DEPARTMENT
OF REGIONAL
ECONOMIC
EXPANSION

THE CANADA LAND INVENTORY

LAND CAPABILITY CLASSIFICATION FOR WILDLIFE

The Canada Land Inventory
Report No. 7
1970

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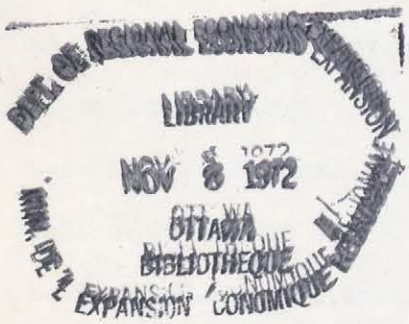

Report No. 7—1969

LAND CAPABILITY CLASSIFICATION FOR WILDLIFE

Prepared for
The Canada Land Inventory
by N. G. Perret

DEPARTMENT OF
REGIONAL ECONOMIC EXPANSION,
CANADA

Published under the authority of

The Minister of Regional Economic Expansion

Ottawa, 1970

Queen's Printer for Canada

Ottawa, 1970

Cat. No.: RE63-7/1969

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ACKNOWLEDGEMENTS

Planning for the orderly development and management of wildlife resources requires an assessment of the resource and an understanding of its relationship to the land and other land uses. To meet those requirements the first step is to examine and describe the various habitats, to map their location and extent, and to show their relationship and limitations by an orderly system of classification. The wildlife classification system was designed for that purpose.

The Land Capability Classification for Wildlife was developed with the assistance and co-operation of many biologists from federal and provincial wildlife agencies and universities across Canada. In the final stages, a committee of biologists approved the system and paved the way for its acceptance and use for the Canada Land Inventory.

I would like to thank Mr. W. Arthur Benson, the first National Wildlife Co-ordinator for the Canada Land Inventory, for the very important part that he played in developing the classification system. Mr. Benson was instrumental in developing the system and carrying the process through to the final committee stage.

I would like to thank also the many other biologists whose advice, suggestions, criticisms and photographs have made this publication possible.

LAND CAPABILITY CLASSIFICATION FOR WILDLIFE

INTRODUCTION

The Canada Land Inventory is a co-operative federal-provincial program under the Agricultural and Rural Development Act (ARDA) of 1961, designed to provide a basis for land use planning at the municipal, provincial and federal levels of government. It includes assessment of lands in the settled portion of Canada, according to their use capability for agriculture, forestry, wildlife and recreation as well as surveys of present land use. As the Canada Land Inventory is an integrated approach to assessing land capabilities for various uses, the classifications used for all sectors have the same framework and follow the same general criteria.

The wildlife classification system described in this report was developed in co-operation with the Canadian Wildlife Service and provincial wildlife agencies. After initial discussions, a tentative classification was drawn up and reviewed at regional and national meetings in 1964 and 1965. Finally, at the Federal-Provincial Wildlife Conference in July 1965, the wildlife classification system was adopted. Field surveying and mapping were started and only minor changes in the classification system were required to produce a national rating of wildlife lands.

Over 800,000 square miles of land are being surveyed and mapped. Maps at the 1:50,000 scale are produced for computer input to be used for land use planning. A series of colored maps, at a scale of 1:250,000, are being published and may be purchased from the Queen's Printer, Ottawa, as they become available.

THE CLASSIFICATION SYSTEM

The Wildlife Sector of the Canada Land Inventory has some unique aspects, particularly the great diversity of wildlife species, their different environmental requirements, and their mobility and other behavioural attributes. One national series of maps cannot effectively represent the capability of land to produce or support all species of wildlife. For this reason, the current capability inventory is restricted to two main groups of species which occur across Canada: ungulates, which are the responsibility of the provincial governments, and waterfowl, which by treaty are the responsibility of the federal government. The classification system used is the same for both groups, with slight modifications due to their different environmental requirements.

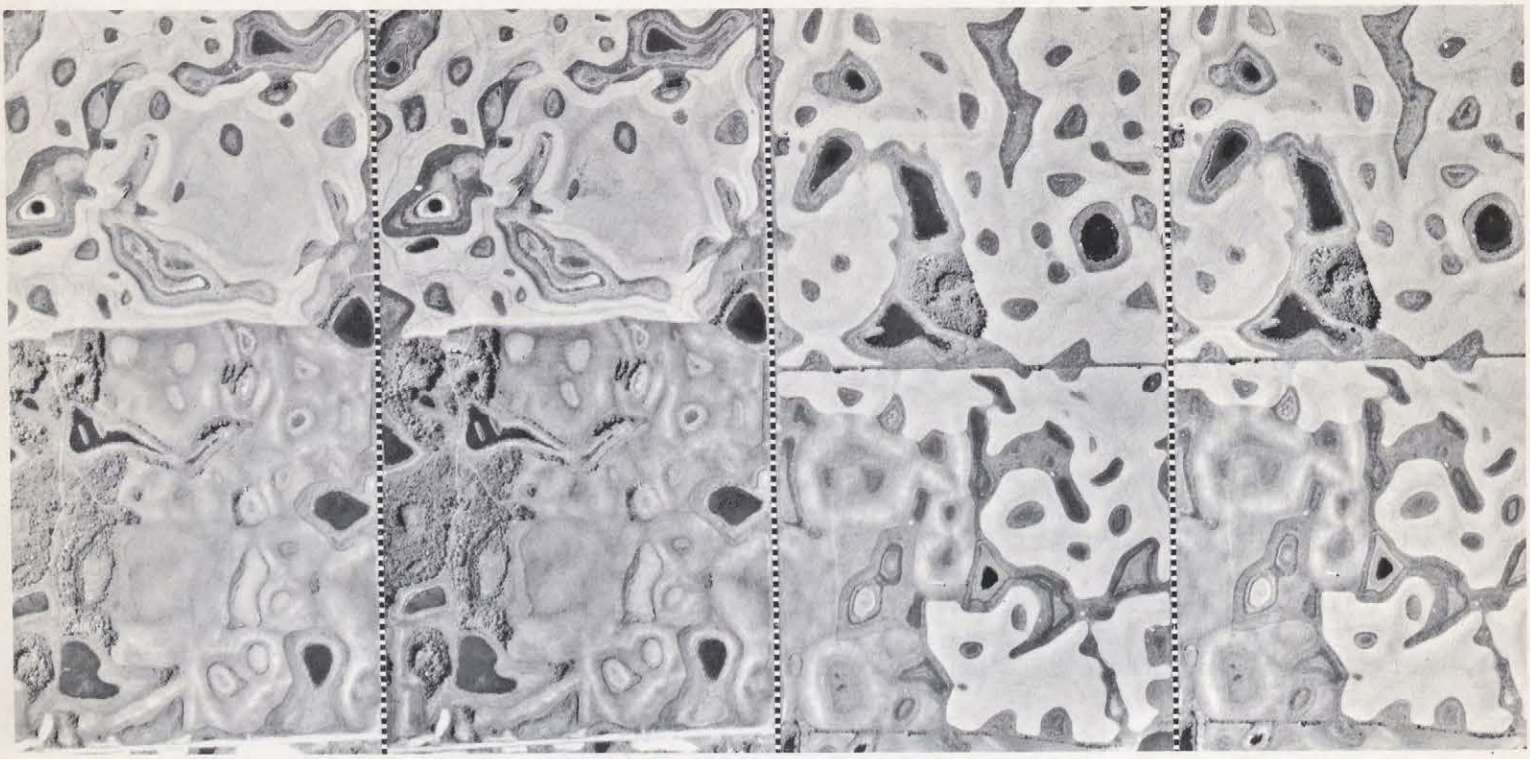

Figure 1: These stereopairs show an end moraine in the aspen parklands of Manitoba, typical of the Class 1 "pothole" habitat in the Canadian prairies. Fertile soils and good interspersion of permanent and temporary water areas provide a wide variety of habitat for breeding and nesting purposes and for the rearing of young.

