the eastern variety (Hitchcock et al. 1964).

Monserud and Ownbey (1971) indicated that *D. cucullaria* occurs throughout Minnesota except in the northwestern and Canadian border areas. Morley (1966) states that it occurs north to Beltrami County, Minnesota, which is within 175 km south of Manitoba. Lakela (1965) records it in the southern half of St. Louis County, Minnesota, about 250 km SE of the southeastern corner of Manitoba. Scoggan (1957) does not list the species for Manitoba in his *Flora of Manitoba*. There are no specimens of it at any of the major herbaria in Manitoba nor any other records of it being collected in Manitoba (K. L. Johnson, Curator of Botany, Manitoba Museum of Man and Nature, personal communication).

On 24 May 1974, I collected *Dicentra cucullaria* near Whitemouth Lake in southeastern Manitoba (approximately 49°15′30″N, 95°43′30″W). Several plants were observed at that time, occurring in a rich wood of *Ulmus americana* (American Elm) and *Fraxinus* sp. (Ash). Associated herbs included *Caulophyllum thalictroides* (Blue Cohosh), *Sanicula marilandica* (Black Snakeroot), and *Osmorhiza longistylis* (Aniseroot).

The specimen (L. E. Pavlick 74-1) has been deposited in the herbarium of the Manitoba Museum of Man and Nature, Winnipeg, Manitoba.

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Additions to Manitoba's Aquatic Macrophyte Flora

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A survey of submerged macrophytes in southern Manitoba revealed new records for *Potamogeton obtusifolius, P. spirillus, Myriophyllum farwellii,* and *Eriocaulon septangulare* from the southeastern portion of the province, which represented northwestward range extensions of up to 300 km. Additional records were confirmed for *Zosterella dubia, Potamogeton amplifolius,* and *Brasenia schreberi.*

Key Words: Manitoba flora, macrophytes, new records, aquatic plants.

Of the 315 stations in southern Manitoba surveyed during 1974–1978 for submerged macrophytes, 13 stations in the eastern part of the province yielded new floristic records. In addition, several records previously regarded as doubtful were confirmed. Voucher specimens have been deposited in the University of Manitoba Herbarium (UMH).

New Records

Potamogetonaceae

Potamogeton obtusifolius

Gleason (1952) placed the range of this species in eastern Canada and the northeastern United States, west to Minnesota and western Ontario. In Manitoba, this species was collected at the following localities: small, slow creeks draining into Brereton Lake (49°48′N, 95°25′W); Rennie River, a slow stream (49°55′N, 95°24′W); south shore, Eleanor Lake (50°09′N, 95°37′W); lake (51°00′N, 95°15′W); drainage ditch (50°53′N, 95°14′W); small creek draining into Lyons Lake (49°34′N, 95°09′W); Beaver Creek, a slow stream (51°37′N, 96°46′W) (UMH Nos. 30123–26, 34185–87). The first three of these stations were located in Whiteshell Provincial Park, while the last, on the west shore of Lake Winnipeg, represented a northwestward range extension of 300 km. Surface

water at the sites where this species was present ranged in pH from 6.4 to 8.0, total filtrable residue 38–179 mg/L, total alkalinity 14–76 mg/L $CaCO_3$, molybdenum blue phosphorus 0.44–1.21 mg/L, combined nitrite and nitrate from below measurable levels to 1.19 mg/L, and chloride from below measurable levels to 26 mg/L. Sulphate was below measurable levels at all sites. Water chemistry was determined using methods recommended by the American Public Health Association (1971). This species was found on substrates which ranged from granitic bedrock to sand and gravel, but all were covered to some extent by organic matter. Its apparent tendency to occur in slow-moving waters supports the observations of Hotchkiss (1967) for this plant in other parts of its range.

Potamogeton spirillus

The range of this species was given by Gleason (1952) as extending from eastern Canada to Minnesota and South Dakota. In Manitoba this plant was found at the following localities: Jessica Lake (50°00′N, 95°15′W); small creek (49°40′N, 95°09′W); Lyons Lake (49°33′N, 95°09′W) (UMH Nos. 30149–51). The first two of these sites were located in Whiteshell Provincial Park and constituted a northward range extension of approximately 200 km at the western end of the range for this species. The surface water chemistry at these three sites showed the following values: pH 7.0–8.2, total filtrable residue 67–109 mg/L, total alkalinity 16–58 mg/L $CaCO_3$, chloride from below measurable levels to 6 mg/L, sulphate from below measurable levels to 4 mg/L, molybdenum blue phosphorus 0.33–1.50 mg/L, combined nitrate and nitrite 0.60–0.70 mg/L. Although these ranges appeared to be quite narrow because of the small number of sites under consideration, this species was found in a wider range for these variables in areas southeast of Manitoba where it was more common (Pip 1979). At the sites in Manitoba the substrate consisted of granitic bedrock, gravel and sand covered with organic matter, and was similar to that of more southerly habitats for this species reported by Pip (1979).

