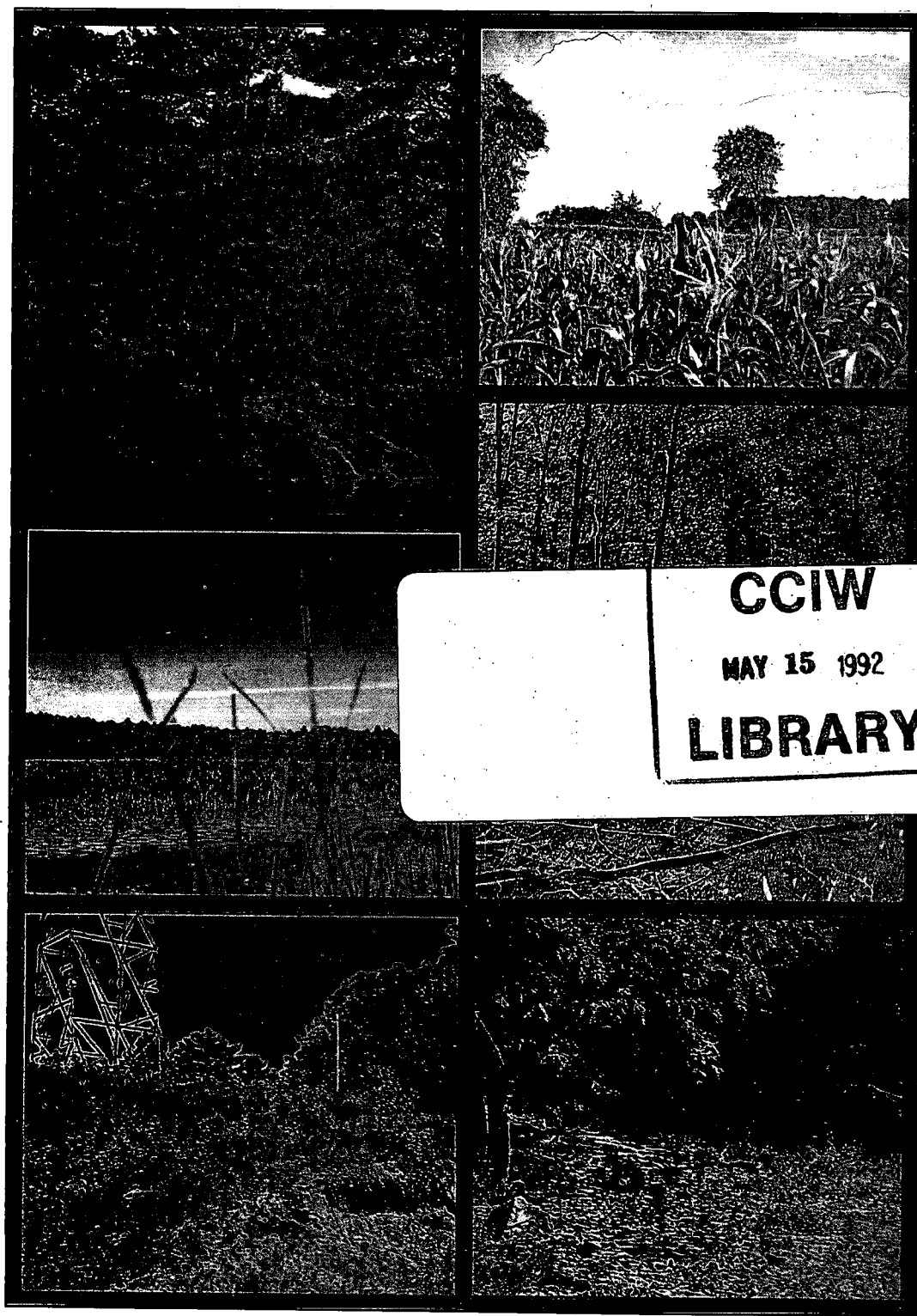


# THE ENVIRONMENT OF THE CORTS CORRIDOR - THE RIDEAU SECTOR

Ecological Land Classification Series



HD  
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no. 15

Ecological Land Classification Series, No. 15

# **THE ENVIRONMENT OF THE CORTS CORRIDOR- THE RIDEAU SECTOR**

**An Inventory and Interpretation  
of some Environmental Resources  
of the CORTS Corridor**

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**March, 1981**

## FORWARD

Within the Canada-Ontario-Rideau-Trent-Severn organization, the total canalway has been divided into three geographical sectors, the Rideau, the Bay of Quinté, and the Trent-Severn. As those sectors are roughly equivalent in area to that which could be covered in one field-study season, and as each contains a biophysical character unique from the others, a separate volume is being prepared for each. This report is volume one, the Rideau Sector.

The accumulated data and the resultant maps are not readily adaptable to bound volumes; therefore, they are reproduced as separate addenda to each report. Similarly, special interest features, such as wetland details, are reported as addenda. Those are listed in the Table of Contents and will be available from the authors.

While the assistance of many persons and agencies throughout the study must be recognized, two individuals stand out. The authors wish to give a whole-hearted acknowledgement and thanks to Richard Thomas and Carl Raynard, two summer student assistants whose loyal and dedicated aid remained steadfast over the three seasons required for the data collection.

Thanks also must go to Carol Martin for her perseverance typing this manuscript through many versions and ever-changing printing formats.

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# AN INVENTORY AND INTERPRETATION OF SOME ENVIRONMENTAL RESOURCES OF THE CORTS CORRIDOR

## THE RIDEAU SECTOR

### Introduction

The Rideau Waterway links the two cities of Kingston and Ottawa, completing the connection between Lake Ontario and the Ottawa River. Its origins can be tied to the conflict between the British and the Americans. Following the War of 1812, there was considerable apprehension in Canada that there would be further attacks from the United States. A need was felt by leaders in Britain for a passage between the Ottawa River and Lake Ontario to circumvent the treacherous St. Lawrence River (Legget, 1955). The establishment of the waterway was also attractive since it would bring settlers into that part of the province.

Lieutenant-Colonel John By, of the British Royal Engineers, was assigned the task of building the waterway. It was he who insisted on providing large enough locks with sufficient draft to handle the recently developed steamboats (Legget, 1955).

The waterway was finished during the 1830's, but never put to its intended use, defence. Relations between the U.S. and Canada improved, and within forty years Canada gained her independence from Britain. Some commercial traffic occurred on the waterway since there were few roads of any kind leading to the interior. During the late 1800's resort hotels began appearing, attracting vacationers and initiating a new era for the waterway. Since the late 1940's, the recreational use of the waterway has increased significantly.

In 1975, an agreement was signed between the federal government (Canada) and the provincial government (Ontario) for planning and development of the Rideau-Trent-Severn (CORTS) recreational Corridor. One of the responsibilities of the CORTS organization is the development of a land-use plan for the Corridor.

To complete any comprehensive planning study, a concise and comprehensive data base is almost essential. A great deal of information must be organized in such a way that it is available to planners in an easily understood format. This report describes a methodology that can be

followed for the collection of environmental resource data in a systematic manner. The Rideau Sector of the CORTS Corridor is treated as the first segment of a program to collect environmental resource data for the entire Corridor.

The study was carried out within the boundaries of the Rideau Sector of the CORTS Corridor (Figure 1), as it extends from Ottawa to Kingston. At the request of the CORTS Agreement Board, staff of the Lands Directorate and the Canadian Wildlife Service of Environment Canada carried out the survey for the purposes of (a) gathering an inventory of baseline data, (b) delineating significant area differences useful to CORTS Land-use planning regulations, (c) identifying individual natural features for an Ecotour publication (Environment Canada, 1978) and Parks Canada interpretative programs, and (d) including specific wetlands surveys for CWS Migratory Bird requirements.

### DESCRIPTION OF THE STUDY AREA

#### Location and Access

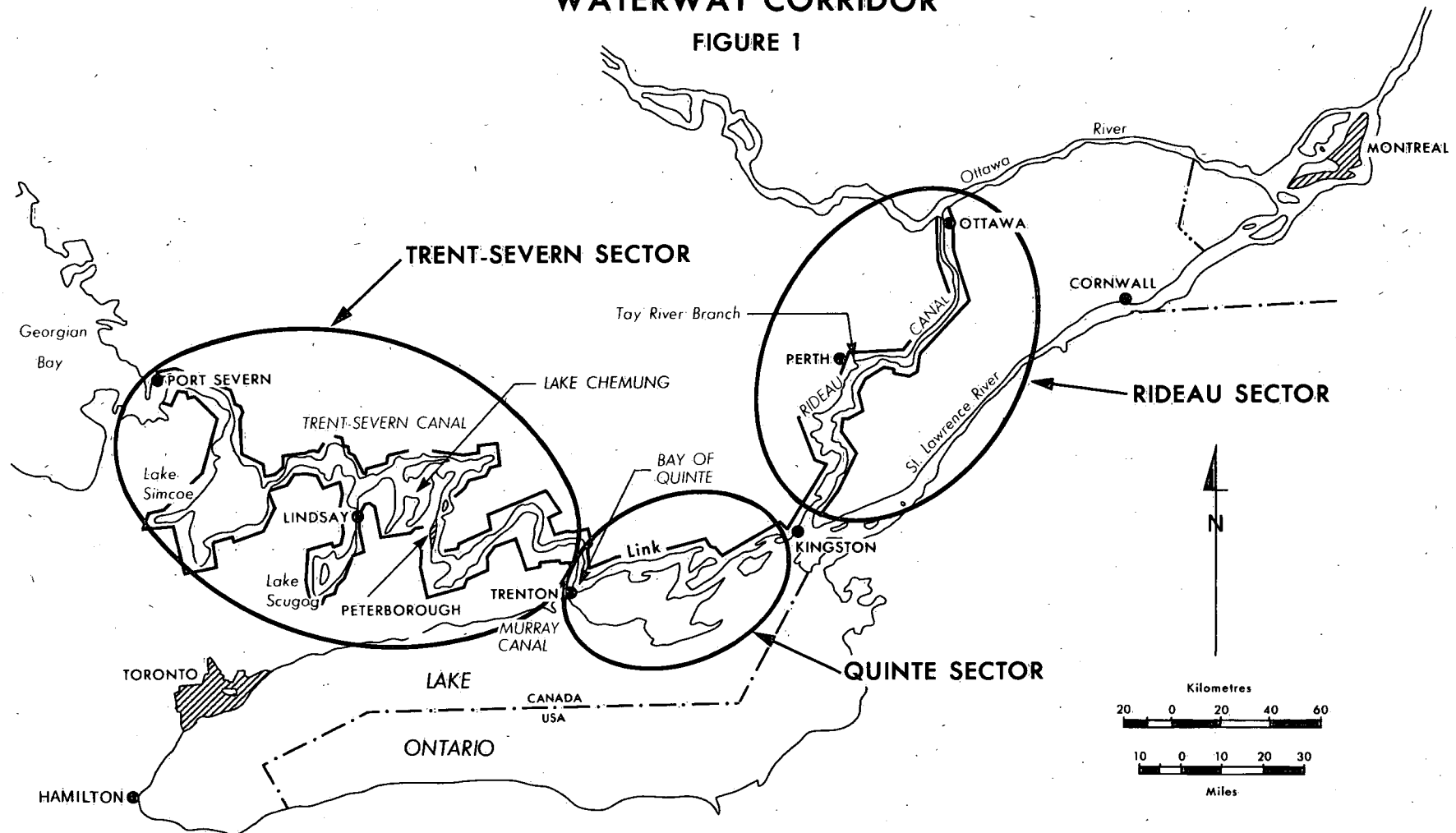
The Rideau Waterway extends from approximately 45° 25' 45" N, 75° 41' 45" W at Ottawa to 44° 15' 15" N, 76° 28' 00" W at Kingston. The system falls from the height of land in the Frontenac Axis, north along the Rideau to the Ottawa River, and south to the Cataraqui River and Lake Ontario. At its highest point, the waterway has an elevation of 122.4 m above mean sea level (amsl). It drops to 40.5 m amsl at Ottawa and 73.4 m amsl at Kingston. The waterway crosses three major physiographic districts; the clay and sand plains from Ottawa to Smiths Falls, the rugged Precambrian Frontenac Axis, and the clay plains and limestone escarpments in the Kingston area.

The Corridor (Figure 1) follows the shores of the Rideau River fairly closely, but widens considerably as it crosses the Frontenac Axis. There it takes in a number of lakes and narrow channels. Those lakes are connected by a series of locks to provide a navigable route across the land

# CORTS

## CANADA - ONTARIO RIDEAU TRENT SEVERN WATERWAY CORRIDOR

FIGURE 1





divide. The Corridor between Ottawa and Smiths Falls crosses a flat area of clay, sand and till plains overlying Ordovician limestones and sandstones which are 200 to 400 million years old. The landscape is highly man-modified to urban and agricultural uses. Natural vegetation is limited to small wet-forest pockets, wetlands, and abandoned fields or semi-managed woodlots.

The Corridor then enters the rugged landscapes of the Frontenac Axis, an area dominated by the billion-year-old Precambrian granites and marbles. Those ancient rocks form an environment of rock ridges and lakes with complex shorelines. The Corridor widens just west of Smiths Falls to encompass the larger lakes; Upper and Lower Rideau, Newboro, Opinicon, and Sand Lakes. Those have steep to moderately sloping shorelines and natural forests of mixed hardwoods and conifers. The rugged landscape is poorly suited to intensive land-uses such as agriculture or urban development. There are, however, relatively large areas of natural and varied forestland in the area. Those, combined with the numerous lakes, provide excellent recreation potential.

To the south, towards Kingston, the land drops down to the plains of Paleozoic limestone rock, some 400-500 million years old. In that area, the construction of the waterway flooded large lowlying areas such as the River Styx. Outcroppings of Precambrian rock continue sporadically as far as Kingston Mills, but are more and more buried beneath the younger limestones as the Cataraqui River drops down to Lake Ontario. Natural mixed hardwood/coniferous forest patches remain in wet areas and on locations of steep topography, while soils of the inter-ridge areas and limestone plains are in pasture and hay crops.

Access to the Corridor is easily gained through the Waterway itself, the Rideau Trail, or along provincial highways #15, #43 and #16 which parallel the Corridor north to south. The southern route of the Trans-Canada Highway (#401) crosses the Corridor near Kingston, while the northern route (#17) crosses at Ottawa.

#### Climate

Climatic factors vary from north to south along the Corridor, but with less divergence than expected with latitude and season when compared to other regions, due to the ameliorating affect of the Great Lakes and other adjacent water masses.

