

GENERAL DESCRIPTION OF THE BRANDON MAP SHEET AREA, 62G

The area covered by the Brandon map sheet is in southwestern Manitoba and comprises 6220 square miles between 49° and 50° north latitude and 98° and 100° west longitude. The main service centers of the area are the cities of Brandon and Portage la Prairie, which are located near the northern boundary of the area. These cities have populations of 29,981 and 13,012 respectively. The smaller towns of Killarney, Pilot Mound, and Morden service the agricultural communities in the south.

Prominent physiographic features of the area are the Brandon Hills and Souris River in the west, the Tiger Hills in the central part of the area, and Pembina Mountain and the Manitoba Escarpment running in a northwest-southeast direction in the east. The duned sandhills and Assiniboine River valley are significant features in the north, whereas the Pembina River valley is a major landform in the south. A small part of Turtle Mountain occurs in the extreme southwest and is the most prominent feature in this part of the area.

Bedrock of the area ranges from gray, green-gray siliceous and calcareous shales, limestone, and bentonite in the west to gypsum, red shale, and dolomitic limestone in the east. Turtle Mountain is underlain by sandstone and coal.

More than 12,000 years ago, during the most recent glacial period, a continental ice sheet covered Manitoba. As this ice sheet receded to the northeast, it left a covering of mixed shale, high lime till, and granitic boulders in the form of morainic hills and smooth till plains over the bedrock.

The Turtle Mountain end moraine remained as the glacier receded from the southwestern part of the area. Melting water, which was bounded by the glacial ice margin to the west and north and Turtle Mountain to the east, formed glacial Lake Souris, west of the area. This lake drained to the southeast along a large ice marginal channel forming the Pembina River valley. Further movement of the glacier left the morainic deposits of the Tiger Hills and Pembina Mountain. Deltaic deposits of gravel, sand, and silt formed later in the region of the present Spruce Woods Provincial Park as waters from the Assiniboine River drained into Lake Agassiz, a large glacial lake in the northeast and north-central part of the area. A number of glacial lakes, including Agassiz and Souris, once covered large parts of the area and are the cause of the water-worked till surface deposits.

The area lies in the Western Upland physiographic division of Manitoba, except for part of the northeast, which lies in the Manitoba Lowland.

The Western Upland can be divided on the basis of surficial deposits and topography into the Boissevain Till Plain, Tiger Hills, Pembina Mountain, and Upper Assiniboine Delta. The undulating Boissevain Till Plain, which consists of morainic and alluvial deposits, occupies a large part of the southwest. The Tiger Hills and Pembina Mountain form a range of hills west of the Manitoba Escarpment and north of the Pembina River valley. The Upper Assiniboine Delta section, which consists mainly of sandhills, covers most of the north-central part of the area, west of the Manitoba Escarpment.

The Manitoba Lowland consists of the flat to undulating Lower Assiniboine Delta and the flat Red River Plain. Surface deposits on the Lower Assiniboine Delta are sandy lacustrine materials on clay over till, as well as some localized eolian deposits. The Red River Plain consists of lacustrine clay and alluvial material, which varies in depth from a few feet to 60 feet.

On the Turtle Mountain in the southwest, Gray Luvisol soils occur. Dark Gray soils, which are transitional between the grassland and the forest, occur in the central part of the area on Pembina Mountain and Tiger Hills. The largest part of the area has developed Black soils under grassland.

The area lies in the Red River - Assiniboine River drainage basin, except for a small part along the northern boundary of the area that lies in the Lake Winnipeg - Nelson River Basin. The main rivers are the Assiniboine, Souris, Pembina, and Boyne, which empty into the Red River and eventually drain into Lake Winnipeg.

CLIMATE

The area has a continental climate and falls within the transitional part of the dry subhumid moisture region. Mean temperatures at Portage la Prairie range from -1°F in January to 67°F in July. The southeast has slightly warmer temperatures than the rest of the area.

Mean annual precipitation varies from 18 to 20 inches, about 80 percent of which falls as rain from April through October. The rest falls as snow from November through March. Mean annual snowfall is about 45 to 50 inches.

