AGRICULTURE AND AGRI-FOOD CANADA

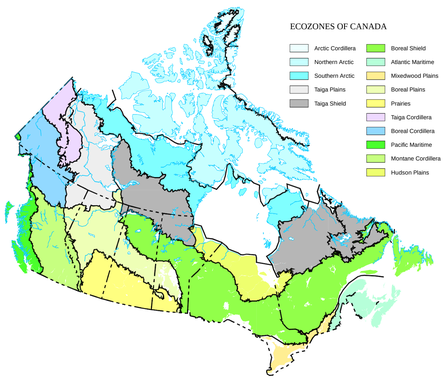
ENVIRONMENT CANADA

TERRESTRIAL ECOZONES, ECOREGIONS and ECODISTRICTS of the PROVINCE of MANITOBA

Scale 1:1 500 000 or 1 centimetre represents 15 kilometres

kilometres 0 10 20 30 40 50 100 150 200 250 kilometres

Lambert Conformal Conic Projection, Standard Parallels 50(N 58'N C.M. -98



CONVENTION

148 ECOREGION Line and Number

666 ECODISTRICT Line and Number

202 Soil Landscapes of Canada - Manitoba Line and Number Version 2.2

CLIMATE [1]

ECOZONE	ECOREGION	ECODISTRICT	Total Annual Precip. (mm)	Annual Snowfall (cm)	Mean July Temp. (°C)	Mean January Temp. (°C)	Growing Season Length (days) [2]	Water Deficit (mm) [3]	Degree Days Above 5°C
Southern Arctic	45 Maguse River Upland	183 Hubbart Point	412	200	11.8	-26.9	100	17	481
Hudson Plains	215 Coastal Hudson Bay Lowland 216 Hudson Bay Lowland	1020 Churchill 1025 French Creek	413 494	201 221	11.9 15.3	-26.9 -25.7	100 127	16 40	486 847
Taiga Shield	70 Kazan River Upland 71 Selwyn Lake Upland	272 Nejanilini Lake 279 Seal River	428 463	200 166	12.2 15.7	-26.7 -25.0	104 132	14 68	523 916
Boreal Shield	88 Churchill River Upland 89 Hayes River Upland 90 Lac Seul Upland 91 Lake of the Woods	353 Granville Lake 363 Sipiwesk Lake 371 Wrong Lake 379 Whitemouth	496 497 583 589	172 183 206 129	16.5 16.8 18.4 18.9	-23.4 -24.1 -20.6 -18.5	151 149 168 179	68 71 42 75	1099 1112 1410 1562
Boreal Plains	148 Mid Boreal Lowlands 149 Boreal Transition 152,153,154 Mid Boreal Uplands 155 Interlake Plain	666 Cedar Lake 709 Swan River 715 Duck Mountain 723 Ashern	475 478 502 510	131 136 139 118	18.5 17.6 18.3 18.5	-20.2 -19.3 -19.0 -19.3	163 171 174 175	81 150 136 102	1393 1386 1498 1506
Prairie	156 Aspen Parkland 161 Aspen Parkland 162 Lake Manitoba Plain 163 Southwest Manitoba Uplands 164 Southwest Manitoba Uplands	758 Stockton 839 Grandview 849 Winnipeg 854 Pembina Hills 855 Turtle Mountain	493 496 514 541 604	114 139 116 136 160	19.3 18.2 19.6 19.3 18.7	-17.5 -18.7 -18.3 -17.1 -16.4	181 173 183 182 179	250 138 205 154 118	1674 1471 1716 1671 1571

[1] Bootsma, A. Canadian Ecodistrict Climate Normals 1961-1990. December 1997 (revised). [2] Period between first and last day that mean daily air temperature equals or exceeds 5°C.

[3] Water deficit estimated for soils with 200 mm available water holding capacity using Penman Potential Evapotranspiration (PE) estimates.

Ecological Stratification of Manitoba's Natural Landscapes

The Canadian Ecological Land Classification System provides a common reference framework for environmental reporting and monitoring. The hierarchy of geographic units is intended to meet ecological reporting and analysis requirements at a range of map scales.

