VASCULAR PLANTS FROM MILL ISLAND, HUDSON STRAIT[1]

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DURING July and August, 1951, some time was spent on Mill Island by Dr. Deric O'Bryan and Mr. Daniel Rogers of the Arctic, Desert and Tropic Information Center, Research Studies Institute, Air University, Maxwell Air Force Base, Alabama, U.S.A. The main object of their visit was archaeological, the work being under the auspices of the Arctic Institute of North America under contractual agreements with the Office of Naval Research and undertaken with the co-operation of the United States and Royal Canadian Air Forces; but the opportunity was fortunatelq taken to collect some plants. These appear to have been the first to be gathered on this little-known island, and, as the vascular species among them were recently sent to me for identification, I feel it incumbent upon me to record them.

Mill Island and the adjacent smaller Putnam Island lie around lat. 64°N. and long. 78°W. near the western outlet of Hudson Strait into northeastern Hudson Bay (*see* map). From a distance they look dark and hummocky, the coast-line being rugged and the bedrock igneous. According to notes kindly supplied by Mr. Rogers, the plants were collected at "Morrissey Harbor, Mill Island, July to August 1951"—some of them "in the immediate vicinity of the camp site" where "The soil was sandy without humus . . . There was no bedrock and permafrost could not be found at five feet . . . The rest of the plants, except those marked as coming from 'meadows', were collected in the sandy area over a humus type of black soil. The flowering plants were generally associated with moss-covered soil. In thie area there was permafrost or bedrock within eighteen inches of the surface. The soil was very damp and cold. The plants collected from the . . . 'meadows' were found in very marshy type of soil."

There follows an annotated list of the 28 species of vascular plants which I have determined in this material from Mill Island (whether from orthodox specimens or mere chance scraps) and arranged according to my 'Botany of the Canadian Eastern Arctic. Part I, Pteridophyta and Spermatophyta',[2] the nomenclature being brought up to date where necessary, and it may be noted that each is not merely a commonly recognized arctic species but is already recorded in that work as widespread and usually plentiful in such adjacent regions as have been botanically explored.

EQUISETACEAE

Equisetum variegatum Schleich. Recorded from most adjacent areas that have been actively botanized, and probably overlooked in the others.

LYCOPODIACEAE

Lycopodium selago L. Plentiful probably throughout this general region.

GRAMINEAE

Trisetum spicatum (L.) Richt. Plentiful probably throughout the general region.

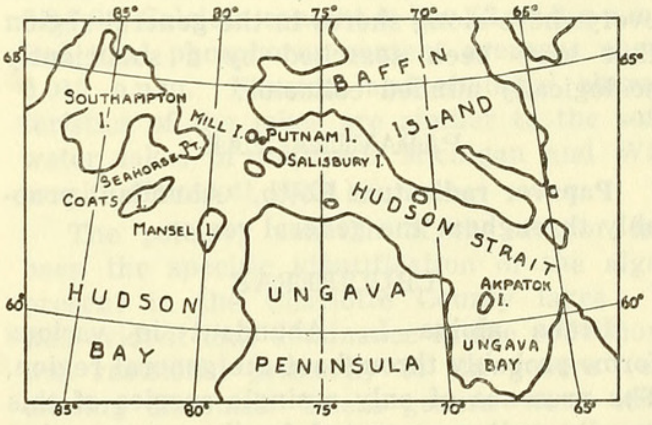
Poa arctica R. Br. Abundant probably throughout the general region.

Puccinellia phryganodes (Trin.) Scribn. & Merrill. Widely overlooked owing to its unattractive matted habit and salt-marsh habitat, but recorded from nearby Southampton Island and both sides of Hudson Strait, and probably abundant along sea shores in the general region.

Elymus arenarius L. var. **villosus** E. Meyer. Plentiful along shores in the general region.

CYPERACEAE

Eriophorum scheuchzeri Hoppe. Abundant probably throughout the general region.



Sketch map showing location of Mill Island.

