

## Studies in Indiana Bryophytes VI

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The mosses used in this study are Indiana collections in herbaria in the following institutions: Indiana University, Butler University, DePauw University, University of Illinois, Earlham College, Field Museum of Natural History, and the New York Botanical Garden.

The nomenclature is that of A. J. Grout, *The Moss Flora of North America North of Mexico* 2:242-260. 1935.

The asterisk preceding the name of a county indicates that the species has been recorded from that locality but has not been studied by the author. The asterisk following the name of a species indicates that this is the first known published record for Indiana.

The recorded range of each species has been extended by the author's collections which were made with the financial assistance of an Indiana Academy of Science research grant through the American Association for the Advancement of Science and by the aid of a research grant from the Graduate Council of DePauw University.

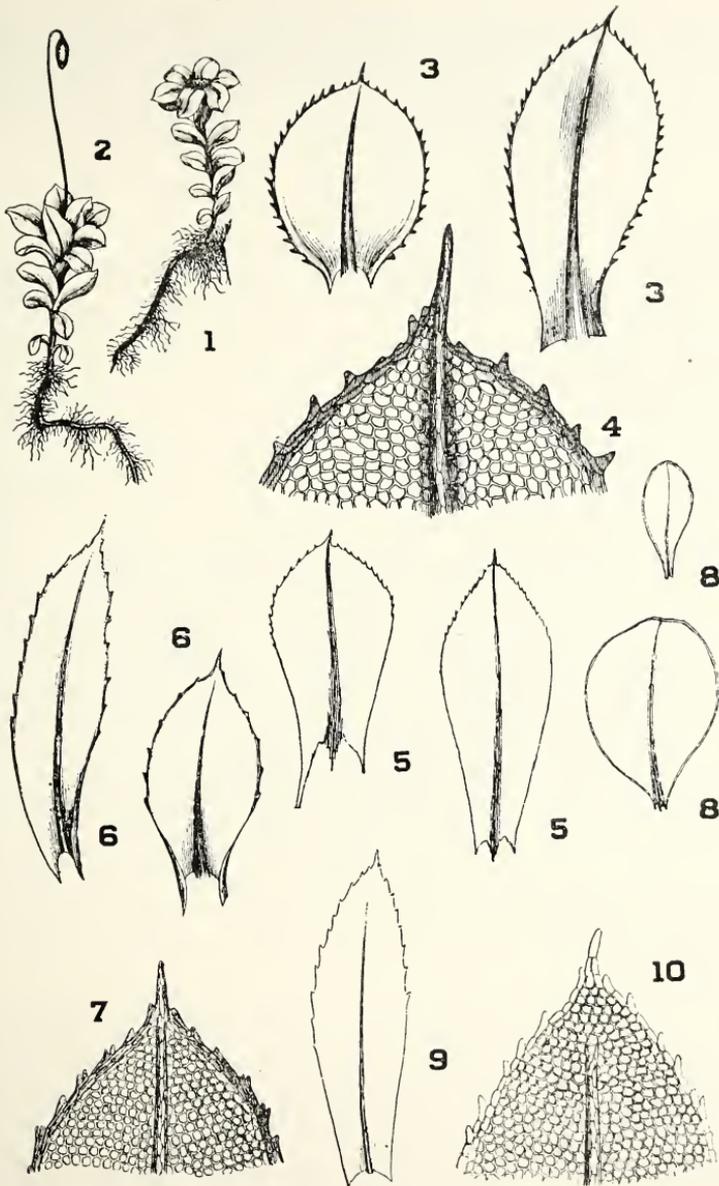
### Mniaceae

Plants conspicuous, commonly in mats or tufts; stems often with clusters of brown radicles; leaves of various shapes, the median usually distinct and somewhat loosely arranged, the terminal frequently in a rosette, some with border of elongated cells, margins entire or serrate with single or double teeth, strongly costate to or nearly to the apex; inflorescence terminal, dioecious or synoecious; sporophytes single or several from one perichaetium; seta elongated; capsules horizontal to pendulous; peristome double, teeth of outer peristome 16.

Mnium is the only genus of this family known to occur in Indiana. A key based upon vegetative characteristics is presented although several species of Mnium can not be determined accurately without the antheridia, archegonia, and sporophytes.

Dr. A. LeRoy Andrews (*in litt.*) has advised me that *M. medium* should be found in the state but *M. rostratum* is a common species in states south of Indiana; that *M. medium* is hardly identifiable by its leaves with any degree of certainty and can be distinguished from *M. affine* only by its synoecious inflorescence and its greater tendency to have grouped sporophytes; that *M. rostratum* is also difficult to determine by its leaves and without the distinct sporophytes; and that most or all of the sterile material called *M. rostratum* in the northern states is *M. affine* or some other species.

No sporophytes were found on plants which were identified as *M. medium* or *M. rostratum*. Many of the vegetative characteristics of plants resembling *M. medium* agree with *M. affine* and some of the leaf



All figures are taken, with permission, from A. J. Grout, Mosses with Hand-lens and Microscope (M.H.M.).

