

BRYOPHYTES OF EASTERN OKLAHOMA
AARON J. SHARP, UNIVERSITY OF OKLAHOMA

THE BRYOPHYTE flora of Oklahoma as a whole has been neglected. As far as I am able to ascertain, up to 1928 there had been only four workers in this field who had left any record. The first worker to leave a written record was Emig (1, 2) who made an extensive study of the travertine deposits in the Arbuckle Mountains and included the mosses which might in any way affect or be affected by these deposits. Following close on Emig's reports came the one by Lowe (3). She had made a collection of about thirty species in Johnston and Pontotoc counties. Wickham (4) later collected a species of anthoceros near Durant. The latest work preceding this paper was that of Neville (5) in Tulsa and Osage counties.

This paper does not purport to give an extensive but rather a brief report of the investigations carried on at the University of Oklahoma within the past year. The determinations are based on collections made by P. B. Sears, R. E. Jeffs, Phyllis Draper, Lois Gould, and the writer in the spring of 1928 in the eastern part of the state, particular attention being given to the southeast. Collections made by the above named persons will be indicated by the last initial of the collector in parentheses. All other collections were made by the writer unless otherwise indicated by a name in parentheses.

A portion of the state so large naturally includes a number of habitats, which may roughly be divided into seven principal types:

Unforested Soil. The most abundant type of habitat is that which I am going to call unforested soil. It varies from sand to various types of clays. Occasionally some loam may be present. Trees are very scarce or wanting.

Rocks and Cliffs. Due to the ruggedness of the southeastern part of the state, rocks and exposed rocky ledges of sedimentary and igneous origin are abundant. They furnish a fine substratum for many of the southern rock-inhabiting species.

Woods Soil. The soil of this group is that common to the Black Jack Oaks, the Pine-Oaks of the Kiamichi region, as well as the other forested and recently cleared lands where at least the uppermost layer of soil is of loam covered with leaf-mold.

Trees. The trees themselves furnish a habitat for the arboreal forms. In nearly every stream valley and ravine are found shrubs and small trees in addition to the regularly forested areas.

Swamps. In a few places, particularly in the southeast, are marsh and swamp areas most of which contain at least a few trees. In the extreme southeast, cypress with its characteristic knees may be found in these low areas.

Rivers and Streams. The streams over such a wide area vary in almost every point that is characteristic of a moving body of water: size, flow, temperature, stream-beds, banks, etc. This allows for quite a variation in the aquatic Bryophyta of the region.

Springs. Naturally in the sandy areas springs abound at least during the wetter seasons and in many places throughout the year. The most of

them are seeping in nature or flow very slowly, forming a habitat of which certain species are characteristic.

In the list of Bryophytes which follows and which the writer hopes to augment at a later date are included the habitat of each species, and the county and station in which it was found. For the most common this is not indicated, and it may be assumed that these may be found in almost any locality within the eastern part of the state. The species together with the stations recorded for it are represented by specimens in the herbarium of the writer and most of them by duplicate specimens in the herbarium of the University of Oklahoma.

Nearly all of the determinations were made by the writer during the summer at the University of Michigan Biological Station under the direction of George E. Nichols of Yale University. A. T. Beals of the Sullivant Moss Society also very kindly assisted in the determination of some of the more difficult specimens. To these men as well as to those who aided in the collection of the material, I wish to express my indebtedness.

Of the 58 species reported in the paper, among the Mosses there are 5 families 15 genera, 30 species and one variety which have not been reported before. An asterisk marks the family, genus or species which has not been reported previously from this state.

HEPATICAE

JUNGERMANNIÆ

- **Frullania inflata* Gottsche. On bark of *Carpinus*, near Haworth, McCurtain Co.
- Porella pinnata* L. On rock in Holly Creek, near Cloudy, Pushmataha Co.
- **Porella platyphylloidea* (Schwein.) Lindb. On bark of tree. Dripping Springs, Delaware Co. (S)

MUSCI

*SPHAGNACEAE

- **Sphagnum subsecundum* Nees & Sturm. In boggy spring near Broken Bow, McCurtain Co.

