

GENERAL DESCRIPTION OF THE NEEPAWA MAP SHEET AREA, 62J

The area covered by the Neepawa map sheet comprises 6094 square miles in south-central Manitoba between 50° and 51° north latitude and 98° and 100° west longitude. The towns of Neepawa, Minnedosa, and Gladstone, which have populations of 3229, 2305, and 935 (1966 census), are the main service centers.

A broad expanse of Lake Manitoba (1042 square miles) and its associated Delta Marsh dominate the eastern half of the area. The main features in the west are the Manitoba Escarpment, the Minnedosa River valley, and the large marsh west of Langruth.

The bedrock of the area ranges from shales and sandstone under Riding Mountain to dolostone, limestone, gypsum, and Precambrian granites in the vicinity of Lake Manitoba.

The Manitoba Escarpment, located at the 1000-foot contour, extends northwest from the south-central margin of the area to the eastern slope of Riding Mountain. The part of the area above the escarpment on the west is in the Saskatchewan Plain or Western Upland physiographic region and the part below the escarpment on the east is in the Manitoba Lowland. The Western Upland comprises the gently undulating Newdale Till Plain and the steeply undulating Riding Mountain. The till plain is composed of ground moraine and small areas of end moraine, glacial outwash, lacustrine, and gravel deposits. The surface deposits of Riding Mountain are eskers, glacial outwash, lacustrine deposits, and intermixed end moraine. Numerous small lakes and shale hillocks occur on the mountain.

The Manitoba Lowland, the vast glacial lake-washed plain east of the Manitoba Escarpment, has a level to very gently sloping topography, except for "Glenhope Island", a 75-foot glacial drift deposit 10 miles east of McCreary. The areas immediately west and east of Lake Manitoba form the Westlake and Interlake till plains, respectively. These plains consist mainly of ground moraine and are characterized by low, stony ridges that alternate with shallow, wet, northwest-southeast depressions. Lacustrine sands and peat deposits are found locally throughout the Lowland. Alluvial fans of coarse-textured shale have been formed at the foot of the Manitoba Escarpment by streams from the Western Upland. In the south-central part of the area, there are deltaic sands dropped by the Assiniboine River as it entered glacial Lake Agassiz. A beach ridge of sands and loams separates the 48,000 acres of Delta Marsh from the south end of Lake Manitoba.

The relief in the area varies from about 2400 feet above sea level on the Riding Mountain escarpment in the west, to 814 feet at Lake Manitoba in the east. From the top of this escarpment, the land slopes east and southeast to 991 feet at McCreary and 1241 feet at Neepawa. Manitoba Interlake terrain in the northeast slopes gently west from 900 feet in the vicinity of Kalevala Lakes to Lake Manitoba.

Soils in the area are mainly well-drained Black, Dark Gray Wooded, and Luvisolic soils above the Manitoba Escarpment and imperfectly drained members of the same groups below the escarpment.

The area lies in the drainage basin of the Saskatchewan and Nelson rivers. The southwestern part of the area is drained by the Minnedosa River, which originates in the Riding Mountain and empties into the Assiniboine River. The Whitemud River drains the south-central lands into Lake Manitoba and the Ochre River drains the northeastern part of Riding Mountain into Lake Dauphin. On the Westlake and Interlake till plains, low sand and gravel ridges restrict drainage, resulting in the formation of the wet swales that are characteristic of much of the Manitoba Lowland.

CLIMATE

The area has an extreme continental climate, modified locally by Lake Manitoba. In the vicinity of the lake, it is expected that temperatures remain lower in spring and higher in autumn. Here, cloud cover and fogs are common in both spring and autumn, as warm and cold air masses meet. Summer temperatures are also cooler near the lake.

The mean annual temperature at Minnedosa (1673 feet) on the Western Upland is 34° F; in the Manitoba Lowland temperatures tend to be higher. The area has 90 to 100 frost-free days but the upper slopes of Riding Mountain have fewer frost-free days than the surrounding lowland.

The mean annual precipitation for the area is 17 inches. Of this, about 80 percent falls as rain from April to October and 20 percent as snow from November through March. The area is in the Great Plains Snow Cover Region and has an average maximum snow cover of less than 15 inches. Snow cover is deeper on Riding Mountain and in the Manitoba Interlake than in the central part of the area. The median snow cover in February for Riding Mountain, Neepawa, McCreary, Langruth, and Eriksdale is 19, 13, 8, 10, and 12 inches.

