

## GENERAL DESCRIPTION OF THE DUCK MOUNTAIN MAP SHEET AREA, 62N

The area covered by the Duck Mountain map sheet comprises about 5930 square miles in west-central Manitoba and eastern Saskatchewan. It lies in the Western Upland portion of the Saskatchewan Plain physiographic region and in the Westlake Plain subdivision of the Manitoba Plain Region. The boundary between these two regions is the Manitoba Escarpment, which is marked by the prominent Campbell Beach that was formed at the 1100 foot contour by the receding glacial Lake Agassiz. Elevations range from 830 feet at Lake Winnipegosis to 2727 feet on Baldy Mountain.

The geological formations underlying the area are mainly sedimentary rocks of Jurassic, Lower Cretaceous, and Upper Cretaceous origin. The Westlake subdivision of the Manitoba Plain is largely underlain by Jurassic and Lower Cretaceous sandstones and shales, whereas the upland is underlain by Cretaceous shales and some limestone and bentonite.

The Westlake Plain, which was part of the basin of former glacial Lake Agassiz, has flat relief broken only by north-south oriented patterns of low ridges, swales, and beach ridges. Surface drainage is somewhat interrupted by these ridges, and stagnant surface water is trapped in the swales, which results in the formation of extensive shallow peat deposits. The main surface materials are calcareous water-worked till, outwash sands, and silty lake and stream deposits.

The plain receives flows from the upland, but most of the larger streams have eroded channels through the ridges. The most important streams in this part of the area are the Vermilion, Wilson, Valley, and Drifting rivers, which flow into Dauphin Lake, and the Fork, Garland, Pine, Sclater, and Duck rivers, which empty into Lake Winnipegosis.

The Saskatchewan Plain Region is composed of six land districts, which are differentiated by geographic location, topography, and surface materials.

The Valley River Plain, which has gently undulating topography with smooth microrelief, gradually slopes from 1700 feet at the foot of Duck and Riding mountains to 1100 feet at the Campbell Beach. The surface materials consist of ground moraine of medium-textured calcareous till, and areas of fine lacustrine and coarse outwash deposits. The plain is drained by numerous tributaries of the Wilson and Valley rivers.

On Duck Mountain, elevations range from 2200 feet on the rim to 1700 feet at the foot of the plateau. An extension of the plateau southeast of Roblin merges with Riding Mountain.

The broken topography of Duck Mountain is typical of recessional and stagnant ice moraines, and is characterized by steep, rounded hills and numerous enclosed depressions or kettles that contain lakes and peat bogs. The lower elevations of the plateau are characterized by ground moraine with well-drained, terraced slopes. The surface materials consist of medium- to coarse-textured till of mixed shale, limestone, and granitic origin.

Deep valleys and ravines dissect the plateau, which forms the headwaters of Big Boggy Creek and the Roaring, Shell, Valley, Fork, Garland, and Duck rivers. The largest lakes are Madge, Bearhead, Sarah, Wellman, Line, the Blue Lakes, Childs, Laurie, and Singush.

The Newdale Till Plain, which is composed of clay-loam boulder till, is bounded by the Shell and Assiniboine rivers and extends northward to Runnymede and San Clara. The surface topography is typical of ground moraine, and is undulating to hummocky with many knolls and shallow potholes. The streams with headwaters originating on the Duck Mountain plateau also drain this plain, leaving some minor areas of outwash sands.

The Oxbow Till Plain is located west of the Assiniboine River Valley and south of Stony Creek, and is similar to the Newdale Plain in topography and surface materials. However, the relief is generally smoother and potholes are more numerous and hold less permanent water. Some salinized depressions occur, and the soil textures are lighter, ranging from loams to sandy loams. A large area of outwash sands is located adjacent to the Assiniboine River valley.

The Kamsack Plain, located along the Assiniboine River, extends north from Stony Creek to Pelly. This part of the area has undulating to gently sloping topography dissected by eroding stream channels. The soil materials, which are mainly composed of lake sediments, outwash, and water-worked till, range from sandy loam to clay.