Local variations in climate exist because of the abrupt changes in elevation in the Turtle Mountain, Brandon Hills, and Manitoba Escarpment regions. Air temperatures are cooler on these uplands and precipitation tends to be greater. Median snow depths for February vary from 11.9 inches on Turtle Mountain to 4.7 inches at Killarney.

ECOLOGY

Natural vegetation in the area ranges from broad-leaved forest and wooded grassland in the northeast to sparsely wooded and open grassland in the southwest, except for the broad-leaved forest on Turtle Mountain. A small region of mixed woods is found in the central part of the area.

The sparsely wooded and wooded grasslands are transitional from grassland to broad-leaved forest. The sparsely wooded grasslands are characterized by extensive prairie with sites around lakes and in ravines dominated by shrubs, such as saskatoon (*Amelanchier alnifolia*), silverberry (*Elaeagnus commutata*), snowberries (*Symporicarpos spp.*), and red-osier dogwood (*Cornus stolonifera*). In the wooded grasslands, trembling aspen (*Populus tremuloides*) is found in groves in association with balsam poplar (*P. balsamifera*) on moist sites and bur oak (*Quercus macrocarpa*) on dry sites.

The mixed grassland zone in the southwest supports tallgrass prairie in the east and shortgrass prairie in the west. Communities are dominated by species of grama (*Bouteloua spp.*), spear grasses (*Stipa spp.*), wheat grasses (*Agropyron spp.*), rough hair grass (*Agrostis scabra*), junc grass (*Koeleria cristata*), and sand reed grass (*Calamovilia longifolia*). Sand dropseed (*Sporobolus cryptandrus*), Indian rice grass (*Oryzopsis hymenoides*), and big bluestem (*Andropogon gerardii*) are dominant grasses on sand dunes, as well as several species of sedges (*Carex spp.*) and little club-moss (*Selaginella densa*). Sites heavily grazed by cattle usually support Kentucky blue grass (*Poa pratensis*) and pasture sage (*Artemisia frigida*). Muhly grass (*Muhlenbergia spp.*), as well as various moisture-loving sedges, are common on imperfectly drained sites.

Turtle Mountain, Pembina Mountain, and parts of the Assiniboine and Pembina river valleys support broad-leaved forest. Continuous stands of trembling aspen and a beaked hazelnut (*Corylus cornuta*) understory are dominant, whereas balsam poplar with a high bush-cranberry (*Viburnum trilobum*) and red-osier dogwood understory occupy the moister sites. Bur oak grows on the drier sites and white birch (*Betula papyrifera*) is found on dry and moist sites. Although hazelnut and red-osier dogwood are the dominant shrubs, there is a wide variety of secondary shrubs including red-fruited choke cherry (*Prunus virginiana*), saskatoon, pin cherry (*P. pensylvanica*), snowberries, roses (*Rosa spp.*), and willows (*Salix spp.*). The frequent forest openings contain woodland types of grasses, such as Kentucky blue grass, fringed bromegrass (*Bromus ciliatus*), and herbs, such as wild sarsaparilla (*Aralia nudicaulis*), tall meadow-rue (*Thalictrum dasycarpum*), strawberries (*Fragaria spp.*), and late goldenrod (*Solidago gigantea*).

Mixed woods are found in the Carberry Sandhills, which are in the vicinity of Spruce Woods Provincial Park. Here, native white spruce (*Picea glauca*) is scattered throughout the grasslands and trembling aspen stands. Snowshoe hares and fires may have prevented white spruce from becoming the dominant species in the Spruce Woods region.

Wild ungulates found in the area are white-tailed deer (*Odocoileus virginianus*), moose (*Alces alces*), elk (*Cervus canadensis*), and possibly mule deer (*Odocoileus hemionus*). In the past, pronghorn (*Antilocapra americana*) and bison (*Bison bison*) were also found here.