Nevertheless, rapid changes of relief and exposure in the central portion do create localized micro-climates of greater extreme variation. Those in turn produce, in close geographic proximity, small areas of specialized habitat harbouring less-hardy southern plant species in sheltered nooks, and environmentally-dwarfed individuals clinging to life in harsh exposed locations. On the whole, the area has warm summers and mild winters resulting in a long growing season of 195-205<sup>1</sup> days. An unusual feature is the reliable and near-uniform dispersal of precipitation throughout the year. That has been a prime factor in the agricultural and socio-economic development of the area. Tables 1 and 2 display average temperature and precipitation statistics<sup>2</sup> for Kingston and Ottawa. Within the Corridor, annual precipitation exceeds evapotranspiration by some 300-400 mm, and this excess contributes to stream and river flows and groundwater movement.

The average frost-free period<sup>2</sup> for both Ottawa and Kingston is 152 days from May 7 to October 7 with a range of 194 to 131 days. With the extremes of topography within the Frontenac Axis, however, highly divergent micro-climates may produce frost-free periods as short as 60 days.

Winds<sup>2</sup> vary little over the year, averaging 13 kph in summer and 16 kph during the winter months, with just under 40% coming from the NW to SW quarter. Maximum hourly speeds have been approximately 86 kph with gusts to 120 kph from the same quarter during winter storms. The winds are calm less than 5% of the time.

#### Physiographic features

The Rideau Waterway cuts across a complex series of physiographic units within the three major geological areas (Chapman and Putnam, 1972). Results of glacial activity predominate on the landscape through active molding of the pre-existing limestone plains and Precambrian outcrops, and with the various forms of glacial deposits along the entire Corridor.

#### Bedrock Geology

The Rideau Waterway Corridor lies along the western side of the Ottawa-St. Lawrence

<sup>1</sup>adapted from Brown, D.M. et al, 1968.

<sup>2</sup>Department of Transport, 1968.

TABLE 1

## OTTAWA (Rockcliffe)

	<u>J</u>	<u>F</u>	<u>M</u>	<u>A</u>	<u>M</u>	<u>J</u>	<u>J</u>	<u>A</u>	<u>S</u>	<u>O</u>	<u>N</u>	<u>D</u>	Yr. Avg.	Extreme
<u>TEMP. (°C)</u>														
Daily max.	-6.0	-5.0	1.5	11.0	19.5	24.5	27.5	26.0	20.5	13.5	5.0	-4.0	11.0	37.8 (July)
Daily min.	-15.0	-14.0	-7.0	0.5	7.5	13.0	15.5	14.5	10.0	4.0	-2.0	-11.0	1.5	-38.8 (Jan.)
Daily avg.	-10.5	-9.5	-3.0	6.0	13.5	18.5	21.0	20.0	15.5	8.5	1.5	-7.5	6.0	-
<u>PPT (mm)</u>														
Rain	23	12	33	65	74	74	78	89	88	63	52	32	684	85/day
Snow	559	551	390	48	-	-	-	-	-	2	183	600	2340	
Total	76	67	73	70	75	75	78	89	88	64	70	91	912	
<u>EVAP/TRANSP (mm)<sup>1</sup></u>													538	

TABLE 2

## KINGSTON (Hydra)

<u>TEMP. (°C)</u>														
Daily max.	-3.0	-2.5	2.5	12.5	18.0	23.5	26.5	26.0	21.0	15.0	7.5	-0.5	12.0	36.1 (Aug.)
Daily min.	-12.0	-11.5	-6.0	1.0	7.0	12.5	15.5	15.0	10.5	5.0	-1.0	-8.5	2.5	-36.7 (Feb.)
Daily avg.	-7.5	-7.0	-2.0	6.5	12.5	18.0	21.0	20.5	16.0	10.0	3.0	-5.0	7.5	-
<u>PPT (mm)</u>														
Rain	28	24	43	64	76	65	78	75	85	75	65	46	720	119/day
Snow	427	370	282	69	-	-	-	-	2	2	14	368	1656	
Total	71	62	71	71	76	65	78	75	85	75	79	83	888	
<u>EVAP/TRANSP (mm)<sup>1</sup></u>													546	

## CLIMATIC SUMMARY FOR RIDEAU WATERWAY

<sup>1</sup>adapted from Brown, D.M. et al., 1968.

lowland. Within the Corridor, the dominant types of bedrock are the Paleozoic sedimentary formations and the crystalline Precambrian rocks. The flat-lying sedimentary bedrock can be found in the area from Smiths Falls to Ottawa and around Kingston. The formations are Ordovician in age and are mainly dolomitic limestone, sandstone and limited areas of shale. The Precambrian rocks are mostly metamorphic, with large areas of crystalline limestone and metasediments. There are also some

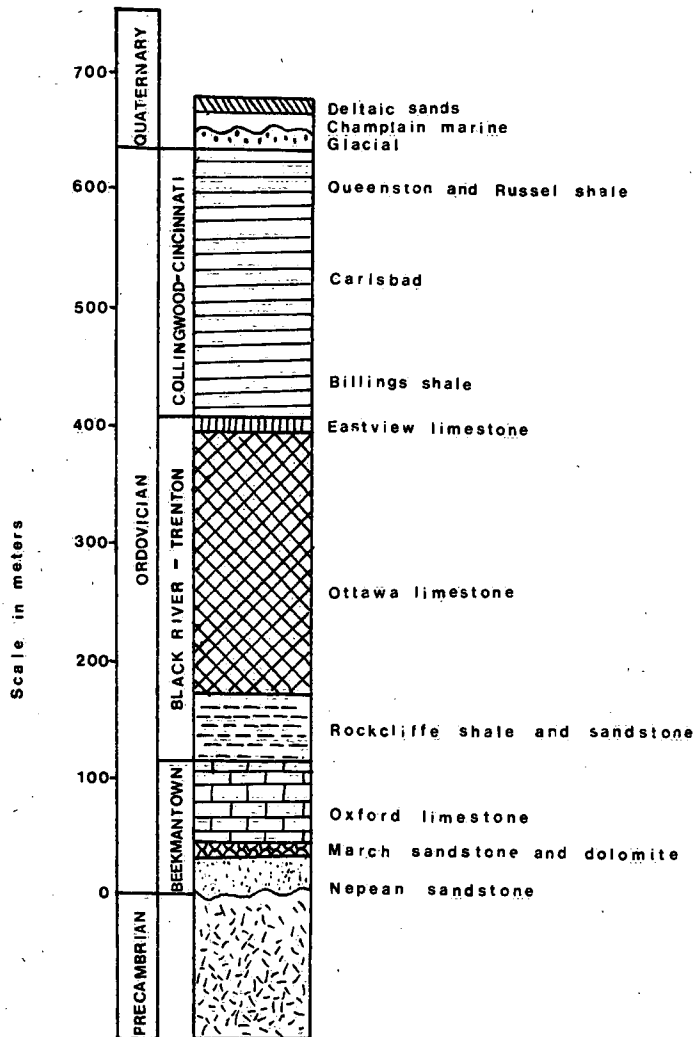


FIG 2

Geological section for  
the Ottawa area

large plutons in the area, best exemplified by the rock Dunders near Jones Falls which rise to an elevation of 175 m amsl. These masses of pink granite rise some 80 m above the lake in striking contrast to the surrounding area. The geological section for the Ottawa area is shown in Figure 2. The most prevalent formations in the Smiths Falls to Ottawa section are the March and Nepean sand-stones. South of the Frontenac Axis, the Black River-Trenton group, composed of the Rockcliffe shale and sandstone and Ottawa limestone, is most prevalent. Within the area of the Precambrian Shield, the predominant rock types fall into two groups; the Grenville rocks, composed of igneous granites, gabbro and syenites, and the Grenville metamorphic series including marble skarn, quartzite, gneiss and granulites (Table 3).

The bedrock geology is significant in its relationship to landform, its effect on vegetative patterns, and its economic importance. The limestones have been used extensively for construction material. The Precambrian rocks yield a variety of minerals; apatite, mica and iron. None of those, however, is actively mined at present.

#### Grenville

Fine grained to aphanitic basic dykes  
White microcline granite and syenite  
Hornblende - biotite granodiorite  
Pink pyroxene monzonite, minor  
hornblende monzonite  
Gabbro, diorite  
Faintly gneissic, pyroxene hornblende  
biotite rocks with augen of potash  
feldspar  
Migmatite

#### Grenville Metamorphic Series

Marble skarn, minor graphitic gneiss  
Quartzite  
Cardierite-bearing gneiss  
Stratiform, Quartzofeldspathic gneisses  
Mesocratic granulite  
Leucocratic granulite

Precambrian Bedrock Types along the Rideau  
Waterway (after Currie and Ermanovics, 1971)

TABLE 3

### Cultural Features

When construction of the waterway was approved, there were only four small settlements in the area; Hull across the Ottawa River, Perth on the Tay River north of Lower Rideau Lake, Richmond and Kingston. Thus, at the beginning of construction of the waterway, the European population was sparse; the native population was low and dispersed; and, the landscape was dominated by natural stands of thick mixed-wood forests, and nearly impenetrable swamps.

Looking back to some 10,000 years earlier, the last thrust of continental glacial ice was retreating, melting from the land, creating new areas and habitats for the immigration of plant and animal species.

Along the glacial toe, transported rock debris was released, the heavier fragments to be mauled and sorted by the water torrents flowing from the ice, and the lighter to be whipped away by strong off-ice winds and deposited in extensive beds of wind-blown sediments. Upon that base, and in response to cold, moist climatic conditions, a boreal environment developed. Black spruce and larch pioneered in the forests; caribou herds moved through the tundra-like middle-ground between forest and ice; and man followed the caribou.

Those earliest immigrants were hunters of the caribou, moose and mastodon -- nomads of the boreal forest and tundra. They affected the environment only slightly with their small numbers and nomadic lifestyle.

For nearly 8,000 years those people followed the northward-retreating tundra/boreal environment across northern Ontario, the shield country, and onto the Hudson Bay lowlands.

Behind them, the ameliorating climate permitted successional stages of vegetation to develop and evolve, until by 3000 to 2000 BC the vegetation communities of the Corridor area began to approximate the present pattern. With those stabilized habitats came populations of beaver, waterfowl, and plant foods capable of sustaining a hunting/gathering human society of larger size and with semi-permanent settlement areas (CORTS, 1977). More of the environment became utilized for food, basketry and containers, and to furnish materials for larger, more permanent housing.

From 500 BC - 1000 AD the population began to live and hunt extensively in certain parts of the Rideau Lakes, shores of the St. Lawrence, and within the Ottawa Valley (CORTS, 1977). Modest agriculture, comprised of domesticated native plants and some corn gained through trade, began with plantings in clearings and exposed deltas. Both inadvertently-caused forest fires and deliberate tree-felling by fire and axe created further openings.

As the time of European discovery approached, the native population had created a very sophisticated way of life.

"... Living, for the most part, south of the Shield, these peoples were the ancestors of the historic Iroquoian residents of southern Ontario. They were enabled by the warmer climate which prevailed between 700 and 1400 AD to exploit intensively not only the variety of hunting, fishing and gathering niches familiar to their predecessors, but, also, corn, beans, squash and sunflower grown on cleared areas of easily-worked sandy soils. With the exception of small hunting and fishing camps, the villages were large and were sited in well-drained locations, inland from navigable waterways."

"... One can surmise an increase in forest clearance and an elaboration in methods dealing with the processing and storage of cultigens. A proliferation of village and camp sites suggests population increase related no doubt to the addition of sunflowers, squash, and beans to the agricultural complex after 1300 AD. Longhouses grew in size, and in numbers per village, implying the development of larger cooperating groups...." (CORTS, 1977).

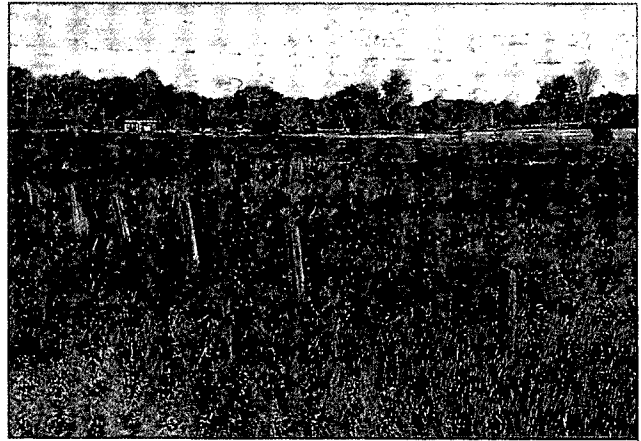
Slash-and-burn agriculture was practiced enthusiastically at this time, so it can be assumed that the landscape was already being altered appreciably by human activity. By the time of Cartier's arrival at Hochelaga (Montreal) in 1535, there were semi-permanent villages along the upper reaches of the St. Lawrence some having

upwards of 50 longhouses.

The introduction of European technology increased the pace of environmental modification. Iron knives and axes, traps and muskets extended the range of techniques to be used in harvesting the area wildlife. The fur trade concentrated populations, creating larger native villages with their attendant refuse dumps. Introduced diseases struck down much of the native population, easing their pressures on the environment, but, European man was rapidly filling the gap, and clearing the land to conform to his cultural heritage.

Now, the land per se had gained a value to be given, bartered, or sold. Land surveyors marked the region off into townships, concessions, and lots. The natural environment was no longer modified, it was ignored, a thing to be replaced by a different landscape of different species and rigid pattern. Thus, road allowances ran through impassable swamps and ridges, and the wilderness was tackled not in the best locations but in the most convenient. The nomadic patterns of use and abandonment to regeneration gave way to permanent settlements and ever-spreading cleared fields, crops, exotic plants and animals, and transportation corridors.

So it was with the Rideau-Cataragui river systems. First a canal project with military intent, but second a link to scattered settlements, an opening of new areas to immigration, clearing, and agriculture.



Clearing and settlement occurred close to transportation routes, often in ignorance of or disregarding severely restrictive environmental conditions. As new areas were opened, the earlier economically marginal, or worse, lands were abandoned. Other land areas had their uses modified as settlers sought crops and practices which fitted the capability of the site and the particular current demand for goods.

Throughout that period, the forests were being cut down or simply burned away to provide clearings. The supposedly limitless quantities of timber were exploited for export to the United States, and to construct the vast English armada. The early 1800's saw the burgeoning of the squared-timber industry based upon large unblemished pine logs. Later, sawn-lumber markets in the U.S. facilitated demand for a wider variety of species and smaller individual trees. Lumber mills appeared in abundance wherever power was available. The forests were destroyed before any serious consideration was given to their limits, or to the consequences of their loss. Within a hundred years, through exploitation, and the resultant fires, floods, storm damage and soil erosion, a landscape had disappeared, a landscape which had taken several thousands of years to develop, and which may never be possible again.

Of those thousands of acres along the waterway abandoned in the wake of the forest industry, the great majority has

been left to natural regeneration. That haphazard regeneration of forests upon the poorer shallow soils is slowly being replaced by the plantations of managed forest and woodlot, emphasizing those species having current marketable value as pulpwood or Christmas trees. The few better agricultural areas have evolved toward intensive cropping in corn, with less capable lands reverting to pasture and hay crops. Modern agriculture throughout the Corridor now stresses dairy and mixed-farming enterprises.

