowa Acad. Sci.* 50:195-197. (Reports 11 mosses and 5 liverworts as additions.)
- Drexler, R. V. 1952. The genus *Sphagnum* in Iowa. *Proc. Iowa Acad. Sci.* 59:85-88. (Reports seven species from 11 stations in seven counties.)
- Fay, M. J., and R. F. Thorne. 1953. Additions to the flora of Cedar County, Iowa. *Proc. Iowa Acad. Sci.* 60:122-130. (Reports *Sphagnum* locality, p. 125; also notes associates.)
- Fitzpatrick, T. J. 1898. Notes on the flora of northeastern Iowa. *Proc. Iowa Acad. Sci.* 5:107-133. (Reports *Marchantia* in three counties; habitats; volume issued for the year 1897.)
- Fitzpatrick, T. J., and M. F. L. Fitzpatrick. 1898. Flora of southern Iowa. *Proc. Iowa Acad. Sci.* 5:134-173. (Reports 10 liverworts and 1 hornwort; habitats and county occurrence; volume issued for the year 1897.)
- Grant, M. L., and R. F. Thorne. 1955. Discovery and description of a *Sphagnum* bog in Iowa, with notes on the distribution of bog plants in the state. *Proc. Iowa Acad. Sci.* 62:197-210. (Reports four species of *Sphagnum* and five other mosses; Hancock County; first report of a large, previously unreported, acid bog in Iowa at Pilot Knob State Park; this park was visited often by botanists such as Macbride, Shimek, Pammel, and Conard, but the bog was overlooked.)
- Greene, W. 1907. Plants of Iowa: A preliminary list of the native and introduced plants of the state, not under cultivation. *Bull. State Hort. Soc.* Des Moines, Iowa. 264 pp. (Reports 19 liverworts, 78 mosses, and 2 hornworts.)
- Grout, A. J. 1917. A fossil *Camptothecium*. *Bryologist* 20:9. (Reports moss from Aftonian deposits, Emmet County.)
- Grout, A. J. 1930. A fossil form of *Drepanocladus fluitans jeunbernati* (Ren.) Grout. *Bryologist* 33:33. (Reports moss from Aftonian deposits, Emmet County.)
- Hayden, A. 1943. A botanical survey in the Iowa lake region of Clay and Palo Alto counties. *Iowa State Coll. J. Sci.* 17: 277-416. (Reports 40 mosses, 9 liverworts, and 2 hornworts; habitats and localities; see especially the discussion on pp. 334-336.)
- Holte, K. E. 1966. A floristic and ecological analysis of the Excelsior Fen complex in northwest Iowa. Ph.D. thesis, The University of Iowa, Iowa City. (Reports two liverworts; quantitative study noting abundance; Dickinson County.)
- Holzinger, J. M. 1903. On some fossil mosses. *Bryologist* 6: 93-94. (Reports four species of moss from Aftonian deposits, Fayette County.)
- Horner, H. T., Jr., N. R. Lersten, and C. C. Bowen. 1966. Spore development in the liverwort *Riccardia pinguis*. *Amer. J. Bot.* 53:1048-1064. (Light and transmission electron microscopy study on material gathered from Iowa County.)
- Hulbary, R. L. 1964. The bryophytes of White Pine Hollow. *State Univ. Iowa Stud. Nat. Hist.* 20(6):37-39. (Reports 95 mosses and 12 liverworts; White Pine Hollow State Forest Preserve, Dubuque County.)
- Jensen, K. G. 1974. Light, transmission electron, and scanning electron microscopy study of sporogenesis in six species of mosses. M.S. thesis, The University of Iowa, Iowa City. (Material gathered from several counties in eastern Iowa.)
- Lazell, F. J. 1927. The flora and blooming time of plants of Linn County, Iowa. M.S. thesis, Iowa State University, Ames. (Notes 46 mosses and 5 liverworts; habitats and localities.)
- Lersten, N. R., and G. H. Crum. 1975. Three new *Sphagnum* records for Iowa. Abstracts of Papers, 87th Session, Iowa Academy of Science, p. 5. (Abstract; reports one species and two varieties new to the state; three new county records; habitats.)
- Linder, M. F. 1886. A brief description of nine species of Hepaticae found in the vicinity of Iowa City. Thesis, The University of Iowa, Iowa City. (Hand-written manuscript; descriptive morphology.)
- Macbride, T. H. 1888. Botanical notes. *Bull. Lab. Nat. Hist. State Univ. Iowa.* 1(1):52-55. (Reports *Sphagnum* in the state for the first time; Johnson County; see also Slotterbec (1888).)
