

ADDITIONS AND EXTENSIONS TO THE FLORA  
OF MANITOBA

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AN opportunity to spend part of the summer of 1955 in north-west Manitoba enabled the writer to make detailed local studies in two regions which had not been explored by any botanist. Four additions, and certain notable extensions to the known flora which resulted from this work are reported here. Detailed floristic and ecological accounts will be published elsewhere. The information which is reported here was not available in time to be included in the forthcoming flora of the province by Dr. H. J. Scoggan. The northwest region of Manitoba has received little attention from botanists, and only the collection of Baldwin (1953) provides representative information about the area. The present material was collected from two main areas, at MacBride Lake (56° 52' N., 99° 57' W) and Tod Lake (56° 45' N., 101° 47' W). In the following account the writer's collection numbers are shown in italics and the Herbaria of the University of Manitoba and the Department of Agriculture, Ottawa are referred to as MAN and DAO respectively.

**Woodsia alpina** (Bolton) S. F. Gray. Tod L. 1264. Only one locality for this plant was established; it was found in a deeply shaded cliff ledge on the north-facing side of a high outcrop ridge on the northwest shore of Tod Lake. This is the first authentic record for the province; reports by Macoun (1890) and Lowe (1943) have not been substantiated by any specimens.

**Cystopteris dickieana** Sim. Tod L. 1263. Growing in close association with *Woodsia alpina* (1264), this species was recorded from only that locality. This is the fourth record of the plant from Manitoba, the others being at Churchill (Ritchie, 1956) and from two localities near The Pas, about 300 km. south of the present locality (cf. map in Löve and Freedman, 1956).

**Dryopteris phegopteris** (L.) Christens. Tod L. 1257. The only record, it was noted in rich wet soil below a small beaver dam under black-spruce and poplar. This is the first specimen collected in the province; Macoun's (1890. p. 269) report that it is "rather scarce along Lake Manitoba and the Porcupine Mountains, Man." is unsupported by any specimens.

**Potamogeton robbinsii** Oakes. Macbride L. 1214. This aquatic was found in local abundance in certain shallow arms of MacBride Lake where it forms a broad submerged (at about 1 m.) zone of vegetation with *P. alpinus* var. *tenuifolius*. This is the second record from Manitoba; a

specimen was collected by B. J. Marek in 1936 (DAO) from Bissett, in the southeast corner of the province, about 750 km. from the present station.

**Schizachne purpurascens** (Torr.) Swallen. Tod L. 1247. Recorded in well drained mineral soil on a south-facing, unshaded site on the summit of a high outcrop ridge, this extends northwards the area of this species in the province; the previous northern limit was at Cross Lake (Scoggan, 1950), about 250 km. southeast from the present station.

**Carex heleonastes** Ehrh. MacBride L. 968, 1024, 1147, 1185. Never found in local abundance, this apparently rare sedge was discovered with surprising ease in several peat bogs in the area. Here it is confined to large cushions of *Sphagnum warnstorffianum* and *Camptothecium nitens*, where it is associated with *Andromeda polifolia*, *Vaccinium oxycoccus*, *Rubus acaulis*, *Salix pedicellaris* var. *hypoglauca* and *Carex limosa*. Due to the lack of adequate material from the province—the only other specimens of the *C. heleonastes-amblyorhyncha* complex are of *C. amblyorhyncha* from Churchill (Böcher, 1952)—it is not yet possible to provide representative information about this species.

**Carex leptalea** Wahl. MacBride L. 1143. Apparently a plant of restricted ecological amplitude, it was collected from the peaty banks of a small muskeg stream where it was associated with *Carex paupercula* and *Caltha palustris*. This record merely extends the northern limit of the plant in Manitoba (it is known from Keewatin) from The Pas and Churchill into the northwest corner of the province.

**Carex abdita** Bickn. Tod L. 1242. A new record for the province, a single colony was found on the southern slope of the high outcrop ridge which bounds the northwest shore of Tod Lake. This record comprises a remarkable northern extension of this transcontinental American plant whose main area is in temperate latitudes.

**Carex lasiocarpa** Ehrh. var. **americana** Fern. MacBride L. 1219, 1221. Both locally abundant and ecologically important this sedge forms a narrow zone at the periphery of certain lake-bogs, associated with *C. rostrata*, *Calla palustris* and *Menyanthes trifoliata*. This record extends northwards the area of the plant within the province from near Cedar Lake (Scoggan, 1950), a distance of about 400 km.

**Carex oligosperma** Michx. Tod L. 1270. In local abundance at a single locality, it forms a zone of dominance in a small swampy depression over clay. This is the second authentic record and makes an extension northwards of 800 km. from the first locality which is in the southeast corner of the province. A new variety of this species has been discovered at Churchill, on Hudson Bay (described by Raymond in Ritchie, 1956).

**Acorus calamus** L. MacBride L. 1228. A single colony was found, growing in the marginal bog vegetation of a shallow arm of MacBride Lake. This record extends the northern limit of the plant by 250 km. from Cross Lake where it was collected by Scoggan (1950).

