

## VI. MOSSES OF TULSA AND OSAGE COUNTIES

*Olive Neville, Tulsa, Oklahoma.*

The following preliminary report is based upon the collections made by the writer in the Northeastern part of Tulsa County and in the adjoining Southwestern portion of Osage County, during the spring and fall of the years 1926 and 1927. In so far as I know, no previous studies of the mosses of this region has been made.

The stations in which mosses were collected are indicated as: the City of Tulsa; Osage Hills; Shell Creek Dam; Turkey Mountain Region; Mohawk Region; and Lost City. Steep rugged hills, with outcroppings of limestone rock, together with the meadows, old fields, woods, and creek beds, produce a variety of habitats in which mosses are found. The principal types of habitats of bryological importance are as follows:

**Rocks and Cliffs.** Limestone and sandstone are common in this region. The greatest outcroppings of limestone occur in Lost City and Turkey Mountain. These cliffs are formed of limestone strata from two to fifty feet in height. The other regions are of sandstone and shale formation.

**Streams.** The streams vary in size, swiftness and temperature, but are alike in having rock or gravel beds with soil or shale banks.

**Woodlands.** The prevailing type of vegetation on the sandy, shaly upland is the scrub and post oaks. Lower down in the valley are found few elms, hickories, redbud, pecan, haw and river birch. The forest floor varies in the amount of fallen and decaying logs, and also in the amount of humus, and the moisture content.

**Open Fields.** The term open fields includes plowed fields, meadows, and banks along the roadside. The soil may be either sandy, clayey or humus loam or shaley.

**Open Marshy Swamp.** This area below Shell Creek Dam is characterized by the abundance of sedges and grasses. It is fed by the overflow from the dam.

**The City Habitats.** In this collection were made from the soil of the lawns and parks, the base of living trees, and the north side of buildings, both on the ground and on the brick and cement foundations.

The following list of fifty species of mosses includes their habitats together with the comparative abundancy of their occurrence in the region under consideration. All of the records are based upon the writer's collection.

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### *Polytrichaceae*

*Catharinea undulata* (L.) W. and M. On moist shady banks; common.

*Catharinea angustata* Brid. On dry soil, in moist meadows, and along the road side; common.

*Polytrichum commune* L. On the ground in various situations; common.

*Pogonatum brachyphyllum* (Mx.) Beauv. On sandy and loamy soil; common.

*Pogonatum brevicaulis* (Brid.) Beauv. Bare moist banks of clay and loam soil; common.

#### *Dicranaceae*

*Dicranella heteromalla*. (L.) Schimp. On shaded sandy banks, and on rocks at the edge of water; common.

*Dicranella rufescens* (Dicks.) Schimp. On bare moist earth, especially clay soil; not common.

*Ditrichum tortile*, var. *vagianas* (Sulliv.) On moist banks before other vegetation; not common.

*Dicranum fuscescens* Turn. On the ground and decayed logs.

#### *Grimmiaceae*

*Grimmia apocarpa* (L.) Hedw. Growing on rocks, in the sun and in the shade; very abundant.

*Grimmia leucophea* Grew. Common on rocks in the sun and in the shade.

*Grimmia conferta* Funk. On rocks; locally abundant.

*Hedwigia albicans* (Web.) Lindb. Found everywhere, on boulders, ledges, and stone walls; very common.

#### *Tortulaceae*

*Tortella caespitosa*. (Schwager.) Limpr. On soil in the woods, and on the roots of trees; common and variable.

*Pottia truncatula* (L.) Lindb. Common on dry soil, and wet banks.

*Barbula convoluta* Hedw. On soil in dry places.

#### *Funariaceae*

*Funaria hygrometrica* (L.) Sibth. Found everywhere, being especially abundant in waste places and on soil recently burned over.

*Physcomitrium turbinatum* (Mx.) Brid. Abundant in old fields, by the roadside, in moist places by paths in parks, and on soil in green houses.

#### *Aulacomniaceae*

*Aulacomnium heterostichum* (Hedw.) B. and S. On rich soil about the bases of trees; not common.

#### *Bryaceae*

*Bryum capillare* (L.) Frequent on rich loamy soil in the woods.

*Bryum argenteum* (L.) Abundant on dry compact soil, in sandy fields, and damp soil on the north side of buildings; occasionally on creek banks.

*Leptobryum pyriforme* (L.) Wils. On rocks near water, and on foundations of buildings; not common.

*Mnium cuspidatum* (L.) Leyss. Decaying logs, rich humus soil, soil along creek banks, and in moist corners of lawns and parks; very common.

*Mnium rostratum* Schrad. On damp humus soil in the shade; frequent.

*Mnium medium* B. and S. On the ground in moist woods; rare.

*Mnium affine* Bland. On the ground in moist woods; common.

*Mnium punctatum* (L.) Schreb. Common in wet woods.

*Leskeaceae*

*Leskea gracilescens* Hedw. On decaying logs and bases of trees; common.

