

GENERAL DESCRIPTION OF THE HUDSON BAY MAP SHEET AREA, 63D

The area covered by the Hudson Bay map sheet comprises about 3 1/2 million acres in northeastern Saskatchewan between 102° and 104° west longitude and 52° and 53° north latitude. The area includes parts of three main physiographic regions, the Saskatchewan Plains, the Manitoba-Saskatchewan Lowlands, and the Manitoba Lowlands.

The Manitoba-Saskatchewan Lowlands region generally lies below 1700 feet and much of it lies below 1500 feet. This region includes the Melfort Plain, which is that part of the Carrot River Lowland lying west of the Pasquia Hills, and the Bjork Lake, Mistatim, and upper Red Deer River plains, which form a low plain between the Pasquia Hills to the north and the Porcupine Hills to the south. Within the Carrot River Lowland, the Bjork Lake Plain forms a region of higher elevation. West of this high, the Melfort Plain slopes to the west and is drained by the Doghicle, Presbyterian, and Crooked rivers. East of this high, the Mistatim and upper Red Deer River plains slope gently eastward to the gravelly beach ridges near the town of Hudson Bay. These two plains are drained by the Red Deer and Etomami rivers and many of their tributaries, which receive drainage from the uplands to the north and south. South of Hudson Bay, the Etomami River joins the Red Deer River, which flows eastward into Lake Winnipegosis. The Manitoba-Saskatchewan Lowlands are generally of low relief and consist of re-sorted glacial till and glaciolacustrine clays, silts, and sands with local organic peat deposits.

The decrease in elevation to the Manitoba Lowlands is marked by beach ridges near the town of Hudson Bay. These lowlands form a flat plain sloping gently to the east and elevations are generally below 1100 feet. This region has low relief and consists of re-sorted glacial till with many locations of glaciolacustrine sands and local organic peat deposits. Limited drainage is supplied by the Red Deer River and its tributaries.

Four sections of the Saskatchewan Plains region occur in the area: the gently to strongly sloping Pasquia Hills Upland in the north, the gently to strongly rolling Porcupine Hills Upland in the central part of the area, the gently to roughly undulating Quill Lake Plain in the southwest corner, and the gently to roughly undulating Assiniboine River Plain in the southeast corner. The upland sections rise to general elevations of 1700 to 2200 feet with isolated hills or plateaus rising to more than 2500 feet. This region consists mainly of undifferentiated glacial till with local areas of re-sorted glacial till, glaciolacustrine silts, clays, and some sands and organic peat deposits.

The native vegetation varies from parkland in the southwest and along much of the southern border of the area, to mixed wood Boreal Forest over the rest of the area. Vegetation in the grassland parts of the parkland includes June grass (*Koeleria cristata*), rough fescue (*Festuca scabrella*), slender wheat grass (*Agropyron trachycaulum*), Hooker's oat grass (*Avena hookerii*), marsh reed grass (*Calamagrostis canadensis*), and northern wheat grass (*Agropyron dasystachyum*), as well as many broad-leaved plants such as roses (*Rosa spp.*) and others. The treed parts of the parkland contain mainly trembling aspen (*Populus tremuloides*), and in moister locations, black poplar (*Populus nigra*) are also common. Various species of willows (*Salix spp.*) together with red-osier dogwood (*Cornus stolonifera*), saskatoon (*Amelanchier alnifolia*), pin cherry (*Prunus pensylvanica*), and black choke cherry (*Prunus virginiana* var. *melanocarpa*) also occur. Vegetation in the forested regions consists mainly of trembling aspen and white spruce (*Picea glauca*). Other species that may occur are black spruce (*Picea mariana*), black poplar, balsam fir (*Abies balsamea*), jack pine (*Pinus banksiana*), and white birch (*Betula papyrifera*). Willows, red-osier dogwood, saskatoon, pin cherry, choke cherry, alders (*Alnus spp.*), and others are also common. Large parts of the forested region on the Mistatim and upper Red Deer plains have been cleared and cultivated.

Most of the Pasquia Hills and a large part of the Porcupine Hills Upland are within Provincial Forest reserves. Commercial timber operations are carried on throughout the eastern parts of the forest reserves. The Provincial Forest reserves have previously been left unclassified for agricultural capability. A resurvey of the soils of the entire area completed by the Saskatchewan Institute of Pedology in 1970 has provided information for rating the agricultural capability of the soils in previously unclassified parts of the area. Therefore, this map presents the agricultural capability for the entire map sheet area based on new soils information. The previously unclassified Greenwater Lake Provincial Park, situated in the forested region of the Porcupine Hills Upland, has also been classified for agricultural capability.