DICRANACEAE

- **Bruchia texana* Anst. Sandy clay near Haworth, McCurtain Co.
- Dicranella heteromalla* (L) Schimp.. On rock near Tishomingo, Johnston Co.
- Dicranum scoparium* (L) Hedw. On sand near Dripping Springs, Delaware Co.
- Ditrichum pallidum* (Schreb.) Hampe (1) (2) Clay near Haworth, McCurtain Co. (4) Sandy clay near Broken Bow, McCurtain Co. (5) Moist sand near Antlers, Pushmataha Co. (1).
- **Pleuridium subulatum* (L) Rabenh. (1) Bare clay near Valliant, McCurtain Co.

LEUCOBRYACEAE

- Leucobryum glaucum* (L) Schimp. (1) Sandy clay near Valliant, McCurtain Co. (2) East bank of ravine near Tishomingo, Johnston Co. (3) Mixed soils near Dripping Springs, Delaware Co. (S).

FISSIDENTACEAE

- Fissidens incurvus* Schwagr. (L) Sandy woods soil east of Norman, Cleveland Co.
- Fissidens obtusifolius* Wils. (1) Woods soil near Broken Bow, McCurtain Co.
- Fissidens subbasilaris* Hedw. (1) On tree near Broken Bow, McCurtain Co.
- Fissidens taxifolius* (L.) Hedw. (1) Sandy soil in woods near Haworth, McCurtain Co. (2) (3) Woods soil near Durant, Bryan Co.

POTTIACEAE

- **Astomum Sullivantii* Schimp. (1) Sandy clay south of Davis, Murray Co. (G, D).
- Barbula squarrosa* Brid. (1) On rock in Arbuckle Mts., Murray Co. Rare.
- Didymodon sphaecus* (Brid.) Jur. (1) On rock in Honey Creek, Arbuckle Mts., Murray Co. (2) Moist sand near Broken Bow, McCurtain Co.
- Tortula muralis* (L.) Hedw. On rock near Broken Bow, McCurtain Co.
- Weisia viridula* (L.) Hedw. Probably Oklahoma's commonest moss. Very abundant in the sandy soils.

HEDWIGIACEAE

Hedwigia albicans (Web.) Lindb. (1) On rock at Troy, Johnston Co. (D, G) (2) On rock near Broken Bow, McCurtain Co. (3) Variety **viridis* Grout. On rock near Dripping Springs, Delaware Co. (S).

*CRYPTHAEACEAE

**Cryphaea glomerata* Br. & Sch. (1) On tree near Haworth, McCurtain Co.
**Forstroemia trichomitria* (Hedw.) Lindb. Variety *immersa* (Sull.) Lindb. (1) On base of tree near Haworth, McCurtain Co. (2) On base of tree near Broken Bow, McCurtain Co.

LEUCODONTACEAE

Leucodon julaceus (Hedw.) Sull. (1) On tree east of Durant, Bryan Co. (2) On tree near Tishomingo, Johnston Co. (D, G).

ENTODONTACEAE

Entodon seductrix (Hedw.) C. Mull. (1) At base of tree near Haworth, McCurtain Co. (2) At base of tree near Durant, Bryan Co. (3) At base of tree near Norman, Cleveland Co. (4) On moist woods soil near Troy, Johnston Co. (D, G).

*FABRONIACEAE

**Clasmatodon purvulus* Sull. (1) On moist decaying wood near Broken Bow, McCurtain Co. (2) On root of tree along a stream near Haworth, McCurtain Co.
Fabronia octoblepharis (Schleich.) Schwaegr. (1) On granite rock near Tishomingo, Johnston Co. (G, D).

LESKEACEAE

Anomodon attenuatus (Schreb.) Hueben. (1) On base of tree near Dripping Springs, Delaware Co. (S).

Anomodon minor (P. Beauv.) Fuern. (1) On base of tree near Durant, Bryan Co.
Anomodon rostratus (Hedw.) Schimp. (1) On base of tree near Durant, Bryan Co. (2) On base of tree near Ft. Towson, Choctaw Co. (G, D). (3) On base of tree near Valliant, McCurtain Co. (4) On base of tree near Antlers, Pushmataha Co. (G, D).

Leskea obscura Hedw. (1) On tree near Millcreek, Johnston Co. (2) (3) On tree near Norman, Cleveland Co.

Leskea polycarpa paludosa (Hedw.) Schimp. (1) On wet rotten wood near Durant, Bryan Co.

Thelia asprella (Schimp.) Sull. (1) On decaying wood near Dripping Springs, Delaware Co. (S).

Thelia hirtella (Hedw.) Sull. (1) On base of tree near Haworth, McCurtain Co.