The Kenville Plain occupies the rest of the area, and extends onto the slopes of the Duck Mountain and into the Swan River valley. The elevations range from 1250 feet to 1700 feet. Deeply cut ravines, tributaries of the Swan River, mark the otherwise smooth surface of this level to gently sloping plain. The surface deposits are chiefly lacustrine and ground moraine, with textures varying from fine sands to silts.

### CLIMATE

The area has a continental climate with a mean July temperature of 66°F and a mean January temperature of -2°F. The mean annual precipitation varies from 17 inches on the Oxbow Till Plain to 20 inches on the Duck Mountain plateau. The Westlake Plain averages 18 inches of precipitation. During May to September, the average precipitation is about 10 to 12 inches. The mean water deficiencies are 3 to 5 inches on the Oxbow Till Plain and 1 to 3 inches on the Duck Mountain plateau and on the Westlake Plain.

### ECOLOGY

The Mixedwood Section of the Boreal Forest Region, which is dominated by trembling aspen (*Populus tremuloides*) and white spruce (*Picea glauca*), occupies the Duck Mountain plateau and the northern half of the Westlake Plain. The Aspen Grove (aspen parkland) Section of the Boreal Forest Region covers the Valley River Plain and the southern part of the Westlake Plain. The Newdale and Oxbow till plains lie mostly within the parkland, whereas the rest of the area was originally an open forest of trembling aspen, balsam poplar (*P. balsamifera*), and bur oak (*Quercus macrocarpa*).

Wetlands are not evenly distributed over the area, and they vary in size, permanency, type, and fertility.

On the Westlake Plain, the chief wetland types are shallow marshes, saline lakes, and fens. Fens hold only seasonal water and the characteristic plant species are sedges (*Carex* spp.), hardstem bulrush (*Scirpus acutus*), northern reed grass (*Calamagrostis inexpansa*), willows (*Salix* spp.), scattered dwarf birch (*Betula glandulosa*), and tamarack (*Larix laricina*). Marshes are alkaline and brackish, and they occur adjacent to beach ridges, along intermittent streams, and bordering Sagemace Bay. The characteristic emergent plants are common reed (*Phragmites communis*), hardstem bulrush, soft-stem bulrush (*Scirpus validus*), and spangletop (*Scolochloa festucacea*). Variable-leaved, sago, and clasping-leaf pondweeds (*Potamogeton gramineus*, *P. pectinatus*, and *P. richardsonii*), water-milfoil (*Myriophyllum* spp.), and common bladderwort (*Utricularia vulgaris*) are common submergent plants. Saline lakes near Lake Winnipegosis have salinity readings as high as 48 mmhos/cm, and are characterized by plant species such as American bulrush (*Scirpus americanus*), red samphire (*Salicornia rubra*), salt bush (*Atriplex hastata*), and widgeon grass (*Ruppia maritima*).

There are a few fertile, permanent or semipermanent marshes still existing on the Valley River Plain. These are fresh to slightly brackish marshes with vegetation similar to that on the Westlake Plain, but cattail (*Typha latifolia*), common coontail (*Ceratophyllum demersum*), mare's tail (*Hippuris vulgaris*), and duckweeds (*Lemna* spp.) are more abundant.

On the Duck Mountain plateau, there are numerous wooded potholes, large freshwater lakes, beaver ponds, swamps, wet meadows, and bogs. The small potholes and beaver ponds contain fresh to slightly brackish waters that are clear or brown in color. The characteristic vegetation includes cattail, bulrush, pondweeds, water-milfoil, and duckweeds. Large lakes are classed as either moderately deep lakes with mineral shorelines, a narrow fringe of emergents, and pondweeds, muskgrass (*Chara* spp.) water-milfoil, and water lily; or shallow bog lakes with a peripheral floating mat of sedges, bulrush, water-horsetail (*Equisetum fluviatile*), water-arum (*Calla palustris*), and bogbean (*Menyanthes* spp.). Floating-leaf pondweed (*P. natans*), and water lily occur in the open water.

Wetlands on the Newdale Till Plain are usually 1 to 10 acres in size, and number about 10 to 20 per square mile. They are generally fertile, slightly brackish marshes with spangletop, cattail, bur-reed (*Sparganium eurycarpum*), water-milfoil, coontail, and star duckweed (*Lemna trisulca*). Some brackish and saline lakes occupy eroded channels near Roblin.