Figure 2: This photograph of aspen parkland habitat is Class 1 for waterfowl. The good interspersion of small temporary ponds with large permanent areas provides ideal conditions for waterfowl production.

Categories used in the classification system are: the capability class; the capability subclass; and for ungulates, the indicator species.

CAPABILITY CLASSES

All environmental factors are taken into consideration when assigning a capability class to a unit of land. The class boundary is determined by physical characteristics of the land which are significant to ungulates and waterfowl. Thus the capability class is an expression of the environmental factors that control the numbers of ungulates or waterfowl that can be produced and supported on a unit of land.

CAPABILITY SUBCLASSES

For all classes except Class 1, factors which limit the production of wildlife are shown as subclasses. The degree of limitation, and to a lesser extent the kind of limitation, determine the class designation. In the waterfowl classification, subclasses are not used with the special class 3M which indicates areas used as "stopovers" or concentration areas during migration.

INDICATOR SPECIES

Indicator species are used in the ungulate classification only to show the species which a unit of land is capable of producing or supporting. The first species indicates the major species in the area. The other indicator species may be as important as or less important than the major species, but all were considered in arriving at the class and subclass.

BASIS OF CLASSIFICATION

In general, the needs of all wildlife are much alike; each individual and species must be provided with a sufficient quality and quantity of food, protective cover and space to meet its needs for survival, growth, and reproduction. The ability of the land to meet these needs is determined by the individual requirements of the species or group under consideration, the physical characteristics of the land, and those factors that influence the plant and animal communities.

In an interpretative land classification system for wildlife, criteria and procedures must be the same if the system is to be uniform. All wildlife capability maps have been prepared as follows:

(1) The separation of the land surface into homogeneous units for classification is on the basis of physical characteristics significant from a wildlife standpoint.

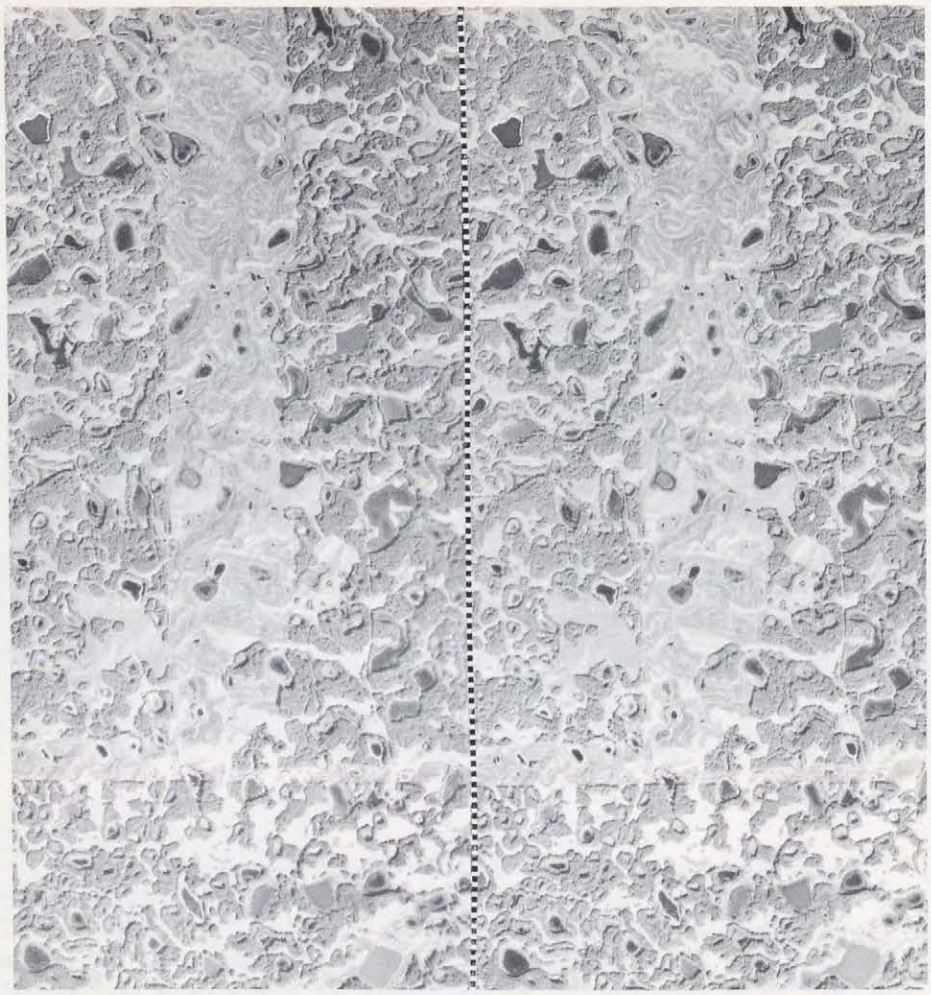

Figure 3: A disintegration or dead-ice moraine in Alberta is Class 1 for the production of waterfowl. Although the ponds are smaller than those seen in Figure 1, the area contains all of the essential habitat features and has no natural limitations. The effects of land clearing on waterfowl habitat in this type of land form are easily recognized in the center of the photographs. Because of topography and special soil characteristics the area has a very low capability for agriculture.

(2) The assignment of a class to each unit of land is on the basis of all known or inferred relevant information about the unit, including parent material, soil profile, depth, moisture, fertility, landform, climatic factors and vegetation which reflect the quality and quantity of food and cover available to wildlife.

(3) Classifications are based on the natural state of the land under good wildlife management practices. Management practices which are practical and feasible are assumed.

(4) Location, access, ownership, distance from cities or roads or present condition of a land unit are not considered in assigning a capability class. Present cover and production in an area are used only as additional information. Excessive or insufficient hunting pressures do not limit the capability of the land and are not used in assigning classification values.

(5) The degree of limitation determines the class designation. The subclass is the factor which causes the limitation. The limitations and the class may be changed as new information becomes available. Although class levels may be changed by the advent of new and improved management techniques, it is unlikely that significant changes can be made except by costly and continuing practices.

LAND CLASSIFICATION FOR WATERFOWL

CAPABILITY CLASSES

The basic unit of the classification system is the capability class which denotes the ability of land or water to support or produce waterfowl. The capability class level is determined by the degree of limitation which affects the quality and/or quantity of habitat for the waterfowl.

CLASS 1 - LANDS HAVING NO SIGNIFICANT LIMITATIONS TO THE PRODUCTION OF WATERFOWL

Capability on these lands is very high. They provide a wide variety and abundance of important habitat elements; the soils are fertile and have good water holding characteristics and topography is well suited to the formation of wetlands. Predominant water areas on these lands are both shallow and deep permanent marshes, and deep, open water bodies with well-developed marsh edges.

Figure 4: A Class 1 marsh which also serves as an important migration stop is illustrated in these photographs. The marsh, a barrier beach pond, is highly productive because of fertile waters and abundance of excellent cover and food plants. Class 1S.

CLASS 1S -

Lands in this special class are Class 1 areas that also serve as important migration stops for waterfowl.

CLASS 2 - LANDS HAVING VERY SLIGHT LIMITATIONS TO THE PRODUCTION OF WATERFOWL

Capability on these lands is high. Slight limitations are due to climate, or fertility or permeability of soils. Topography tends to be more undulating than rolling; a higher proportion of the water areas consists of small temporary ponds or deep open water areas with poorly developed marsh edges.

CLASS 2S -

Lands in this special class are Class 2 areas that also serve as important migration stops for waterfowl.

CLASS 3 - LANDS HAVING SLIGHT LIMITATIONS TO THE PRODUCTION OF WATERFOWL

Capability on these lands is moderately high but productivity may be reduced in some years because of occasional droughts. Slight limitations are due to climate or to characteristics of the land that affect the quality and quantity of habitat. These lands have a high proportion of both temporary and semi-permanent shallow marshes poorly interspersed with deep marshes and bodies of open water.