The agriculturally settled parts of the area are adequately serviced by road and railway. Tisdale on the west and Hudson Bay on the east are the main marketing centers serving the central agricultural region; Wadena and Kelvington are the main marketing towns for the southwestern part of the area; and Preeceville is the main town servicing the southeast.

CLIMATE

The regional climate of the area is continental subhumid, characterized by relatively short but moderately warm summers with wide variations in day and night temperatures, long cold winters, and moderately low annual precipitation.

The annual precipitation is 16 to 18 inches, 10 to 12 inches of which falls as rain. Because of the greater moisture efficiency in the relatively cool climate, the area is not considered to have any significant limitations of aridity. Precipitation is slightly higher in the highest elevations of the Pasquia Hills.

Much of the area does, however, have varying degrees of limitation with regard to seasonal climate as evidenced by relatively short growing seasons, moderately low number of growing degree-days above 42° F, and short frost-free periods. The parts of the area that are significantly affected are indicated on the map.

Climatic subregion I has no significant limitations and occurs in the northwestern part of the Carrot River Plain and in the southwestern and southern parts of the Quill Lake Plain. These areas have annual temperatures of 32° to 34° F, July mean temperatures of 62° to 64° F, and a growing season of 158 to 168 days. Accumulative growing degree-days are generally about 2250. A frost-free period of only 80 to 90 days indicates a slight frost hazard.

Most of the area, including the Porcupine Hills Upland, the central and eastern parts of the Carrot River Lowland, and the lower parts of the Pasquia Escarpment, is in climatic subregion II because of limitations of seasonal climate and frost hazards. The annual temperature for these parts of the area is 32° to 33° F and the July mean temperature is 60° to 64° F. The growing season is about 153 to 163 days with accumulative growing degree-days ranging from 2000 to 2250. The frost hazard is significant and the frost-free period is about 70 to 90 days.

SOILS AND AGRICULTURAL CAPABILITY

Most of the soils in the area are developed on undifferentiated glacial till parent material with lesser amounts of glaciolacustrine, glacioluvial, and re-sorted glacial till parent materials. The Black and Dark Gray Chernozemic soils, which comprise about 70 percent of the agriculturally settled region, are among the most productive soils in Saskatchewan. The soils that are developed on glaciolacustrine silts and clays (Tisdale, Balcarres, Canora, and Kamsack associations), as well as the thick Black soils developed on undifferentiated glacial till (Yorkton association), are generally rated Class 1; these soils may be reduced to Class 2 because of a combination of soil and topographic limitations. The soils that developed on medium textured glacial till parent materials (Oxbow and Whitewood associations) are also productive, but are reduced to Class 2 or 3 because of topography, stoniness, structural, or moisture-holding limitations. The soils that developed on sandy, glaciolacustrine parent materials (Meota, Nisbet, Hamlin, and Shellbrook associations) are reduced to Class 3 or 4 because of moisture-holding, fertility, or topographic limitations. A large area of heavy textured soils developed on re-sorted limestone till (Etomami association) occurs in the northeastern part of the area. The soils in this part of the area are reduced to capability Class 2 because of the climatic limitation of a short frost-free growing season.

Gray Luvisol (Gray Wooded) soils occupy extensive parts of the area, but comprise only about 25 percent of the soils developed for agriculture. The fine textured glaciolacustrine soils (Eldersley association) are rated Class 2 because of poor structure and impeded internal drainage limitations. The soils developed on undifferentiated glacial till (Wainville association) are rated Class 3 because of structural limitations caused by the tendency of the cultivated surface horizon to puddle when wet and to form a hard crust when dry. Most of the Wainville soils in the area occur within provincial forest boundaries; some of these sites have been reduced to Class 4 because of topography or stone limitations or a combination of several soil and landscape limitations. Organic soils cover about 10 percent of the area, mainly in the Porcupine Hills Upland, the Pasquia Hills Upland, and the Westlake Lowland.

SETTLEMENT AND LAND USE

The area has a dissected settlement pattern, broken by two large forest reserves and by some large scattered blocks of unoccupied land. The almost complete settlement along the western and southern boundaries of the area and on the margins of the Black soil zone is combined with irregular ribbon settlement through the interior and extending along the railway routes, which enter the town of Hudson Bay from the west, south, and northeast. The settlement along the western and southern boundaries represents an older and more developed settlement under the municipal form of local administration; the ribbon-type is identified with the pioneer fringe settlement characterizing the northern margins of agricultural settlement of the province and has remained under Local Improvement District administration.