Mining has never been a large resource-use within the Rideau Corridor. It has persisted as small-scale operations in the hard-rock shield region, and in larger scale as quarries for building stone and aggregate material from limestone and glacial deposits respectively.

## RESOURCE INVENTORY

### Methodology

The inventory of resource data for the Rideau Waterway Corridor included physical and biological measures taken from various sources and reports, and from field-site investigations. Those data included information on bedrock geology (underlying rock formation), soils (parent material, depth, texture), geomorphology (terrain types), land features (local topography, drainage), past and present vegetation (historical information and field surveys), wildlife (significant populations, rare and endangered species), and special features (sensitive areas, wetlands).

The work consisted of preliminary establishment of landscapes from aerial photographs, soils maps, existing forest and vegetational surveys. Those factors were supplemented by field studies to acquire details on environmental conditions and existing land-use practices.

### Aerial Photography

The photographs used were taken in 1976 at a scale of 1:50,000. They are vertical, black & white prints, and the NAPL numbers listed below are from the National Air-Photo Library.

<u>Roll #</u>	<u>Photo #</u>
A 24312	43-47, 64-70, 177-183

<u>Roll #</u>	<u>Photo #</u>
A 24313	17-19, 145-146
A 24316	50-57, 177-186, 213-216
A 24341	87-91, 116, 117, 134-136
A 31084	113, 134, 152, 154, 168, 183-187

Photographs used for the wetland surveys were taken in 1977 (spring) at scales of 1:10,000 and 1:4,000.

<u>Location</u>	<u>Roll #</u>	<u>Photo #</u>
Tay Marsh	A 24619	114-125
Kilmarnock	"	98-102
Smiths Falls	"	80-85, 107-111
Cataraqui	"	205-210
Kilmarnock	A 24620	10, 11

The wetland photos were supplemented by 35 mm colour oblique photos taken by CWS in 1977 (fall).

### Base Maps

The base maps are derived from the National Topographic Series (1:50,000) available from the Department of Energy, Mines and Resources at Ottawa. Chronoflex copies of map sheets 31G5 - Ottawa, 31G4 - Kemptville, 31B13 - Merrickville, 31C16 - Perth, 31C9 - Westport, and 31C8 - Gananoque, were utilized for the inventory maps. The following information is recorded on those base maps:

Water courses - from NTS sheet

Surface Contours - from NTS sheet

Road Network - from NTS sheet

Landscapes - from overlay

Landscape Summary - on overview map

Terrain types - overlay

Sampling points - overlay

Identified significant features - overlay

The various symbols and characters used on the inventory maps are listed in Appendix A.

Example Landscape interpretations are shown in this report with relevant maps. They are based on the N.T.S. map sheets, 31C, 31G and 31B. The symbols and characters are the same as on the inventory maps.

The vegetational components are indicated in the Landscape Summary. Those components are the dominant, common, and total tree species in their order of frequency; that is, the five most frequently appearing species are listed in order of greatest appearance in each Landscape. The abbreviations utilized are listed in Appendix D.

### Land Classification

The land resources of the Rideau Waterway are classified at three levels. The broad-scale levels are those of a biophysical classification (Lacate, 1969). Those are the Land Regions and the Land Districts. They are defined as:

Land Region - an area of land characterized by a distinctive regional climate as expressed by vegetation.

Land District - an area of land characterized by a distinctive pattern of relief, geology, geomorphology and associated vegetation.

The third level of description is a departure from the standard biophysical approach. Rather than define ecologically-significant land systems and land types, Landscape units are defined and a system of landscape analysis utilized. Landscape analysis is better suited to the diverse land-cover mosaic found in the Rideau Waterway. The main components of landscape analysis are:

Landscape units - an area of land and water characterized by a distinctive pattern of related terrain types and water bodies. This level closely parallels the land systems level.

Terrain Types - an area of land characterized by a distinctive landform, geological type and land cover.

Land Types - an area of land having a homogeneous soil and uniform vegetational chronosequence.

Landform - the topographic expression of the land.

Geological type - the nature and origin of the predominant surface material, granular or bedrock.

Landcover - the pattern of land-use and vegetation cover existing on the land surface (Table 4).

The landscape classification used here can be considered as a parallel classification to the hierarchy in the biophysical guidelines (Lacate, 1969). The parallel nature is shown in Figure 3.

The Landscape concept is utilized here instead of the biophysical land system because of the diverse mosaic of land cover which exists in the study area. The patterns on the land do not follow natural succession trends, nor do they exhibit distinct biophysical relationships.

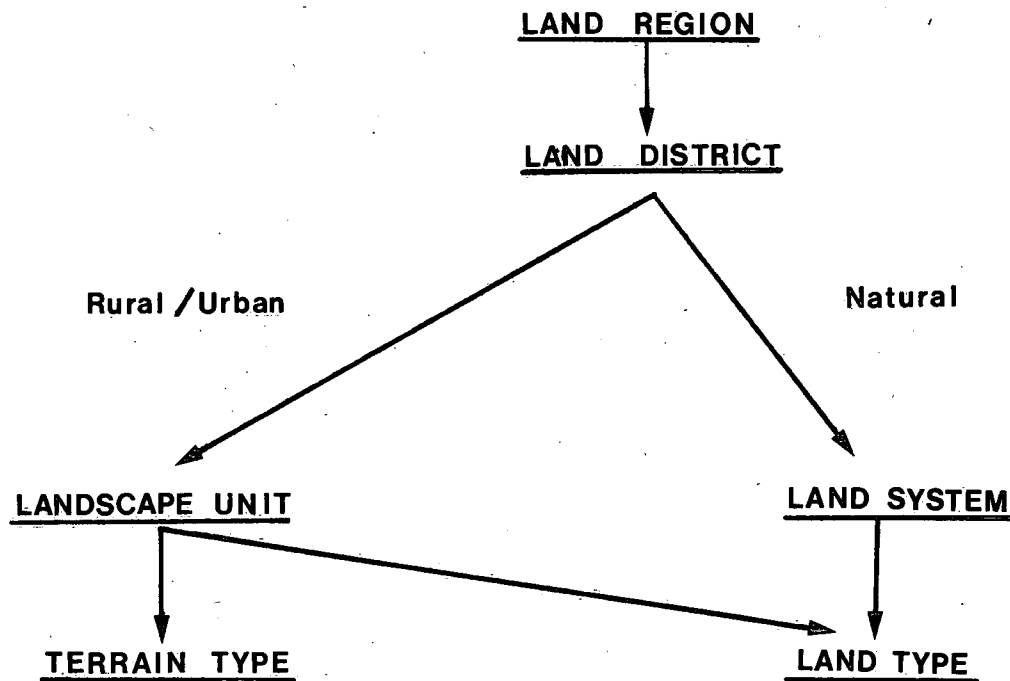
Landscape analysis provides a description of what exists on the land area at a given time. It is an inventory of the land components within a predefined spatial unit. The primary basis of the classification is the Terrain Type or Landform. It is possible to extend the concept to include various biophysical relationships and thus predict the potential vegetation cover for the area if left undisturbed. This report deals only with the inventory stage of the landscape analysis. The predictive stage is described as ecological land evaluation (Olschowy, 1975).

The Landscapes of the Rideau were interpreted from 1:50,000 air photos. The interpreted units were then transferred to 1:50,000 N.T.S. map sheets. A characteristic Landscape would be the hilly plain landscape of the North Gower Drumlin field. That is an area dominated by agricultural land-uses occurring on the glacial till of the drumlins and the marine clay in the plain.

A Landscape Summary map is also compiled for the area. That shows the boundaries of the Landscape units and provides a brief description of the main components of the Landscape (see Appendix A).

### Geology, Soils and Land-use Analysis

All available information regarding the surficial and bedrock geology, soils, and land-use in the Rideau Waterway was utilized in developing a classification. The Corridor crosses a wide range of



**CLASSIFICATION HIERARCHY**  
**FIGURE 3**

geological features. The flat plains and escarpments around Kingston, the rugged and varied landscapes of the Frontenac Axis, and the flat plains from Smiths Falls to Ottawa. The published material was used to identify the important variables to be noted in the field. The variables selected also reflect those commonly utilized in biophysical surveys. The physical variables are referred to as Geo-Env.-Descriptives. Those are listed in Appendix C.

During field investigations, observations were recorded on pre-printed 8-1/2 x 11" sheets (Appendix B). Standardized descriptive terms were utilized throughout to provide continuity during the survey. Sites were identified according to the site number, Landscape number, map sheet and geographical location.

Sampling sites were located on 1:50,000 map sheets. They were selected on a random basis using a grid and a random-number table (Brown Lee; 1967). The same approximate density of points was used throughout the entire Rideau Sector. The density of sites utilized was chosen to give a sufficient representation of the different Landscapes; about 20 sites per Landscape were evaluated. The random-sampling method was developed to suit the complexity of the natural and man-influenced landscapes in the Rideau Sector. Alternative methods of data collection may be utilized in less complex systems within other sectors of the CORTS Corridor to make optimal use of time and personnel, yet maintain the same degree of accuracy. The data, however, would be equally applicable to the methods of analysis used here.



Man-influenced

MINING		URBAN		RURAL	
Open pit	Under ground	Intens.	Non-intens.	Active	Aband.
pit	shaft	commer.	housing	dairy	fallow
quarry		indust.	recreat.	beef	old field
		utility	disturb.	crop	advanced
					old field
		transp.	seasonal	orch.	regen.
		high ri		hay	
				past.	

Natural

WOODED		OPEN		AQUATIC	
Wet	Dry	Upland	Wetland	Standing	Open
conif.	conif.	alvar	bog	lake	river
mixed	mixed	savan.	fen	pond	stream
decid.	decid.	meadow	marsh	reserv.	creek
		sand	swamp		

CORTS Corridor  
Land Cover Classification

TABLE 4



### Vegetation

Because the study was intended to include successional and man-dominated land-use effects upon the historically natural vegetation, vegetational data were not mapped as communities, except in the wetland Land-Types. Tree vegetation was recorded at each sample site in three categories:

- (a) dominant tree species - comparable to original historic land-surveyors' reports on vegetation encountered on survey lines;
- (b) most common tree species - indication of current successional stage, and tree species response to environmental conditions;
- (c) total tree species - for statistical comparisons and community coefficient calculations.

Those categories were selected for ease of sampling, and to match, as nearly as possible, other known vegetational survey techniques. No special weighting of species importance as a reflection of environmental conditions is intended by those categories.

Those categories are used to (a) compare existing woodlands to the historical, (b) to estimate present stage of succession for

woodlands that have been disturbed and may be regenerating, (c) to attempt a prediction of vegetational response under different management alternatives, and (d) to discriminate statistically between vegetational components of different Landscapes.

No attempt has been made to classify or map detailed natural vegetational communities; that would be extremely difficult here due to the extensive and complex patterns of man-altered environments. Vegetation was inventoried and analyzed as it exists within each Landscape.

For the wetland Land-Types, the vegetational communities were mapped from the aerial photographs in advance of field investigation. Aquatic and nearby upland vegetational communities were surveyed and their current locations and composition delineated on the maps. A general interpretation of each wetland is given in the Landscape descriptions; a detailed description, interpretation, and evaluation is included in the Supplemental Addendum 3 to this report (Hodges, 1981).

Tree vegetation was identified using Hosie (1975), and wetland vegetation using Hotchkiss (1972), each supplemented by Gleason (1952). Species lists are included in Appendix D.

### Resource Maps

With the completion of the field data collection, the information was used to map the various components making up the biophysical characteristics of each Landscape and wetland area.

Appendix A contains the overall descriptive map of the individual Landscapes, showing their locations and describing the main characteristics of each. Landscapes 118 and 237 are also described and interpreted as examples of the resource data inventory. Those examples give details on Terrain Types, wetland locations, special feature areas, and sampling-site locations. A complete inventory, interpretation, and mapping of all the Landscapes is included in a supplemental Addendum 1 to this report (Arbour and Hodges, 1981).

### Field Work

Preliminary mapping of the Landscape boundaries was completed during May, 1977, before the field investigations. Field work was carried out between mid-June to

mid-September, 1977, surveying each randomly selected 1-acre site from the Kingston end of the Corridor northward to Ottawa. At each site, physical and biological data were collected in the format shown in Appendix B.

The field component of the study required approximately 8 weeks. The initial two weeks were used to develop a consistent methodology in the field, and to familiarize the field crew with the study concepts. About six weeks were required to complete the field investigations. Transportation to the sites was by motor vehicle and by boat. The base camp was periodically moved to new locations such that no site was located more than an hour's drive from the camp. An average of 15 sites/day were completed.

Additional field time was required to complete the detailed wetland evaluations as required by the Canadian Wildlife Service. Temporal changes in water nutrients were to be assessed through a series of samples to be collected over a complete annual cycle.

#### Water Resources

The Rideau Waterway is comprised of a combination of natural, man-created, and man-influenced drainage systems. The canalway passes through the Rideau River, the interior lakes, and the Cataraqui River. Each has a number of associated tributary streams, storage lakes, dams, and channels which together make up the total watershed, not all of which is encompassed within the CORTS Corridor. Figure 4 shows the extent of the total watershed, its relationship to the CORTS Corridor, direction of flow, storage lakes, dams, etc.

Nutrients will be transported, precipitated, and/or absorbed into the living systems in the direction of flow. Patterson (1976) has indicated a different relationship between the aquatic vegetation of the nutrient-poor waters of the Precambrian rock areas and that of the nutrient-rich waters of the sand and clay-plain Districts. That difference is reflected in the location and composition of the wetland areas, and the presence of heavy aquatic vegetation along the canalway.

The watersheds of the Rideau and Cataraqui Rivers with a combined length of 200 km drain an area of some 4,600 square kilometers, and are divided at Upper Rideau Lake between the Narrows and Newboro locks.