The methods and concepts used to construct the spatial ecological framework are described in A National Ecological Framework for Canada (Ecological Stratification Working Group, 1995). The accompanying map portrays Canadian ecozones and ecoregions, the most generalized levels in the hierarchy, at 1:7 500 000 scale.

This map and accompanying report,Terrestrial Ecozones, Ecoregions, and Ecodistricts of Manitoba (Smith et al, 1998) portrays the ecological land classification hierarchy within the province at several levels of generalization. The example below illustrates the various levels portrayed on this map (definitions are from the Ecological Statification Working Group. 1995);

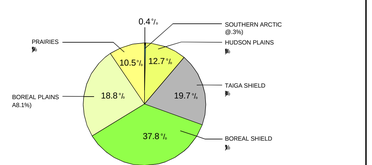
Ecozones are the most generalized units in the hlerarchy. They define, on a subcontinental scale, the broad patterns formed by the interaction of macroscale climate, human activity, vegetation, soils, and geological and physiographic features of the country. The Prairies Ecozone is one of Canada's fifteen terrestrial ecozones.

Ecoregions are subdivisions of ecozones, characterized by distinctive, large order landforms or assemblages of regional landforms, small order macro- or mesoclimates, vegetation, soils, water, and regional land use. Ecoregion 162 (Lake Manitoba Plain) is one of four ecoregions within the Prairies Ecozone in Manitoba. Sixteen of Canada's 194 unique terrestrial ecoregions occur in Manitoba.

Ecodistricts are subdivisions of ecoregions. They are characterized by distinctive assemblages of landforms, relief, surficial geologic materials, soils, water bodies, vegetation, and land uses. Ecodistrict 849 (Winnipeg) is one of twelve ecodistricts within ecoregion 162 (Lake Manitoba Plain). Ninety-three unique named ecodistricts occur in Manitoba.

Soil Landscapes of Canada-Manitoba (SLC) polygons (Canada Soil Inventory, 1989). Although not part of the ecological stratification system, the SLC polygons are presented here (show in red) as a link to the Manitoba SLC map and data base. The SLC polygons have in common the general characteristics of the ecodistrict in which they are found and identify areas which are fairly uniform in climate, landform types, relief, surficial materials, vegetation and land use characteristics. For example, SLC polygons 89, one of eight SLC polygons in the Red River Valley ecodistrict (849), identifies a landscape of level clay soils in the central portion of the ecodistrict.

Manitoba represents 6.5% of the total area of Canada. Portions of 6 of Canada's 15 terrestrial ecozones occur in Manitoba. The diagram below illustrates the portion of Manitoba's total area within each ecozone. The percentage of the Canadian ecozone area within Manitoba is shown in brackets. For example, the Prairies ecozone occupies 10.5% of Manitoba, while Manitoba represents 14.9% of the total area of the ecozone within Canada.



"Ecological land classification is a process of delineating and classifying ecologically distinctive areas of the surface. Each area can be viewed as a discrete system which has resulted from the mesh and interplay of the geologic, landform, soil, vegetative, climatic, wildlife, water and human factors which may be present. The dominance of any one or more of these factors varies with the given ecological land unit. This holistic approach to land classification can be applied incrementally on a scale-related basis from site-specific ecosystems to very broad ecosystems."(Wiken. 1986)

By classifying and mapping ecosystems or complexes of ecosystems, ecological land classification aims to provide sufficient data on the environment so that an evaluation can be made for various resource uses, and of the impact these uses may have on the environment. The quality of planning, management, and potential impacts of various resource uses depends on the level of generality of the map being used, and the level of understanding and expertise brought to the evaluation process.

National Ecostratification and Soil Landscapes of Canada digital maps and databases are available from Agriculture and Agri-Food Canada's National Soil Data Base (CanSIS, see cartographic citation). More detailed soil maps at various scales are also available for many areas of Manitoba. Contact the Land Resource Unit, Room 362 Ellis Building, University of Manitoba, Winnipeg, Manitoba, R3T 2N2 (Phone 204 474-6118).