Settlement began in the southern part of the area at a fairly early date with the establishment of a Doukhobor colony on the Swan River in 1899. In 1904, the Canadian Northern Railway was extended from Ross Junction, west of Kamsack, to the former Hudson Bay Junction, which is now Hudson Bay, and opened the area to settlement from the south. The completion of the Prince Albert - Hudson Bay line eastward from Prince Albert in 1906 brought settlement from the west. As a result, there was fairly complete occupation of the southern and western parts of the area by 1911. Further penetration of settlement into the interior of the area occurred after 1911. This movement was augmented by considerable soldier settlement in the early 1920s and by continued homesteading in the late 1920s that was enhanced by the opening of the northeast by the Hudson Bay Railway, which was completed in 1929. The main settlement of the interior, however, came in the 1930s with the influx of drought-stricken settlers from the prairies, which gives a predominant cast of recent settlement to the area today.

Agriculture in the area varies from well-established and well-developed farming on the Dark Gray soils of the Melfort Plain in the northwest and on the Black and Dark Gray soils in the west and south, to almost pioneer farming on the poorer soils and in the more isolated parts of the interior. Arability ranges from more than 80 percent of the occupied region in the northwest and 60 to 70 percent along the western and southern borders, to 50 percent and less for larger parts of the interior. In the larger parts of the interior, recency of settlement, heavy bush cover, poor soils, peat, muskeg, and inadequate local drainage account for limited land development. In many parts, the local drainage problem has been acute, causing periodic spring flooding, which results in late seeding and seeding failure. This in turn increases the possibility of frost and harvest damage, resulting in crop failures or low productivity, which have resulted in some abandonment of cultivation.

Under the combined influence of general climate, growing season, and markets, mixed grain and combination grain-livestock operations are favored with considerable emphasis on specialty crops, including oilseed and forage seed crops. In the western and southern sectors, wheat occupies from three-fifths to two-thirds of cropped acreage, and coarse grains occupy one-quarter to one-third of cropped acreage. In the interior, wheat generally makes up less than half and coarse grains nearer to two-fifths of the cropped acreage. Oilseeds, including some flax but more particularly rapeseed, with its adaptation to late seeding and a short growing season, are more important than in most other parts of the province, and usually range from 5 to 15 percent of the seeded acreage of some localities. Seeded forage acreages are also relatively large, comprising more than 5 percent of the cropped acreage in most localities, but ranging to more than 10 percent in some locations. In regions with more than 10 percent of the seeded acreage in forage, a larger proportion is devoted to seed production. The seeded acreage of alfalfa in the northwest has increased in recent years with the development of several alfalfa dehydration plants.

Livestock enterprises are widely distributed, but are predominantly on a small scale. The main livestock emphasis is beef cattle, including some dual-purpose cream production in the southwestern and southern parts of the area. Cattle numbers are somewhat larger in the southwest than in the northwest, southeast, and interior, reflecting greater availability of pasture. Pasture shortage is, however, a general limitation to the scale of cattle operations throughout the area.

Cropping systems are highly variable with considerable use of a two-year grain rotation on better soils and a more general use of a three-year grain system in other parts of the area. However, extended grain cropping on breaking acreage and on normal cropland is common. Summerfallow makes up 30 to 35 percent of annual cropping acreage for most regions. Use of more developed grain-forage rotation systems is still quite limited despite their apparent adaptation to large parts of the area.

Farms in the area are basically small. The typical settlement unit was the quarter section, resulting in more than two-fifths of the farm units in the better-developed parts of the area and more than half of those in the pioneer fringe region being one-half section or less in size. However, the extent of farm consolidation that has occurred compares with that of many prairie areas; present farm numbers are generally less than two-thirds of the number that formerly existed, and for some larger areas, they are reduced to one-half of the former highs.

Classification by H. B. Stonehouse, Saskatchewan Institute of Pedology, based on information in Saskatchewan Soil Survey Reports. Settlement and Land Use Section prepared by the late H. Van Vliet, former Head, Department of Agriculture Economics, University of Saskatchewan.

DESCRIPTION DU TERRITOIRE DE LA FEUILLE DE HUDSON BAY, 63D

Le territoire représenté sur la feuille de Hudson Bay occupe une superficie d'environ 3 1/2 millions d'acres, dans le nord-est de la Saskatchewan, entre 102° et 104° de longitude ouest et 52° et 53° de latitude nord. Il comprend une partie de trois grandes régions structurales, les plaines de la Saskatchewan, les basses terres du Manitoba et de la Saskatchewan ainsi que les basses terres du Manitoba.