CLASS 3S -

Lands in this special class are Class 3 areas that also serve as important migration stops for waterfowl.

CLASS 3M -

Lands in this special class may not be useful for waterfowl production but are important as migration or wintering areas. This class has no subclasses.

CLASS 4 - LANDS HAVING MODERATE LIMITATIONS TO THE PRODUCTION OF WATERFOWL

Capability on these lands is moderate. Limitations are similar to those in Class 3 but the degree of limitation is greater. Water areas are predominantly temporary ponds, or deep, open waters with poorly developed marsh edges, or both.

Figure 5: This tidal marsh located on the lower St. Lawrence River is Class 2S. It has a high capability for the production of ducks with a slight limitation due to tidal action. The area is an important migration stop for Canada Geese during the spring and autumn. Class $2S^{I}$

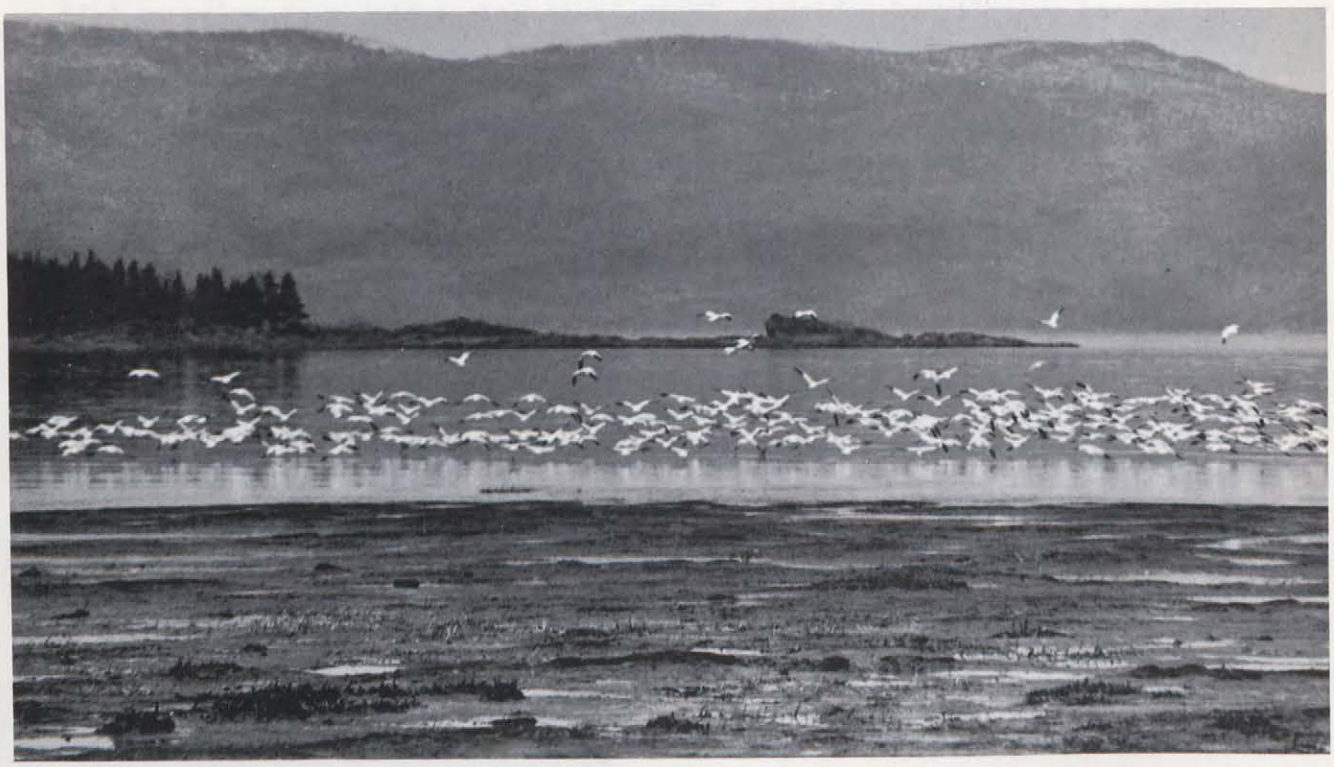

Figure 6: The tidal marshes at Cap Tourmente near the city of Quebec are important feeding and resting areas for Greater Snow Geese during spring and autumn migrations. This area is Class 3M.

CLASS 5 - LANDS HAVING MODERATELY SEVERE LIMITATIONS TO THE PRODUCTION OF WATERFOWL

Capability on these lands is low. Limitations are usually a combination of two or more of the following factors: climate, soil moisture, permeability, fertility, topography, salinity, flooding, or poor interspersion of water areas.

CLASS 6 - LANDS HAVING SEVERE LIMITATIONS TO THE PRODUCTION OF WATERFOWL

Capability on these lands is very low. Limitations are easily identified. They may include aridity, salinity, very flat topography, steep-sided lakes, extremely porous soils, and soils containing few available minerals.

CLASS 7 - LANDS HAVING SUCH SEVERE LIMITATIONS THAT ALMOST NO WATERFOWL ARE PRODUCED

Capability on these lands is negligible or non-existent. Limitations are so severe that waterfowl production is precluded or nearly precluded.

CAPABILITY SUBCLASSES

With the exception of Class 1 and Special Class 3M, the classes are divided into subclasses according to the nature of the limitations that determine the class level. The following subclasses are used to denote significant limiting factors that may affect either waterfowl or the ability of the land to produce suitable habitat conditions.

A - Aridity. The limitation is the inherent susceptibility of the land to periodic drought, which results in low water levels or premature drying of marshes and ponds during the breeding season. There is no aridity limitation if a high proportion of the basins in a land unit which go dry in late summer hold water through July in most years.

B - Free-flowing Water. The limitation is usually due to excess of swiftly-flowing water which inhibits the development of marsh habitat along a watercourse. It may also be due to a lack of flow through low-lying areas which results in habitat of poor quality. It may be due also to a lack of consistent flow in rapidly drained channels or intermittent stream courses.

C - Climate. The limitation is by adverse climatic factors which inhibit development of favorable habitat and restrict waterfowl production. This limitation is usually associated with high elevations in mountain areas where ponds and water bodies are ice-free for only a short period each year.

F - Fertility. The limitation is due to a lack of sufficient nutrients in the soil and/or water for optimum growth of vegetation essential to waterfowl production. This limitation is applied to areas such as coarse-textured sands and gravels, exposed tills, highly carbonated soils, leached grey wooded and podzolic soils, or deep peat soils. Indicators used to assess fertility include water quality measurements, abundance and diversity of aquatic vegetation and agricultural fertility ratings.

G - Landform. The limitation is a poor distribution or interspersion of natural basins or landforms which inhibit the development of optimum waterfowl habitat. This limitation, while closely associated with both topography and moisture-holding capacity of the soils, is used to designate those areas where a poor distribution and interspersion of small marshes result in reduced waterfowl production.

I - Inundation. The limiting factor is excessive fluctuation of water level or tidal action which adversely affects the habitat or the nesting success of waterfowl. It is used to indicate the shorelines of lakes which are subject to severe drawdown during the spring and summer and watercourses where runoff waters are very high during the spring nesting season and leave exposed gravel or mud bars later in the summer. The limitation is also used in areas, such as the shores of the Bay of Fundy, which are adversely affected by tidal waters.

J - Reduced Marsh Edge. The limitations are topographic or other features that adversely affect the width or development of optimum marsh conditions along the edges of water areas. Marsh edge refers to the zone extending from the normal full stage level to a water depth of three feet and is usually marked by the maximum extent of emergent vegetation. Steep gradients, which result in a marsh zone of less than 10 feet in width, are considered a limitation to the capability of the wetland. Shoreline development, the ratio of shoreline length to total area, is also considered on large lakes or marshes. A large marsh with small islands and an irregular shoreline has a higher capability for waterfowl production than does a marsh with a regular shoreline. Both shoreline features are used in considering the limitation due to reduced marsh edge.