Potholes on the Oxbow Till Plain vary from .5 to 5 acres in size, and number 40 to 120 per square mile. These slightly brackish marshes include spikerush (*Eleocharis* spp.), manna grass (*Glyceria* spp.), water crowfoot (*Ranunculus* spp.), star duckweed, and the common emergents, except for common reed. Saline lakes support the typical species, in addition to prairie bulrush (*Scirpus paludosus*), sago pondweed (*Potamogeton pectinatus*), and horned pondweed (*Zannichellia palustris*).

The Kamsack and Kenville plains presently hold few wetlands, except for the fertile wetlands near Lac la Course, and some isolated marshes in local drainage channels.

### LAND CLASSIFICATION FOR WATERFOWL

Land and water with moderate to high capability (Classes 2, 3, and 3M) for waterfowl production or migratory use occupy about 9 percent of the area. The most important breeding areas include the vicinities of Bluewing and Merridale on the Duck Mountain plateau, the northern Newdale Till Plain, the Oxbow Till Plain, and part of the Kenville Plain near Lac la Course.

Some marshes on the Oxbow and Newdale plains are rated Class 1 but, in general, wetlands on these plains are rated lower due to limitations of smooth topography, poor interspersing of deep marshes, reduced shoreline, flowing water, and low fertility. Wetlands along the shorelines of Sagemace Bay have slight limitations because of inundation and high salinity.

Areas of moderate (Class 4) productivity are located on the Oxbow Till Plain and in the western and southern parts of Duck Mountain. The central part of the plateau is rated Class 5. Here, the potential for duck production is limited by reduced marsh edge, low water fertility, excessive water depth, and steep topography.

The rest of the plains are largely rated Classes 5 and 6, with limitations of topography, low surface water retention, poor interspersing of marshes, and low soil fertility.

The major migratory areas usually include shorelines and water areas of shallow but permanent lakes, such as Lac la Course, Bearhead, Sarah, Cucumber, Snake, Wincell, and Brokenpipe lakes, and the shorelines and shoals of Sagemace and Coleman bays.

The most abundant species of breeding waterfowl found in the area are the Mallard (*Anas platyrhynchos*), Scaup (*Aythya* spp.), Blue-winged Teal (*Anas discors*), American Widgeon (*Mareca americana*), American Coot (*Fulica americana*), Pintail (*Anas acuta*), Canvasback (*Aythya valisneria*), Redhead (*Aythya americana*), Shoveler (*Spatula clypeata*), Ruddy Duck (*Oxyura jamaicensis*), Gadwall (*Anas strepera*), Green-winged Teal (*Anas carolinensis*), Bufflehead (*Bucephala albeola*), and Common Goldeneye (*Bucephala clangula*). Dabbling ducks, such as the Mallard, Blue-winged Teal, and Pintail, prefer shallow marsh habitats, and they are especially common on the Newdale, Oxbow, Westlake, and Kamsack plains. The Mallard, American Widgeon, Canvasback, and Scaup occupy the deep marshes and potholes on the western and southern fringes of the Duck Mountain plateau, whereas small wooded ponds are frequented by the Mallard, American Widgeon, Green-winged Teal, Bufflehead, and Common Goldeneye. The deeper lakes and bays are used by diving ducks, such as the Scaup, Common Goldeneye, Canvasback, Redhead, and Bufflehead.

Capability classification by G. D. Adams and R. C. Hutchinson, Canadian Wildlife Service.

### REFERENCES

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## DESCRIPTION DU TERRITOIRE DE LA FEUILLE DE DUCK MOUNTAIN – 62N

Le territoire inscrit sur la feuille de Duck Mountain, au centre-ouest du Manitoba et à l'est de la Saskatchewan, couvre 5 930 milles carrés. Il se situe sur les hautes terres de la plaine de la Saskatchewan, et dans la plaine Westlake, sub-division de la plaine du Manitoba. L'escarpement du Manitoba, dont la remarquable plage Campbell formée à la suite du retrait du lac glaciaire Agassiz à une cote de 1 100 pi est un des points marquants, sépare les hautes terres de la plaine. L'altitude varie entre 2 727 pi au sommet du mont Baldy et 830 pi au lac Winnipegosis.