La région des basses terres du Manitoba et de la Saskatchewan ne dépasse habituellement pas 1 000 pi d'altitude et la majeure partie se situe en-dessous de 1 500. Cette région comprend la plaine de Melfort, c'est-à-dire cette partie des basses terres de la rivière Carrot à l'ouest des collines Pasquia, et les plaines du lac Bjork, de Mistatim et du cours supérieur de la rivière Red Deer formant une plaine basse entre les collines Pasquia, au nord, et les collines Porcupine, au sud. Dans les basses terres de la rivière Carrot, la plaine du lac Bjork forme une région plus élevée. A l'ouest de cette dernière, la plaine de Melfort s'abaisse vers l'ouest; les rivières Doghicle, Presbyterian et Crooked en assurent le drainage. A l'est de la plaine du lac Bjork, les plaines de Mistatim et du cours supérieur de la rivière Red Deer s'abaisse lentement vers l'est jusqu'aux levées de plage graveleuses, à proximité de la ville de Hudson Bay. Les rivières Red Deer et Etomami et leurs nombreux affluents qui alimentent les eaux des bas-plateaux situés au nord et au sud drainent les deux plaines. Au sud de Hudson Bay, la rivière Etomami rejoint la rivière Red Deer qui coule vers l'est, jusqu'au lac Winnipegosis. Les basses terres du Manitoba et de la Saskatchewan présentent habituellement un relief peu marqué et sont formées de till glaciaire et d'argiles, de limons et de sables glacio-lacustres remaniés et parsemés de dépôts de tourbe.

La présence de levées de plage près de la ville de Hudson Bay, souligne la diminution d'altitude dans les basses terres du Manitoba. Ces basses terres forment une plaine unie s'abaisse doucement vers l'est et l'altitude y est habituellement inférieure à 1 100 pi. Cette région a un relief peu marqué et elle est formée de till glaciaire remanié, parsemé de nombreux secteurs de sables glacio-lacustres et de quelques dépôts de tourbe. La rivière Red Deer et quelques-uns de ses affluents assènent le drainage limité.

Quatre sections de la région des plaines de la Saskatchewan sont représentées sur le territoire: dans le nord, le bas-plateau des collines Pasquia en pente tantôt faible, tantôt forte; dans le centre du territoire, le bas-plateau des collines Porcupine au relief légèrement ou fortement vallonné; dans le coin sud-ouest, la plaine du lac Quill au relief légèrement ou fortement ondulé; et, dans le coin sud-est, la plaine de la rivière Assiniboine au relief légèrement ou fortement ondulé. Les sections de bas-plateau atteignent une altitude générale de 1 700 à 2 200 pi; quelques collines ou quelques plateaux isolés s'élèvent à plus de 2 500 pi. Cette région est surtout formée de till glaciaire avec des îlots de till glaciaire, de sables, de limons et d'argiles glacio-lacustres remaniés et de quelques dépôts de tourbe.

La végétation indigène varie de la prairie-parc dans le sud-ouest et le long d'une grande partie de la frontière méridionale du territoire à une forêt boréale mixte dans le reste du territoire. Dans les secteurs de prairie de la prairie-parc, le couvert végétal est formé d'herbe de juin (*Koeleria cristata*), de fétuque scabre (*Festuca scabrella*), de chienet à tiges rudes (*Agropyron trachycaulum*), de folle avoine de Hooker (*Avena hookerii*), de calamagrostis du Canada (*Calamagrostis canadensis*) et d'agropyre du Nord (*Agropyron dasystachyum*), ainsi que de nombreuses plantes à feuilles larges telles que les rosiers (*Rosa spp.*). Les secteurs boisés de la prairie-parc renferment du peuplier faux-tremble (*Populus tremuloides*) et, dans les endroits plus humides, le peuplier baumier (*Populus nigra*) est aussi une essence commune. On y trouve également diverses variétés de saules (*Salix spp.*), le cornouiller stolonifère (*Cornus stolonifera*), l'amélanchier (*Amelanchier alnifolia*), le cerisier de Pennsylvanie (*Prunus pensylvanica*) et le cerisier à grappes (*Prunus virginiana* var. *melanocarpa*). Dans les régions boisées, le couvert forestier est surtout formé de peuplier faux-tremble et d'épinette blanche (*Picea glauca*). Parmi les autres essences qui peuvent être présentes, on mentionne l'épinette noire (*Picea mariana*), le peuplier baumier, le sapin baumier (*Abies balsamea*), le pin gris (*Pinus banksiana*) et le bouleau blanc (*Betula papyrifera*). Les saules, le cornouiller stolonifère, l'amélanchier, le cerisier de Pennsylvanie, le cerisier de Virginie, les aulnes (*Alnus spp.*) et d'autres espèces sont également communes. De vastes secteurs de la région boisée des plaines de Mistatim et du cours supérieur de la rivière Red Deer ont été défrichés et mis en culture.