M - Soil Moisture. The limitation is the poor water holding capacity of certain soils, which adversely affects the formation and permanence of water areas. It refers to the internal drainage patterns of the soil profile and includes coarse-textured and well-drained soils, such as loamy sands, sands and gravels, that are not influenced by seepage or subsurface moisture. Usually, granular soils fall in this category, but rock outcrops or shallow drift over rock may also be included.

N - Adverse Soil and Water Characteristics. The limitation is excessive salinity, alkalinity, acidity, lack of essential trace elements, or abundance of toxic elements which limits the development of plant and

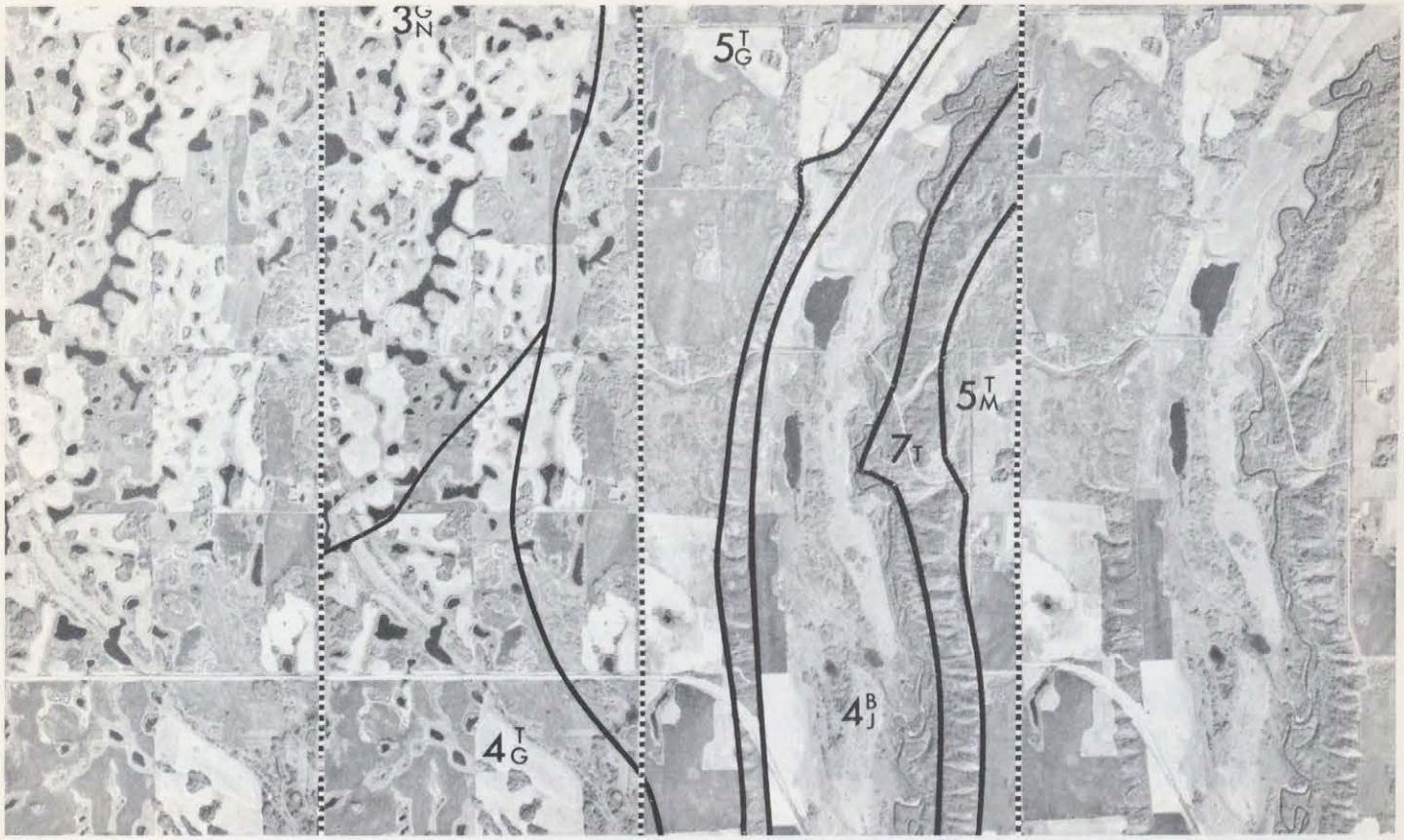

Figure 7: The classifications of the landforms illustrated in these stereopairs are easily recognized. The ablation moraine in the west is Class 3, with limitations due to poor interspersion of temporary ponds and saline soils. The re-worked till to the east and south east is limited by the flat relief and poor interspersion of ponds. Because of intermittent stream flow and reduced marsh edge, the land in the river bottom is Class 4. The steep eroded slopes leading from the plain to valley bottom are Class 7T.

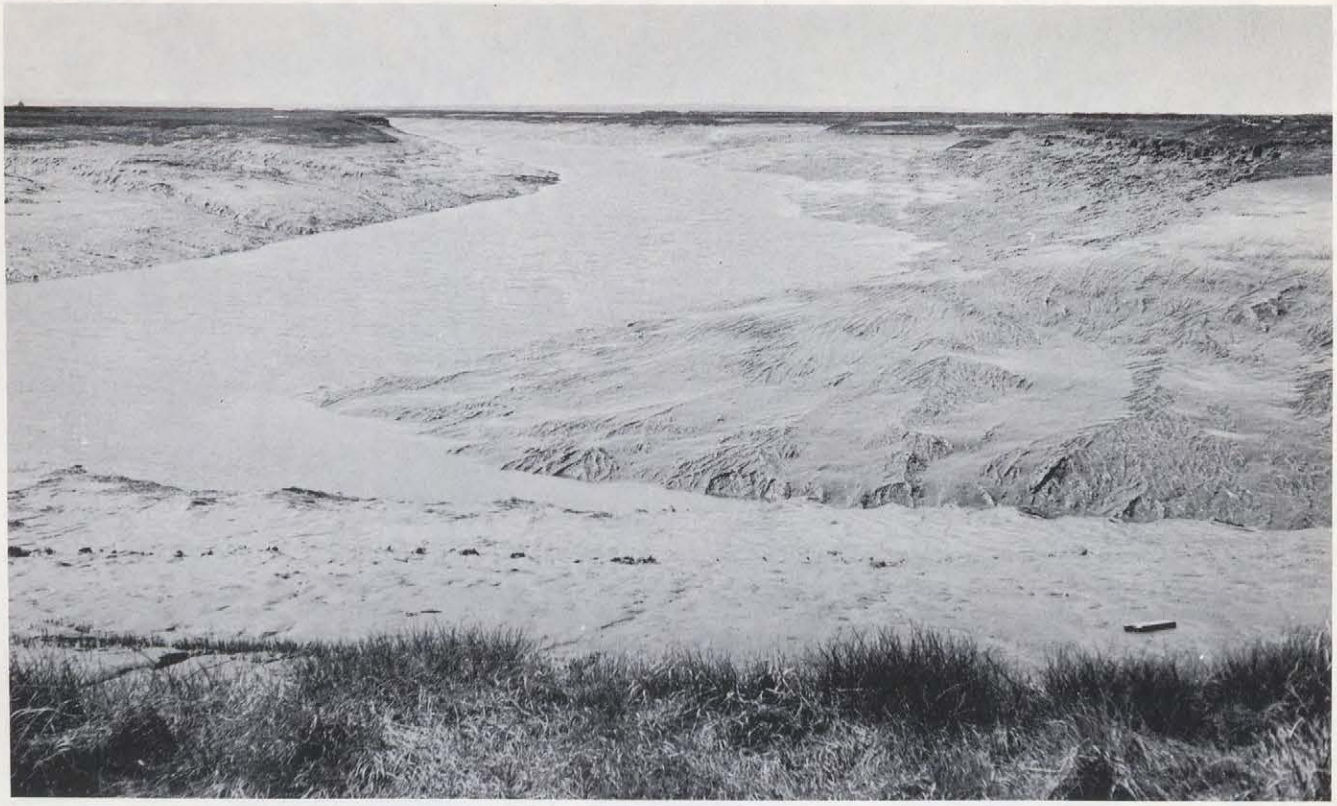

Figure 8: The intertidal zone of the Bay of Fundy, except where well developed tidal marshes were formed, is Class 6 with a severe limitation of inundation. Although not as spectacular in appearance, many tidal areas fall in this category. Class 6^{I}

animal communities essential for waterfowl production. This subclass is used to designate very saline soils or saline or alkaline lakes or other areas where it has been demonstrated that these chemical factors are limiting waterfowl production.