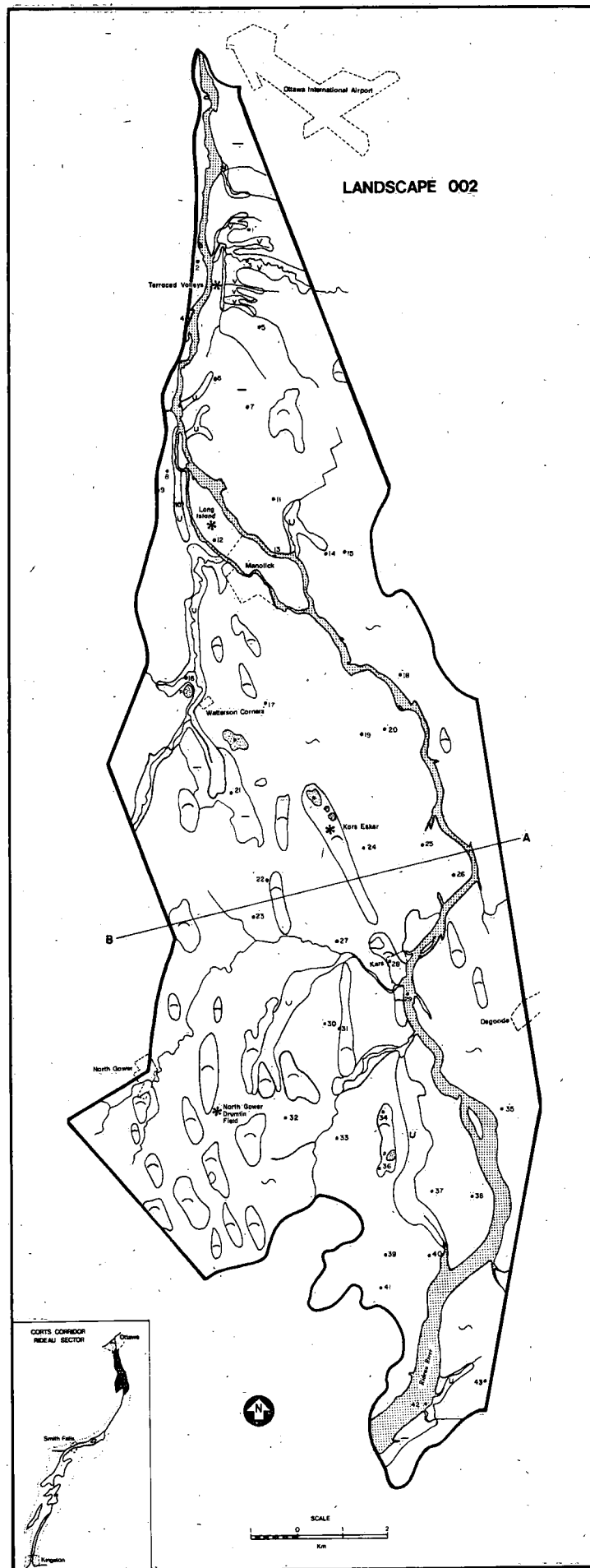
Water bodies (i.e. lakes, rivers, streams, and wetlands) were mapped at 1:50,000 within Landscapes in similar manner to those shown on topographic maps. For the wetlands, additional maps were prepared at approximately 1:8,000 delineating the wetland boundaries, inflows and outflows, depths, and nutrient status.

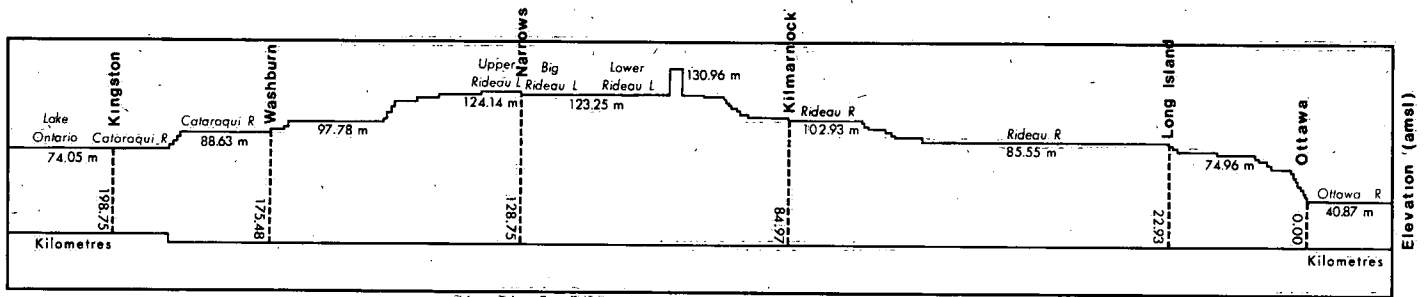


Wetlands were classified as fluvial marshes similar to the classification of Zoltai *et al* (1973). Nutrients were measured in a fashion to facilitate comparison with other wetland research (Bayly, 1975; Whitman, 1976).

The various rivers, lakes, dams, and canalways which make up the waterway proper, also aid in water flows to the electric-generating stations, flood control, and navigation. Table 5 gives the size of each basin and the watershed areas (from DOT 1952).

Control of those waters is complicated by unpredictable and uncontrollable levels of precipitation, as well as other climatic effects as rate of snow-melt, winds, and frost depths. Man, also, continues to play a role by affecting run-off rates through de-forestation and other land-use practices. The result has been the wide fluctuations of water-levels along the system which are uncoordinated from year to year, and even between various points within the system at any one time. Appendix E shows the water-levels for June recorded at the lock-stations and associated storage lakes since 1965.





courtesy of Parks Canada

RIDEAU CANAL PROFILE

FIG. 5

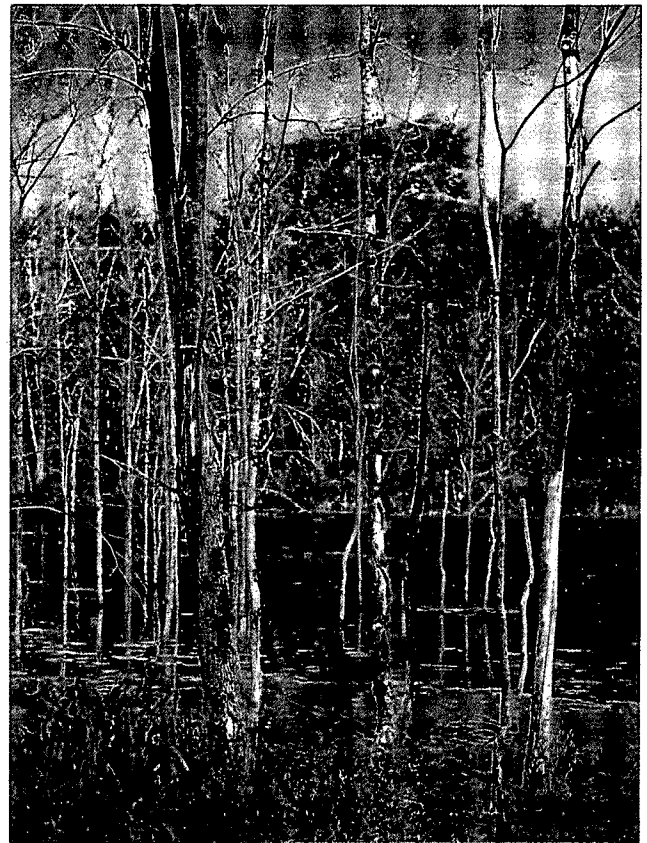
The fluctuations at individual stations from year to year are never more than two feet. The seasonal fluctuation, however, rising in the spring and declining through the summer is often much greater with storage lakes varying up to four feet from late winter to spring.

Storage of water in those lakes with a controlled, slow drawdown has been attempted by man in place of the more usual run-off and flooding of natural conditions. Recently, Parks Canada has undertaken a study (Acres, 1977) of the hydrology of the waterway, and methods are being studied to optimize water quantities, both in the storage lakes and canals, for recreation, navigation, power generation, and the myriad other purposes for which those waters are used.

Water quality, and its attendant problems, has not received concerted investigation. Cursory studies by OMNR (1976) have indicated a sharp rise in nitrogen and phosphorus levels in the spring, probably due to run-off from agricultural fields. Also the Ontario Ministry of Environment (M.O.E.) maintains monitoring stations for water quality. Table 6 sets out the levels of available phosphorus and nitrogen at stations along the Rideau and Cataraqui portions of the Corridor. In almost every instance, the nutrient levels have been well below what might be considered responsible for heavy growth of aquatic vegetation.

Visual evidence of nutrient loadings is generally expressed in algal blooms and growth of aquatic vegetation. Both are more evident in those portions of the waterway passing through the flat plains at each end of the system because accumulations of nutrients from up-stream sources

are combined with the higher rates of nutrient input from increased agricultural and dairy enterprises, and from the natural sources arising from the sedimentary bed-rocks. Blue-green algal blooms are evident near urban centers, while the green algal mats are particularly obvious in the shallow, warmer backwaters of bays and wetlands. In recent years, there has been an upswing in submerged aquatic vegetation throughout the waterway. That is in response to increased nutrient availability, and to the introduction of exotic species having greater efficiencies of growth under those waterway conditions.



	<u>Lake Area (ha)</u>	<u>Watershed Area (km<sup>2</sup>)</u>
TOTAL RIDEAU WATERSHED	14,500	3,700
- Wolfe Lake	970	75
- Upper Rideau	1,380	90
- Bob/Crow	3,340	360
- Big Rideau	5,910	745
- Rideau River	2,960	2,465
TOTAL CATARAQUI WATERSHEDS	15,000	900
- Canoe/Eel Lakes	300	25
- Kingsford/Birch/ Desert/Holleford/Knowlton	1,080	110
- Devil	1,120	45
- Buck	810	65
- Loughborough	1,900	125
- Newboro	2,830	130
- Opinicon/Rock/Hart	890	105
- Sand	890	20
- Cranberry/Whitefish/ Dog/Little Cranberry	2,590	150
- River Styx	2,590	125

## CORTS Corridor Watershed

TABLE 5

Location	Year	P <sup>1</sup> (ppm)				N <sup>2</sup> (ppm)			
		72	73	74	75	72	73	74	75
Kingston		.008	.004	.002	.002	.57	.83	.41	.89
Kingston Mills		.002	.002	.002	.001	.53	.65	.48	.77
Jones Falls		.021	.01	.007	.001	.43	.46	.31	.39
Narrows		.012	.044	.008	.003	.67	.50	.50	.56
Rideau Lake		.002	.002	.002	.002	.63	.39	.27	.39
Rideau Ferry		.002	.002	.004	.002	.45	.37	.38	.48
Tay River		.01	.011	.007	.005	.62	.43	.40	.55
Old Slys		.004	.021	.01	.01	.95	.50	.57	.77
Kilmarnock		.024	.046	.041	.017	.78	.66	.70	.65
Burritts Rapids		.046	.056	.029	.018	.91	.62	.72	.63
Kemptville Creek		.016	.045	.11	.062	1.00	1.10	1.5	1.14
Kars		.036	.022	.024	.014	.97	.79	.69	.79
Black Rapids		.071	.02	.017	.019	1.10	.72	.64	.76
Hogs Back		.062	.005	.009	.021	.74	.75	.70	.74
Ottawa		.092	.031	.055	.02	.99	.73	.76	.75

## Rideau Canal Water Nutrient Data\*

TABLE 6

\*years 72-75 from OMOE, Ontario

<sup>1</sup> as soluble P (normal level <.1)<sup>2</sup> as total Kjeldahl N (normal level <5)

Heavy growths of aquatic vegetation may cause difficulties of navigation along portions of the waterway. On the other hand, those 'weeds' are also creating habitat for fish and other aquatic life. Additionally, some aquatic plants absorb excess nutrients, at a rate several thousand times greater than is required for their growth. Those nutrients can then be removed from the water by artificially harvesting the weeds. If unharvested, normal decay of the plant parts often results in many of the nutrients becoming 'locked-up' in the sediments at the bottom of the watercourse. Every effort should be made to reduce nutrient loadings getting into the waterway from urban sources, agricultural and forestry practices, etc.; however, in the meantime the aquatic vegetation is performing a significant role in reducing nutrient levels, and preventing more harmful algal blooms from occurring.

The CORTS program has prepared statements on water-borne nutrients, aquatic weeds, management techniques, etc., as might be applicable throughout the waterway. Their reports (Brydges et al, 1976; CORTS, 1980) should prove to be a useful adjunct to the data found in this study.

LAND RESOURCESLand Region

A Land Region is an area of land and water that has evolved under a distinctive climate, the result of which is expressed by a particular regional vegetational response (Lacate, 1969).

In the case of the Corridor, the topography and geomorphology vary widely, but each carries the pattern of continental glaciation. Gravel-rich eskers traverse the

landscape, drumlin fields create long narrow hills in parallel array. Massive plutons of granite have resisted weathering, resulting in distinctly rugged landscapes in the Precambrian Shield. Overlying those areas is a mantle of sandy till, with interspersed areas of clays and waterlaid sands.

The climate is moist and moderate, with considerable effect from the Great Lakes. That has resulted in the development of three main soil groups, Brunisols, organic soils, and Gleysols. The Brunisols are found in the better-drained areas of sand. They exhibit very little horizonation. The organic soils are generally found in the depressional, poorly drained areas. They are generally mesic to humic in nature and seldom more than 1 m deep. The Gleysols form on poorly-drained clays and waterlaid sands. Generally they are humic, and limited in extent.

