

MOSES OF A NORTHERN OHIO AREA

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For some time past the writer has been endeavoring to build up as complete a list of mosses as possible in a certain limited area in the vicinity of Cleveland, Ohio. This area is known as the North Chagrin Reservation of the Cleveland Metropolitan Park System and comprises some sixteen hundred acres, of which roughly two thirds are wooded and the remainder more or less open meadows. There are two small ponds on the area and the Chagrin River borders it for some distance along one side, resulting in various marshy spots, alder thickets, button-bush bogs and so on.

The wooded part of the area consists largely of a beech-maple forest with considerable hemlock mixed in along the spurs and ravines which lead down from the higher level to the open meadows along the river. A full description of a part of this forest is to be found in a paper by Williams (1936)..

The list has now reached a total of ninety-nine, including five varieties, and has nearly come to a standstill. One hundred species in a county has been said to be a near average (Conard, 1944), so that the present list from a tract which is less than one two hundredth the size of the average Ohio county may serve to point out its unusual richness.

The majority of the mosses which make up the list have been found within the confines of the forest itself. Many of these grow on decaying organic matter such as rotted logs, old stumps, or the humus of the forest floor. A number of others were found along the grassy borders of the roads and paths through the park, and on the more or less exposed soil of the cuts and embankments. Some were collected from the bark of living trees. Though the list of these is as yet small it should be materially increased. A few came from rocks in or near watercourses and one or two came from the actual streams.

The open fields and meadows yielded a good percentage, but this is another habitat the study of which is by no means completed. A few species were gathered from the shores of the ponds, including two species of *Sphagnum* judged to be among the most common. But due to the number and complexity of the Peat Mosses, the difficulty of working with them and the fact that complete keys and descriptions of them are not readily available, nothing further has been attempted here. In any event the number of species of *Sphagnum* which might be encountered in the very small areas to which they are confined cannot be much larger.

Should the reader desire fuller details on the climate, geology and other features of the area he is referred to the paper by Williams (1936).

Specimens of all the species in the following list are in the writer's herbarium in Cleveland. The order of listing is in accordance with the Checklist of Mosses for North America as issued by the American Bryological Society (then the Sullivant Moss Society) (Grout, 1940).

Most of the identifications, including all which were in the slightest doubt, have either been made or confirmed by Dr. Henry S. Conard, to whom the writer owes his deepest thanks for his very great help and encouragement. Others were made by Dr. Richard T. Wareham, and one *Fissidens* new to North America was identified and described by Dr. William C. Steere, to both of whom the writer makes grateful acknowledgment.

SPHAGNACEAE

Sphagnum Girgensohnii Russow. On boggy ground around the borders of one of the ponds of the area.

Sphagnum Magellanicum Brid. Same habitat as the preceding. These two Sphagnums are probably the common ones of the area, although there are undoubtedly others.

TETRAPHIDACEAE

* *Tetraphis pellucida* Hedw. Usually found on decayed wood. Occ.—General throughout the woods.

POLYTRICHACEAE

* *Atrichum angustatum* (Brid.) Bry. Eur. On soil, especially along the borders of the paths and boulevards through the woods. Occ.—Common and widespread.

Atrichum angustatum (Brid.) Bry. Eur. var. *plurilamellatum* (Jennings) Frye. On soil in the woods. Occ.—Less common than the species.

* *Atrichum undulatum* (Hedw.) Beauv. Usually on rather wet clayey soil. Occ.—Common.

Atrichum undulatum (Hedw.) Beauv. var. *altecristatum* Ren. & Card. As to frequency of occurrence, no careful check has been attempted on the area as yet.

* *Pogonatum pensilvanicum* (Hedw.) Paris. On bare soil. Occ.—Common.

* *Polytrichum commune* Hedw. In open spots in the woods and in the meadows. Occ.—Very common.

* *Polytrichum juniperinum* Hedw. In dry open places in the woods. Occ.—Fairly frequent.

* *Polytrichum ohioense* Ren. & Card. Similar in situation to *P. commune* but less frequent in occurrence.

* *Polytrichum piliferum* Hedw. On the ground in dry open places. Rare.

FISSIDENTACEAE

Fissidens bryoides Hedw. On rather low wet bare ground. Infrequent.

Fissidens Bushii Card. & Ther. On bare wet ground. Frequent.

Fissidens exilis Hedw. On bare patches of ground in the woods. The green stain of the protonema will often lead to its discovery, otherwise it is almost impossible to detect it if it is not in fruit. Infrequent. First record for North America. See *The Bryologist*, Vol. 50, pp. 131-136.

Fissidens minutulus Sull. On rocks, usually sandstone, in open ravines, bridge foundations, etc. Rather common.

DITRICHACEAE

* *Ceratodon purpureus* (Hedw.) Brid. In dry open places such as the borders of the park boulevards. Very common.

Ditrichum lineare (Sw.) Lindb. On moist ground in open places. Rather infrequent.

* *Ditrichum pallidum* (Hedw.) Hampe. In dry open places. Fairly frequent.