REFERENCES

Bootsma, A. Canadian Ecodistrict Climate Normals 1961-1990. December, 1997 (revised) http://res.agr.ca/CANSIS/NSDB/ECOSTRAT/DISTRICT/climate.html

Canada Soil Inventory. 1989. Soil Landscapes of Canada - Manitoba. Land Resource Research Centre, Research Branch, Agriculture Canada, Ottawa, Ontario. Agric. Can. Publ. 5242/B. 22pp. 1:1M scale map compiled by Canada-Manitoba Soil Survey.

Ecological Stratification Working Group. 1995. A National Ecological Framework For Canada. Agriculture and Agri-Food Canada, Research Branch, Centre for Land and Biological Resources Research, and Environment Canada, State of Environment Directorate, Ecozone Analysis Branch, Ottawa/Hull. Report and national map at 1:7.5M scale.

National Soil Data Base. 1996. Soil-Landscapes of Canada, Version 2.2. Agriculture and Agri-Food Canada. Research Branch, Ottawa, Ontario.

Wiken, E.B. (Compiler). 1986. Terrestrial Ecozones of Canada. Ecological Land Classification Series No. 19. Environment Canada, Hull, Quebec. 26 pp. + map.

PARTNERS and MAJOR CONTRIBUTORS

Agriculture and Agri-Food Canada, Research Branch, Brandon Research Centre, Land Resource Unit, Winnipeg.

Agriculture and Agri-Food Canada, Research Branch, Centre for Land and Biological Resources Research, Ottawa.

Environment Canada, State of the Environment Directorate, Ottawa/Hull.

Manitoba Department of Agriculture, Soils and Crops Branch, Manitoba Soil Resource Section, Winnipeg.

CITATION

Smith, R.E., H. Veldhuis, G.F. Mills, R.G. Eilers, W.R. Fraser, and G.W. Lelyk. 1998. **Terrestrial Ecozones, Ecoregions, and Ecodistricts of Manitoba, An Ecological Stratification of Manitoba's Natural Landscapes.** Technical Bulletin 1998-9E. Land Resource Unit, Brandon Research Centre, Research Branch, Agriculture and Agri-Food Canada, Winnipeg, Manitoba. Report and map at 1:1 500 000 scale.