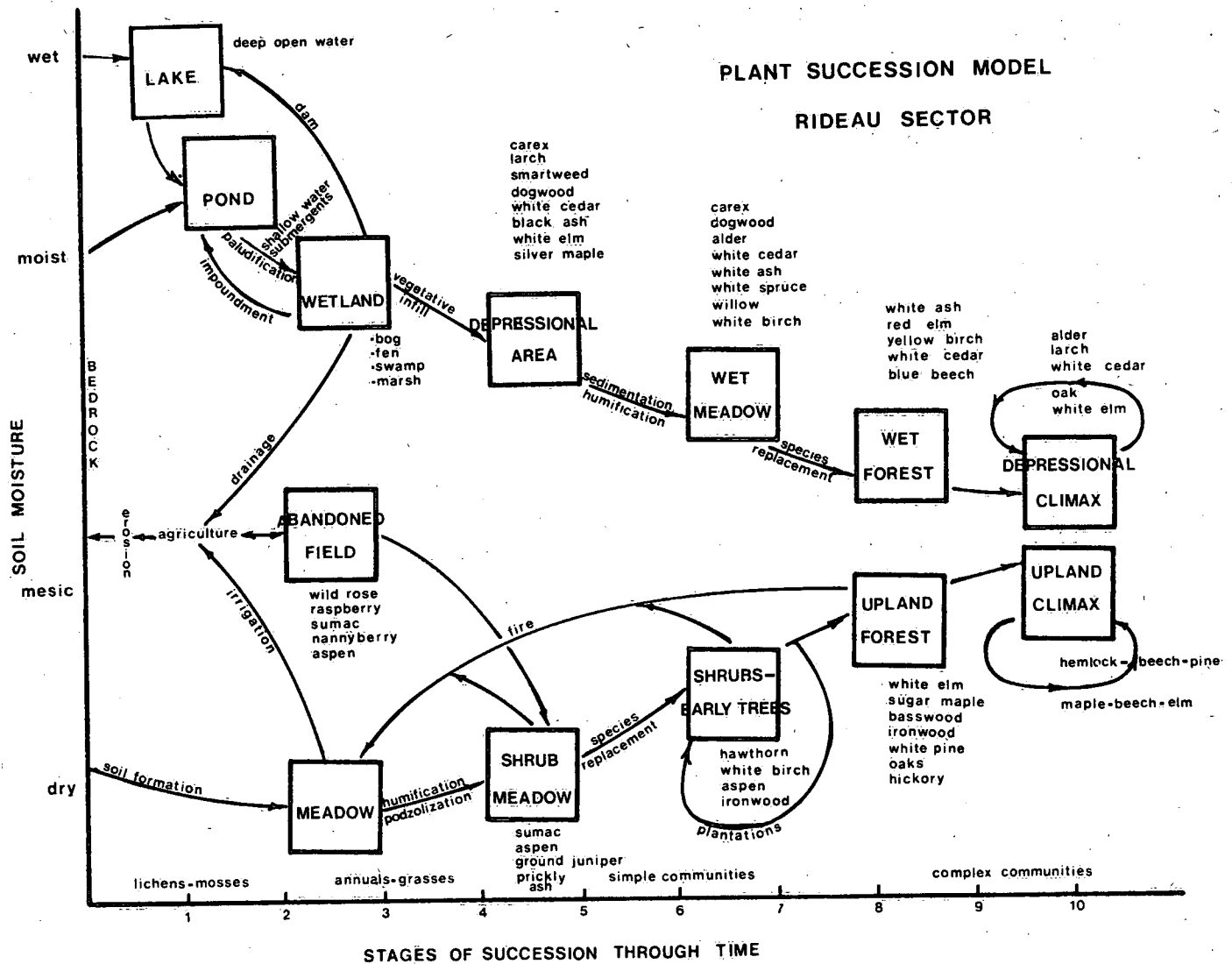
The vegetation of the Rideau Waterway Corridor is within the Great Lakes-St. Lawrence Forest Region (Rowe, 1972). That is a mixed-forest region that has developed from species having wide ranges of climatic tolerance. In the northern portion are species such as jack pine and balsam fir suited to the rigors of moist, sub-arctic conditions, while to the south grow the walnuts and hickories requiring deep soils and warm temperatures. Between, there is a dynamic intermeshing of northern species growing to their southern limits, and southern species at their northern-most advance in the wake of the most recent glacial retreat. At the southern end of the Corridor, deep soils and more moderate climate have produced a predominately deciduous forest dominated by sugar maple, elm and oak, with some individual white pine. The increasing altitude and exposure on the Precambrian-rock uplifted area increases the response of coniferous species, especially white pine, with accompanying sugar maple, basswood, and the oaks. On the thin soils of the plain from Smiths Falls to the Ottawa River, white cedar becomes common as it does also in the moister low-lying areas. On the deeper and better drained soils of the glacially modified landscapes, sugar maple, white elm, and basswood dominate. The absence of extensive stands of white pine appears to relate to past logging practices, while early reforestation programs emphasized red pine plantations, which in turn are now being replaced by hybrid species of poplar.

The vegetation existing at present is the combined result of natural succession and catastrophe (fire, flood, etc.) and of man's activities both disruptive and restorative. In most of the Corridor, the natural vegetational development has been set back. On the uplands, forestry practices have removed many individuals of pine, oak and maple, and have allowed restoration to occur both by natural successional stages and artificially in managed woodlots and plantations. The wet woodland sites have been selectively cut-over for cedar, and generally left to regenerate naturally. Depressional wetlands have been drained to a great extent for agriculture, and those will not return naturally, but if and when abandoned will recover in an altered manner closer to upland regeneration. The wetlands associated with lake and river edges have been dramatically altered with the construction of the canalway and its changed water levels. In the case of recently drowned lands, and along altered water courses, dredge spoil banks, and newly formed levees, wetland evolution is still under way.

Although successional studies of vegetational cover development do not appear to have been carried out specifically within the Corridor, there have been a number done in similar areas by Martin (1959), Hills (1960), Smith et al (1975) and Hirvonen and Woods (1978). From those studies, early historical records, and vegetational formations now existing, a diagram of successional trends and stages has been prepared as shown in Figure 6. Vegetation patterns develop and change as individual species' populations wax and wane with altered environmental conditions. Figure 6 uses only two of those conditions, soil moisture and time. While those appear to account for a good portion of the change occurring, vegetation in specific locations may vary from those species shown due to some other factor(s). The development of large fluvial marshes within the clay plains at each end of the Corridor is an example of that situation.

Figure 6 is intended to give the reader an appreciation of the probable successional stage of the vegetation at locations of interest. For instance, in the choice between alternative sites for urban development, the later stages (8-9-10) may be considered more valuable for preservation than earlier stages (5-6-7) due to the longer period of time required for natural





replacement of older disturbed vegetational stages (Smith, et al, 1975). The probable paths of effects of certain activities, natural or anthropogenic, are also shown.

#### Land Districts

The Corridor falls into three Land Districts. They are areas of distinctive patterns of topography, geology, geomorphology and associated vegetation (Lacate, 1969). The Land Districts are subdivisions of the Land Region. They are separated principally upon their physiographic and geologic patterns. The Land Districts along the Rideau Waterway are shown in Figure 7.

District 000 is referred to as the Champlain District. This is in reference to the Champlain Sea episode which had a

major effect on the landforms in that district. The area is characterized by flat-lying Paleozoic bedrock. Some of the most prominent formations are the March and Nepean sandstones which cover extensive areas from Smiths Falls to Kemptville. The surficial deposits in the area are dominated by glacial till, which is overlain in lower areas by marine sands and clay. Many of the glacial features have been modified by the action of the Champlain Sea. An example is the glacial-fluvial ridge under the Ottawa (Uplands) Airport. It has lost the distinctive shape of a ridge and is capped with reworked beach sands. The most prominent physiographic features are the drumlins near North Gower. Those, however, are poorly defined and do not constitute good examples of drumlins. The District coincides with Rowe's Upper St. Lawrence forest section, with the vegetation

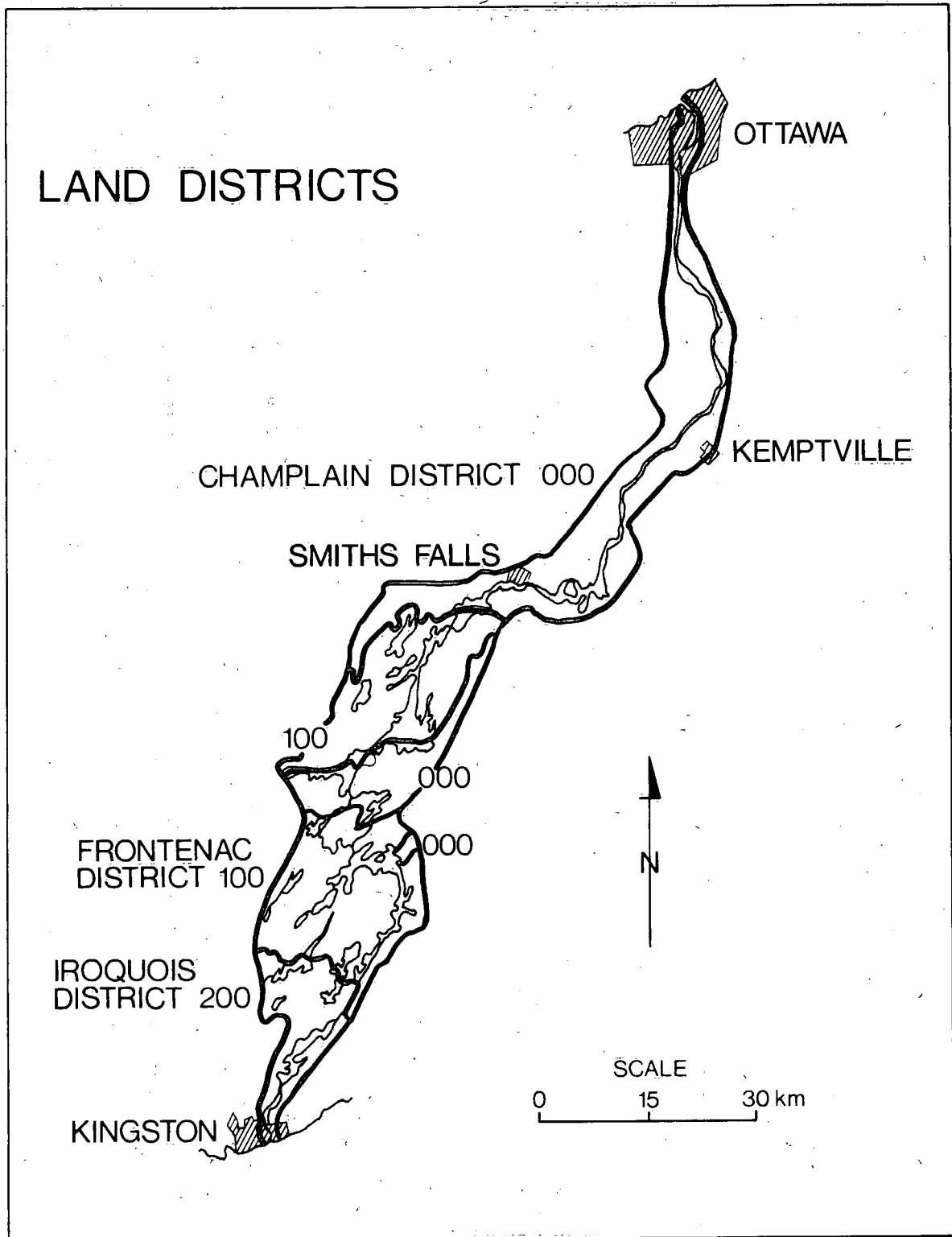


FIG 7

responding to the flat, low-lying topography, glacially-derived soils, and mainly calcareous parent material. Approximately 20% of the area remains in a natural or artificially-wooded condition. Agriculture now occupies nearly 30% of the District as active farms, fields, and crops, with an additional 10% existing in an abandoned condition. It is in this District that the major wetlands exist as fluvial marshes along the Rideau River and Tay Canalway, covering some 5% of the total area. The open waters of rivers, streams and lakes cover about 15%. Ten per cent of the District is in urban development and 5% is occupied by utility corridors. The remainder is in cottaging and recreational use.

The dominant tree species were found to be sugar maple, white elm and basswood on the dry upland sites, and the ashes, white

species such as beech, yellow birch and the oaks. Early successional species on abandoned agricultural areas and disturbed sites are balsam poplar, white cedar, trembling aspen, and white birch. Plantations of Scots pine and red pine are present in managed woodlots, with infrequent apple orchards and individual fruit trees near active and abandoned farm-sites. Within this Sector of the Corridor there are few natural stands of hemlock and spruce, while the white elm population is under severe pressure from Dutch elm disease and may soon disappear entirely.

The larger wetlands are located along the Tay, and on the Rideau from Smiths Falls to near Kemptville. Those have major significance as places for resting/feeding migratory birds in spring and fall; as well, small numbers of breeding waterfowl and fish-eating birds exist throughout the

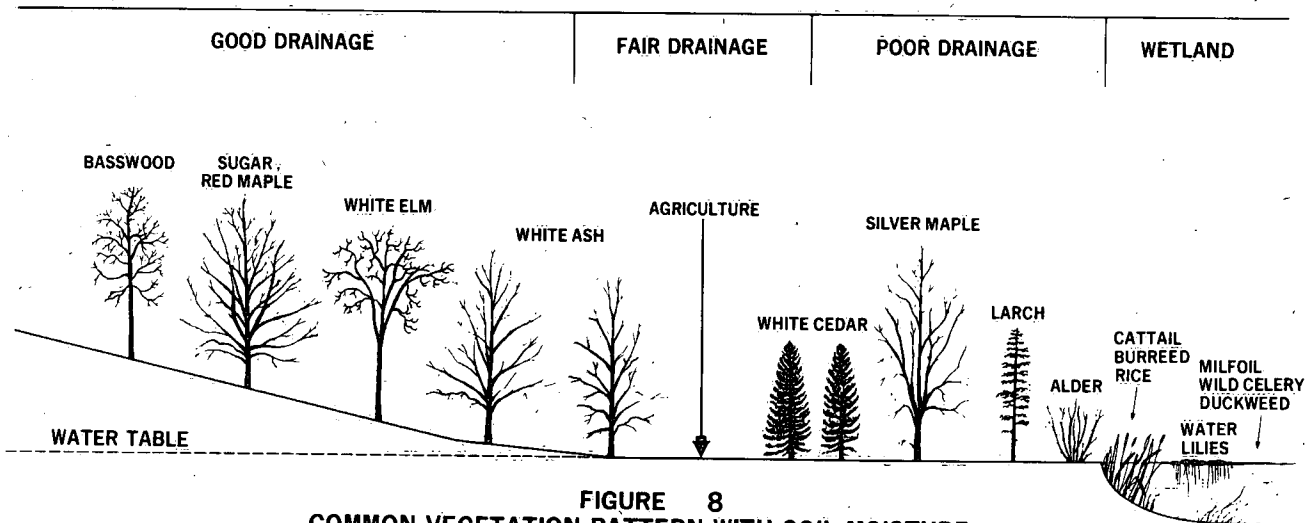


FIGURE 8  
COMMON VEGETATION PATTERN WITH SOIL MOISTURE  
CHAMPLAIN DISTRICT (OOX)

cedar, and alder in the poorly-drained low-land areas. The most common cover species on upland sites with deeper soils are sugar and red maple, and hornbeam. White cedar is most common on shallow soils and wet upland areas, with the ashes, willows and silver maple in poorly-drained low areas. In a large Land District such as this, a number of restricted specialized micro-environments exist, which provide conditions for the sporadic appearance of

summer along with numerous blackbirds, marsh-wrens, amphibians, and fur-bearing animals.

The historical vegetation in the District has been described by Francescut (1977) using early records of dominant vegetation encountered by original land surveyors while cutting their survey lines. Throughout the Champlain District, the major upland associations were those of

maple-beech-elm and hemlock-birch with lesser amounts of basswood and pine. The wet areas were wooded with cedar and larch or ash-elm-alder. That compares well with what is left of today's natural woodlands, although with a great deal less of beech and hemlock on the uplands and larch in the low-lands. Today, the natural white pine is being replaced by red pine and white spruce plantations. The loss of extensive amounts of beech and hemlock seems to relate to modern woodlands being only in what might be termed a middle stage of succession following earlier logging practices. Soil and climatic conditions do not appear to have been drastically affected; therefore, it can be assumed that time for successional development is the factor limiting those species' numbers. A major factor in man's influence on the area has been the reduction in wet forest areas which have been drained for agriculture, or filled for urban uses. The extensive larch growths noted in original wet forests no longer exist within the Corridor, appearing there only in limited areas, though extensive stands are found in the large wetlands a few tens of miles to the east. It is unlikely that many wetland species will ever return to the Corridor in significant numbers due to the modification of the environment.