DICRANACEAE

* *Dicranella heteromalla* (Hedw.) Schimp. On soil everywhere in the woods. One of the commonest mosses of the area.

* *Dicranella heteromalla* (Hedw.) Schimp. var. *orthocarpa* (Hedw.) Paris. Uncommon.

Dicranella varia (Hedw.) Schimp. On moist clayey soil. Infrequent.

Dicranum Bonjeani DeNot. The only specimens of this which were collected check perfectly with the variety *alatum* Barnes, according to Dr. H. S. Conard. This variety is apparently not given rank as such by Grout in the Moss Flora of North America, nor included in the Checklist. However, the specimens on which this listing are based are definitely not the typical *D. Bonjeani*, a frequenter of marshy ground. (Syn.—*D. palustre*.) Collected only once, on dry soil under white pines and some mixed hardwood.

* *Dicranum fulvum* Hook. On rocks in the forest, occasionally on stumps. Fairly common.

* *Dicranum montanum* Hedw. On the bark of trees, living or dead. Common.
Dicranum rugosum (Hoffm.) Brid. On soil in low wet places, occasionally in large mats.
 Infrequent.

* *Dicranum scoparium* Hedw. On soil in the woods. Fairly common.

LEUCOBRYACEAE

* *Leucobryum glaucum* (Hedw.) Schimp. On soil or over rocks. Very common.

BUXBAUMIACEAE

Buxbaumia aphylla Hedw. Found once only in an old road cut. It may not be rare but is difficult to find, being visible only when in fruit.

POTTIACEAE

Astomum Muhlenbergianum (Sw.) Grout. On soil. Another pygmy moss easily overlooked.
 Found only twice.

Barbula fallax Hedw. Usually on bare or recently disturbed soil. Fairly common.

Barbula unguiculata Hedw. On bare disturbed earth, especially earth slides along roads and trails. Very common in these places.

* *Desmotodon obtusifolius* (Schw.) Jur. On sandstone rock. Uncommon.

* *Pottia truncata* (Hedw.) Fürm. On bare ground. Infrequent.

Weisia viridula Hedw. On bare ground. Fairly frequent.

EPHEMERACEAE

Nanomitrium Austinii (Sull.) Lindb. On mudflat of a pond, exposed by low water. Found only once.

DISCELIACEAE

Discelium nudum (Dicks.) Brid. On bare alluvial soil. Found in successive years in one spot only. Visible only when fruiting, except for the protonema which soon disappears. Grout lists only four collections of this species in MFNA.

FUNARIACEAE

* *Funaria hygrometrica* Hedw. Usually on bare, often gravelly soil in open places. Fairly common.

Physcomitrium immersum Sull. Similar in its occurrence to *Nanomitrium Austinii*, and in fact the two were found together in their only known occurrence on the area.

* *Physcomitrium turbatum* (Mx.) Brid. On bare earth. Quite common.

ORTHOTRICHACEAE

Orthotrichum pumilum Dicks. On bark of trees. Uncommon.

AULACOMNIACEAE

* *Aulacomnium palustre* (Web. & Mohr) Schw. On soil in low swampy spots. Common and widespread.

BRYACEAE

* *Bryum argenteum* L. In crevices in the stonework of bridges, on the sides of roadbeds where it is often mixed with *Ceratodon*, and in other dry exposed situations. Common.

* *Bryum caespiticium* (L.) Hedw. Found in situations much like those of the preceding, and of about equal frequency of occurrence.

* *Bryum capillare* (L.) Hedw. On the bark of trees or on moist soil. Uncommon.

Bryum pseudotriquetum (Hedw.) Schw. In wet situations. Apparently quite infrequent, though rated a common species.

* *Leptobryum pyriforme* (Hedw.) Schimp. On shaly cliffs, moist logs, etc. Rather uncommon.

Pohlia nutans (Schreb.) Lindb. On moist ground and bases of trees. Very common.

Pohlia pulchella (Hedw.) Lindb. On moist alluvial soil. Rare.

* *Pohlia Wahlenbergii* (Web. & Mohr) Andrews. In wet open places. Rather infrequent.

MNIACEAE

- Mnium affine* Bland. On wet ground in the woods. Very common.
- * *Mnium cuspidatum* Hedw. On wet ground and decayed wood in the forest. Very common and widespread.
- * *Mnium punctatum* Hedw. In similar situations to the preceding but rather less common.
- * *Mnium punctatum* Hedw. var. *elatum* Schimp. In wet places, on shaly ravine banks, etc. Infrequent.
- Mnium stellare* Hedw. On base of elm in ravine. Found once.