*Anomodon rostratus* Hedw. On the ground at the base of living trees.

*Anomodon attenuatus* Schreb. On rocks and bases of living trees; occasional.

*Anomodon minor* (P. Beauv) Fuern. Frequent on logs and trunks of trees.

*Thelia asprella* Schimp. On dry soil, and on the bases of trees; rare.

*Thelia hirtella* Hedw. On bases of living trees, and stumps; rare.

*Thuidium microphyllum* (Sw.) Best. On rocks in the shade, and bark of trees; occasional.

*Thuidium recognitum* (Hedw.) Lindb. Moist soil and decaying logs; not common.

*Thuidium delicatulum* (L.) Mitt. Common on stones and rotten logs.

*Hypnaceae*

*Hypnum imponens* Hedw. Abundant on rotten wood.

*Amblystegium serpens* (L.) B. and S. On moist soil, stones, and decaying wood; common.

*Amblystegium irriavum* (Wils) B. and S. On stones at the edge of water and on wet banks, and logs; common.

*Amblystegium varium* (Hedw.) Lindb. In moist shady places, on stones, decaying wood, soil, and at the base of living trees; very common.

*Amblystegium juratzkanum* Schimp. On rocks at the edge of water.

*Amblystegiella subtilis* (Hedw.) Loeske. On bark of trees; not common.

*Amblystegiella subtilis* (Hedw.) Loeske. On bark of trees; not common.

*Entodon seductrix* (Hedw.) C. M. Common on rotten wood, soil, and base of living trees.

*Entodon cladorrhizans* (Hedw.) C. M. On damp humus soil and rotten logs; common.

*Brachythecium rutabulum* (L.) B. S. Damp humus soil, and base of living trees; common.

*Brachythecium acuminatum* (Hedw.) Lindb. Frequent on dry soil, the base of living trees, and decaying wood.

*Brachythecium salebrosum* (Hoffm.) Ba. and Sch. Common on moist earth, bases of trees, rocks, and decaying wood.

*Brachythecium plumosum* (Sw.) B. and S. On rocks in streams, and on moist rocks in damp shady places; not common.

*Brachythecium flexicaule* R. and C. On earth, decaying logs, and on roots of trees; common.

*Plagiothecium elegans* (Hook.) Sulliv. On moist soil; rare.

*Cratoneuron commutatum* (Hedw.) Roth. Rocks at the edge of water; rare.

Following is a list of the families of mosses and the habitat relations of each, together with the comparative frequency of some of the most common species as found in the region under discussion.

Of the Polytrichaceae, *Catharinea undulata*, *Catharinea angustata*, and *Pogonatum brevicaulis* are found growing abundantly every where, in open fields, along the road sides, on damp shady banks, and in all kinds of soil.

The Dicranaceae are inhabitants of soil and rocks. *Ditrichum tortile* was found to be the most common species of this group.

The Grimmiaceae are found growing almost entirely on rocks. A few rare species have been reported growing on dry soil, but were not so observed in this region. *Hedwigia albicans* and *Grimmia apocarpa* are the most common of this group.

The Tortulaceae grow mainly on soil, although one species, *Tortella caespitosa*, which is found on the base of trees, is a very common species. The species of this group most frequently found are *Tortella caespitosa* and *Barbula convoluta*.

Of the Funariaceae, two species, *Physcomitrium turbinatum* and *Funaria hygrometrica* are found every where, being especially abundant in waste places, old fields, by the road side, by paths in the park, in the cracks of sidewalks, and on soil in green houses.

Of the Aulacomniaceae *Aulacomnium heterostichum* is our most common species. It is found on rich moist soil at the base of trees.

Bryaceae. Many of these mosses are quite common, and are found growing on damp humus soil, rotten logs, rocks in the shade, and on soil along creek banks. Of the sub-family Bryeae, *Pohlia nutans* and *Bryum argenteum*, are the most common. Of the sub-family Mnieceae, *Mnium cuspidatum*, one of the first signs of vegetation in the spring, is common on lawns, parks, and in moist shady woods, growing on soil and rotten logs. *Mnium affine* and *Mnium rostratum* are found quite frequently but are not common as *Mnium cuspidatum*.

The Leskeaceae are found growing on the base of trees, rocks in the sun, decaying logs, and dry soil. The common species of this group are *Anomodon rostratus*, *Thuidium recognitum*, and *Leskea gracilescens*.

The Hypnaceae are the largest group of mosses. This great family is often divided into sub-families. Of these, *Amblystegium* and *Brachythecium* are the most common.

Amblystegiae are small moisture loving mosses found growing on various substrata. Of this sub-family, *Amblystegium varium* and *Amblystegium serpens* are the most common.

Brachytheciae are typically hypnaceous in habit. They are found growing on decayed wood, dry soil, rocks in streams, moist soil and on the bases of trees. Of this sub-family *Brachythecium salebrosum* and *Brachythecium plumosum* are most often found.