The Frontenac District (100 series) includes most of the Frontenac Axis. That is an arm of the Grenville province of the Canadian Shield. It is primarily composed of crystalline Precambrian limestones, metamorphic rocks and massive granitic plutons. The resistant nature of the Precambrian bedrock has resulted in a rugged landscape of steep ridges and high rock knobs. Some of the most striking features in this District are the massive rock dunders, large granitic plutons flanked by white quartzite, and the dramatic white marble bluffs on Rideau Lake near Westport. The surficial materials in this District are sandy tills referred to as ground moraine in the literature. On the edges of the District there are areas of lacustrine and marine deposition among the rock knobs. Those sand and clay deposits are the best agricultural lands in the District existing as pockets of CLI classes 1-3 for agriculture between ridges.

The District's forests are those of the southern half of Rowe's Middle Ottawa forest section. The vegetation there has responded to an uplift in elevation, reduced soil mineralization, soil pockets of poor drainage, exposure, and extremes in

micro and macro climatic changes. Larger numbers of coniferous species begin to play a significant part in the vegetational community, while deeper soils with sunny aspect encourage greater concentrations of oaks than elsewhere in the Corridor. The major dominant species are sugar maple, white pine, basswood, and red and white oak on the upland areas with deeper soils. Moist lowland sites contain white ash and elm; wet-forest sites have silver maple and white cedar. Dominant early successional species appearing on abandoned agricultural areas are white birch, trembling and big-tooth aspens, and some white cedar. Most common cover species of upland sites are hornbeam, sugar maple, the oaks, and white pine. Very dry, exposed sites are often covered by ground juniper, staghorn sumac, or prickly ash. Wet sites encourage white and black ash, silver maple, and white cedar. Aspens and white birch are the most common species where disturbances through fire or agriculture have set back succession. The great variety of micro-climates produces ideal, though limited, conditions for the occasional presence of other species: hemlock and beech in cooler, protected valleys; pitch pine upon high exposed ridges; while willows and blue beech often accompany white cedar in the swampy areas.

Slightly over one-half of the total area still retains relatively natural forest cover. Small wetlands and large open water, lakes, etc. areas account for 7% and 15%, respectively. Active forms of agriculture occupy about 15% of the District, while abandoned fields cover an additional 5%. The remainder is occupied by utility corridors, recreational cottages and facilities, and urban settlements. None of the wetlands of this District is large, nor significant beyond a local context.

Early survey field notes indicate a mixed forest, with deciduous trees on the flats and conifers predominant on the ridges. The main association was maple-beech-hemlock, the latter two of which are relatively scarce today. The wet areas were similar to today's associations of elm and ash, although larch was more apparent then and silver maple more so now. The original vegetation of the ridges was hemlock and pine, with lesser amounts of birch, maple and beech. Logging has reduced the conifers and increased the opportunities for the deciduous species such as the oaks, butternut, and hickory which were not noted earlier at all. Those species seem to appear at middle successional

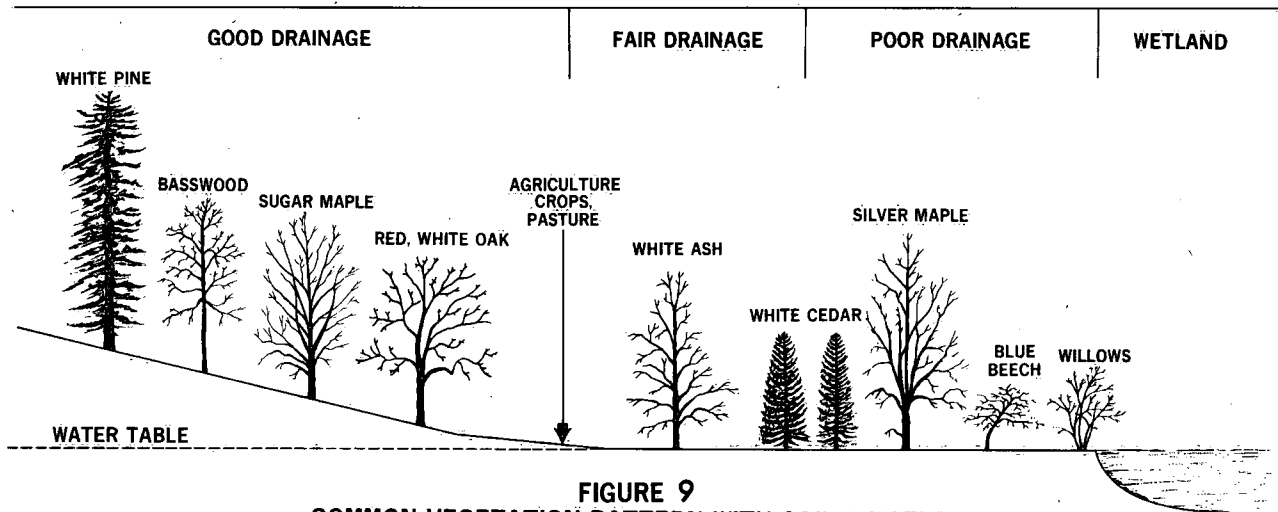


FIGURE 9  
COMMON VEGETATION PATTERN WITH SOIL MOISTURE  
FRONTENAC DISTRICT (10X)

stages following the logging of the valuable conifers.

The Iroquois District (200 series) is located in that portion of the Lake Ontario basin which was inundated by pre-glacial Lake Iroquois (Chapman and Putnam, 1972). The underlying bedrock is mostly Ordovician sandstones and limestones. The lower areas, such as the Cataraqui River basin are underlain by the Potsdam Formation of fine-grained sandstones and siltstones (Liberty, 1970). The upland areas include the Gull River Formations of limestone and dolomite (Liberty, 1970). A band of Precambrian metamorphic rocks underlies a portion of the north central area of this District.

The surficial materials in this District can be separated into three major groups: lacustrine silty clays, ground moraine (a sandy till) and organic deposits (Henderson, 1973). The silty clays cover the largest portion of the area, usually in the lower-lying terrain. There is a possibility that the waters of the Champlain Sea affected deposition here, although, the nearest definable evidence of the marine intrusion is at Brockville. The sandy till is a major component of the surficial deposits. It has been derived through the abrading action of glacial ice on the bed-

rock producing a stony calcareous material. Lowlying, poorly drained areas, and the river plains, contain most of the organic deposits.

The topography is generally composed of flat plains, escarpments, undulating plains and low wide hills. Much of the land has been cleared for agricultural use. The clay loams in the low areas are well suited, and can be used for numerous crop types; however, the soils on the upland plains tend to be thin and have proven poorly suited to agriculture. Subsequently, many of those sites have been abandoned, or are used only for rough pasture.

Again in this District, coincident with the eastern portion of Rowe's Huron-Ontario section, sugar maple is the dominant species. A slightly milder climate and a wide variety of landforms, however, have allowed for a greater number of deciduous species to appear in this District despite the fact that natural wooded lands have been reduced to only a third of the area. White pine is also a dominant species along with the hickories and oaks on upland sites. In wet forest areas, white elm gives way to more red oak in association with white ash and white cedar. The most common cover species are hornbeam, sugar maple, hickory, red oak and white ash, the

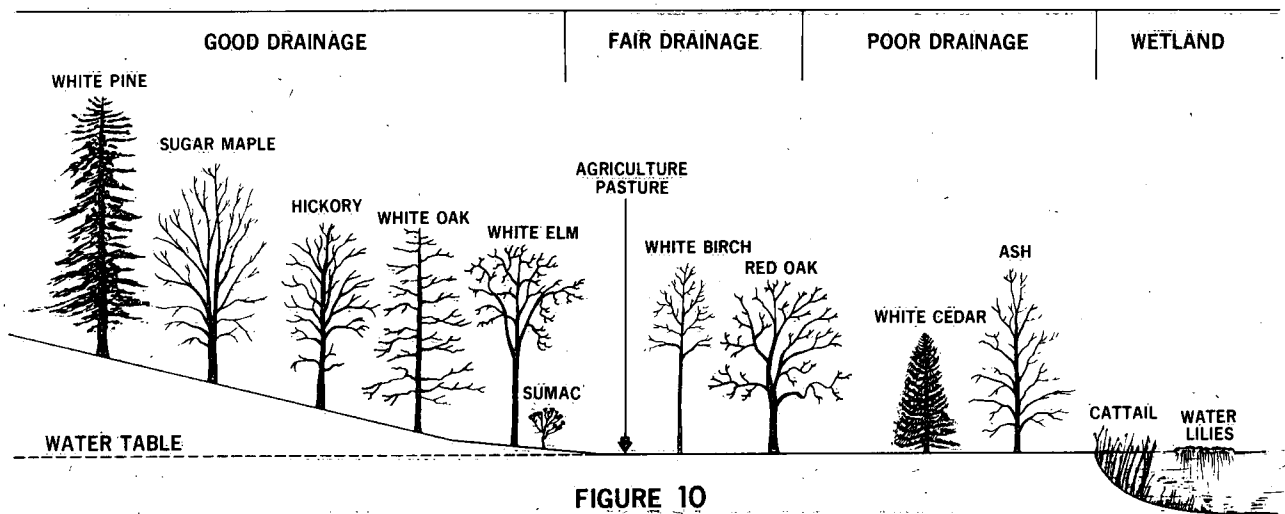


FIGURE 10  
COMMON VEGETATION PATTERN WITH SOIL MOISTURE  
IROQUOIS DISTRICT (20X)

first four on upland sites and the last in wet lowlands. Disturbed areas are invaded by white birch and the aspens, with buckthorn and staghorn sumac on the drier sites, and lilacs around abandoned farm yards. Particular conditions provide for the presence of beech and hemlock in cooler sites, walnut on deeper soils, and some juniper along water edges. Hybrid poplars (*Populus deltoides* var. *Caroliniana*) and willows have been planted along roadsides. The third of the District that now has a natural woodland cover has been reduced by agriculture (25% active, 5% abandoned) and urban development (15%). Open water areas account for 10% of the District, and wetlands, mainly on the Cataraqui River, also occupy 10%. The Cataraqui Marsh, located near the mouth of the Cataraqui River, is one of the largest within the Corridor. It is described in detail in the publication on the wetlands of the Rideau Waterway (Hodges, 1981).

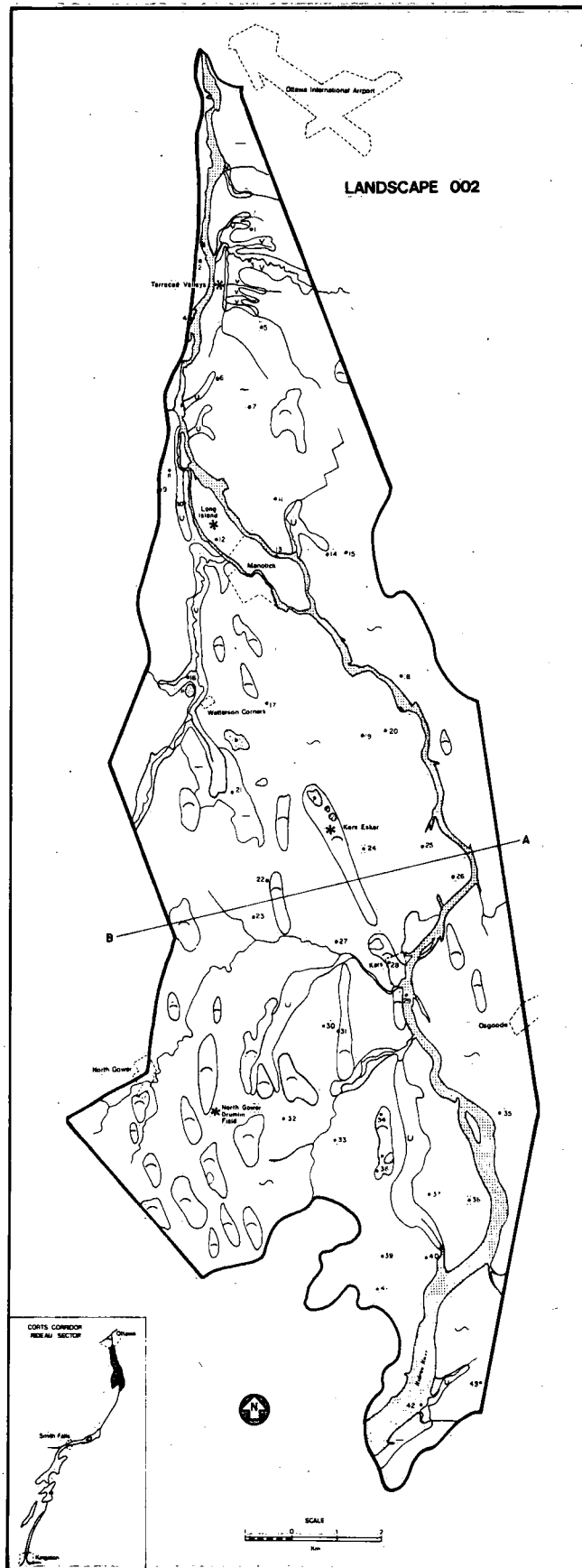
#### Landscapes

The Landscapes of the Rideau Sector are areas of a distinct pattern of related Terrain Types and water bodies characterized by distinctive land-cover patterns. In this study they are identified through the use of air-photos and soil, geology and

physiographic maps. The Landscapes are similar in concept to several other land classification levels used across Canada. Possibly the most familiar is the Physiographic Region used by Chapman and Putnam (1972). The units defined here, however, differ considerably since the definition of the Landscape takes in a much larger number of variables, including land-use. Another similar classification level is that used by Lacate (1969) which is the Land System of the Biophysical Land Classification mentioned earlier in the methodology section of this report.

The Rideau Sector of the CORTS Corridor has been classified into 40 Landscapes (Map 1), covering an area of over 1500 km<sup>2</sup>. The Landscapes range widely in size from 158 km<sup>2</sup> to .375 km<sup>2</sup>. The average size is 39 km<sup>2</sup>. The smallest is only a partial Landscape and will be continued in the Quinté Sector report.

A full description of each Landscape is too lengthy for this report. Subsequently, three example descriptions, one from each Land District is included. The full set of descriptions and maps is included in Addendum I. The example Landscapes are 002, 118 and 237.



### Landscape 002

This is the largest Landscape in the Rideau Sector. It is also an interesting and significant Landscape in that it contains the only major drumlin field in the Rideau Sector. The terrain is mostly low, with wide hills, flat plain and low, wide valleys. The hills are generally drumlins and are composed of a coarse sandy till. The plain and valleys were inundated during the Champlain Sea episode and are covered by a layer of marine clay.

The hills are well-drained and well suited to agricultural use, although some are very bouldery, particularly the long elongate hill running through Kars. That is most likely a glacio-fluvial origin. The plains are imperfectly to poorly drained; however, artificial drainage increases the agricultural capability to a high level.

The present land-use is mostly agriculture, with crops grown on the plains and a mixture of crops and grazing on the hills. Very little woodland is found, even in the valleys. Farm residences are almost always located on the hills.