**Salix pseudocordata** (Anderss.) Rydb. MacBride L. 1113. A single plant of this was noted, growing in a muskeg where it was concomit-

ant with *Picea mariana*, *Salix myrtillofolia*, *Rubus chamaemorus*, *Sphagnum fuscum*, *S. warnstorffianum* and *Aulacomnium palustre*. This is the first record for Manitoba and it comprises a considerable (1000 km.) north-eastern extension from the nearest known station, at Cypress Hills in southwest Saskatchewan where it occurs as an outlier of the main area of the plant which is in the southern Cordillera (Breitung, 1954).

***Salix hebecarpa*** Fern. (= ? *S. athabascensis* Raup) MacBride L. 990, 1029. Two localities were established for this willow, and in both instances it grew in muskeg vegetation, associated with *Picea mariana*, *Betula glandulosa*, *Ledum groenlandicum* and other typical muskeg plants. The differences between this species and *S. athabascensis* are unconvincing, and the latter scarcely merits specific rank. *S. hebecarpa* is known only from Alaska (Hultén, 1943 p. 520-1) and the Gaspé Peninsula (Scoggan, 1950a p. 173). Possibly these are eastern and western subspecies of a single species, together forming a more or less continuous area in N. America. This record extends the provincial area northwards by about 600 km., from Riverton (Scoggan, 1953).

***Salix gracilis*** Anderss. var. ***textoris*** Fern. MacBride L. 1205. This was recorded only from certain rare stands of white-birch on raised peat ridges. It extends northwards by 300 km. the area of the plant from The Pas (collected by W. Krivda, MAN).

***Salix arbusculoides*** Anderss. MacBride L. 985, 989. This was recorded from muskeg in two localities. It is the second record for the province, the other being at Churchill, the eastern limit of the entire area of the plant.

***Arabis holboellii*** Hornem. var. ***collinsii*** (Fern.) Rollins. Tod L. 1253. Only one colony of plants was found, in dry soil on the southern slope of a high outcrop ridge at Tod Lake. This extends further the northern limit of this plant in the province from the locality established by Freedman (MAN) near Flin Flon, about 250 km. from the present area.

***Potentilla arguta*** Pursh. Tod L. 1246. The only specimen collected from the area, it was found in dry mineral soil on the south-facing slope of the summit of a high outcrop ridge. This extends northwards by 300 km. (from The Pas) the area of the plant in northwest Manitoba.

***Potentilla pensylvanica*** L. var. ***pensylvanica***. Tod L. 1251. In the same locality as the previous two species, this record extends the area by 250 km. from the previous northern limit for the province at Cross Lake (Scoggan, 1950).

***Oxytropis splendens*** Dougl. Tod L. 1241. This was the only locality in the areas which were surveyed; here it was concomitant with the three previous species and *Artemisia caudata*. This record extends the area in the province by 600 km. northwards from the locality at Cowan, Duck Mountain (Scoggan, 1952).

***Artemisia caudata*** Michx. Tod L. 1245. Associated with the last four species, it was confined to dry, open sites on the summit of the ridge on the northwest shore of Tod Lake. This record extends the area northwards from Knee Lake (Scoggan, 1951) by about 300 km.

Certain of these additions and extensions are of phytogeographical interest. While it is apparent that the flora of northern Manitoba is incompletely known at present, several of the records which have been enumerated constitute remarkable outliers of the main areas of the plants, while others are rare or local, even in regions which have been explored in greater detail. Of these plants, *Woodsia alpina*, *Cystopteris dickieana*, *Schizachne purpurascens*, *Carex abdita*, *Arabis holboellii* var. *collinsii*, *Potentilla arguta*, *Potentilla pensylvanica* var. *pensylvanica*, *Oxytropis splendens* and *Artemisia caudata* were recorded only from the relatively high ridge which runs parallel to the northwest shore of Tod Lake. This ridge is of a somewhat exceptional geological nature, having arisen by considerable faulting between two series of sedimentary rocks (Milligan, 1952). Otherwise, by far the greater area of this entire region is of low relief, consisting of undulating glacial till ridges with the intervening depressions filled by lakes, muskegs and bogs, the whole showing little diversity of habitat and bearing a relatively poor flora, typical of much of the northern forested regions of the Canadian Shield. On this ridge on the exceptionally well drained upper slopes with a southern aspect, above small cliffs and therefore relatively unshaded by trees, were found *Schizachne purpurascens*, *Carex abdita*, *Arabis holboellii* var. *collinsii*, *Potentilla pensylvanica* var. *pensylvanica*, *Oxytropis splendens* and *Artemisia caudata*. Without exception these occurrences, near the northern limit of the continuous coniferous forest, are considerably beyond the main areas of these species, all of which are more typical of the southern deciduous forest and prairie vegetation zones. Further, the presence of exceptional cliff habitats provides, on the north-facing slopes, conditions of shelter and moisture which are suitable for such ecologically specialized ferns as *Woodsia alpina* and *Cystopteris dickieana*. It is suggested that these records provide some corroboration, at the regional flora level, of the thesis of Böcher (1951) that many discontinuities of area can be explained satisfactorily in terms of ecological factors.

The writer wishes to record his thanks to Dr. H. J. Scoggan who kindly provided much of the information about distribution within Manitoba. This work is being supported by generous

grants from the National Research Council of Canada.—DEPARTMENT OF BOTANY, UNIVERSITY OF MANITOBA, WINNIPEG, CANADA.

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Ritchie, J C . 1956. "ADDITIONS AND EXTENSIONS TO THE FLORA OF MANITOBA." *Rhodora* 58, 321–325.

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