ECOZONE	NAME Area / (%) of Prov.	ECOREGION DESCRIPTION	ECODISTRICTS
SOUTHERN ARCTIC	45 MAGUSE RIVER UPLAND 2588 km² @.4%)	Undulating to hummocky Proterozoic (Precambrian) granitic bedrock is the dominant surface form, covered with a discontinuous veneer of sandy glacial till. Almost continuous permafrost underlies the terrain at shallow depth. Small lakes are numerous, and drainage is eastward into Hudson Bay. Dwarf-shrub tundra vegetation predominates, with dwarf birch, willow, Mountain Avens and ericaceous shrubs. Soils are generally shallow and weakly developed and are typically sandy, Static and Turbic Cryosols, with inclusions of Organic Cryosols and Dystric Brunisols. Patterned ground in the form of sorted and nonsorted nets and circles is widespread.	183 Hubbart Point
HUDSON PLAINS	215 COASTAL HUDSON BAY LOWLAND 43 242 km² F.5%)	This lowland is a flat lying plain of Paleozoic limestone and dolomite, covered by marine sediments that are largely overlain by peat deposits. Extensive mud flats occur along the coast. Due to isostatic rebound, relic, sandy beaches are widespread features, but are generally peat covered farther inland. Permafrost is very widespread in bogs and fine textured mineral materials, and infrequent in fens. Thermokarst ponds are very common. Drainage is primarily northeast and north towards Hudson Bay, but is impeded by the numerous beaches and peatlands. Vegetation consists of open stands of stunted black spruce, ericaceous shrubs and mosses on bogs. Fens have sedge and brown moss vegetation and sparse, stunted tamarack. Beaches and glaciofluvial deposits support shrubs or open stands of white spruce and lichen vegetation. Soils are dominantly Organic Cryosols and Organic Mesisols and Fibrisols. Regosols, Gleysols, and Static Cryosols are prevalent along the coast, while Eutric Brunisols are associated with prominent older beaches at higher elevations.	1020 Churchill 1021 York Factory 1022 Fort Severn
	216 HUDSON BAY LOWLAND 40 865 km² F.2%)	This lowland is a flat lying plain of marine, glaciolacustrine, and deep glacial till deposits overlaying Paleozoic limestone and dolomite bedrock. Extensive organic deposits blanket most of the mineral materials. Permafrost is widespread and associated with bogs, and to a lesser extent with fens and loamy to clayey mineral materials. Creeks and rivers flow towards Hudson Bay, but drainage is impeded, resulting in numerous lakes and ponds. Vegetation consists of open stands of stunted black spruce on bogs and tamarack on fens. Open stands of black spruce, white spruce and white birch, associated with ericaceous shrubs and lichens, are found on mineral sites. Soils developed on organic deposits are predominantly Organic Cryosols and Organic Mesisols and Fibrisols. Eutric Brunisols are associated with the sandy marine beaches. Upland clayey and loamy marine sediments and loamy glacial till deposits are characterized by Eutric Brunisols, with some Static and Turbic Cryosols.	1024 Winisk River Lowland 1025 French Creek 1026 Sombert Lake
TAIGA SHIELD	70 KAZAN RIVER UPLAND 28 393 km² D.3%)	The hummocky Precambrian (Proterozoic and Archean) bedrock is partially covered by a thin veneer of acidic, sandy, granitic till. Permafrost is very widespread, but discontinuous. Drainage is eastward, and small and medium lakes are numerous. Vegetation ranges from stands of stunted black spruce and tamarack with dwarf birch, willows, northern Labrador tea, sedges and mosses, with white spruce, ericaceous shrubs and lichens on drier sites, and tundra shrub communities and sedge tussock vegetation on wetter sites. Soils are strongly turbated Turbic Cryosols on sandy loam and loamy sand textured glacial till and outwash deposits. Significant areas of Dystric Brunisols, Static Cryosols and Organic Cryosols also occur. Sorted and nonsorted nets and circles, and polygons are common patterned ground features.	270 Pakulak Lake 271 Blevins Lake 272 Nejanilini Lake
	71 SELWYN LAKE UPLAND 102 040 km² [illegible]	The Precambrian (Proterozoic and Archean) bedrock has a discontinuous veneer of acidic, sandy, granitic till in the northwestern portion of the province. Prominent sandy glaciofluvial esker ridges also occur in this area. Clayey, glaciolacustrine deposits occur at lower elevations in the eastern sector. Permafrost is widespread and discontinuous, and mostly associated with peatlands and clayey sediments. Drainage is to the northeast and east, and small to large lakes are numerous. Vegetation is dominantly open black spruce, dwarf birch, northern Labrador tea, mosses and lichens, with white spruce, northern paper birch and ericaceous shrubs on dry sites. Vegetation on bogs consists of sphagnum mosses, ericaceous shrubs and black spruce, with sedges and brown mosses on fens. Soils are dominantly Organic Cryosols on frozen peatlands, and organic Mesisols and Fibrisols on nonfrozen peatlands. Mineral soils are typically Dystric Brunisols on sandy till and glaciofluvial deposits,with Gray Luvisols and, to lesser extent, Turbic Cryosols on clayey sediments.	276 Nueltin Lake 279 Seal River 280 Sprott Lake 281 Embleton Lake 282 Big Sand Lake 283 Northern Indian Lake