In this Landscape, the Waterway is comprised of the river which runs in a fairly straight north/south channel. It is relatively shallow with a tendency to be weedy in the summer.

The Landscape contains numerous small woodlots interspersed throughout the agricultural areas, mainly on wet, depressional sites, or thin soils. The natural vegetation is dominated by red maple, basswood and poplar on the drier sites, with white cedar, white birch, ironwood, and hawthorne being most common. On shallow soils and abandoned farm land white cedar is both dominant and most common. As sites grow wetter, the ashes dominate while white cedar and alder, willow, and dogwood shrubs are most common. Larch, once predominant on these wet soils, is now restricted to boggy areas and marshy edges.

Generally, the successional stage for the drier sites is at about stage 7, with species such as beech, hemlock, hickory, white pine and sugar maple only becoming present. Many historically wet sites have been drained, moving them from wetland stage 8 to a more mesic stage 2. Remaining wetlands are generally fluvial marshes along the Rideau shoreline.

The Kars marsh is a fluvial marsh formed along the shoreline of Cranberry Creek just short of its outflow to the Rideau River. The marsh of cattail, sedge, and submergents hugs both shorelines with a solid, abrupt frontal edge. The marsh acts mainly as a good waterfowl migration resting spot.

#### Significant Features:

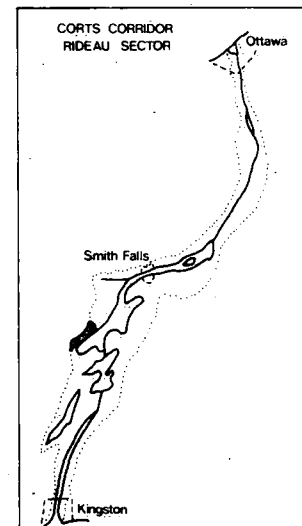
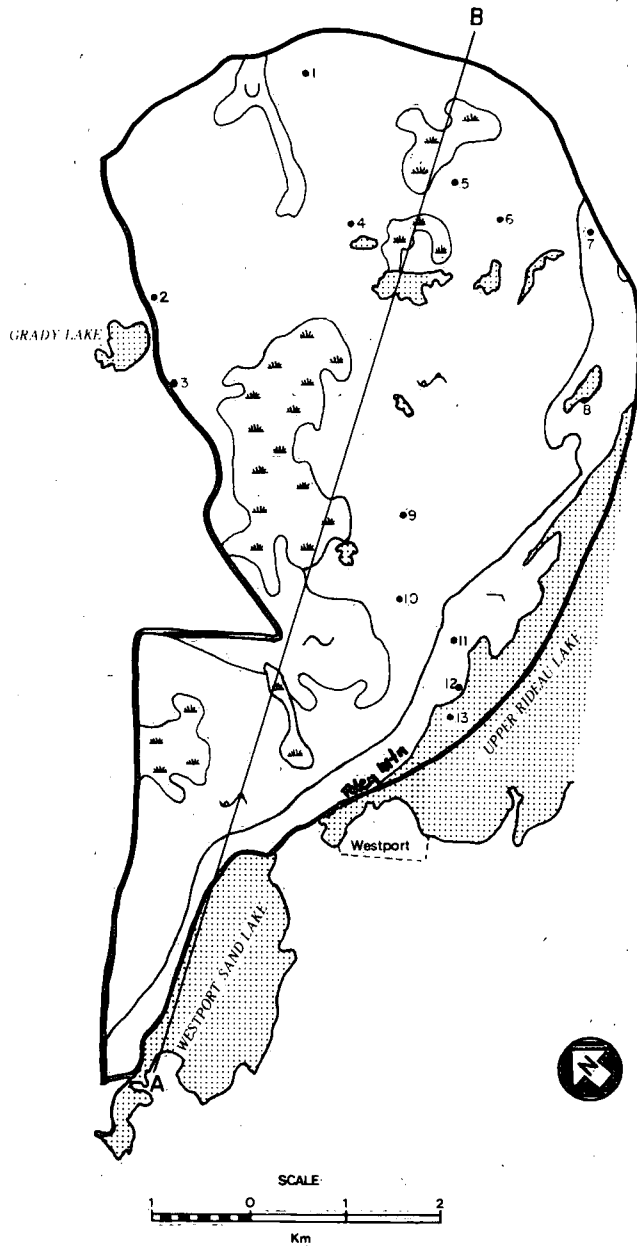
- A. Kars esker: a winding glacial deposit roughly paralleling the western shoreline of the Rideau from Kars to Manotick.
- B. North Gower drumlin field: a group of subdued drumlins (drawn-out glacial hills) from Kars to North Gower.
- C. Long Island: a long island dividing the Rideau River into two channels. Now mostly covered by the town of Manotick, with the dam and historic mill-site on the west branch, and the locks on the east branch.
- D. Terraced valleys of the streams leading into the Rideau: those stream banks have slumped, due to their heavy clay make-up, into a series of terraces. The terraces are emphasized by the trails of the local dairy cattle using the sloping shelves to get down to water.

### Landscape 118

The Landscape rises abruptly from Upper Rideau Lake in a steep, almost sheer bluff of syenite, to the rolling, knobby terrain that forms the top of a massive syenite formation. In the central area, a large, flat, depressional spot and a rolling plain offer the only major differences in terrain. The surficial deposits are very thin sandy till, except for the area of rolling plain where the till is deeper. Shallow, well decomposed organic deposits are found in the flat depressional areas. Along the bluffs there is little surficial material, just extensive areas of outcrop. A portion of that outcrop, near Westport, changes to crystalline limestone forming white cliffs. The Landscape is of little use to agricultural or residential development. The steep rugged cliffs and natural appearance, however, make it a significant visual resource.



## LANDSCAPE 118



At present, the area is mostly woodland. Recreational uses have evolved along the bluffs at Upper Rideau Lake, such as Foley Mountain.

In the extensive wooded areas, the dominant tree types on the uplands are red oak, white elm, white oak, basswood and sugar maple with some beech beginning to appear (stage 8-9). Although the woodlands are extensive, there is a lot of rock outcrop which tends to be quite barren and dry. The vegetation there is quite scattered. The most common tree types are ironwood, red oak, beech, rock elm and white cedar.

#### Significant Features:

A. Foley Mountain Bluffs: located north-east of Westport along the shore of Rideau Lake. These pink rock bluffs rise abruptly out of the water to form the highest point in the area.

B. Westport Fish Hatchery: run by OMNR, this hatchery provides a large percentage of the fingerlings of trout, whitefish, etc., used to stock Ontario's sport-fishing waters.

#### Landscape 237

The Landscape borders both sides of the River Styx in the Cataragui River section of the Rideau Waterway. The terrain types include rolling plain, hills, bluffs, a small area of rock knob and extensive flats. The bedrock underlying the area is predominantly Ordovician limestone and sandstone except for a band of metamorphic schist and gneiss which underlies the hummocky terrain. The surficial deposits are entirely glacio-lacustrine deposits of sandy and silty clay.

The soils of the Landscape are well suited to agricultural use including cropland. The only areas limited in any way are the hummocky terrain, the shore flats of the River Styx which have poor to very poor drainage, and the knobby terrain at Kingston Mills which has very steep slopes and excessive rockiness. At present, the land-use is predominantly agricultural, with woodland restricted to farm woodlots. The shorelines have very limited seasonal-residential development due to the shallow, weed-infested and stumpy nature of most of the River Styx. That comes from its being drowned land created by the construction of the Waterway.

Dominant tree species on the dry sites are sugar maple, black cherry, and red oak with shrub meadows and hedgerows dominated by hawthorne. Sugar maple and hawthorne are most common. As sites become more moist, elm begins to dominate with white ash common; shrub willows and dogwood predominate as sites turn wet. Dry sites are near stage 8, while moist sites are approaching 7.

#### Significant Features:

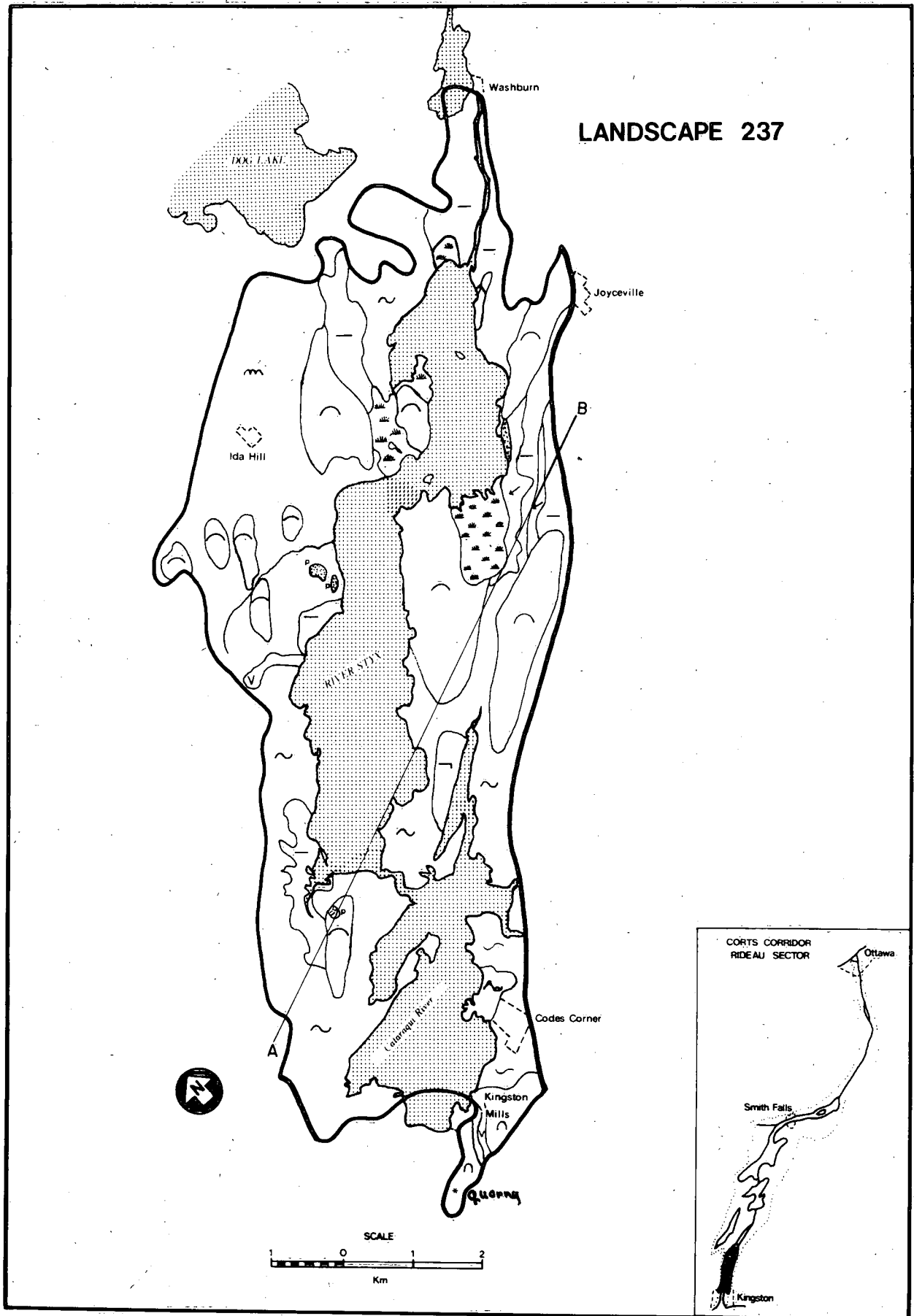
- A. River Styx: a drowned land still shallow, full of stumps and floating vegetation. A disquieting site still undergoing a reformation from past forest to drowned land to, perhaps, a future marsh.
- B. Granite quarry: billion-year-old rock is quarried from here for decorative stone facings.

#### Land Types - Wetlands

As shown in Figure 3, the Landscape unit can be further subdivided into Land Types having relatively homogeneous soils and distinctive units of vegetation. Within the inventory the Land Type level was used only for the major wetlands of the Corridor. They were identified from aerial photographs and existing literature, and field-checked for vegetational communities, soil materials, and water nutrients. The individual wetlands are described in an addendum to this report, and published separately (Hodges, 1981).

#### Animal Resources

The Rideau Waterway Corridor ranges across a great variety of environmental settings, and contains both diverse and expansive man-dominated conditions. Just as many of the vegetational species reach their individual northern or southern limits along the length of the Corridor, so too do various animal species found there. The timber wolf (Canis lupus) only occasionally slips into the northern portion of the Corridor; the black rat snake (Elaphe obsoleta obsoleta) reaches its northern limit near Chaffey's Locks, and outside the Corridor is now considered a rare species; and, the white-tailed deer (Odocoileus virginianus), a creature of woodland edges, has moved during historical times northward into the Corridor area where man has removed the denser forests creating fields and meadows.



A number of species living within, or, using portions of, the Corridor are now listed as threatened, rare, or endangered. For purposes of this report, the following definitions apply to the status of wildlife species (Hodges, 1978):

1. a "rare" species is one which only shows rare occurrences within the Corridor, although it may occur more frequently in other locations;
2. a "threatened" species is one which although not written into legal protection, is considered by knowledgeable authorities to be in imminent danger in the Provincial context and is known to be present within the Corridor; and
3. an "endangered" species is one so legislated by the Provincial Rare and Endangered Species Act and which has been known to have been present within the Corridor.

A listing of the animal species currently found within the Corridor is given in Appendix G.

A number of specialized habitat areas have been identified by OMNR in their District Sensitive Area Reports ranging from fish spawning beds to winter deer-yard locations. Recently, important migratory bird sites have been compiled for land-use planners (OMNR, 1978).

Additionally, the Canada Land Inventory has delineated those areas incorporated within the Corridor having a capability for the support of waterfowl and ungulates during some necessary period of their life-cycles (Environment Canada, 1970; 1971).

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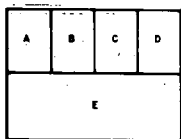
# LEGEND

## RIDEAU SECTOR LANDSCAPES

### TERRAIN TYPE:

Bluff .....	
Depression .....	
Escarpment .....	
Flat .....	
Hill .....	
Hummocky Plain .....	
Knob .....	
Knobby Plain .....	
Knobby Plateau .....	
Pit .....	
Plateau .....	
Quarry .....	
Ridge .....	
Ridged Plain .....	
Rolling Plain .....	
Rough Plain .....	
Slope .....	
Undulating Plain .....	
Valley .....	
Wetland .....	
C O R T S B O U N D A R Y .....	
L A N D S C A P E B O U N D A R Y .....	
R A N D O M S A M P L I N G S I T E .....	
S I G N I F I C A N T F E A T U R E .....	
C R O S S - S E C T I O N .....	
W A T E R .....	