At present white-tailed deer are the most abundant wild ungulate in the area. They first appeared in southern Manitoba in the late 1800s and their range expanded as agriculture developed. A small population of moose inhabit the Epinet Creek lowland southwest of Carberry, although occasionally individual animals stray onto the surrounding uplands. Elk were common in the area in early times, but by 1884 they were found only in the Carberry sandhills and on Pembina Mountain. Today, only small herds of elk are scattered throughout the Carberry sandhills. Mule deer, which inhabited the area prior to settlement, have become extremely scarce, but a few of these species may still be found in the Carberry sandhills.

Many bison once roamed the southern prairies, but the last record of wild buffalo in Manitoba was of one individual along the Souris River in 1883.

Pronghorn once inhabited the plains of southwestern Manitoba, but their numbers decreased as settlement spread over the land. By 1870 the few remaining bands had disappeared from the more rugged terrain between Pembina Mountain and Tiger Hills.

LAND CLASSIFICATION FOR WILD UNGULATES

High-capability land for wild ungulates covers 43 percent of the area. Of this, 15 percent is rated Class 1, 3 percent is rated Class 2, and 25 percent is rated Class 3. Twelve percent of the area is classed as high-capability winter range. The rest of the area comprises 21 percent Class 4, 18 percent Class 5, and 18 percent Class 6 capability for wild ungulate habitat. Class 7 land occurs on the open sands of the Bald Head Hills and covers less than 1 percent of the area.

White-tailed deer are the primary indicator species over 98 percent of the area, whereas elk and moose are the primary indicator species over less than 2 percent of the area. Lands rated primarily for moose are confined to Turtle Mountain and the Epinet Creek valley. Elk are the primary indicator species on lands in the Carberry sandhills region.

Class 1 wintering range for white-tailed deer occurs in topographically diverse parts of the Manitoba Escarpment and the Pembina and Souris river valleys. These winter ranges are critical for the survival of deer during the harsh winter months.

The Carberry sandhills are rated Class 3 wintering range for deer and are limited by excessive or deficient soil moisture (Subclass M) and low fertility (Subclass F).

Poor interspersion of landforms (Subclass G) necessary for optimum wild ungulate habitat is the main limitation over 24 percent of the land. Flat topography (Subclass T) is the main limitation over 21 percent of the area. Other significant limitations are aridity (Subclass A), which restricts the development of suitable food and shelter plants over 19 percent of the area, and excessive or deficient soil moisture conditions (Subclass M) over 18 percent of the land.

Most of the high-quality white-tailed deer habitat in the area occurs along creek and river valleys, in duned sand terrain, and on Turtle Mountain. These habitats are important for providing food and shelter for deer in times of stress, such as during hunting seasons and in winter.

Favorable climate, diverse topography, fertile soils, and a variety of vegetation are important in the successful production of wild ungulates in the area. Natural vegetation has rapidly disappeared as a result of agricultural development. Unless steps are taken to ensure the preservation of native habitat in the area, only river and creek valleys and nonarable sand dunes will be left to provide habitat for wild ungulates in the area. These habitat remnants are vulnerable to intense livestock grazing, which could significantly lower the carrying capacity for wild ungulates.

Capability classification by M. C. Imrie, I. J. Milliken, and H. D. Goulden, Canada Land Inventory Project for Manitoba, Department of Mines, Resources and Environmental Management, Winnipeg.

Descriptive narrative by M. C. Imrie.

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DESCRIPTION DU TERRITOIRE DE LA FEUILLE DE BRANDON - 62G

Le territoire représenté sur la feuille de Brandon est situé dans le sud-ouest du Manitoba et occupe une superficie de 6 220 milles carrés entre 49° et 50° de latitude nord et 98° et 100° de longitude ouest. Les principaux centres urbains du territoire sont les villes de Brandon et de Portage la Prairie, situées près de la limite septentrionale du territoire. Ces villes comptent respectivement 29 981 et 13 012 habitants. Killarney, Pilot Mount et Morden sont des villes plus petites qui desservent les communautés agricoles du sud.