Les formations géologiques sous-jacentes du territoire consistent principalement en roches sédimentaires d'origine jurassique, crétacée inférieure et crétacée supérieure. Des grès et des schistes argileux d'origine jurassique, crétacée inférieure et crétacée supérieure, constituent en grande partie les assises de la plaine Westlake; des schistes argileux crétacés, quelques calcaires et bentonites, celles des hautes terres.

La plaine Westlake appartient au bassin de l'ancien lac glaciaire Agassiz. Seules des crêtes basses, des dépressions marécageuses et des crêtes de plage orientées nord-sud, viennent briser l'uniformité de son relief. Ces structures font quelque peu obstacle au drainage et bloquent les eaux de surface qui deviennent stagnantes dans les dépressions et causent la formation de dépôts tourbeux étendus, peu profonds. Les principaux matériaux de surface sont: les tills calcaires remaniés, les alluvions proglaciaires et les sédiments limoneux.

La plaine reçoit les eaux des hautes terres, mais la plupart des grandes rivières se sont creusé des chenaux à travers les crêtes. Les rivières Vermilion, Wilson, Valley et Drifting, qui se jettent dans le lac Dauphin, et les rivières Fork, Garland, Pine, Sclater et Duck, tributaires du lac Winnipegosis, sont les plus importantes dans cette partie du territoire.

La plaine de la Saskatchewan comprend six secteurs, que différencient l'emplacement géographique, la topographie et les matériaux de surface.

La plaine de la rivière Valley, au relief légèrement ondulé, descend progressivement de 1 700 pi à la base des monts Duck et Riding, à 1 100 à la plage Campbell. Ses matériaux de surface consistent en moraine de fond sous forme de tills calcaires de texture moyenne, de dépôts lacustres fins et d'alluvions proglaciaires grossiers. Les nombreux affluents des rivières Wilson et Valley drainent la plaine.

L'altitude du mont Duck varie entre 2 200 pi sur le rebord du plateau et 1 700 à sa base. Au sud-est de Roblin, un prolongement de ce plateau rejoint le mont Riding.

Le relief brisé du mont Duck, typique des moraines glaciaires de retrait ou stagnantes, présente des collines aux flancs abrupts et aux sommets arrondis et de nombreuses marmites ou cuvettes glaciaires transformées en lacs et en tourbières. Les parties inférieures du plateau, se composent de moraines de fond aux pentes terrassées bien drainées. Ces matériaux de surface sont des tills de texture moyenne ou grossière, issus d'un mélange de schiste, de calcaire et de roche granitique.

Des vallées profondes et des ravins découpent le plateau, où passent les cours supérieurs du ruisseau Big Boggy et des rivières Roaring, Shell, Valley, Fork, Garland et Duck. Les lacs Madge, Bearhead, Sarah, Wellman, Line, the Blue Lakes, Childs, Laurie, and Singush sont les plus grands.

La plaine de Newdale, formée par le till loameux-argileux, a pour limites les rivières Shell et Assiniboine et s'étend vers le nord jusqu'à Runnymede et San Clara. Son relief ondulé à bosses, formé de bosses et de cuvettes est typique d'une moraine de fond. Les cours d'eau, qui prennent leur source sur le plateau du mont Duck, drainent la plaine et laissent quelques zones peu étendues d'alluvions proglaciaires sableux.

La plaine d'Oxbow se situe à l'ouest de la vallée de la rivière Assiniboine et au sud du ruisseau Stony. Elle a la même topographie et les mêmes matériaux de surface que la plaine de Newdale. Toutefois, son relief est en général, plus uni. Les cuvettes y sont plus nombreuses et contiennent moins d'eau permanente. Elle comprend quelques dépressions salines; les textures du sol y sont plus légères et varient de loams à loams sableux. Cortigé à la vallée de la rivière Assiniboine, on trouve un vaste secteur d'alluvions proglaciaires sableux.

La plaine de Kamsack se situe le long de la rivière Assiniboine et s'étend du nord du ruisseau Stony à Pelly. Des chenaux creusés par les cours d'eau débouchent sur le lac Pelly. Des affluents de la rivière Stony, qui coulent dans des ravins encaissés, lui donnent parfois une légère inclinaison. Ses dépôts de surface consistent principalement en moraines de fond et lacustres, dont les textures vont du sable fin au limon.