- Macbride, T. H. 1897. A pre-Kansan peat bed. *Proc. Iowa Acad. Sci.* 4:63-66. (Notes *Hypnum fluitans* from Aftonian deposits, Fayette County; volume issued for the year 1896.)
- Martin, J. N. 1943. Some of the available hepatics and their location in the vicinity of Iowa State College. *Proc. Iowa*

- Acad. Sci.* 50:229-234. (Reports eight liverworts and one hornwort; habitats and localities.)
- McConaha, M. 1936. Structures aiding external capillarity in the Hepaticae. M.S. thesis, The University of Iowa, Iowa City. (Emphasis upon *Conocephalum* anatomy and morphology; material gathered in eastern Iowa.)
- McConaha, M. 1940. The morphology of ventral structures affecting capillarity in the Marchantiales. Ph.D. thesis, The University of Iowa, Iowa City. (Treats five species in four genera; descriptive morphology and anatomy; material gathered in eastern Iowa.)
- Messmer, L. W., and N. R. Lersten. 1968. Chromosome studies of ten species of mosses from Iowa. *Bryologist* 71: 348-353. (Reports chromosome counts from Iowa material; some counts first reported for species, while other counts verify or differ from those already published.)
- O'Hara, R. 1941. *Aphanorhegma patens* in Iowa. *Proc. Iowa Acad. Sci.* 47:115-122. (Reports a new state record, Tama County; taxonomic and morphologic discussion; volume issued for the year 1940.)
- Pammel, L. H. 1909. Flora of northern Iowa peat bogs. *Iowa Geol. Sur. Annu. Rpt.* 19:735-777. (Historically interesting for its lack of mention of a large *Sphagnum* bog in Pilot Knob State Park, while mentioning the lake in which it occurs; see also Grant and Thorne (1955); volume issued for the year 1908.)
- Paris, C. D. 1937. *Funaria flavicans* Michx. in Iowa. *Proc. Iowa Acad. Sci.* 44:103. (Reports new state record, Delaware County.)
- Pratt, W. H. 1876. Report on a geological examination of the section of the bluffs recently exposed by the C., R.I. & P.R.R. *Proc. Davenport Acad. Nat. Sci.* 1:96-99. (Reports *Hypnum aduncum* from Aftonian deposits, Scott County.)
- Rohret, M. B. 1916. Morphology of *Blasia pusilla*. M.S. thesis, The University of Iowa, Iowa City. (Presents descriptive morphology and anatomy with special emphasis upon gemmae production; material collected from eastern Iowa localities.)
- Rohret, M. B. 1917. The morphology of the thallus and cupules of *Blasia pusilla*. *Proc. Iowa Acad. Sci.* 24:429-445. (Presents morphological description with special emphasis upon gemmae production.)
- Savage, T. E. 1899. A preliminary list of the mosses of Iowa. *Proc. Iowa Acad. Sci.* 6:154-164. (Reports 78 species and varieties of moss; notes habitats, localities, and county of occurrence; volume issued for the year 1898.)
- Savage, T. E. 1904. A buried peat bed in Dodge township, Union County, Iowa. *Proc. Iowa Acad. Sci.* 11:103-109. (Reports two mosses; volume issued for the year 1903.)
- Sayre, G. 1934. The Grimmiids of Iowa. *Bryologist* 37:29-34. (Reports 10 species and varieties; notes localities, habitats; presents keys and taxonomic discussion.)
- Sayre, G., and H. S. Conard. 1934. The mosses of southwestern Iowa. *Proc. Iowa Acad. Sci.* 41:105-106. (Reports 75 species and varieties; however, only new state and county records were specifically mentioned.)
- Schuster, R. M. 1958. Boreal hepaticae, a manual of the liverworts of Minnesota and adjacent regions, III: Phytogeography. *Amer. Mid. Nat.* 59:257-332. (Discusses distributions and relationships to Pleistocene events in Iowa; Iowa material on pp. 280-281, 309-314, and 318-323.)
- Shimek, B. 1897. The flora of the Sioux quartzite in Iowa. *Proc. Iowa Acad. Sci.* 4:72-77. (Reports one liverwort; see Conard, 1945c, p. 162; issued for the year 1896.)
- Shimek, B. 1899. The Iowa liverworts. *Proc. Iowa Acad. Sci.* 6:113-116. (Reports 21 species; habitats, localities, and county presence; volume issued for the year 1898.)
- Shimek, B. 1903. Living plants as geological factors. *Proc. Iowa Acad. Sci.* 10:41-48. (Reports soil erosion control by three liverworts in Iowa; volume issued for the year 1902.)