La majeure partie des collines Pasquia et une grande partie du bas-plateau des collines Porcupine sont des réserves forestières provinciales. Des activités forestières commerciales se poursuivent dans les secteurs est des réserves forestières. Les réserves forestières provinciales n'ont précédemment été l'objet d'aucun classement des possibilités pour l'agriculture. De nouveaux relevés pédologiques ont été effectués à travers tout le territoire en 1970 par l'Institut de pédologie de la Saskatchewan; ils ont fourni les renseignements nécessaires au classement des possibilités agricoles des sols des parties du territoire qui avaient jusqu'alors échappé au classement. Par conséquent, cette feuille indique les possibilités agricoles de tout le territoire établies à partir de nouvelles données sur les sols. Le parc provincial du lac Greenwater, situé dans la région boisée du bas-plateau des collines Porcupine, non classé auparavant, l'est maintenant.

La route et le chemin de fer desservent adéquatement les secteurs du territoire aménagés à des fins agricoles. Tisdale, dans l'ouest, et Hudson Bay, dans l'est, desservent la région agricole du centre; Wadena et Kelvington sont les principaux centres d'échanges du sud-ouest du territoire et Preeceville est la ville la plus importante du sud-est.

CLIMAT

Le climat régional du territoire est de type continental subhumide: étés assez courts mais modérément chauds et présentant de grandes variations de températures entre le jour et la nuit, de longs hivers froids et une précipitation annuelle modérément faible.

La précipitation annuelle varie de 16 à 18 po; 10 à 12 po de cette précipitation tombent sous forme de pluie. Étant donné l'efficacité plus grande de l'humidité en présence d'un climat relativement frais, on ne considère pas que le territoire présente un grave problème d'aridité. La précipitation est légèrement plus élevée dans les endroits les plus élevés des collines Pasquia.

Des saisons végétatives relativement courtes, un nombre modérément faible de degrés-jours de végétation au-dessus de 42° F et de courtes périodes sans gel limitent à divers degrés les possibilités d'une grande partie du territoire. Les parties du territoire qui n'influencent pas gravement ces facteurs sont indiquées sur la feuille.

La sous-région climatique I ne présente pas de limitations importantes et apparaît dans le nord-ouest de la plaine de la rivière Carrot et dans le sud-ouest et le sud de la plaine du lac Quill. Dans ces régions, la température annuelle moyenne varie de 32 à 34° F; en juillet, elle va de 62 à 64 et la saison végétative dure de 158 à 168 jours. On enregistre habituellement environ 2 250 degrés-jours de végétation. Le fait que la période sans gel dure de 80 à 90 jours révèle un léger risque de gel.

La majeure partie du territoire, y compris le bas-plateau des collines Porcupine, le centre et l'est des basses terres de la rivière Carrot et les secteurs les plus bas de l'escarpement de Pasquia, appartient à la sous-région climatique II à cause de limitations dues à des conditions climatiques saisonnières et au risque de gel. Dans ces parties du territoire, la température annuelle moyenne varie de 32 à 33° F et, en juillet, elle va de 60 à 64. La saison végétative dure de 153 à 163 jours et on enregistre de 2 000 à 2 250 degrés-jours de croissance. Le risque de gel est important et la période sans gel dure de 70 à 90 jours.

Le plateau de Pasquia et les secteurs les plus élevés de l'escarpement de Pasquia appartiennent à la sous-région climatique III pour laquelle, on ne possède que très peu de données climatiques. Cette partie du territoire a été placée dans la classe climatique III parce qu'elle présente un manque de chaleur modérément grave et une période sans gel relativement courte. On compte moins de 2 000 degrés-jours de végétation et la période sans gel dure moins de 70 jours.

SOLS ET POSSIBILITÉS AGRICOLES

La plupart des sols du territoire se sont développés sur du till glaciaire formés de matériaux non différenciés et sur des quantités moindres de dépôts glacio-lacustres, de dépôts fluvioglaciaires ou de till glaciaire remanié. Les sols chernozémiques noirs et gris foncé qui couvrent environ 70% des régions aménagées à des fins agricoles comptent parmi les sols les plus productifs de la Saskatchewan. Les sols développés sur des limons et des argiles glacio-lacustres (associations