1 Received for publication March 2, 1952.

2 National Museum of Canada Bulletin No. 92, pp. vi + 408, 1940.

Carex misandra R.Br. Plentiful probably throughout the general region, and very likely abundant, but the records are not as numerous as for many species—presumably owing to its unassuming grass-like form.

C. membranacea Hook. Abundant probably throughout the general region.

SALICACEAE

Salix reticulata L. Abundant probably throughout the general region, but represented by only a few loose and withered leaves in the present collection.

S. herbacea L. Abundant probably throughout the general region.

S. arctica Pall., *s.l.* Abundant in several of its numerous forms probably throughout the general region.

S. calcicola Fernald & Wiegand. Plentiful in at least some adjacent areas.

POLYGONACEAE

Oxyria digyna (L.) Hill. Abundant probably throughout the general region.

Polygonum viviparum L. Abundant probably throughout the general region.

CARYOPHYLLACEAE

Silene acaulis L. var. **exscapa** (All.) DC. Abundant probably throughout the general region.

Lychnis apetala L. Abundant probably throughout the general region.

Cerastium alpinum L., *s.l.* Abundant in one or another of its various forms probably throughout the general region.

Stellaria humifusa Rottb. Appears to be recorded among the islands of Hudson Bay and Strait only from Southampton Island (and an immediate satellite), but this is probably owing to its diminutive form and restricted salt-marsh habitat, as it has been found almost everywhere along shores in the general region that have been searched by a sufficiently ecologically minded collector.

PAPAVERACEAE

Papaver radicatum Rottb. Abundant probably throughout the general region.

CRUCIFERAE

Draba alpina L. Abundant in various forms probably throughout the general region. The presence of only a single species of this usually well represented family suggests that the collecting in 1951 was largely fortuitous.

SAXIFRAGACEAE

Saxifraga cernua L. Abundant probably throughout the general region.

S. oppositifolia L. Abundant probably throughout the general region.

S. tricuspidata Rottby. Plentiful probably throughout the general region.

ROSACEAE

Dryas integrifolia M. Vahl. Abundant probably throughout the general region.

ONAGRACEAE

Epilobium latifolium L. Although there are rather few reports of this handsome species from the islands of Hudson Strait and Bay, it may yet prove to be plentiful thereon, as it is in the adjacent parts of the mainland and on Baffin Island.

ERICACEAE

Cassiope tetragona (L.) D.Don. Abundant probably throughout the general region.

COMPOSITAE

Erigeron humilis Graham (*E. unalaschkensis* (DC.) Vierh.). Even though there are not many reports of this species from the Islands of Hudson Strait and Bay (apart from southern Baffin Island), it is probably plentiful throughout the region, being often overlooked owing to its characteristic 'late-snow' habitat and diminutive form.

In addition there were collected on gravelly soil near the shore at Seashore Point, which is the easternmost extremity of Southampton Island and the nearest point of that considerable land-mass to Mill Island (*see* map), the following 6 phanerogams—all of which have previously been recorded from Southampton Island where indeed each one is plentiful and widespread: *Salix herbacea* L., *Oxyria digyna* (L.) Hill, *Silene acaulia* var. *exscapa* (All.) DC., *Saxifraga tricuspidata* Rottb., *Dryas intergifolia* M. Vahl, and *Pedicularis lanata* Cham & Schlecht.

For such reasons as the very poor representation, or even omission, of some of the larger families and genera, and their frequency in the better-known areas of the same general region, it seems safe to conclude that the above list of plants from Mill Island, although useful as a start, indicates only a small proportion of the total vascular flora, while the lower cryptogams are doubtless far more numerous. In this and other connections it may be of interest to list the special vascular *florulae* that in recent years have

been published of islands in Hudson Bay and Strait; although most of the relevant information was gathered together and the data revised in my work already cited, much of significance has been added since.

