Studies on the Bryophytes of Southern Manitoba. II. Collections from the Winnipeg Area

Muriel H. L. Stringer and Paul W. Stringer

Department of Biology, University of Winnipeg, 515 Portage Avenue, Winnipeg, Manitoba R3B 2E9


Abstract. Fifty-five taxa of bryophytes are reported for the area of Winnipeg, Manitoba. Frullania inflata, Brachythecium acuminatum, Encalypta ciliata, and Tortella inclinata are new records for the province.

Little work has been done on the bryophyte flora of Manitoba, and published work on the ecology of mosses and liverworts of the area lags far behind that for many other provinces. This is especially unfortunate as Manitoba lies in the transition zone of three major vegetation formations: the boreal forest, the prairies, and the St. Lawrence–Great Lakes forest. It is consequently floristically rich and merits further study.

In recent years, Bird (1962, 1969) has recorded a number of bryophyte species from the prairies and the Aspen Parkland, including some collections from the Winnipeg area. Longton (1972) published 19 new records, mostly from the northern part of the province.

The present paper in which 55 species are recorded, is part of a series on the ecology and distribution of the bryophytes of southern Manitoba.

The area studied (49º43’-50º05’ N, 97º00’-97º20’ W) lies wholly within the Aspen Parkland (Bird 1961) and its forests are almost wholly deciduous. The nearest coniferous forests are at Birds Hill Provincial Park, 24 km NNE of the city. The bryophyte flora of this latter area will be the subject of other publications in this series (in preparation).

Most of the upland region in the Winnipeg area is occupied by aspen (Populus tremuloides)*–oak (Quercus macrocarpa) forest, while the valleys of the Red, Seine, Assiniboine, and La Salle rivers are lined with floodplain forest dominated by green ash (Fraxinus pennsylvanica), Manitoba maple (Acer negundo), and elm (Ulmus americana), with basswood (Tilia americana) locally abundant.

Collections were made in eleven areas between June and August 1972, as follows.
1. North Kildonan Park, on clay and stones beside lake 8 km NNE of downtown Winnipeg.
2. La Barrière Park, in oak–aspen and floodplain forest along the La Salle river 16 km S of downtown Winnipeg.
4. Seine River bank at Marion Street. Ash–elm–maple forest with the understorey partly cleared.
5. Camp Manitou, 16 km W of downtown Winnipeg. Extensive areas of medium-aged — old deciduous forest in a bend of the Assiniboine River. Floristically the richest area, with moss abundant on deadfall and on live trunks.
7. Assiniboine Park on south bank of Assiniboine River. Much of the area has been cleared, but extensive areas of only slightly disturbed forest of all types remain.
8. Very disturbed open grassland behind Cottonwood Village, 0.8 km N of Highway No. 1 and 2.4 km E of the Seine River.
9. Stony Mountain 0.8 km SE of the village of Stony Mountain, 24 km N of downtown Winnipeg. A large limestone outcrop, disturbed by quarrying. Dense Salix sp. shrubs on the west side, and a calcareous marsh on the northwest side.
10. Crescent Drive Park. Across the Red River from area 3, and with a similar type of forest.
11. Ash–elm–oak forest sloping rapidly to the river, on the south bank of the Assiniboine River just E of Assiniboine Park.

*Vascular nomenclature follows Scoggan 1957.
The numbers in brackets in the following list refer to the areas described above. Nomenclature of mosses follows Crum et al. (1965) with modification according to Crum (1971). Hepatic nomenclature follows Schuster (1953) with abbreviations of authorities modified to conform with the list given by Sayre et al. (1964).

Taxonomic and field work were shared equally by both authors. Voucher specimens have been deposited in the authors’ own herbarium and at the University of Winnipeg.

When possible, several collections of the same species were made in each area, and the comments on substrates and associated species are based on careful observation of all collections made.

**Hepaticae**

*Frullania inflata* Gott. (5). Not previously recorded for the province. A single collection of this species in fruit was made 0.5 m above the ground on the south and east sides of an elm tree, where it was growing with *Pylaisiella polyantha* and *Brachythecium* sp. According to Schuster (1953) this species is not rare on bark in elm floodplain forests.

*Marchantia polymorpha* L. (1, 7, 8). Fairly common on soil in moist habitats in the area. Often with *Leptobryum pyriforme* or *Leptodictyum trichopodium* var. kobichii.

**Musci**

*Amblystegium jurtzkanum* Schimp. (2, 3, 4, 5, 9, 10, 11). Common on tree bases, with *Brachythecium salebrosum* and *Mnium cuspidatum*, but also found on silt and clay in floodplain forest with *Leptodictyum* spp. (2, 11).

*Amblystegium serpens* (Hedw.) B.S.G. (2, 3, 9, 11). In the same habitats as the preceding species but less often on silt.

*Amblystegium variatum* (Hedw.) Lindb. (2, 3, 5, 9, 10). Frequent on rotten wood, or on moist clay (3), and often forming pure mats.