### CLIMAT

Le climat du territoire est continental. Les températures moyennes de juillet et de janvier sont respectivement: 66 et -2°F. Les précipitations annuelles moyennes varient entre 17 po dans la plaine d'Oxbow et 20 sur le plateau du mont Duck. Celles de la plaine Westlake s'élèvent à 18 po. De mai à septembre, elles atteignent 10 à 12 po environ. Les insuffisances d'eau moyenne se chiffrent entre 3 et 5 po dans la plaine d'Oxbow et entre 1 et 3 po sur le plateau du mont Duck et dans la plaine Westlake.

### ÉCOLOGIE

Le secteur de la région forestière boréale aux essences mélangées, s'étend sur le plateau du mont Duck et la moitié nord de la plaine Westlake. Le peuplier faux-tremble (*Populus tremuloides*) et l'épinette blanche (*Picea glauca*) y dominent. Le secteur des tremblaines (prairies-parcs) de la région forestière boréale couvre la plaine de la rivière Valley et le sud de la plaine Westlake. La majeure partie des plaines de Newdale et d'Oxbow se situe à l'intérieur de ce couvert forestier formant un parc. Le reste était, à l'origine, une forêt à découvert composée de peupliers faux-tremble, de peupliers baumiers (*P. balsamifera*) et de chênes à gros fruits (*Quercus macrocarpa*).

Les terrains marécageux ne sont pas répartis régulièrement sur le territoire. Leur taille, leur permanence, leur catégorie et leur fertilité varient.

Dans la plaine Westlake, les principaux types sont: les marais peu profonds, les lacs salins et les marécages. Les eaux des marécages ne sont que saisonnières et contiennent principalement des carex (*Carex* spp.), des scirpes à tige dure (*Scirpus acutus*), des roseaux du nord (*Calamagrostis inexpansa*), des saules (*Salix* spp.), des bouleaux nains (*Betula glandulosa*) clairsemés et des mélèzes laricins (*Larix laricina*). Les marais sont alcalins et saumâtres et adjacents aux crêtes de plage. On les trouve aussi le long des cours d'eau intermittents et en bordure de la baie de Sagemace. Leur flore émergente habituelle consiste en roseaux communs (*Phragmites communis*), scirpes à tige dure, scirpes vigoureux (*Scirpus validus*) et scholochloïdes (*Scolochloa festucacea*). Les potamots à feuille variable, s'agoutier et à vrille (*Potamogeton gramineus*, *P. pectinatus*, et *P. richardsonii*), le mille-feuille aquatique (*Myriophyllum* spp.) et l'utriculaire commune (*Utricularia vulgaris*) sont des plantes submergées communes. Les lacs salins, près du lac Winnipegosis, ont une teneur en saumure qui s'élève jusqu'à 48 mmhos/cm; le jonc d'Amérique (*Scirpus americanus*), le salicorne (*Salicornia rubra*), l'arroche (*Atriplex hastata*) et le ruppias (*Ruppia maritima*) y croissent.

La plaine de la rivière Valley compte encore quelques marais fertiles, permanents ou semi-permanents. Leurs eaux sont douces ou légèrement saumâtres et leur végétation généralement semblable à celles des marais de la plaine Westlake. Toutefois, la massette (*Typha latifolia*), le cératophylle (*Ceratophyllum demersum*), la prêle (*Hippuris vulgaris*) et les lentilles (*Lemna* spp.) y sont plus abondantes.

Le plateau du mont Duck renferme de nombreuses cuvettes boisées, de grands lacs d'eau douce, des étangs de castor, des marais, des marécages et des tourbières. Les eaux des petites cuvettes et des étangs de castor sont douces ou légèrement saumâtres, claires ou brunes. Leur végétation consiste essentiellement en massettes, scirpes, potamots, mille-feuilles aquatiques et lenticules. Les grands lacs comprennent: des lacs de profondeur moyenne aux rivages minéraux avec une étroite bordure de plantes émergentes, ainsi que des potamots, du musc (*Chara* spp.), du mille-feuille aquatique et des nénuphars ou des lacs marécageux peu profonds, entourés d'une couche fl