BOREAL SHIELD	88 CHURCHILL RIVER UPLAND 82 917 km² [illegible]	Hummocky and ridged Precambrian (Proterozoic) bedrock, partially covered with a veneer of acidic, sandy glacial till, are the predominant surficial materials in the western sector, while a blanket of clayey, glaciolacustrine sediments and peat deposits commonly overlie the bedrock in the eastern portion of the ecoregion. Permafrost is widespread in peatlands, but occurs only sporadically on the clayey upland areas. Drainage is northeastward, with numerous small to very large lakes. Vegetation is dominantly closed stands of black spruce and jack pine, with inclusions of white spruce, birch, and trembling aspen in the south. Stunted black spruce, ericaceous shrubs, and mosses are dominant on bogs. Forest fires are a commonoccurrence. Soils of the upland areas are dominantly Dystric Brunisols on sandy glacial till and outwash deposits, and Gray Luvisols on clayey glaciolacustrine sediments. Shallow and deep Organic Mesisols and Fibrisols are associated with nonfrozen peatlands. Organic Cryosols occur on frozen peat plateaus and palsas.	344 Reindeer Lake 346 Wells Lake 349 Southern Indian Lake 350 Waskaiowaka Lake 353 Granville Lake 355 Orr Lake 356 Three Point Lake 357 Wekusko 358 Flin Flon 359 Reed Lake
	89 HAYES RIVER UPLAND 115 451 km² [illegible]	Hummocky and ridged Archean bedrock with a discontinuous veneer of acidic, sandy till is predominant in the eastern portion of the area, with loamy, calcareous till in the northeast. In the western section the bedrock is overlain by a blanket of clayey glaciolacustrine deposits, which are in turn overlain by organic deposits in the lower slope positions. Drainage is primarily to the northeast. The area contains numerous small to very large lakes. Vegetation on upland sites is a closed mixed forest of black and white spruce, jack pine, and trembling aspen. Vegetation on fens is sedges, brown mosses, and tamarack, while bogs are characterized by black spruce, ericaceous shrubs and mosses. Forest fires are a common occurrence. Shallow and deep Organic Cryosols, Mesisols and Fibrisols are dominant peatland soils. Eutric and Dystric Brunisols predominate on the calcareous and acidic tills respectively, while Gray Luvisol soils occur on the clayey glaciolacustrine sediments in the west.	360 Knee Lake 361 Pikwitonei Lake 362 Silsby Lake 363 Sipiwesk Lake 364 Island Lake 365 Gods lake 366 Norway House 367 Gunisao Lake 368 Cantin Lake
	90 LAC SEUL UPLAND 37 775 km² E.7%)	Hummocky, crystalline Archean (Precambrian) bedrock outcrops predominate along the Ontario border, with a discontinuous veneer of acidic, sandy, granitic till. The western and northern sections have lower elevations and lower relief, and the bedrock is typically covered by calcareous, clayey glaciolacustrine sediments, which in turn are overlain by extensive areas of organic deposits. Lakes are numerous in the eastern sector, and drainage is west into Lake Winnipeg. Vegetation on upland sites is a closed, mixed forest of black and white spruce, jack pine, balsam fir, trembling aspen and balsam poplar. Vegetation in fens is sedges, brown mosses and tamarack, with black spruce, ericaceous shrubs and mosses in bogs. Forest fires are a common occurrence. In the east, Dystric Brunisols occur on very shallow to deep sandy till, in association with bedrock outcrops and deep Organic Mesisols and Fibrisols in peat filled depressions. Towards the west and north, soils are dominantly Organic Mesisols and Fibrisols, with Gray Luvisols and Gleysols on clay textured glaciolacustrine sediments.	370 Berens River 371 Wrong Lake 373 Nopiming