Les principaux éléments structuraux du territoire sont les collines Brandon et la rivière Souris dans l'ouest, les collines Tiger dans le centre et, dans l'est, le mont Pembina et l'escarpement du Manitoba de direction nord-ouest-sud-est. Dans le nord, on trouve des dunes et la vallée de la rivière Assiniboine tandis que, dans le sud, la vallée de rivière Pembina est le seul élément structural important. Une petite partie du mont Turtle apparaît dans l'extrême sud-ouest et constitue le principal élément de relief dans cette partie du territoire.

Les éléments qui entrent dans la composition des assises rocheuses du territoire vont des bentonites, des calcaires et des schistes argileux calcaires et siliceux gris et vert-gris dans l'ouest aux gypses, aux schistes argileux rouges et aux calcaires dolomiques dans l'est. Le mont Turtle repose sur du grès et de la houille.

Il y a plus de 12 000 ans, pendant la dernière période glaciaire, un glacier d'origine continentale a recouvert le Manitoba. Au fur et à mesure de son retrait vers le nord-est, il abandonna sur place un till schisteux à haute teneur en caux et renfermant de gros blocs granitiques; ces matériaux formaient des collines moraines et des plaines de till au relief doux recouvrant la roche mère.

La moraine frontale du mont Turtle abandonnée par le glacier lorsqu'il commence de se retirer du sud-ouest du territoire. Les eaux de fusion glaciaire, enfermées dans l'espace délimité par les bords du glacier à l'ouest et au nord et le mont Turtle à l'est, ont formé le lac glaciaire Souris, à l'est du territoire. Les eaux de ce lac s'écoulent vers le sud-est en empruntant un large chenal glaciaire marginal formant aujourd'hui la vallée de la rivière Pembina. Le récif glaciaire se poursuit, entraînant la mise en place des dépôts morainiques des collines Tiger et du mont Pembina. Des dépôts deltaïques de gravier, de sable et de limon apparaissent ensuite dans la région correspondant au parc provincial de Spruce Woods, là où les eaux de la rivière Assiniboine se déversent dans le lac Agassiz, un vaste lac glaciaire qui occupait le nord-est et le centre-nord du territoire. Un certain nombre de lacs glaciaires, dont les lacs Agassiz et Souris, ont déjà recouvert une grande partie du territoire et ont remanié les dépôts morainiques superficiels.

Le territoire appartient à la région structurale des hautes terres occidentales du Manitoba à l'exception d'une partie du nord-est qui appartient aux basses terres.

Compte tenu de la nature des formations meubles et de la topographie, les hautes terres occidentales se divisent en plusieurs régions: la plaine de till de Boissevain, les collines Tiger, le mont Pembina et le delta de la haute-Assiniboine. La plaine de till ondulée de Boissevain, formée de dépôts morainiques et d'alluvions, occupe une grande partie du sud-ouest. Les collines Tiger et le mont Pembina forment une chaîne de collines à l'est de l'escarpement du Manitoba et au nord de la vallée de la rivière Pembina. La section du delta de la haute-Assiniboine, composée principalement de dunes, occupe la majeure partie du centre-nord du territoire, à l'est de l'escarpement du Manitoba.

Les basses terres du Manitoba comprennent le delta de la basse-Assiniboine, au relief plat ou onduleur, et la plaine sans relief de la rivière Rouge. Les formations meubles, dans le delta de la basse-Assiniboine, sont des matériaux lacustres sableux recouvrant de l'argile déposée sur du till et, par endroits, des dépôts éoliens. La plaine de la rivière Rouge est constituée d'argile lacustre et d'alluvions dont l'épaisseur varie de quelques pieds à 60 pi.

Sur le mont Turtle, dans le sud-ouest, sont apparus des luvisols gris. Des sols gris foncé forment une zone de transition entre la prairie et la forêt dans le centre du territoire, sur le mont Pembina et les collines Tiger. Dans la majeure partie du territoire, on trouve des sols de prairie noirs.