*Mnium affine* (M.H.M., pl. 49). Fig. 1. Male gametophyte, enlarged. Fig. 2. Female gametophyte and sporophyte, enlarged. Fig. 3. Cauline leaves, enlarged. Fig. 4. Upper portion of leaf, enlarged. *Mnium cuspidatum* (M.H.M. Fig. 117 e). Fig. 5. Cauline leaves, x 10. *Mnium marginatum* (M.H.M., pl. 51). Fig. 6. Cauline leaves, enlarged. Fig. 7. Upper portion of leaf, enlarged. *Mnium punctatum* (M.H.M. Fig. 118 c, e). Fig. 8. Cauline leaves, x 4. *Mnium stellare* (M.H.M. Fig. 121). Fig. 9. Cauline leaf, enlarged. Fig. 10. Upper portion of leaf enlarged.

characters of plants which one might determine as *M. rostratum* apply to the forms of *M. affine* in which the teeth are reduced or almost entirely lacking. In the absence of material possessing inflorescences and sporophytes it has seemed advisable to exclude *M. medium* and *M. rostratum* from the Indiana species of Mniaceae.

### Mnium

1. Leaves with a border of elongated cells . . . . . 2.  
    Leaves without a conspicuous border of elongated cells, serrate  
    above, cells isodiametric, costa ending below apex . . . . . *stellare*.
2. Margins of leaves entire . . . . . *punctatum*.  
    Margins of leaves serrate . . . . . 3.
3. Teeth in pairs . . . . . *marginatum*.  
    Teeth single . . . . . 4.
4. Margins serrate in upper  $\frac{1}{2}$  to  $\frac{2}{3}$  only . . . . . *cuspidatum*.  
    Margins serrate nearly to base . . . . . *affine*.

*M. affine* Bland. (Fig. 1-4.) Leaves spreading, crispate or irregularly distorted when dry, oval to obovate, short cuspidate, sometimes slightly decurrent, bordered with 2-4 rows of narrow cells, commonly toothed from apex to base with sharp teeth of 1-3 cells each but the teeth in some forms much reduced or almost entirely lacking; costa percurrent, ending in cuspidate apex; leaf cells subhexagonal, slightly elongated in oblique direction from costa to border and arranged in rows, up to  $50\mu$  in longest diameter, gradually decreasing in size from costa to border; dioecious, sporophytes usually single, present in spring. On moist, shaded rock, soil, logs, stumps, and tree trunks in Carroll, Clark, Delaware, Dubois, Floyd, Fountain, Gibson, Hamilton, Harrison, Jasper, Jefferson, Lake, LaPorte, Lawrence, Madison, Marshall, Martin, Monroe, Montgomery, Morgan, Noble, Owen, Parke, Perry, Porter, Putnam, Randolph, Ripley, St. Joseph, Spencer, Steuben, Warren, Washington, Wayne, and Wells counties.

*M. cuspidatum* (L.) Leyss. (Fig. 5). Leaves spreading, much crisped and distorted when dry, obovate, acute to short acuminate, base narrow and decurrent, bordered with 2-4 rows of narrow cells, serrate in upper  $\frac{1}{2}$  or  $\frac{2}{3}$  only, teeth single, acute, 1-celled; costa percurrent; leaf cells irregularly rounded-hexagonal, up to  $25\mu$  in diameter; synoecious; sporophytes single, present in spring. On moist, shaded soil, logs, rock, tree trunks, and stumps in Allen, \*Brown, Carroll, Cass, Clark, Crawford, Decatur, Delaware, Dubois, Elkhart, Floyd, Fountain, Grant, \*Hamilton, Harrison, Henry, Huntington, Jasper, Jefferson, Jennings, Knox, Kosciusko, Lagrange, Lake, LaPorte, Lawrence, Madison, Marion, Marshall, Martin, Monroe, Montgomery, Noble, Orange, Owen, Parke, Perry, Pike, Porter, Posey, Pulaski, Putnam, \*Randolph, Ripley, Saint Joseph, Scott, Starke, Steuben, Sullivan, Warren, Washington, Wayne, Wells, and White counties.

*Mnium marginatum* (Dicks.) Pal. de Beauv. (Figs. 6-7.) Leaves erect-spreading, rather distant and few, not forming a conspicuous rosette at end of stem, much crisped and twisted when dry, oblong to ovate, short acuminate, decurrent, bordered throughout with narrow, reddish cells, serrate, teeth short and in pairs; costa reddish, not toothed dorsally, frequently percurrent and joining border to form an apiculus; leaf cells subquadrate and somewhat uniform in size, except at base where much elongated, in longitudinal rows, up to  $35\mu$  in diameter; synoecious; sporophytes single, present in spring. On moist rock and soil in woods in Jefferson, Madison, Parke, Porter, and Putnam counties.

*Mnium punctatum* Hedw. (Fig. 8.) Leaves spreading, usually slightly wrinkled and distorted when dry, oval to obovate-spatulate, broadly rounded to slightly emarginate at apex, gradually narrowing at base, not decurrent or slightly so, border distinct, sometimes reddish, entire; costa ending below apex or percurrent, occasionally forming with the border a short blunt point at apex; leaf cells subhexagonal to subrhomboidal, frequently elongated and in oblique rows from costa to border, up to  $150\mu$  in longest diameter; commonly dioecious but occasionally synoecious; sporophytes generally single, present in winter or spring. On moist, shaded rock, logs, and soil in Cass, Dubois, Montgomery, Owen, Parke, Porter, Putnam, and Steuben counties.

*Mnium stellare* Reich.\* (Figs. 9-10). Leaves erect-spreading, slightly undulate or irregularly curved when dry, elliptic to ovate, decurrent, apex obtuse to acute, usually not bordered with narrow cells, upper leaves serrate above with broad 1-celled teeth; costa reddish, abruptly ending some distance below the apex; leaf cells rounded to hexagonal, almost isodiametric, up to  $30\mu$  in diameter; dioecious; sporophytes single, present in spring and summer. Putnam County. (Welch 7844, June 3, 1936, base of dead tree trunk, bank of Mill Creek, Hoosier Highlands. DP. Hb.)