- Shimek, B. 1904. The flora of the St. Peter sandstone in Winneshiek County, Iowa. *Bull. Lab. Nat. Hist. State Univ. Iowa* 5(4):225-229. (Reports five mosses; discussion of habitats.)
- Shimek, B. 1915. The plant geography of the Lake Okoboji region. *Bull. Lab. Nat. Hist. State Univ. Iowa* 7(2):1-90. (Reports five mosses in the prairie; one moss and two liverworts in swamps and lakes; four mosses in forest; comments on the general paucity of bryophytes.)
- Shimek, B. 1916. The plant geography of the Lake Okoboji region: Additional notes. *Bull. Lab. Nat. Hist. State Univ. Iowa* 7(4):3-5. (Historically interesting note that after one year of increased rainfall, the bryophyte flora was much more abundant than it had been in the last 20 years; see also Shimek (1915).)
- Slotterbec, A. 1888. The mosses of Iowa City and vicinity. Thesis, The University of Iowa, Iowa City. (Handwritten manuscript; descriptive morphology of 13 species, including *Sphagnum capillaceum*; see also Macbride (1888); both references were overlooked by later workers.)
- Smith, G. L. 1963. Additions to the moss flora of Iowa. *Proc. Iowa Acad. Sci.* 70:64-67. (Reports two new species for the state, including *Buxbaumia*; localities in eastern Iowa.)
- Smith, G. L. 1964. Analysis of variation in gametophytes of *Atrichum* in North America. M.S. thesis, The University of Iowa, Iowa City. (Includes Iowa material; reports chromosome counts for Iowa material, the first made for Iowa material.)
- Smith, P. E. 1962. An ecological analysis of a northern Iowa *Sphagnum* bog and adjoining pond. Ph.D. thesis, The University of Iowa, Iowa City. (Reports 12 mosses and two liverworts; see also Grant and Thorne (1955); Dead Man's Lake, Pilot Knob State Park, Hancock County.)
- Sorensen, P. D. 1962. The Williams prairie: A prairie relict in Johnson County. *Proc. Iowa Acad. Sci.* 69:45-53. (Reports eight mosses.)
- Statler, S. S. 1949. Further study on the liverworts of Henry County, Iowa. *Proc. Iowa Acad. Sci.* 56:179-181. (Reports seven additional species as county records, totaling 14 species for the county.)
- Statler, S. S., and J. Morrow. 1948. A preliminary study of the liverworts of Henry County, Iowa. *Proc. Iowa Acad. Sci.* 55:213-215. (Reports seven liverworts; five county records.)
- Steere, W. C. 1941. Pleistocene mosses from the Aftonian interglacial deposits of Iowa. *Mich. Acad. Sci., Arts, Lett.* 27:75-104. (Reviews all fossil mosses of Iowa; material of 17 genera noted, with 19 specific identifications provided.)
- Thele, R. 1961. Bryophytes of Des Moines County, Iowa. *Proc. Iowa Acad. Sci.* 68:144-145. (Reports 63 mosses and 6 liverworts; 25 county records.)
- Tolstead, W. L. 1936. A flora of Winneshiek and Allamakee counties. M.S. thesis, Iowa State University, Ames. (Reports 33 mosses; habitats and some localities.)
- Tolstead, W. L. 1938. A flora of Winneshiek and Allamakee counties and Clayton County in the vicinity of McGregor.

- Iowa State Coll. J. Sci.* 12:321-384. (Reports 33 mosses; habitats and some localities.)
- Van Dyke, G. D. 1972. Aspects relating to emergent vegetation dynamics in a deep marsh, north central Iowa. Ph.D. thesis, Iowa State University, Ames. (Reports quantitative ecological observations on *Drepanocladus* abundance, cover, and biomass; phenological observations included.)
- Welch, W. H., and F. LeBlanc. 1972. H. S. Conard (1874-1971). *Bryologist* 75:558-565. (Presents a biographical sketch of the most influential Iowa bryologist, with a complete bibliography of his work.)
- Wolden, B. O. 1919. The moss and lichen flora of western Emmet County: an annotated list of the bryophytes and lichens of the High Lake and Des Moines River region. *Proc. Iowa Acad. Sci.* 26:259-267. (Reports 33 mosses and 4 liverworts; habitats and localities.)
- Wynne, F. E. 1944. Studies in *Drepanocladus*, II: Phytogeography. *Amer. Mid. Nat.* 32:643-668. (Discusses Iowa fossil material on p. 652.)