Haloragaceae

Myriophyllum farwellii

Gleason (1952) stated that this species ranges from Quebec and Connecticut west to Minnesota. In Manitoba it was found at Hanson Creek (49°43′N, 95°11′W) in Whiteshell Provincial Park, and in the river connecting Davidson and Star Lakes (50°22′N, 95°10′W) in Nopiming Provincial Park (UMH Nos. 34179–80). The latter record constituted a northward range extension of approximately 300 km at the western end of the range for this species. The surface water chemistry at these two sites gave the following respective values: pH 5.5, 6.6; total filtrable residue 62, 15 mg/L; molybdenum blue phosphorus 0.23, 0.48 mg/L; combined nitrate and nitrite below measurable levels and 0.22 mg/L. Both sites had a total alkalinity of only 4 mg/L $CaCO_3$, while chloride and sulphate concentrations were below measurable levels. Both sites were streams with a moderate current and with a bottom of granitic bedrock covered by organic matter. Little is known concerning the ecology of this plant in other parts of its range.

Eriocaulaceae

Eriocaulon septangulare

Gleason (1952) gave the range of this species as extending from eastern Canada and the northeastern United States, west to Minnesota. In Manitoba it was found at Green Lake (57°07′N, 95°19′W) in Whiteshell Provincial Park (UMH Nos. 30056, 34200). This record constituted a northwestward range extension of approximately 300 km. The surface water at this site showed the following values: pH 8.6, total filtrable residue 41 mg/L, total alkalinity 16 mg/L $CaCO_3$, molybdenum blue phosphorus 0.09 mg/L, combined nitrate and nitrite 0.92 mg/L. Chloride and sulphate concentrations were below measurable levels. The plants were found growing partially emergent from the water in a crevice filled with organic matter, in the granitic bedrock bottom. This habitat type differed from that cited for this genus by Prescott (1969), who reported that in the United States these plants generally occur in sandy, acid conditions. The presence of an organic substrate agrees with the observations of Haslam et al. (1975) for this species in Britain.

Confirmed Records

Zosterella (= *Heteranthera*) *dubia* (Pontederiaceae), first reported from Manitoba by Pip and Paulishyn (1971), was recorded during the present study at eight stations in southeastern Manitoba and on the west shore of Lake Winnipeg. This species appeared to be particularly sensitive to high total alkalinity values, the highest recorded value being 112 mg/L $CaCO_3$. *Potamogeton amplifolius* (Potamogetonaceae) was cited from Manitoba by several workers (e.g., Ogden 1943; Lowe 1943 *in* Scoggan 1957), as was *Brasenia schreberi* (Nymphaeaceae) (e.g., Rydberg 1932 *in* Scoggan 1957), but Scoggan (1957) tentatively excluded these species from the flora of the province because of the lack of verifiable specimens. During the present study, *P. amplifolius* was recorded at 13 stations, where the water showed low values for total filtrable residue (18–170 mg/L) and total alkalinity (10–119 mg/L $CaCO_3$). *Brasenia schreberi* was found at two stations in Whiteshell Provincial Park, where the respective water chemistry values were pH 6.4, 8.6; total filtrable residue 41, 45 mg/L; total alkalinity 4,

16 mg/L $CaCO_3$; molybdenum blue phosphorus 0.09, 0.16 mg/L; combined nitrate and nitrite below measurable levels and 0.92 mg/L. Both sites had chloride and sulphate concentrations below measurable levels.

All of the above records relate to waters of the Precambrian Shield and to sites with similar low dissolved solids on the west shore of Lake Winnipeg. The most important factor which appears to influence the distributions of these predominantly eastern species with respect to water quality is total alkalinity (Pip 1979). It is probable that the more alkaline waters of the western portions of the province present a barrier to any further westward expansion of the ranges of these species.

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Polar Bear Predation on Ringed Seals in Ice-free Water

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Donald J. Furnell, and David Oolooyuk. 1980. Polar Bear predation on Ringed Seals in ice-free water. Canadian Field-Naturalist 94(1): 88–89.

An adult Polar Bear (*Ursus maritimus*) was observed catching a free-swimming Ringed Seal (*Phoca hispida*). Additional evidence of successful predation on seals was found on beaches.

Key Words: Polar Bear (*Ursus maritimus*), Ringed Seal (*Phoca hispida*), predatory behavior, feeding behavior.

Seals constitute the major prey of Polar Bears (*Ursus maritimus*) throughout their circumpolar range. In the Canadian Arctic, bears feed primarily on Ringed Seals (*Phoca hispida*) with Bearded Seals (*Erignathus barbatus*) and Harp Seals (*Phoca groenlandica*) taken to a lesser extent (Stirling and McEwan 1975). Most published information on hunting by Polar Bears has dealt with predatory behavior on sea ice, specifically the capture of seals at winter breathing holes; in subnivean birthing lairs; and on spring ice when seals haul out for the annual molt (Stirling and Archibald 1977; Stirling and Latour 1978).

Seals are most vulnerable to Polar Bear predation in spring when giving birth or as pups and when molting. With this abundant food supply, bears develop reserves of fat before summer. These fat reserves are believed to carry Polar Bears through summer (Knudsen 1973), although supplementary feeding on carrion, tundra berries and grasses, ground-nesting birds and their young, microtine rodents, swimming birds, marine algae and invertebrates, and cubs of their own species has been reported (Russell 1975). Polar Bears are powerful swimmers and can submerge for over 2 min, but they cannot match the