ECOLOGY

The area may be divided into five vegetation zones from south to north: mixed grass prairie, sparsely wooded grassland, wooded grassland, broadleaf forest, and mixed woods.

Mixed grass prairie is present on a relatively small area in the southwest near the village of Brookdale. The prairie is dominated by grama grasses (*Bouteloua* spp.) and spear grasses (*Stipa* spp.) on mature grassland sites, but these have been replaced on local soil types by prairie muhly (*Muhlenbergia cuspis*) and blue grasses (*Poa* spp.). Pasture sage (*Artemisia frigida*) and Kentucky bluegrass (*Poa pratensis*) are prevalent on heavily grazed areas. Infrequent woody components of this grassland include trembling aspen (*Populus tremuloides*), silverberry (*Elaeagnus commutata*), snowberries (*Symphoricarpos* spp.), and prickly rose (*Rosa acicularis*).

Sparingly wooded and wooded grassland together form a transition zone between continuous grassland to the south and broadleaf forest to the north. In this transition there is a gradual decrease in grassland and a corresponding increase in shrub- and wood-covered lands. Sparingly wooded grassland in the southwest and southeast, local sites around lakes, and sheltered ravines are dominated by shrubs such as saskatoon (*Amelanchier alnifolia*), roses (*Rosa* spp.), red-fruited choke cherry (*Prunus virginiana*), snowberries, and willows (*Salix* spp.). Trembling aspen and bur oak (*Quercus macrocarpa*) are found on well-drained sites, whereas aspen, balsam poplar (*P. balsamifera*), willow, and red-osier dogwood (*Cornus stolonifera*) grow in moist places. On shallow dry soils and on arid south- and west-facing slopes, bur oak, silverberry, snowberry, rose, shrubby cinquefoil (*Potentilla fruticosa*), and hawthorn (*Crataegus succulenta*) are common.

Wooded grassland, the dominant vegetation of the area, covers the Newsdale and Westlake till plains and lands in the vicinity of Lundar in the Manitoba Interlake. In this zone the trees form groves of considerable size. Trembling aspen is usually dominant in these tracts, though balsam poplar is found on moist sites and bur oak on dry sites. The shrub complex is similar to that of sparsely wooded grassland, but tends to be denser.

Broadleaf forest occurs on the slopes of Riding Mountain and the west and east shores of Lake Manitoba. This deciduous forest consists of fairly continuous stands of trembling aspen and balsam poplar with a thrifty understory of saskatoon, bush-cranberries (*Viburnum* spp.), rose, hazelnut (*Corylus cornuta*), willows, and red-osier dogwood.

The well-drained uplands of Riding Mountain and "Glenhope Island" have a mixed wood forest cover. Trembling aspen, balsam poplar, white birch (*Pinus glauca*), and balsam fir (*Abies balsamea*) are the characteristic forest associates on these sites. White spruce and balsam fir are especially prominent in mature mixed wood stands. Jack pine (*Pinus banksiana*) is an additional species on drier till soils and mixes with black spruce (*Pinus mariana*) on the higher sites. White elm (*Ulmus americana*), lanced-leaved ash (*Fraxinus pennsylvanica*), bur oak, and Manitoba maple occur infrequently on these uplands. Low, poorly drained areas support black spruce and tamarack (*Larix laricina*). A shrub cover of hazelnut is commonly associated with mixed wood and broadleaf forest on upland sites, and willows, red-osier dogwood, and dwarf birch (*Betula glandulosa*) are prevalent shrubs in poorly drained areas.

Extensive wetlands are common on the Westlake and Interlake till plains, where the high-lime till produces alkaline waters over silty clay, muck, or shallow peat. Three types of wetlands exist on this terrain: shallow, wet sedge (*Carex* spp.) meadows, which occupy the swales between the low, stony ridges of the Westlake and Interlake till plains; shallow, seasonal marshes characterized by hardstem bulrush (*Scirpus acutus*); and deep marshes, such as Delta Marsh at the south end of Lake Manitoba, which are characterized by vast tracts of giant reed grass (*Phragmites australis*).

Today the predominant wild ungulates that inhabit the area are white-tailed deer (*Odocoileus virginiana*), North American elk (*Cervus canadensis*), and moose (*Alces alces*). White-tailed deer, the most plentiful species first moved into the area from the south and east in the early 1900s. During presettlement times large herds of elk were common on the plains around Riding Mountain, but agricultural development pushed these animals into the heavily forested upland. Today, elk move to the lower slopes of Riding Mountain outside the National Park boundary only during severe winters. Moose were once prevalent throughout the area, but are now largely confined to the top of Riding Mountain.