Le territoire est situé à l'intérieur du bassin hydrographique de la rivière Rouge et de la rivière Assiniboine à l'exception d'une petite partie située le long de la frontière septentrionale qui appartient au réseau du lac Winnipeg et du fleuve Nelson. Les principales rivières sont les rivières Assiniboine, Souris, Pembina et Boyne qui se jettent dans la rivière Rouge dont les eaux se déversent dans le lac Winnipeg.

CLIMAT

Le territoire jouit d'un climat continental et appartient à la zone de transition de la région sèche subhumide. La moyenne des températures à Portage la Prairie varie de -1°F en janvier à 67 en juillet. Les températures sont légèrement plus élevées dans le sud-est.

La précipitation moyenne annuelle varie de 18 à 20 po et environ 80% de cette quantité tombe sous forme de pluie d'avril à la fin d'octobre. Le reste tombe sous forme de neige de novembre à la fin de mars. Il tombe en moyenne chaque année de 45 à 50 po de neige.

Il existe des variations climatiques locales dues aux brusques changements d'altitude dans les régions du mont Turtle, des collines Brandon et de l'escarpement du Manitoba. Les températures de l'air sont plus basses sur ces hautes terres et la précipitation a tendance à être plus considérable. L'épaisseur médiocre du couvert de neige en février varie de 11.9 po sur le mont Turtle à 4.7 à Killarney.

ÉCOLOGIE

La végétation naturelle du territoire va de la forêt de feuillus et de la prairie boisée dans le nord-est à la prairie déboisée ou faiblement boisée dans le sud-ouest, exception faite de la forêt de feuillus du mont Turtle. Il existe une petite région de bois mixtes dans le centre du territoire.

Les prairies faiblement boisées et boisées forment une zone de transition entre la prairie et la forêt de feuillus. Les prairies faiblement boisées sont de vastes prairies renfermant, autour des lacs et dans les ravins, des régions où dominent des arbres-sous-bois tels que l'amélanchier (*Amelanchier alnifolia*), le chêne changeant (*Elaeagnus commutata*), les symphorines (*Symporicarpos spp.*) et le cornouiller stolonifère (*Cornus stolonifera*). Dans les prairies boisées, le peuplier faux-tremble (*Populus tremuloides*) forme des futaines où il est associé au peuplier baumier (*P. balsamifera*) sur les stations humides et au chêne à gros fruits (*Quercus macrocarpa*) dans les secteurs secs.

Dans la zone de prairie mixte du sud-ouest croissent des herbes longues dans l'est et des herbes courtes dans l'ouest. Dans ces communautés végétales dominent différentes espèces: bouteloues (*Bouteloua spp.*), stipes (*Stipa spp.*), agropyres (*Agropyron spp.*), agrostide rude (*Agrostis scabra*), herbe de juin (*Koeleria cristata*) et jonc des sables (*Calamovilia longifolia*). Le sporobole à fleurs cachées (*Sporobolus cryptandrus*), le riz indien (*Oryzopsis hymenoides*) et le barbon fourchu (*Andropogon gerardii*) sont les graminées qui dominent sur les dunes où croissent également plusieurs espèces de carex (*Carex spp.*) et le petit lycopode en masse (*Selaginella densa*). Sur les terrains très utilisés comme pâturages croissent habituellement le pâturin des prés (*Poa pratensis*) et l'armoise frigida (*Artemisia frigida*). Les muhlenberges (*Muhlenbergia spp.*) et différentes espèces de carex préférant les milieux humides sont communs dans les endroits imparfaitement drainés.

Des forêts de feuillus croissent sur les monts Turtle et Pembina et dans certaines parties des vallées des rivières Assiniboine et Pembina. Les peuplements continus de peuplier faux-tremble avec sous-bois de noisetier à long bec (*Corylus cornuta*) dominent; sur les secteurs les plus humides habite le peuplier baumier qui croît en présence d'un sous-bois de viorne trilobée (*Viburnum trilobum*) et de cornouiller stolonifère. Le chêne à gros fruits croît sur les terrains très secs et le bouleau blanc (*Betula papyrif*