R - Soil Depth. The limitation is the restriction of the rooting zone by bedrock or other impervious layers, which limits the development and growth of suitable plant communities. It applies to landforms such as severely eroded soils, rock outcrops and areas with a shallow layer of soil over rock. It also applies to the marshes in the Canadian Shield which have rocky shorelines.

T - Adverse Topography. The limitation is surface relief, slope or gradient, patterns of knolls and depressions or surface drainage patterns which adversely affect the capability of the land to support waterfowl. Areas with the same severe limitations are level, depressionless plains, very steep slopes or deeply dissected and well-drained moraines and plateaus.

Z - Water Depth. The limitation is deep or shallow waters which limit the development of optimum waterfowl habitat. Usually it is used to indicate large, deep water bodies which are mapped separately, but it may be used also to indicate large marshes or lakes which are uniformly shallow and choked with single stands of vegetation, such as cattail.

Figure 9: These two photographs show the slight difference between Classes 1 and 2. The upper photograph has the higher capability because of many small, temporary ponds distributed near large permanent water bodies. The Class 2G area in the lower photograph is less productive because it has fewer temporary ponds.

LAND CLASSIFICATION FOR UNGULATES

CAPABILITY CLASSES

The basic unit of the classification system is the capability class which denotes the ability of land to support or produce wild ungulates. The capability class level is determined by the degree of limitation which affects the quality and/or quantity of habitat for the animals.

CLASS 1 - LANDS HAVING NO SIGNIFICANT LIMITATIONS TO THE PRODUCTION OF UNGULATES

Capability on these lands is very high. They provide a wide variety and abundance of food plants and other habitat elements.

CLASS 1W -

Lands in this special class are Class 1 areas that are winter ranges on which animals from surrounding areas depend.

CLASS 2 - LANDS HAVING VERY SLIGHT LIMITATIONS TO THE PRODUCTION OF UNGULATES

Capability on these lands is high. Slight limitations are due to climatic or other factors which have a slight adverse effect on the habitat.

CLASS 2W -

Lands in this special class are Class 2 areas that are winter ranges on which animals from surrounding areas depend.

CLASS 3 - LANDS HAVING SLIGHT LIMITATIONS TO THE PRODUCTION OF UNGULATES

Capability on these lands is moderately high, but productivity may be reduced in some years. Slight limitations are due to characteristics of the land that affect the quality and quantity of habitat, or to climatic factors that limit the mobility of ungulates or the availability of food and cover.

CLASS 3W -

Lands in this special class are Class 3 areas that are winter ranges on which animals from surrounding areas depend.

Figure 10: The slopes leading to the river bottom land in this stereopair are a good example of Class 1W, deer habitat that also serves as a wintering area. The bottom land with its meandering river is limited by poor distribution of landforms and by spring flooding. It is Class $3^{G}_{D^{I}}$

Figure 11: This photograph illustrates the vegetation complex of an upland site in Manitoba. The area is Class 2 for moose, deer and elk with limitations of poor distribution of land-

forms and excess moisture in the low areas. Class $2^{G}_{M}{}^{M}_{D}{}_{E}$

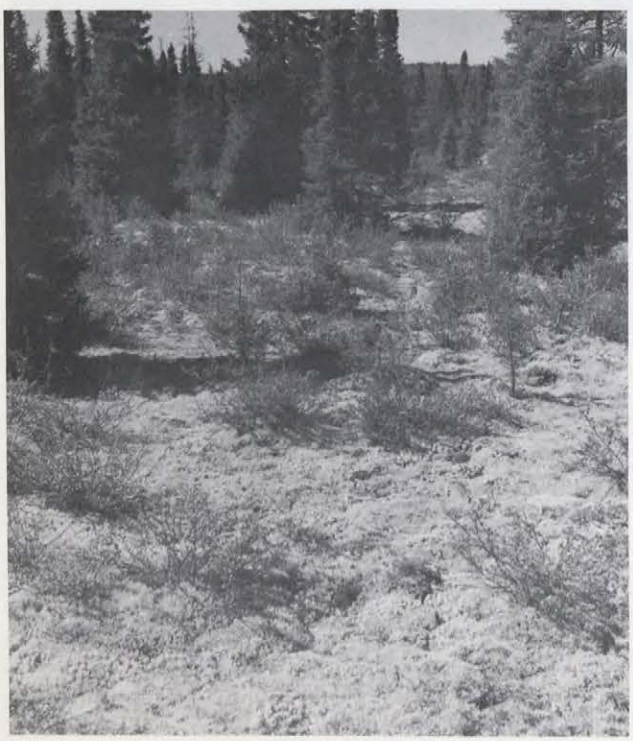

Figure 12: These photographs show a Class 2 wintering area for woodland caribou. The slight limitation is due to climatic factors. The photograph below shows the type of vegetation present in this high quality habitat. Forest cover is primarily black spruce with an understory of dwarf birch (Betula glandulosa). The forest floor is covered by a thick mat of lichens. Class 2WC

C

CLASS 4 - LANDS HAVING MODERATE LIMITATIONS TO THE PRODUCTION OF UNGULATES

Capability on these lands is moderate. Limitations are similar to those in Class 3 but the degree of limitation is greater.

CLASS 5 - LANDS HAVING MODERATELY SEVERE LIMITATIONS TO THE PRODUCTION OF UNGULATES

Capability on these lands is moderately low. Limitations are usually a combination of two or more of climate, soil moisture, fertility, soil depth to bedrock or other impervious layer, topography, flooding, exposure or adverse soil characteristics.

CLASS 6 - LANDS HAVING SEVERE LIMITATIONS TO THE PRODUCTION OF UNGULATES

Capability on these lands is very low. Limitations are so severe that they are easily recognized - for example, soil depth may be negligible or climatic factors so extreme that ungulate populations are severely reduced.

CLASS 7 - LANDS HAVING LIMITATIONS SO SEVERE THAT THERE IS LITTLE OR NO UNGULATE PRODUCTION

Capability on these lands is negligible or non-existent. Limitations are so severe that ungulate production is precluded or nearly precluded

CAPABILITY SUBCLASSES

With the exception of Class 1, the classes are divided into subclasses according to the nature of the limitations that determine the class level. In most cases the limitations do not have a direct effect on the animals but they affect the ability of the land to produce suitable food and cover plants. For convenience the subclasses are placed in two main groups: those relating to climate and those relating to inherent characteristics of the land.

CLIMATE

The following subclasses are used to denote significant climatic factors that may affect either the animals or the ability of the land to produce suitable food and cover.