In the past, the area was also inhabited by woodland caribou (*Rangifer tarandus*), bison (*Bison bison*), pronghorn (*Antilocapra americana*), and mule deer (*Odocoileus hemionus*). Woodland caribou roamed the heights of Riding Mountain as late as the 19th century. Bison migrated south over the area in the 18th and early 19th century. Large herds were seen in the vicinity of Kinosota, near the south end of Ebb and Flow Lake, on Lake Manitoba as late as January, 1803, by Alexander Henry, the younger. Pronghorn, which was abundant on the open prairies of the 18th century, decreased in numbers about the same time as the bison. Mule deer were once the common deer in this region, but now they are rarely found in Manitoba.

LAND CLASSIFICATION FOR UNGULATES

High-capability wild ungulate habitat (Class 3 or better) comprises 21 percent of the area. Land with Class 4 and 5 potential comprises 25 and 17 percent of the area. Class 6 land covers 11 percent and 19 percent is designated Z to denote water bodies. Riding Mountain National Park, which covers 7 percent of the area, was not classified.

Of the land classified, 89 percent was rated primarily for white-tailed deer. Much of the best habitat is found on the rugged terrain along the Manitoba Escarpment and Minnedosa River valley. Although the upper slopes of Riding Mountain have many features of high-quality deer range, they are limited by deep snow and prolonged low temperatures. The fertile, undulating Newdale Till Plain constitutes the largest block of high-potential deer range in the area. However, agricultural development has largely precluded deer production on this plain. The Delta Marsh has one of the largest deer herds near Winnipeg and compares favorably for deer production with better deer habitats in Manitoba.

Land with priority capability for elk comprises 9 percent of the classified area. The rugged eastern and southern slopes of Riding Mountain have high capability for both elk and moose but only the habitat near Proven Lake, which comprises 2 percent of the area, was rated primarily for moose.

Excessive or deficient soil moisture (Subclass M) is the primary limitation for 36 percent of the area. This subclass is predominant on the ridge and swale landscape of the Manitoba Lowland, along with the limitation of adversely flat terrain (Subclass T), which is prevalent on 35 percent of the land. Poor distribution of landforms (Subclass G) limits 21 percent of the area classified and is especially prominent on the Newdale Till Plain. Subclasses T and G emphasize the monotypic aspect of the glacial till plains. Five percent of the area was rated Class 1 and, therefore, not assigned a subclass. The remaining 3 percent of the area classified has a variety of primary limitations.

Much of the area is developed for agriculture. Grainfields cover the Newdale Till Plain, and mixed farming is increasing on the Westlake and Interlake plains. On the Riding Mountain escarpment, however, the clearing and tillage of steeply sloping terrain is resulting in devastation of the local landscape. Divested of native tree and sod cover, soil and subsurface materials have been eroded from the uplands and washed downhill to cover the productive lands below. Where such erosion-prone terrain is denuded of native cover and is tilled, the total resource base is placed in jeopardy. In order to stop the deterioration of these lands, sound land treatment practices must be implemented immediately.

Capability classification by H. D. Goulden, V. H. Scott, I. J. Milliken, and L. M. Nelson, Canada Land Inventory Project, Manitoba Department of Mines, Resources and Environmental Management. Description by H. D. Goulden and V. H. Scott.

REFERENCES

Ehrlich, W. A., L. E. Pratt, E. A. Poyer, and F. P. Leclaire. 1958. Report of reconnaissance soil survey of West-Lake map sheet area. Soils Rep. No. 8, Manitoba Soil Surv. Manit. Dep. Agr. Immigr., Winnipeg. 100 p.

Ellis, J. H. 1964. Land use problems in the Interlake and Westlake high-lime region in Manitoba. Unpubl. ms. Soils and Crops Branch, Manitoba Dep. Agr. and Lands Branch, Manitoba Dep. Mines Natur. Resources. Winnipeg. 164 p.

Seton, E. T. 1909. Lifehistories of northern animals. An account of the mammals of Manitoba. Charles Scribner's Sons, New York. Vol. 1, xxx + 673 pp.; Vol. 2, xii + p. 674-1267.