	91 LAKE OF THE WOODS 14 638 km² B.2%)	Hummocky, crystalline Archean bedrock underlies the area, and forms extensive outcrops in the northeastern section (Whitesheil Provincial Park). The bedrock is mantled by a discontinuous veneer of sandy glacial till. Deep, sandy glaciofluvial and morainal uplands are prominent features in the western sector, in the Sandilands, Milner Ridge, and Belair areas. Extensive fen peatlands, underlain by clayey glacial Lake Agassiz deposits, dominate the ecoregion in southeastern Manitoba. Drainage is generally northwestward, and medium to large lakes are common in the northeastern sector. Vegetation is a closed, mixed forest composed of jack pine, white spruce, balsam fir, trembling aspen and white birch on upland sites. Red and white pine reach their most western limit here. Eastern white cedar, black ash and white elm are also common. Black spruce, Labrador tea, sphagum and feathermosses are common on bogs; and tamarack, swamp birch, alder, willows, sedges and brown mosses are associated with fens. Organic Mesisols and Fibrisols are the dominant peatland soils. Eutric and Dystric Brunisols occur on till and glaciofluvial outwash, and Gray Luvisols and Humic Gleysols occu on fine textured glaciolacustrine sediments.	375 Stead 376 Pinawa 377 Kenora 379 Whitemouth 380 Piney
BOREAL PLAINS	148 MID-BOREAL LOWLAND 71 028 km² [illegible]	Flat lying, low relief Paleozoic limestone bedrock is covered almost entirely by calcareous, loamy glacial drift of varying thickness. A north to south trending drumlinoid or ridged topographic pattern is distinctive. Clayey, glacial Lake Agassiz deposits occur at lower elevations to the north, and along the western shoreline of Lake Winnipeg, and are typically covered by extensive fen and bog peatlands. Significant areas of medium and fine textured recent alluvium also occur, primarily along the Saskatchewan River east and west of The Pas. Lake Agassiz beaches are distinct on the southern edge of The Pas moraine. Permafrost is sporadic in the north and is associated with peatlands. Drainage is east towards Lake Winnipeg. The area contains many large lakes. Vegetation consists of closed mixed forests of trembling aspen and balsam poplar, along with white spruce, balsam fir and black spruce. Jack pine is widespread due to frequent forest fires in the well drained, bedrock dominated areas. Fens support sedge, brown moss, shrub and tamarack vegetation, while bogs support black spruce, ericaceous shrubs and sphagnum mosses. Dominant soils are Eutric Brunisols on glacial till, and shallow to deep Organic Mesisols and Fibrisols on peatlands. Gray Luvisols are typical soils on clayey, glaciolacustrine sediments, while Humic Gleysols and Cumulic Regosols occur on recent alluvial deposits.	663 Playgreen Lake 664 Namew Lake 665 Cormorant Lake 666 Cedar Lake 667 Summerberry 668 The Pas Moraine 669 Saskatchewan Delta 670 Grand Rapids 671 Narrow Islands 672 Overflowing River 674 Pelican Lake 675 Chitek Lake 676 Sturgeon Bay 677 Grindstone
	149 BOREAL TRANSITION 606 km² @.4%)	Cretaceous shale bedrock underlies the area, which is almost entirely covered by thick, kettled to hummocky, calcareous, loamy till and glaciolacustrine deposits. Lakes, ponds and sloughs are associated with the morainal deposits. Vegetation consists of closed stands of trembling aspen, balsam poplar and shrubs mixed with minor occurences of white spruce and balsam fir. Sedges and willows, with some black spruce and tamarack occupy depressional areas. Soils are predominantly Dark Gray Chernozems, with local areas of Black Chernozems, Gray Luvisols, peaty Gleysols and Organic Mesisols.	709 Swan River
	152, 153, 154 MID-BOREAL UPLANDS 11 610 km² A.7%)	These uplands consist of Cretaceous shale bedrock, which is covered entirely by kettled and dissected, deep, loamy to clayey glacial till deposits and glaciolacustrine sediments. Drainage is multi-directional. The area contains numerous lakes and ponds. Vegetation consists of closed mixed forest stands of trembling aspen, balsam poplar, white and black spruce, balsam fir and jack pine, and tends to be more deciduous in the Duck Mountain and Riding Mountain ecoregions. Deciduous and mixed stands have diverse understories of shrubs and herbs. Black spruce and tamarack are found in bogs and fens respectively. Forest fires are a common occurrence. Soils are dominantly Gray Luvisols and Gleysols on loamy and clayey deposits, while Organic Mesisols occupy peat filled depressions. Dark Gray Chernozems are associated with sandy glaciofluvial deposits at lower elevations.	714 Porcupine Hills 715 Duck Mountain 716 Riding Mountain