A - Aridity. The limitation is primarily a climatic factor which restricts the development and growth of suitable food and cover plants. It is

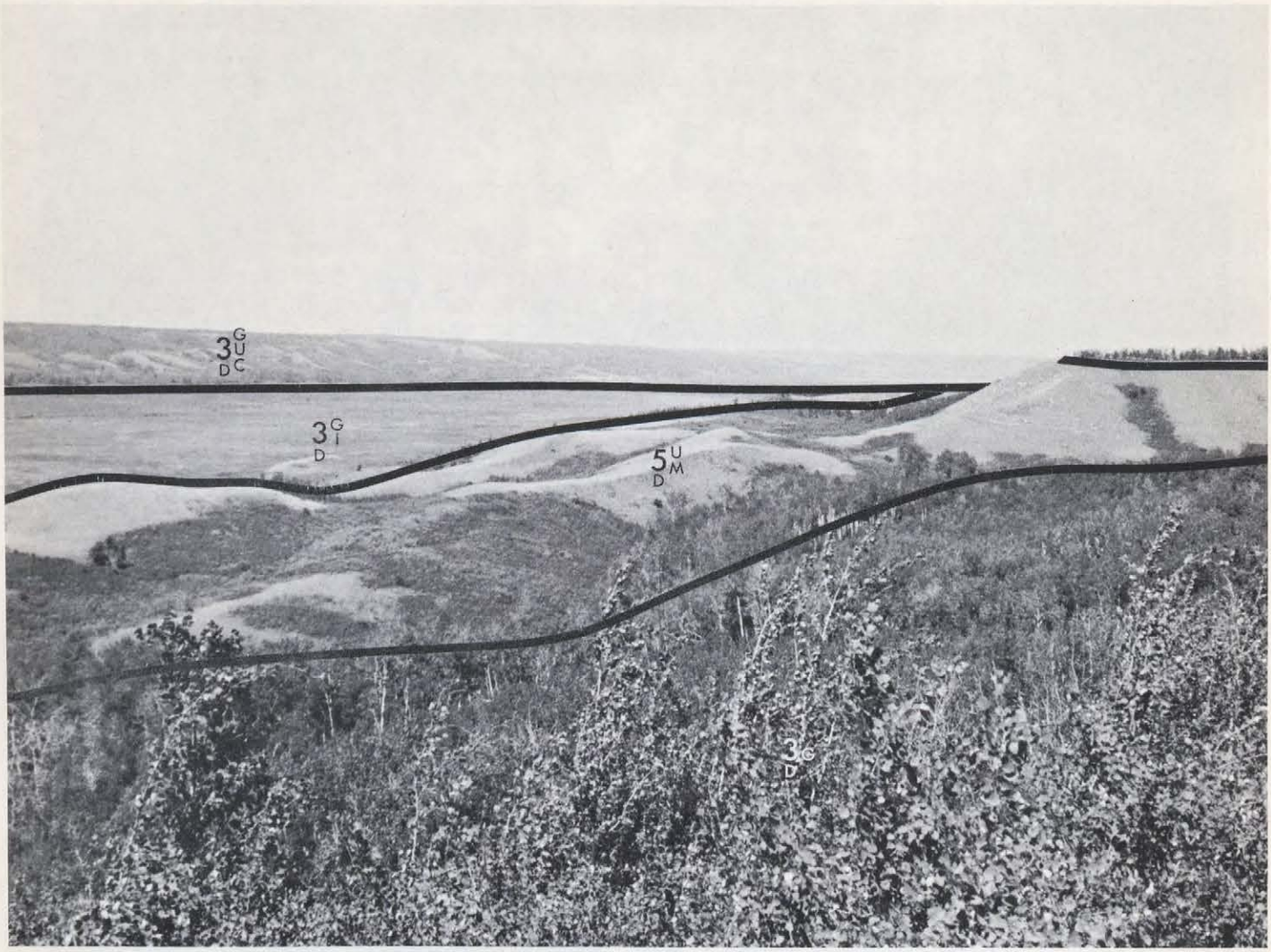

Figure 13: The Class 3 slope in the foreground is moderately sloping with little variety of landforms, aspects or cover types. The Class 5 ridges are south-facing and exposed to the desiccating effects of sun and wind, limiting available moisture. Effects of exposure are further amplified by rapid drainage due to coarse textured soil material. The opposite slope, Class $3^{G}_{U}{}_{D_C}$, lacks ideal landform variety, has an eastern exposure, and is somewhat limited by local climate.

closely associated with moisture-holding capacity of soils but is used to denote those areas of minimal precipitation where rainfall is not available for plant growth due to rapid runoff. It is also used to denote droughty areas where very low precipitation and high rate of evaporation and transpiration retard the growth of browse species.

C - Climate. The limitation is a combination of climatic factors, such as excessive cold or moisture, which reduce the quantity, quality, or availability of food and cover or which affect the production and survival of ungulates. It is used primarily to denote land units with extreme weather conditions, very short growing season or areas where very high rainfall reduces the capability for ungulates.

Q - Snow Depth. The limitation is prolonged periods of snow conditions which reduce the mobility of ungulates and/or the availability of food plants. It is difficult to define the limitation or provide uniform standards for use across Canada because it may be due to one or more of the following factors: depth, texture, size of snow granules, compressibility, density and uniformity of the snow. Experience and knowledge of snow conditions on the winter ranges will assist the surveyor in arriving at a decision on whether or not snow is a limiting factor to the production or survival of ungulates.

U - Exposure or Aspect. The limitations are special climatic factors, such as exposure to prevailing winter winds or hot, dry summer winds that adversely affect the animals and their habitat. In most areas this is a minor limitation but it can be a major limitation to the production of food and cover plants in some coastal areas that are exposed to continuous strong gales.

LAND

The following subclasses are used to denote significant characteristics of the land that limit its usefulness for producing suitable food and cover. Some subclasses may also have a slight adverse effect on the animals.

F - Fertility. The limitation is due to a lack of available nutrients in the soil for optimum growth of food and cover plants. It is applied to units of land where the quality and quantity of cover is affected by the uniform lack of nutrients. Because ungulate production is dependent upon a variety of habitats, the associated ecotones or "edge" pockets of soils low in nutrients within a fertile soil area are not necessarily a limitation. Indicators used to assess fertility include diversity of food and cover plants and agricultural fertility ratings.

G - Landform. The limitation is a poor distribution or interspersion of landforms necessary for optimum ungulate habitat. It is applied to areas with a moderate amount of topographical relief but which are not irregular

Figure 14: The plateau in this picture is a moderately good summering area for moose and deer but because of snow conditions and climate, few animals remain during the winter. It is Class $4^{Q}_{M}{}^{C}_{D}$. The mountain in the background has very little capability but it supports the occasional mountain goat. Limitations are snow depth and exposed rock and shallow soils.