On Southampton Island we have H. M. Raup's "Pteridophyta and Spermatophyta of Southampton Island" (*Memoirs of the Carnegie Museum,* vol. 12, part 3, pp. 17-30 1936), the present writer's "The flora of Southampton Island, Hudson Bay" (*Journal of Botany,* vol. 76, pp. 93-103, 1938) and "Additions to the floras of Southampton and Mansel Islands, Hudson Bay" (*Contributions from the Gray Herbarium of Harvard University.* No. 165, pp. 94-105, 1947), and W. J. Cody's "Additions and annotations to the flora of Southampton Island, Northwest Territories, Canada" (*Canadian Field-Naturalist,* vol. 65, pp. 140-3, 1951); on Mansel Island, we have the present author's "Vascular plants from Mansel (Mansfield) Island, N.W.T." (*ibid.,* vol. 52, pp. 5-9, 1938) as well as his "Additions" cited above; on Salisbury Island, we have the present writer's "On some plants from Salisbury Island, collected by Major L. T. Burwash in 1924 and by the Hon. J. N. S. Buchan in 1938" (*ibid.,* vol. 54, pp. 9-10, 1940), and on Akpatok Island we have his earlier "The flora of Akpatok Island, Hudson Strait" (*Journal of Botany,* vol. 72, pp. 197-204, 1934).

Besides the gentlemen mentioned above to whom is owed this opportunity to offer a preliminary florula of Mill Island, it is a pleasure to thank the John Simon Guggenheim Memorial Foundation for a research fellowship and Harvard University for a renewed honorary appointment to help me continue my various studies in arctic botany and ecology.

PHYTOPLANKTON OF SOME MARITIME LAKES [1]

ELWYN O. HUGHES [2]

IN an earlier paper (Hughes, 1950) the author has reviewed the literature on the fresh-water algae of the Maritime Provinces. Since most of the species reported in that paper were found in collections taken from the littoral regions of lakes, ponds, and streams, the strictly limnetic phytoplankton is not adequately described. Professor C. W. Lowe's list of algae from Lake Jesse, Nova Scotia, (M. W. Smith, 1938) appears to be the only previous record of freshwater phytoplankton from the Maritime Provinces.

From Dr. M. W. Smith of the Atlantic Biological station, the author has received 22 collections[3] of phytoplankton taken over a period of several years from eight small lakes in Charlotte County, N.B. The algae were collected by towing a No. 20 bolting silk net to a depth of one metre. Names of the lakes and dates on which collections were made are:

Bonaparte Lake—July, 1948.

Crecy Lake—Aug. and Sept. 1942; June 1948.

Gibson Lake—Sept. and Oct. 1947; June, Aug. and Sept. 1948.

Kerr Lake (North Lake)—July 1948.

Limeburner Lake—June 1948.

Potter's Lake—May, June, July, Sept. and Oct. 1938.

St. Patrick Lake—July 1948.

Welch Lake—Aug. and Sept. 1942; July 1948.

The limnology of seven of these lakes (excluding Potter's) is described in detail by M. W. Smith (1952). In general it may be stated that they all lie in a Devonian granite region and that their waters are stained to varying degrees by bog drainage. The lakes are low in carbonates (mean value of bound CO_2, 3.3 ml. per 1.) with a surface pH of 6.8-7.0. Calcium content is low (2.4-4.3 p.p.m.) and total phosphorus content averages about 0.015 p.p.m. Physical and chemical characteristics of the lakes are similar to the soft-water lakes of northern Michigan and Wisconsin (Prescott, 1951).

The primary concern of the author has been the specific identification of the algae present in the Charlotte County lakes. It was evident that dominance in the collections was restricted primarily to six genera (excluding diatoms). These genera were *Anabaena, Microcystis, Ceratium, Dinobryon, Botryococcus* and *Staurastrum.* The same six

1 Manuscript received March 11, 1952.
2 Division of Applied Biology, National Research Laboratories, Ottawa, Ontario.
3 Species identified from eight of these collections are also being reported by Smith (1952).