*Anomodon minor* (Hedw.) Führnr. (2, 3, 4, 10, 11). A characteristic species of tree bases in the area, occurring on all species except aspen, and sometimes extending up to 30 cm up the trunk in situations where moisture seems more abundant than usual. It is often associated with the basal *Mnium* and *Brachythecium* colonies and higher up the trunk with *Leskea* spp.

*Brachythecium acuminatum* (Hedw.) Rau and Herv. (2, 3, 5). Occupying the same niche as *B. salebrosum* on humus at tree bases. Sterile material was determined with difficulty in some cases. A new recording for the province.

*Brachythecium campestre* (C. Müll.) B.S.G. (3, 5). Usually on humus in drier areas. Several collections were in fruit and easily distinguished from *B. salebrosum* by the roughness of the upper parts of the seta.

*Brachythecium collinium* (Schleich. ex C. Müll.) B.S.G. (4, 5). A species of drier areas, both collections being made at dry, south-facing tree bases.

*Brachythecium rutabulum* (Hedw.) B.S.G. (2, 3, 5, 10). On moist humus, sometimes with *Mnium cuspidatum* and *Campylium hispidulum*, or on bottomland silt and clay with *Amblystegium* spp.

*Brachythecium salebrosum* (Web. and Mohr) B.S.G. (1, 2, 3, 5, 7, 9, 10, 11). The most widespread and commonest member of the genus, occurring in a wide variety of habitats but most frequent on humus and bases of trees of all species. Often associated with *Mnium cuspidatum* at tree bases, or with *Pylaisiella polyantha* higher up the trunks.

*Bynum angustirete* Kindb. ex Mac. (9). One collection made on dry gravelly soil.

*Bynum argentenum* Hedw. (7, 9). On dry, coarse soil (9) and in cracks in paving stones.

*Bynum ceberrimum* Tayl. (2, 3, 5, 9). On humus, especially in drier open areas, where it is often mixed with *Ceratodon purpureus*. Widespread and common in the area.

*Bynum pallescens* Schleich. ex Schwaegr. (2). One collection only, at the base of an oak, on humus.

*Bynum stenotrichum* C. Müll. (9). Two collections, on humus, and on rotten wood with *Brachythecium salebrosum* and *Amblystegium variatum*.

*Callicladium haldanitum* (Greve.) Crum (5, 11). Both collections on moist rotten wood, one with *Mnium cuspidatum*. Previously reported for the Winnipeg area by Bird (1969) and for the Spruce Woods area by Bird (1969) and by the authors1.

*Camphysium chrysophyllum* (Brind.) J. Lange (3, 9). On thick humus and rotten wood in moist habitats. Not common.

*Campylium hispidulum* (Brind.) Mitt. (2, 3, 5, 9). Common on tree bases, with *Amblystegium jurtzkanum*, and on rotten wood with *Haplocladium microphyllum*.

*Campylium stellatum* (Hedw.) C. Jens. (8). One collection made with *Leptodictyum riparium* and *Drepanoclados aduncus* in a grassy area flooded in spring.

*Ceratodon purpureus* (Hedw.) Brind. (2, 3, 4, 5, 7, 9). A widespread and common species, occurring with a wide variety of associated species, notably *Bynum* spp. in dry habitats, and on a wide variety of substrates, ranging from clay and silty gravel (2, 3, 4) to such unusual substrates as a piece of polythene foam sponge with a little humus on it (3).

*Climacium dendroides* (Hedw.) Web. and Mohr (5). One collection, on humus and hardwood litter under oak.

*Dionana varia* (Hedw.) Schimp. (9). Two collections, both on silt in the marshy area at this site.

*Dicranella gregilleana* (Brind.) Schimp. (3). One collection, on silty soil, with *Leptodictyum riparium*.

**Dirichium flexicaule** (Schwae gr.) Hampe. (9). In thick sods, on coarse, gravelly soil in cracks in the rock outcrop.

**Drepanocladium aduncum** (Hedw.) Warnst. (8). This wetland species was found only in grassland flooded in spring.

**Drepanocladium aduncum** (Hedw.) Warnst. var. poly- 
carpus (Bland. ex Voit.) Roth (3, 9, 12). More 
commonly found than the preceding, this variety 
was also collected in wet areas (e.g. marsh (9)), 
on humus or clay.

**Drepanocladium vernicosus** (Lindb. ex C. Hartm.) 
Warnst. (9). Found only as pure masses in the 
calcareous marsh at Stony Mountain.

**Encalypta ciliata** Hedw. (2, 3). Usually found on clay 
in dry areas. Not previously recorded for the 
province.

**Eurylichium pulchellum** (Hedw.) Jenn. (2, 5). In 
pure mats, often on humus at tree bases.

**Funaria hygrometrica** Hedw. (1, 5, 7, 10). Common 
on ashes of old fires but also on clay (1). Fre- 
quently with **Leptobryum pyriforme** and **Bryum** 
spp.