Class $6^{Q}_{G}{}^{R}$

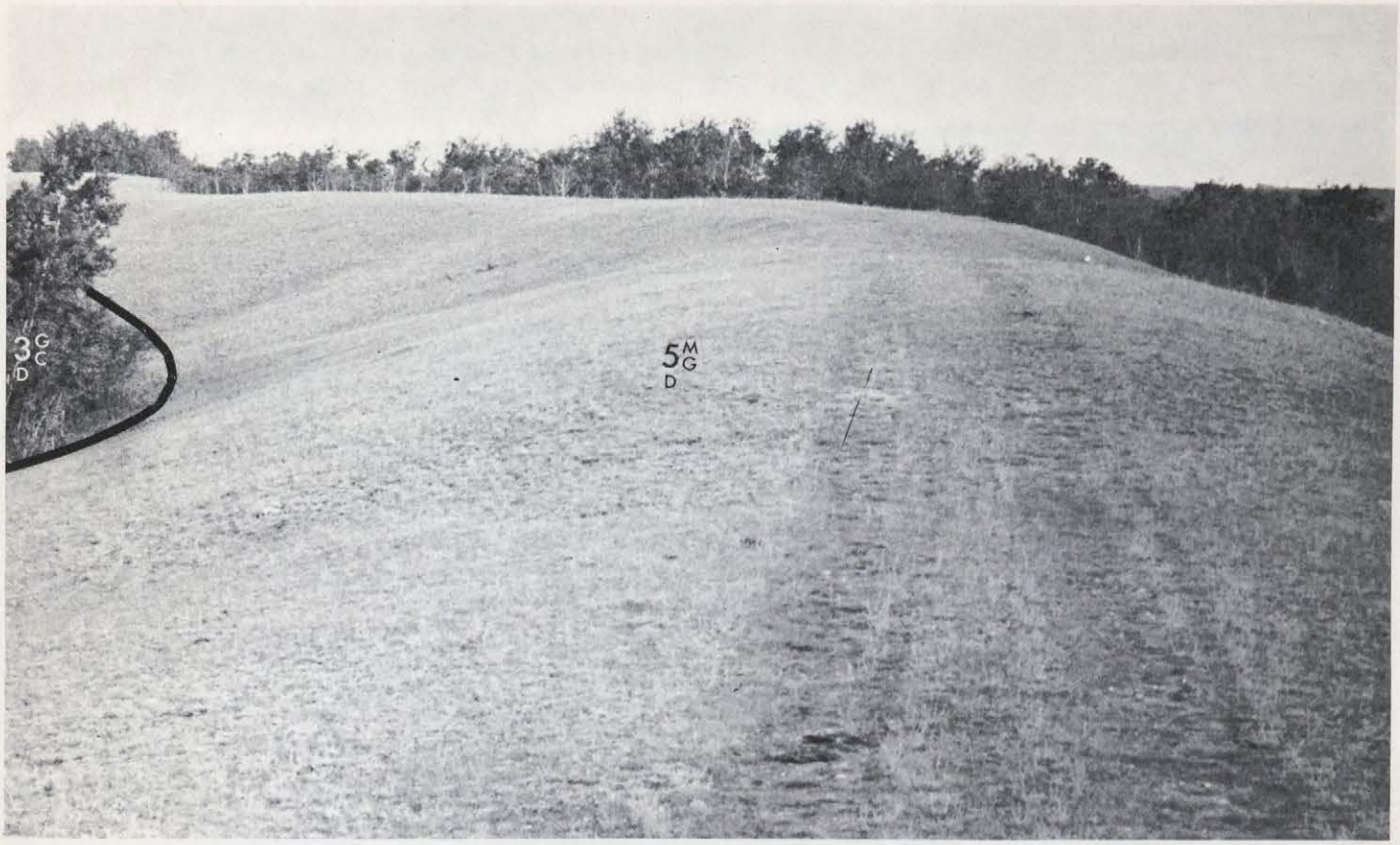

Figure 15: This portion of braided esker, formed of gravelly textured fluvial material, supports only short prairie grasses. Capability Class $5^{M}_{D}{}_{G}$, indicates moderately severe limitations due to deficient soil moisture and poor landform variety. The low areas between the eskers are Class $3^{G}_{D}{}_{C}$. Limiting factors are poor landform variety and climate.

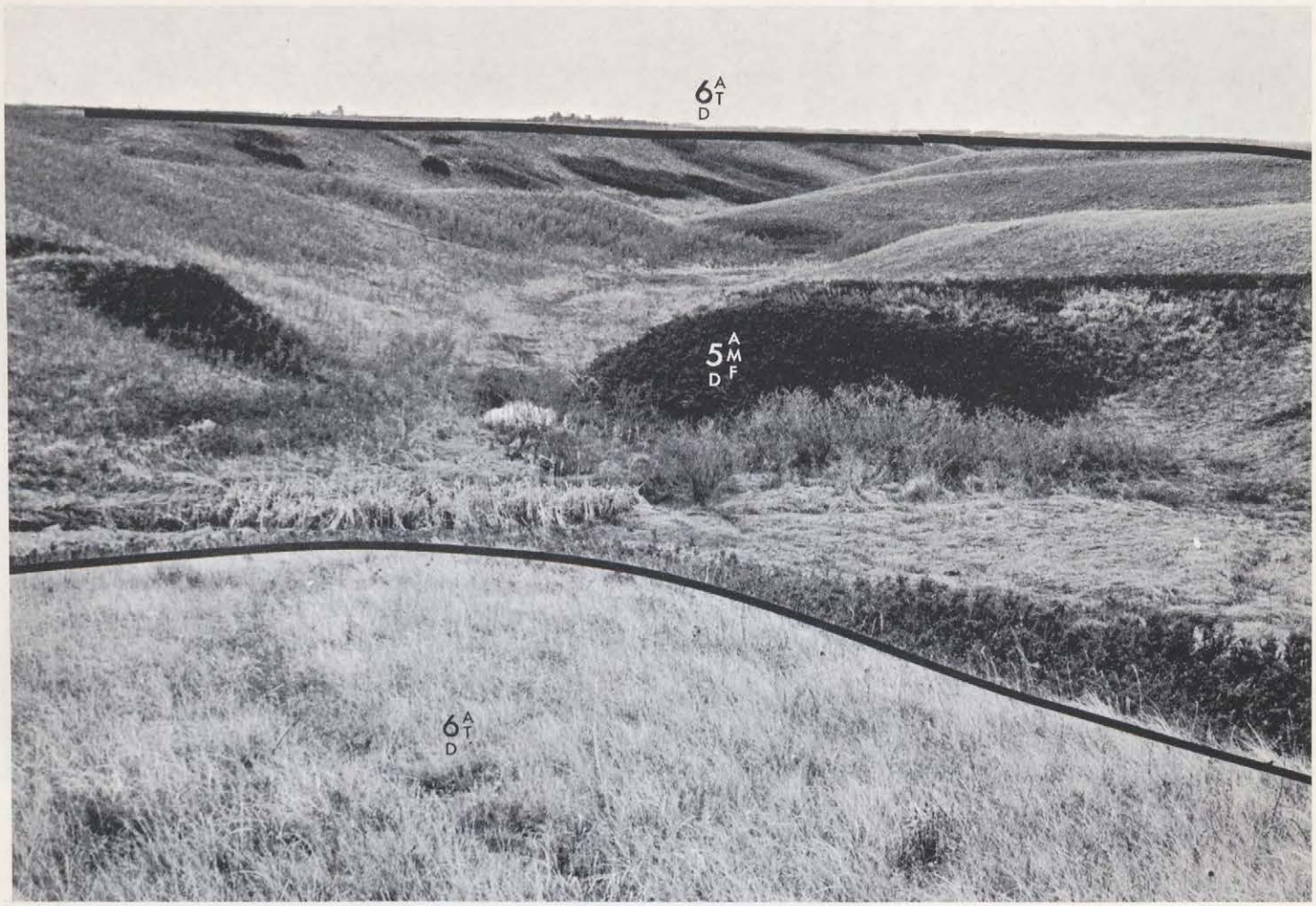

Figure 16: The Class 6 lands in this photograph are flat and arid, the native vegetation being primarily mixed prairie grasses. The shallow ravine, although arid as well, provides better landform variety with some sites able to support tree and shrub growth. The gravelly outwash channel is excessively drained and the water-worked soils are inherently infertile.

enough to provide the desired complex of aspect or "edge" for the ungulate species under consideration. It is applied also to areas which lack essential adjacent escape terrain, cover or other special habitat requirements.

I - Inundation. The limitation is excessive water level fluctuation or tidal action that adversely affects the habitat or survival of ungulates. This subclass is used to denote large tidal areas where food and cover production is limited by tides. It is used also for areas such as river bottom lands or areas associated with some hydro electric developments where water level fluctuations adversely affect the quantity or quality of the food and cover.

M - Soil Moisture. The limitation is poor soil moisture conditions, either excessive or deficient, which adversely affect the development and growth of vegetation or which limit the mobility of ungulates. In most instances the subclass is used to denote those areas where there is an excess of soil moisture due to poor internal drainage. It can be used also to denote areas of adequate precipitation with porous soils that have poor moisture-holding characteristics.