Weir, T. R. (ed.) 1960. Economic atlas of Manitoba. Manitoba Dep. Industry and Commerce, Winnipeg. 81 p.

DESCRIPTION DU TERRITOIRE DE LA FEUILLE DE NEEPAWA - 62J

Le territoire de Neepawa s'étend sur 6 094 milles carrés au centre-sud du Manitoba, entre 50 et 51° de latitude nord et 98 et 100° de longitude ouest. Les principales agglomérations sont: Neepawa, Minnedosa et Gladstone, qui comptent respectivement 3 229, 2 305 et 935 habitants (recensement de 1966).

Une grande étendue (1 042 milles carrés) du lac Manitoba et du marais du Delta, domine la moitié est du territoire. L'ouest comprend l'Escarpement du Manitoba, la vallée de la rivière Minnedosa et le grand marais à l'est de Langruth.

Les assises du territoire consistent en schistes argileux et en grès dans la région du mont Riding; en dolomites, calcaires, gypses et granites précambriens dans le voisinage du lac Manitoba.

L'escarpement du Manitoba, situé à une courbure de niveau de 1 000 pi, s'étend au nord-ouest de la bordure centre-sud du territoire vers l'est du mont Riding. A l'ouest, la partie située au-dessus de l'escarpement s'inscrit dans la région physiographique de la plaine de Saskatchewan et des hautes terres de l'ouest. A l'est, celle située au-dessous de l'escarpement appartient aux basses terres du Manitoba. Les hautes terres de l'ouest comprennent la plaine de till, légèrement ondulée, de Newdale et les versants escarpés du mont Riding. Des moraines inférieures, de petites surfaces de moraines frontales et de dépôts alluviaux proglaciaires, lacustres et graveleux forment la plaine. Les dépôts de la plaine du mont Riding consistent en eskers et dépôts alluviaux proglaciaires et lacustres, mélangés de moraines frontales. Les petits lacs et les monticules de schistes argileux sont abondants.

A l'est de l'escarpement, les basses terres du Manitoba, vaste plaine laissée par un lac glaciaire, ont un relief très légèrement incliné, à l'exception de l'île Glenhope, dépôt glaciaire de 75 pi à l'est de McCreary. Les plaines de till Westlake et Interlake comprennent les régions immédiatement à l'ouest et à l'est du lac Manitoba. Elles consistent principalement en moraines inférieures; des crêtes basses et pierreuses alternent avec des dépressions humides et peu profondes, orientées du nord-ouest au sud-est. Sur l'ensemble des passes terres, on note la présence locale de sables lacustres et de dépôts tourbeux. Au pied de l'escarpement du Manitoba, les cours d'eau provenant des hautes terres de l'ouest ont formé des éventails alluviaux de schistes argileux de texture grossière. Dans le centre-sud du territoire, la rivière Assiniboine, en entrant dans le lac glaciaire Agassiz, a déposé des sables deltaïques. Un banc de sable et de loam sépare les 48 000 acres du marais du Delta de l'extrémité sud du lac Manitoba.

L'altitude du territoire varie d'environ 2 400 pi sur l'escarpement du mont Riding, à 814, au lac Manitoba. Du sommet de l'escarpement, les terres s'inclinent à l'est et au sud-est. Elles se situent à 991 pi à McCreary et à 1 241 à Neepawa. Enfin, au nord-est, la plaine Interlake du Manitoba s'incline doucement à l'ouest vers le lac Manitoba. Elle atteint 900 pi dans les parages des îles Kalevala.

Les sols noirs, gris foncé boisés et luvisoliques sont bien drainés au-dessus de l'escarpement du Manitoba et médiocrement au-dessous.

Le territoire s'étend dans le bassin de drainage de la rivière Saskatchewan et du fleuve Nelson. La rivière Minnedosa, qui prend sa source sur le mont Riding et se jette dans la rivière Assiniboine draine le sud-ouest. La rivière Whitemud assure le drainage des terres du centre-sud dans le lac Dauphin. Les bancs de sable et de gravier, contrariant le drainage des plaines erratiques Westlake et Interlake et provoquant la formation de dépressions marécageuses, caractérisent les basses terres du Manitoba.

CLIMAT

Le climat du territoire extrêmement continental est modifié localement par le lac Manitoba. Dans le voisinage de ce dernier, les températures sont, en général, plus basses au printemps et plus élevées à l'automne. Les nuages et les brouillards sont fréquents au printemps et à l'automne, lors de la rencontre des masses d'air chaud et d'air froid. Les températures d'été y sont également plus fraîches.