	155 INTERLAKE PLAIN 39 711 km² F.0%)	This plain is underlain by flat lying Palaeozoic limestone bedrock, which is mantled by extremely calcareous, very stony, water-worked, loamy glacial till. Relief is very low, with drumlinoid or ridge and swale topography. Sandy to clayey glaciolacustrine sediments overlie the till in the northwest and southeast, and are the principal areas of agricultural land in the ecoregion. Drainage is generally to the north and east. Vegetation is dominated by trembling aspen mixed with balsam poplar. This forest cover becomes increasingly mixed with white spruce towards the north of the region. Jack pine is associated with well drained sandy areas. Black spruce and mosses are dominant on bogs, while sedges and tamarack are associated with fens. Mineral soils are predominantly Dark Gray Chernozems, with significant inclusions are Eutric Brunisols. Organic Mesisols and peaty Humic Gleysols occur in poorly drained depressions.	717 Swan Lake 718 Waterhen 720 Gypsumville 723 Ashern 724 Gimli 726 Steinbach
PRAIRIES	156, 161 ASPEN PARKLAND 34 804 km² E.3%)	This region is underlain by Cretaceous shale bedrock that are almost entirely covered by undulating, calcareous, loamy glacial till or glaciolacustrine sediments. Significant areas of level to gently undulating glaciolacustrine sands occur in the eastern (Assiniboine Delta) and southwestern portions of the ecoregion. These sandy deltaic deposits have been reworked as eolian hummocky, ridged, and duned landforms in the Spruce Woods area. Numerous ponds and sloughs are associated with the morainal (glacial till) deposits. Drainage is generally eastward. Native vegetation is mixed wheat grass and fescue prairie, associated with aspen and bur oak groves. Deciduous shrubs and herbs are an important component of most communities. Slough grass, sedges, cattails and willows are found in depressions and surrounding lake margins. Most of the better drained land has been converted to farmland. Soils are predominantly Black Chernozems on glacial till and sandy lacustrine deposits, with Humic Gleysols in poorly drained depressions and Regosols on eolian sand deposits.	751 St. Lazare 752 Melville 753 Hamiota 757 Shilo 758 Stockton 759 Carberry 760 Gainsborough Creek 763 Oak Lake 764 Hilton 765 Killarney 766 Manitou 839 Grandview
	162 LAKE MANITOBA PLAIN 32 818 km² E.0%)	This plain is underlain by Jurassic dolomite and sandstone in the western section, and Ordovician limestone in the eastern part. The bedrock is covered by strongly calcareous, loamy glacial till in the northern half, with a gently undulating ridge and swale topography. The south eastern portion has a deep blanket of calcareous silty and clayey glaciolacustrine sediments, while extensive areas of sandy deltaic deposits occur in the southern central portion of ecoregion. Relief is minimal, and drainage is generally to the east and north. Native vegetation in the northwest, is characterized by trembling aspen and bur oak stands mixed with grassland communities. Slough grasses, sedges, cattails and willows occupy depressional areas. Most of the Red River Valley (Winnipeg, Winkler and Emerson ecodistricts) was originally Tall Grass Prairie, with significant areas of wet meadow and marsh lands. Soils are predominantly Black Chernozems and Humic Gleysols, with significant Vertisols. Most of the glaciolacustrine areas within the ecoregion have been drained and converted to farmland, while stony, glacial till areas are used for improved forage and native pasture for livestock production.	840 Dauphin 841 Alonsa 843 Ste. Rose 844 McCreary 846 Lundar 847 Gladstone 848 Langruth 849 Winnipeg 850 MacGregor 851 Portage 852 Winkler 853 Emerson
	163, 164 SOUTHWEST MANITOBA UPLANDS 2 184 km² @.2%)	The uplands consist of a thick, kettled to hummocky blanket of glacial till and fluvioglacial deposits that overlay Cretaceous shales in the Pembina Hills and Tertiary shales in Turtle Mountain. The Turtle Mountain rises about 200 m above the surrounding plains, while the Pembina Hills upland rises about 200 m above the Manitoba Plains to the east, but only 60 m above the plains west of Manitoba escarpment. The Turtle Mountain uplands occur at a higher elevation, and contain many lakes and ponds. Drainage is multi directional. Vegetation is deciduous forest dominated by trembling aspen. The native vegetation in the Pembina Hills consists of aspen, balsam poplar and bur oak, but large areas are now farmland. Soils are predominantly Dark Gray and Black Chernozems. Gray Luvisols are also widespread, particularly on higher elevation areas in the Turtle Mountain ecodistrict. Significant associated soils are peaty Gleysols and Organic Mesisols in peat filled depressions.	854 Pembina Hills 855 Turtle Mountain

CanSIS-ID cas021

Plot Date 99-03-17

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