N - Adverse Soil Characteristics. The limitation is due to excessive salinity or alkalinity, lack of essential trace elements, or abundance of toxic elements in the soil. Although used sparingly across Canada the limitation may be of major importance on some ungulate ranges. It is used only where it has been demonstrated that adverse soil characteristics affect the growth or development of optimum vegetation or the health and survival of ungulate species.

R - Soil Depth. The limitation is due to the restriction of rooting zones by bedrock or other impervious layers. It is generally used to denote large areas of shallow soils or exposed bedrock. Small areas of shallow soils or outcrops are not necessarily a limitation and in fact may enhance the capability of an ungulate range by providing a variety of habitat types and the associated ecotones.

T - Adverse Topography. The limitation is due to excessive steepness or flatness of the land. It is used primarily to denote areas with such extreme slopes that the development of optimum vegetation is reduced or the use of the area by ungulates is restricted. Where it is used to denote flat landscapes it is usually associated with other limitations such as poor distribution of landforms.

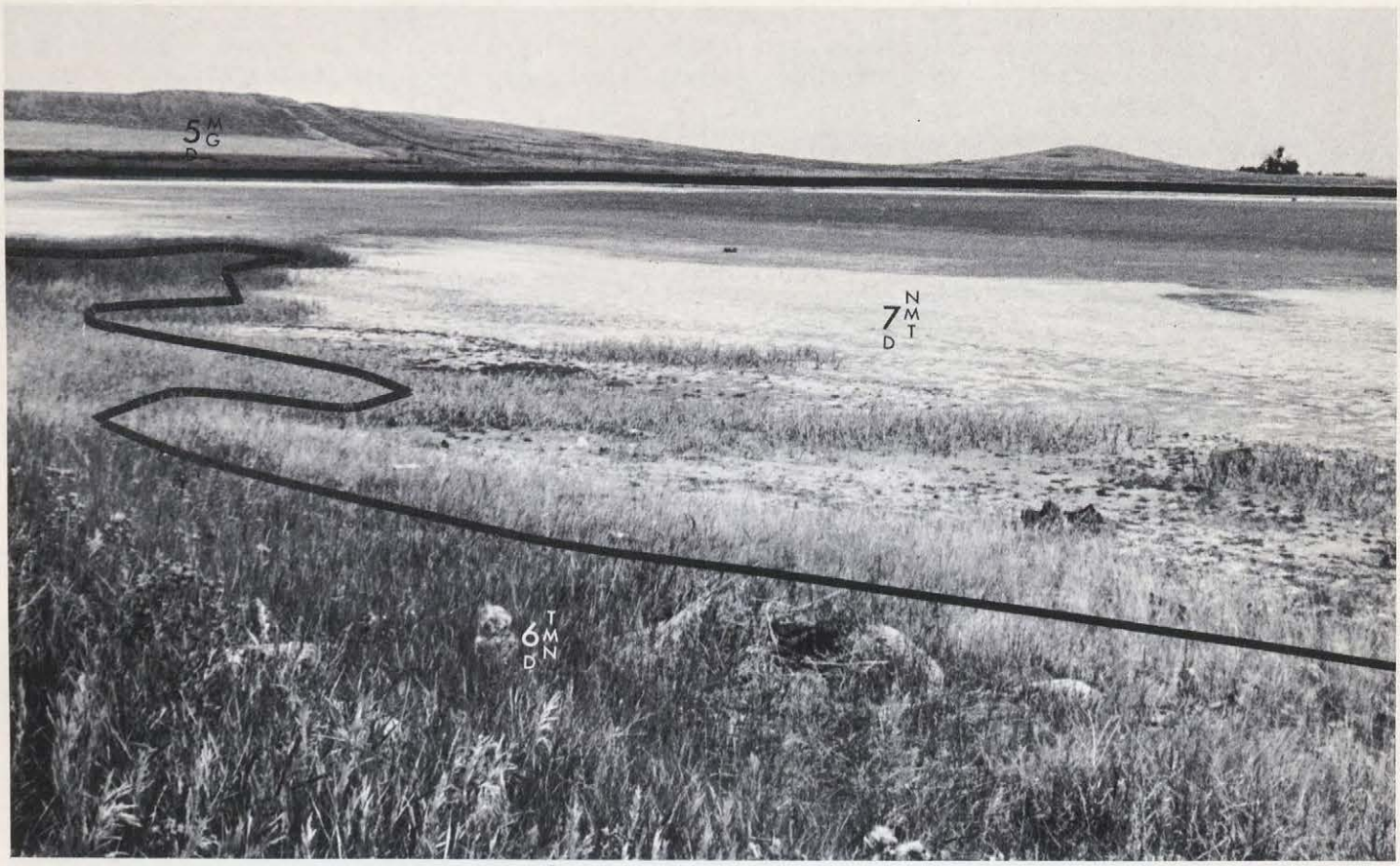

Figure 17: The Class 7 unit has no capability for white-tailed deer production because salinity, related to poor drainage and adversely flat topography, precludes the growth of food and cover. The Class 6 land in the foreground is less salinized and better drained but supports only saline tolerant and hydrophytic grasses and forbs. The gently rolling hills in the background, rated Class 5, are limited by excessive drainage and poor interspersion of landforms. Only the sheltered, north-facing aspects support tree growth.

UNGULATE INDICATOR SPECIES

Species of ungulates for which capability ratings are assigned are shown by the following symbols:

A	Antelope
C	Caribou
D	Deer (white-tailed deer, Columbia black-tailed deer, mule deer)
E	Elk
G	Goat
M	Moose
S	Mountain Sheep

CONVENTIONS

The conventions used in preparing wildlife capability maps are as important to the map user as they are to the field surveyor. This knowledge is important not only for understanding the symbols used but also for interpreting the map data. In summary, the conventions used for mapping wildlife capability are as follows:

1. The map symbol consists of:

   (a) a capability class from 1 to 7 indicated by large arabic numerals or a special class denoted by the class numeral followed by the large, upper case letter W, S, or M.

   (b) subclasses or limitations are denoted by small upper case letters placed after the class or special class. A maximum of three subclasses may be used on maps at the 1:50,000 scale and two subclasses on the published 1:250,000 scale maps.

   (c) species of ungulates are indicated by upper case italic letters placed below the class numeral. A maximum of three species indicators may be used with each class.

2. Map symbols are combined or complexed when individual areas are too small to be shown on the map. Complexes are used on the 1:50,000 computer maps only when small habitat units are dispersed throughout another major habitat type and are important enough by themselves to be identified. When reducing computer maps to the 1:250,000 scale for publication, complexing is used to show the association of small habitat units within a larger habitat type. A maximum of three classes may be used in a complex on the 1:250,000 scale maps and two classes on the 1:50,000 scale maps.

3. In addition to the class, subclass and indicator species, the complexed symbol will include numerals to indicate the approximate proportions, in tenths, of the classes within the complex. The proportion is indicated by a small arabic numeral placed after the class and above the subclass letters. Only those habitat units which make up 10% or more of the area will be shown in the complexed symbol.

4. Class symbols in a complex are placed in order of their relative proportion in the area. The class with the largest proportion is shown first.

Examples:

$\begin{matrix}2W_Q \\ EM\end{matrix}$	An important wintering area for elk and moose but with slight limitations due to excessive snow depths.

5^{T}_{Z}	An area of low capability for the production of waterfowl because of steep slopes and deep water which limit the growth and development of aquatic vegetation.
$3^{6}_{D}Q\,2W\,Q^{4}_{T}ED$	A complexed habitat unit made up of 60% class 3 for deer with limitations due to snow depth and topography and 40% class 2 wintering range for elk and deer with slight limitations due to adverse snow conditions.
$1^{6}\,2^{4}G$	An important waterfowl production area of which 60% is class 1 with no limitations and 40% is class 2 with slight limitations due to poor interspersion of small permanent wetlands.
3M	An important area for waterfowl during spring and autumn migrations. However, few, if any waterfowl are produced in the area.

PHOTO CREDITS

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