HYPNACEAE

- * *Amblystegium Juratzkanum* Schimp. On decayed logs or soil in the forest. Common.
- Amblystegium serpens* (Hedw.) Bry. Eur. On decayed wood as a rule. Somewhat less common than the preceding.
- * *Amblystegium varium* (Hedw.) Lindb. On soil, rockwork of culverts, etc., where moist conditions prevail. Infrequent.
- Brachythecium oxycladon* (Brid.) J. & S. On grassy slopes in the open. Probably common, though infrequently recorded so far.
- Brachythecium flagellare* Bry. Eur. In rather wet places in the woods, on ground, over tree trunks, rocks, etc. Fairly common.
- 3 *Brachythecium rivulare* Bry. Eur. On moist ground or in water. Infrequent.
- * *Brachythecium rutabulum* (Hed.) Bry. Eur. Similar in situation and frequency to the preceding.
- Brotherella recurvans* (Mx.) Fleisch. In moist places in the forest, usually on decaying logs. Common.
- Brotherella tenuirostris* (Sch.) Broth. On tree bases or decayed wood in moist situations. Infrequent.
- ° *Bryhnia novae-angliae* (Sull. & Lesq.) Grout. Usually on the ground, sometimes over rocks, in wet places. Common.
- Calliergon cordifolium* (Hedw.) Kindb. Around bases of cattails and rushes along the borders of ponds. Fairly common.
- * *Calliergonella Schreberi* (Bry. Eur.) Grout. On the ground in moist open areas. Fairly frequent.
- ✓ *Campylium chrysophyllum* (Brid.) Bryhn. In moist places on the ground. Very common.
- 7 *Campylium hispidulum* (Brid.) Mitt. On humus in the woods. Found once.
- Chamberlainia acuminata* (Hedw.) Grout. On logs, soil, etc., in the ravines and other moist places. Fairly common.
- Cirriphyllum Boscii* (Schw.) Grout. On the ground in meadows and along the woods borders. Common.
- * *Climacium americanum* Brid. On soil in low wet places. Fairly common.
- ° *Climacium Kindbergii* (R. & C.) Grout. In low wet places. Common.
- ° *Entodon seductrix* (Hedw.) C. Muell. On soil, decaying wood, rockwork of culverts, etc. Infrequent.
- Eurhynchium hyans* (Hedw.) J. & S. On moist ground in the woods or along the borders. Fairly common.
- Eurhynchium rusciforme* (Neck.) Milde. On rock bottom of watercourse. Found once.
- Eurhynchium serrulatum* (Hedw.) Jindb. On soil in the woods. Common.
- * *Heterophyllum Haldanianum* (Grev.) Kindb. On soil or decayed wood in the forest. Very common and widespread.
- * *Hygroamblystegium irriguum* (Wils.) Loeske. On soil or rocks in quite wet situations. Infrequent.
- * *Hypnum curvifolium* Hedw. On moist ground in woods. Infrequent.
- ° *Hypnum imponens* Hedw. On decaying logs in moist ravines. Infrequent.
- Hypnum molluscum* Hedw. On moist soil or bases of trees. Infrequent.
- Hypnum Patientiae* Lindb. On wet ground, margins of ponds, along streams through meadows. Common.

- * *Hypnum reptile* Mx. On decayed wood and bases of trees in the forest. Fairly common.
- * *Leptodictyum riparium* (Hedw.) Warnst. On decayed wood in wet situations. Rather common.
- * *Leptodictyum trichopodium* (Schultz) Warnst. In situation similar to the preceding, probably more common.
- * *Plagiothecium denticulatum* (Hedw.) Bry. Eur. On moist soil and decayed wood in the forest. Common. The forma *propagulifera* Ruthe has also been collected frequently.
- * *Plagiothecium elegans* (Hook.) Sull. On the base of a beech tree in a rather moist spot. Collected only once. Since this was apparently the first record of this species for Ohio it was sent to Dr. Richard T. Wareham, Newton Lower Falls, Mass., for recheck. He confirmed the identification.
- * *Plagiothecium Roeseanum* (Hampe) Bry. Eur. On moist soil and decayed wood. Fairly common.
- * *Plagiothecium turfaceum* (Lindb.) Lindb. On decaying hemlock stump. Found only once. (Det. by Dr. Wareham.)
- * *Platygyrium repens* (Brid.) Bry. Eur. On bark of trees and logs. Very common.
- * *Sematophyllum adnatum* (Mx.) E. G. B. On bark at bases of trees. Infrequent.

LESKEACEAE

- * *Anomodon attenuatus* (Hedw.) Hüben. On bases of trees. Infrequent.
- * *Anomodon rostratus* (Hedw.) Schimp. On bases of trees in moist places. Infrequent.
- * *Helodium paludosum* (Sull.) Aust. On the ground in marshy places. Common.
- * *Thuidium delicatulum* (Hedw.) Mitt. On soil and decayed wood in the forest and along the grassy road borders. Common.
- * *Thuidium recognitum* (Hedw.) Lindb. Similar in situation and frequency to the preceding, may be mixed with it.
- * *Thuidium virginianum* (Brid.) Lindb. On trunk of fallen white ash. Found only once.

FONTINALACEAE

- * *Fontinalis novae-angliae* Sull. In running streams, not necessarily flowing the year round. Infrequent.

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