Sur les hautes terres de l'ouest, la température annuelle moyenne est à Minnedosa (1 673 pi) 34° F; elle tend à être plus élevée dans les basses terres du Manitoba. La période sans gel, sur le territoire, est de 90 à 100 jours; mais, les pentes supérieures du mont Riding en comptent moins que les basses terres environnantes.

Les précipitations annuelles moyennes sont de 17 po, dont 80% en pluie entre avril et octobre et 20% en neige, de novembre à mars. Le territoire est inclus dans la région des plaines couvertes de neige. La couche de neige maximum moyenne, inférieure à 15 po, est plus épaisse sur le mont Riding et dans la plaine Interlake du Manitoba qu'au centre. En février, au mont Riding, à Neepawa, à McCreary, à Langruth et à Eriksdale, elle atteint respectivement 19, 13, 8, 10 et 12 po.

ÉCOLOGIE

On peut diviser le territoire, du sud au nord, en cinq zones de végétation: la prairie mélangée, le pré aux arbres clairsemés, le pré-boisé, la forêt feuillue, les bois à essences variées.

Au sud-ouest, près du village de Brookdale, la prairie mélangée occupe une superficie relativement faible. Elle se compose principalement de bouteloue (*Bouteloua* spp.) et de chienfond (*Stipa* spp.) sur les prés mûrs, remplacés sur les sols locaux par la mühlenbergie (*Muhlenbergia cuspidata*) et le pâturen des prés (*Poa* spp.). La sauge des prés (*Artemisia frigida*) et le pâturen du Kentucky (*Poa pratensis*) dominent dans les zones de pâturage à usage intensif. Les rares arbres et arbustes qui y figurent sont: le peuplier faux-tremble (*Populus tremuloides*), l'élagne (*Elaeagnus commutata*), les symphorines (*Symporicarpos* spp.), et le rosier aciculaire (*Rosa acicularis*).

Le pré aux arbres clairsemés et le pré-boisé forment une zone de transition entre les prairies permanentes du sud et la forêt feuillue du nord. Cette transition est marquée par une diminution progressive des prés et une augmentation correspondante des arbustes et des terres boisées. Au sud-ouest et au sud-est, les prés aux arbres clairsemés se rencontrent localement autour des lacs et dans les ravins abrités. Ils comprennent surtout des arbustes tels que: l'amélanchier à fruits rouges (*Prunus virginiana*), les symphorines et les lessauies (*Salix* spp.). Le poeppier faux-tremble et le chêne à gros fruits (*Quercus macrocarpa*) se rencontrent dans les endroits bien drainés; le tremble, le poeppier baumier (*P. balsamifera*), le saule et le cornouiller stolonifère (*Cornus stolonifera*) dans les terrains humides. Le chêne à gros fruits, l'élagne, la symphorine, le rosier, la portentille rampante (*Potentilla fruticosa*) et l'aubépine (*Crataegus succulenta*) sont communs sur les sols secs peu profonds et sur les versants arides orientés vers le sud et l'ouest.

Le pré-boisé, zone de végétation la plus répandue sur le territoire, couvre les plaines erratiques de Newdale et la région Interlake, aux alentours de Lundar. Les bois y occupent une étendue considérable. En général, le poeppier faux-tremble y domine. Les sols humides comportent également des poeppiers baumiers et les terrains secs, des chênes à gros fruits. Les arbustes, semblables à ceux des prés à arbres clairsemés, y sont plus denses.

La forêt feuillue se rencontre sur les pentes du mont Riding et sur les rives ouest et est du lac Manitoba. Elle consiste en peuplements assez ininterrompus de peupliers faux-tremble et de peupliers baumiers, avec un maigre sous-bois d'amélanchiers à feuilles d'aule, de canneberges (*Vaccinium* spp.), de rosiers, de noisetiers (*Corylus cornuta*), de saules et de cornouillers stolonifères.

Une forêt aux essences variées couvre les terrains secs bien drainés du mont Riding et l'île Glenhope. Elle abrite principalement le poeppier faux-tremble, le poeppier baumier, le bouleau à papier (*Populus glauca*) et le sapin baumier (*Abies balsamea*). L'épinette blanche et le sapin baumier sont très communs dans les peuplements adultes d'essences mixtes. Le pin gris (<