**Grimmia apocarpa** Hedw. var. conferta (Funck) 
Spreng. (9). A saxicolous, found twice on bare 
 limestone.

**Haplocladium microphyllum** (Hedw.) Broth. (3, 5, 
7, 9, 11). Common, especially in area 5, but con- 
 fined to moist, well-rotted wood where its com- 
monest associates were **Mnium cuspidatum** and 
**Leptodictyum trichopodium** var. kochii.

**Hypnum lindbergii** Mitt. (5). One collection, on 
black silt over rotten wood in a wet hollow with **Lepto- 
dictyum riparium**.

**Leptobryum pyriforme** (Hedw.) Wils. (1, 4, 5, 7). 
Common on a wide range of substrates but most 
frequently on clay or soil.

**Leptodictyum riparium** (Hedw.) Warnst. (2, 3, 4, 5, 
11). Frequent on litter or silt and clay in wet 
habitats.

**Leptodictyum trichopodium** (Schultz) Warnst. var 
kochii (B.S.G.) Broth. (1, 2, 3, 5, 7, 9, 11). Com- 
mon especially on moist silt and clay, but also on 
rotten wood (1, 2, 3, 5) with **Haplocladium**.

**Leskea obscura** Hedw. (2, 3, 4, 10). Most frequently 
on bark near bases of live trees but persisting on 
bark on deadfall until decay is well advanced. 
Commonly associated with **Anomodon**, **Pylaisia- 
ella**, and **Orthotrichum** spp.

**Leskea polycarpa** (Hedw.) (2, 3, 4, 5, 7, 11). In the 
same habitats as, but more frequent than, the pre- 
ceding species. The two species are distinguished 
with difficulty (Bird 1969), **L. polycarpa** having 
the more acute leaves.

**Leskea nervosa** (Brid.) Loeske (9). Two collections 
made, with **Amblystegium juratzkanum**, **Mnium** 
cuspidatum, and **Brachythecium salebrosum**, on 
humus and twigs under willow shrubs.

**Mnium cuspidatum** Hedw. (2, 5, 9, 11). On humus, 
especially at tree bases, but also on rotten wood.

**Orthotrichium obtusifolium** Brid. (2). On bark of a 
live elm tree at the edge of a floodplain forest, with 
**Leskea obscura**.

**Orthotrichium pumilum** Sw. (2, 3, 10). On bark of 
live trees above basal stockings and often for 
several meters up the trunk. Especially common on 
poplar.

**Plagiomnium rugicula** (Laur.) Koponen (7). On wet, 
sandy soil with **Brachythecium salebrosum** and 
Pohlia wahlenbergii. Nomenclature follows Koponen 
(1971).

**Platygyrium repens** (Brid.) B.S.G. (2, 9, 11). On clay 
soil (2, 11) and limestone rock (9). Juvenile speci- 
mens were distinguished with difficulty from **Pyla- 
siella poyantha**.

**Pohlia wahlenbergii** (Web. and Mohr) Andr. (7). One 
collection, on wet, sandy soil at the edge of a 
pond.

**Pylaisiella poyantha** (Hedw.) Grout (2, 3, 5, 9, 10). 
A characteristic corticolous species, occurring above 
the basal **Mnium-Brachythecium** stockings but per- 
sisting for some time on deadfall, where it was 
found several times with **Haplocladium**.

**Rhyochostegiella compacta** (C. Müll.) Loeske (9). 
One collection, on twigs and litter under willow 
shrubs.

**Thuidium recognitum** (Hedw.) Lindb. (5). One col- 
collection, on loose humus and litter, under oak.

**Tortella fragilis** (Hook. ex Drumm.) Limpr. (9). 
Common on coarse soil on the limestone outcrop.

**Tortella inclinata** (Hedw. f.) Limpr. (9). One col- 
collection, on thick humus over coarse, gravelly soil. 
Not previously recorded for the province.

**Tortella tortuosa** (Hedw.) Limpr. (9). Common in 
the same habitat as the preceding species.

**Tortula mucronifolia** Schwae gr. (2). One small col- 
collection, on bare soil in an oak wood, with **Encaly- 
pa ciliata**.

**Tortula ruralis** (Hedw.) Gaertn., Meyer and Scherb. 
(9). On coarse soil over limestone rock. Not com- 
mon.

**Weissia controversa** Hedw. (9). On coarse soil in a 
chink in limestone rock. One collection only.

**Acknowledgements**

The field work in this study was supported in part by Grant No. 140-118 from the University 
of Winnipeg. The authors also wish to express their gratitude to Dr. D. H. Vitt, University 
of Alberta, for his prompt assistance with some of the identifications, and to Dr. R. 
R. Ireland, National Museums of Canada, for examining the **Weissia** material.

**Literature Cited**

**Bird, C. D.** 1962. Mosses of the prairies of west- 
central Canada. Canadian Journal of Botany 40: 
35-47.

**Bird, C. D.** 1969. Bryophytes of the aspen park- 
land of west-central Canada. Canadian Journal of 


Received November 20, 1972
Accepted February 13, 1973