Thelia Lescuirii Sull. (1) On sand near Norman, Cleveland Co. (2) On sand near Marietta, Love Co. (G, D).

Thuidium delicatulum (L.) Mitt. (1) Moist soil near Dripping Springs, Delaware Co. (S) (2) Woods soil near Antlers, Pushmataha Co. (G, D) (3) Damp soil near Norman, Cleveland Co. (S).

HYPNACEAE

Amblystegium irriguum (Wils) B. & S. (1) On wood in spring near Norman, Cleveland Co. (2) Spring in Arbuckle Mts., Murray Co. (G, D).

Amblystegium Kochii Br. & Schimp. (1) In spring near Norman, Cleveland Co.
Amblystegium noterophilum (Sull.) Warnst. (1) In spring at Dripping Springs, Delaware Co. (S).

Amblystegium varium (Hedw.) Lindb. (1) In creek near Norman, Cleveland Co. (2) In small cypress swamp near Broken Bow, McCurtain Co.

Chrysohypnum chrysophyllum (Brid.) Loeske (1) On moist sand near Antlers, Pushmataha Co. (G, D).

**Plagiothecium deplanatum* (Sch.) Grout (1) On bank of stream near Sulphur, Murray, Co.

Plagiothecium micans (Sw.) Paris. (1) On base of tree near Haworth, McCurtain Co.

Stereodon curvifolius (Hedw.) Britt. (1) On moist soil near Dripping Springs, Delaware Co. (S).

*BRACHYTHECIACEAE

**Cirriphyllum Boscii* (Schwaegr.) Grout. (1) On dry sandy clay near Broken Bow, McCurtain Co.

**Eurynchium diversifolium* Br. & Sch. (1) On damp sandstone cliff near Norman, Cleveland Co. (Bunch).

GRIMMIACEAE

Grimmia **Olneyi* Sulliv. (1) On granite rocks near Millcreek, Johnston Co. (2) On granite rocks near Durant, Bryan Co. (D, G) (3) On granite rocks near Tishomingo, Johnston Co.

Psychomitrium incurvum (Schwaeger.) Sull. (1) On rock near Broken Bow, McCurtain Co.

FUNARIACEAE

Funaria **flavicans* Mx. (1) Roadside near Durant, Bryan Co. Also collected on roadside near Floratio, Arkansas (D).

Physcomitrium turbinatum (Mx.) Brid. Common throughout in the more open soils during the spring season.

BRYACEAE

Bryum argenteum L. Common in moist shady sand.

Bryum **atropurpeum* Wahlb. On bare sandy clay near Valliant, McCurtain Co. Rare.

**Pohlia nutans* variety *triciata* Jennings. On gravelly soil near Troy, Johnston Co. (D,G).

AULACOMNIACEAE

Aulacomnium **palustre* Schwaeger. (1) Boggy spring near Broken Bow, McCurtain Co.

BARTRAMIACEAE

**Bartramia radicalis* Beauv. (1) Moist sandstone cliff east of Norman, Cleveland Co. (2) Moist granite cliff near Troy, Johnston Co. (G, D).

Philonotis culcares Schimp. (1) Rocks and falls in Honey Creek, Arbuckle Mts., Murray Co.

DENDROIDACEAE

**Climacium americanum* Brid. (1) Moist soil near Dripping Springs, Delaware Co. (S).

**Climacium Kindbergii* (R. & C.) Grout. (1) In swamp near Durant, Bryan Co. (2) In boggy spring near Broken Bow, McCurtain Co.

POLYTRICHACEAE

Catherinea angustata Brid. (1) Woods soil near Dripping Springs, Delaware Co. (S). (2) Sandy soil in the very northeast corner of the state, Ottawa Co. (Dr. C. N. Gould).

Catherinea undulata (L.) W. & M. (1) Woods soil near Haworth, McCurtain Co. (2) Sandy clay near Valliant, McCurtain Co. (3) Sandy clay south of Broken Bow, McCurtain Co. (4) Moist soil in Troy granite quarry, Johnston Co. (G, D).

Pogonatum brachyphyllum (Mx.) Beauv. (1) On sandy bank of ravine near Tishomingo, Johnston Co. Also collected on sandy clay near Foreman, Arkansas (G, D).

Polytrichum commune L. (1) Sandy soil near Broken Bow, McCurtain Co.

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