## RIDEAU LANDSCAPES — SUMMARY MAP



EXAMPLE

<b>Box A</b> Symbol Proportion of Area	<b>Box B</b> LANDFORM	<b>Box C</b> DRAINAGE	<b>Box D</b> LAND USE
40% ridges & knobs 20% flat 40% knobby plain	40% bedrock 30% clay 30% sand	40% rapidly drained 30% well drained 30% imperfectly drained	50% wooded 20% hay & pasture 30% abandoned field & wooded swamp
<b>Box E</b> Vegetation			
Qa, Pt, Ula, Aca, Frs — dominant species in descending order			
Pt, Os, Qa, Ula, Acr — common species in descending order			
Btp, Acr, Tla, Tla, Aca — other species present in descending order			

### LEGEND

**Box A - LANDFORM**

- flat
- undulating plain
- rolling plain
- hilly plain
- knobby plain
- ridged plain
- hummocky plain
- rough plain
- plateau
- knobby plateau
- scarpe
- bluff
- slope
- valley
- depression
- hill
- knob
- ridge
- river
- lake
- pond

**Box C - DRAINAGE**

- W well
- Imp imperfect
- P poor
- R rapid
- Wt wet

**Box D - LAND USE**

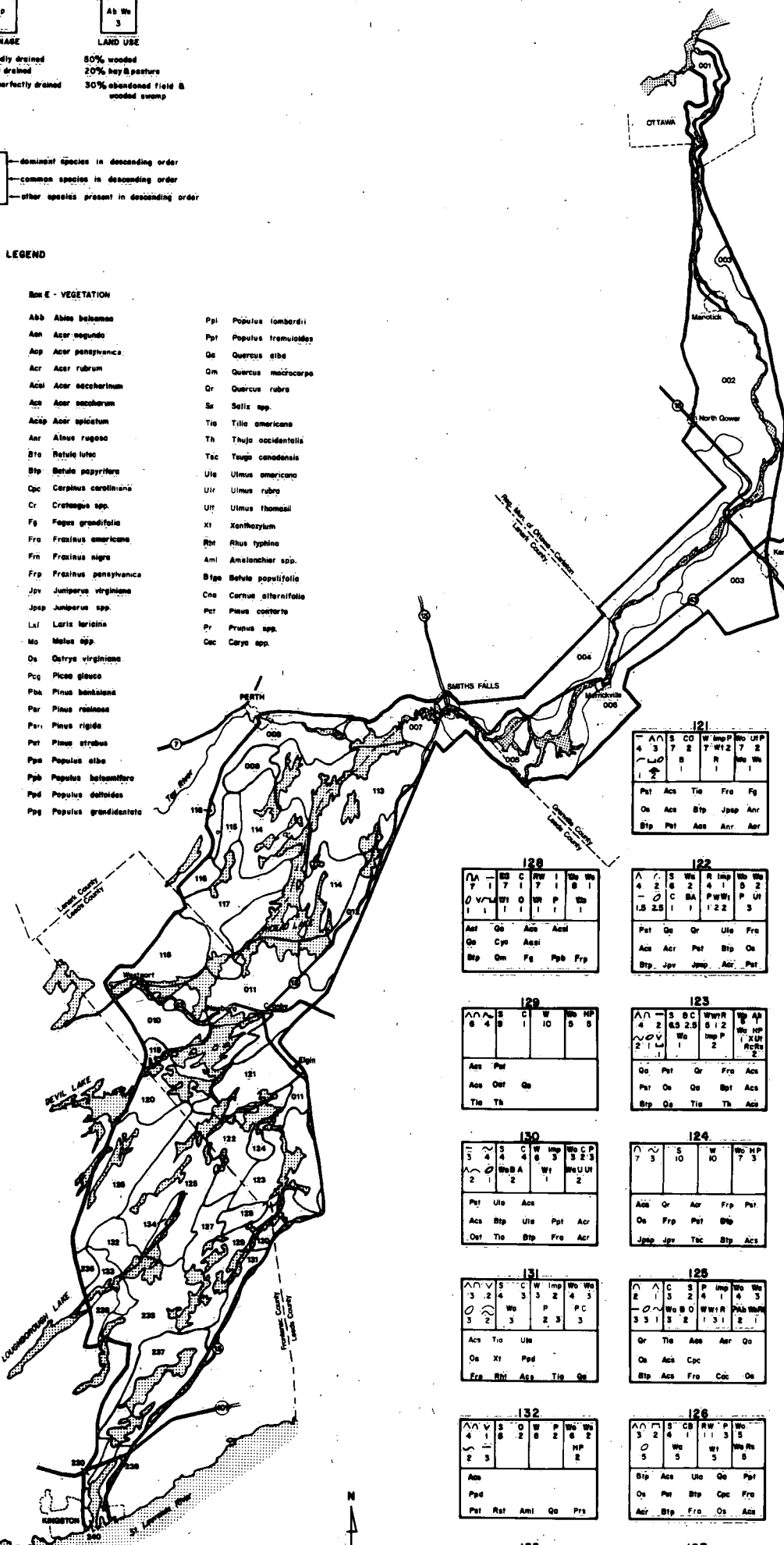
- U urban
- Re seasonal residential
- Ur utilities
- X extractive
- C crops
- H hay
- P pasture
- Ab abandoned field
- Wo wooded
- Wt wetland
- Rc recreation
- Wa water

**Box E - VEGETATION**

- Abb Abies balsamea
- Aan Acer negundo
- Aap Acer pensylvanicum
- Acr Acer rubrum
- Aca Acer saccharinum
- Aca Acer saccharum
- Aca Acer spicatum
- Aar Alnus rugosa
- Bta Betula lutea
- Btp Betula papyrifera
- Coc Carpinus caroliniana
- Cr Cornus sp.
- Fg Fagus grandifolia
- Fra Fraxinus americana
- Fri Fraxinus nigra
- Frp Fraxinus pennsylvanica
- Jvp Juniperus virginiana
- Jsp Juniperus sp.
- Lal Larix laricina
- Ma Malus sp.
- Os Ostrya virginiana
- Pca Picea canadensis
- Pba Pinus banksiana
- Par Pinus resinosa
- Pri Pinus rigida
- Pst Pinus strobus
- Ppe Populus alba
- Ppb Populus balsamifera
- Ppd Populus deltoides
- Ppg Populus grandidentata
- Ppi Populus tremuloides
- Qa Quercus alba
- Qm Quercus macrocarpa
- Qr Quercus rubra
- Sa Salix sp.
- Tia Tilia americana
- Thu Thuja occidentalis
- Tac Tilia canadensis
- Ula Ulmus americana
- Ulr Ulmus rubra
- Uti Ulmus thomasi
- Xi Xanthoxylum
- Rht Rhus typhina
- Ami Amelanchier sp.
- Btp Betula papyrifera
- Cno Cornus alternifolia
- Pct Prunus coccinea
- Pr Prunus sp.
- Cac Carya sp.

**Box B - MATERIALS**

- A artificial
- B bedrock
- Sb boulders
- C clay
- O organic
- S sand
- Wa water



001

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

002

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

003

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

004

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

113

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

005

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

006

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

007

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

008

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

009

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

010

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

011

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

012

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

120

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

121

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

122

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

123

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

124

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

125

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

126

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

115

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

116

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

117

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

118

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

119

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

132

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

133

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

238

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

239

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

240

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

234

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

235

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

236

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca

237

Qa	Pt	Ula	Aca	Frs
Pt	Os	Qa	Ula	Acr
Btp	Acr	Tla	Tla	Aca





<b>Physical Data</b>	
System:	Site:                      Date:
Photo:	Base Map:                      Name:
Sample	
Plot Size	
Land form	
Slope	
Materials	
Geology	
Soils	
Moisture	
Soil pH	
Drainage	
Land-use	
Comments	
"	
"	
"	

## Biological Data

**Site:** \_\_\_\_\_

Location: \_\_\_\_\_

Date: \_\_\_\_\_

Photo: \_\_\_\_\_

Base Map: 

Name: \_\_\_\_\_

**Sample:**

## Tree Cover

Percentage.

Species

**Dominant**

Common

**Others**

## Animal Sightings

Geo. Env. Descriptors

<u>Slope</u>	<u>%</u>	<u>Deg.</u>	<u>Code</u>	<u>Materials</u>	<u>Code</u>
Flat	0	0	01	Clay	01
Gentle	3	2	02	Silt	02
Moderate	10	6	04	Sand	03
Steep	50	27	05	Gravel	04
Very steep	100	45	06	Boulders	05
Shear	∞	90	07	Bedrock	06
				Artificial	07
				Organic	08
				Water	09

<u>Surficial Geology</u>	<u>Code</u>	<u>Bedrock Geology</u>	<u>Code</u>	<u>Soils</u>	<u>Code</u>
Glacial	01	Limestone	01	Organic	01
Glacial Fluvial	02	Sandstone	02	Gleysol (Humic)	02
Lacustrine	03	Shale	03	Regosol	03
Colluvial	11	Granite	04	Brown Forest	04
Alluvial	04	Quartzite	05	Agrisol Sand	05
Aeolian	05	Marble	06	Agrisol Clay	06
Organic	06	Metasediments	07	Disturbed	08
Marine	07	Conglomerate	08	Rockland	09
Bedrock	08	Water	13	Water	07
Disturbed	09				
Water	12				

<u>Moisture</u>	<u>Code</u>	<u>Drainage</u>	<u>Code</u>	<u>Land Use</u>	<u>Code</u>
Dry	01	Poor	04	Urban	01
Moist	02	Imperfect	03	Urban Residential (med.-low)	05
Wet	03	Well	02	Rural Residential	13
		Rapid	01	Seasonal Residential	06
				Recreational	07
				Utilities	08
				Extractive	14
				Institutional	15
				Pasture	02
				Crops	03
				Hay	04
				Abandoned	10
				Landfill	11
				Plantations	12
				Wooded	17
				Wetlands	09
				Water	16

Sub-categories, on the fieldsheets under Comments.  
 Agric - the crop type or farm typology is indicated.  
 Wetlands - the wetlands type is indicated.

SPECIES LIST AND SYMBOLS OF WOODY VEGETATION\*

<u>Common Name</u>	<u>Scientific Name</u>	<u>Symbol</u>
Jack pine	<i>Pinus banksiana</i>	Pbk
Scots pine	<i>P. contorta</i>	Pct
Red pine	<i>P. resinosa</i>	Psr
Pitch pine	<i>P. rigida</i>	Psri
White pine	<i>P. strobus</i>	Pst
Larch/tamarack	<i>Larix laricina</i>	Lxl
Norway spruce	<i>Picea abies</i>	Pca
White spruce	<i>P. glauca</i>	Pcg
Black spruce	<i>P. mariana</i>	Pcm
Hemlock	<i>Tsuga canadensis</i>	Tsc
Balsam fir	<i>Abies balsamea</i>	Abb
White cedar	<i>Thuja occidentalis</i>	Th
Red cedar	<i>Juniperus virginiana</i>	Jpr
Junipers	<i>J. spp.</i>	Jpsp
White poplar	<i>Populus alba</i>	Ppa
Balsam poplar	<i>P. balsamifera</i>	Ppb
Cottonwood	<i>P. deltoides</i>	Ppd
Carolina poplar	<i>P. deltoides (caroliniana)</i>	Ppdc
Big-tooth aspen	<i>P. grandidentata</i>	Ppg
Lombardi poplar	<i>P. lombardii</i>	Ppl
Trembling aspen	<i>P. tremuloides</i>	Ppt
Willows	<i>Salix spp.</i>	Sx
Butternut	<i>Juglans cinerea</i>	Jc
Black walnut	<i>J. nigra</i>	Jn
Bitternut hickory	<i>Carya cordiformis</i>	Caf
Shagbark hickory	<i>C. ovata</i>	Cao
Mockernut hickory	<i>C. tomentosa</i>	Cat
Blue beech	<i>Carpinus caroliniana</i>	Cac
Ironwood/hornbeam	<i>Ostrya virginiana</i>	Os
Yellow birch	<i>Betula lutea</i>	Btl

\*nomenclature from Hosie (1975).

<u>Common Name</u>	<u>Scientific Name</u>	<u>Symbol</u>
Paper birch	<i>B. papyrifera</i>	Btp
Grey birch	<i>B. populifolia</i>	Btpo
Spotted alder	<i>Alnus rugosa</i>	Anr
Beech	<i>Fagus grandifolia</i>	Fg
White oak	<i>Quercus alba</i>	Qa
Swamp white oak	<i>Q. bicolor</i>	Qb
Burr oak	<i>Q. macrocarpa</i>	Qm
Red oak	<i>Q. rubra</i>	Qr
Elm	<i>Ulmus americana</i>	Ula
Slippery elm	<i>U. rubra</i>	Ulr
Rock elm	<i>U. thomasi</i>	Ult
Hackberry	<i>Celtis occidentalis</i>	Ce
Witch hazel	<i>Hamamelis virginiana</i>	Hv
Sycamore	<i>Platanus occidentalis</i>	Po
Apple	<i>Malus spp</i>	Ma
Mountain ash	<i>Sorbus americana</i>	Sa
Service berry	<i>Amelanchier spp</i>	Aml
Hawthorn	<i>Crateagus spp</i>	Cr
Black cherry	<i>Prunus serotina</i>	Pr
Pin cherry	<i>P. pennsylvanica</i>	Pc
Choke cherry	<i>P. virginiana</i>	Pch
Canada plum	<i>P. nigra</i>	Pn
Redbud	<i>Cercis canadensis</i>	Cc
Honey locust	<i>Gleditsia triacanthos</i>	Gt
Staghorn sumac	<i>Rhus typhina</i>	Rht
Manitoba maple	<i>Acer negundo</i>	Acn
Black maple	<i>A. nigrum</i>	Acm
Striped maple	<i>A. pennsylvanicum</i>	Acp
Red maple	<i>A. rubrum</i>	Acr
Silver maple	<i>A. saccharinum</i>	Acsi
Sugar maple	<i>A. saccharum</i>	Acs
Mountain maple	<i>A. spicatum</i>	Acsp

<u>Common Name</u>	<u>Scientific Name</u>	<u>Symbol</u>
Basswood	<i>Tilia americana</i>	Tia
Flowering dogwood	<i>Cornus florida</i>	Cnf
Alternate-leaf dogwood	<i>C. alternifolia</i>	Cna
White ash	<i>Fraxinus americana</i>	Fra
Black ash	<i>F. nigra</i>	Frn
Red/green ash	<i>F. pennsylvanica</i>	Frp
Prickly ash	<i>Xanthoxylum</i> spp.	Xt
Lilac	<i>Syringa</i> spp.	Sy

STATIONDATE

	<u>1965</u>	<u>1966</u>	<u>1976</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
Ottawa	6-9	7-2	7-1	7-0	7-3	7-4	7-5	7-5	7-0	7-6	7-5	7-3	7-7
Hartwells	7-6			7-8	7-7	7-6	7-6	7-4	7-7	7-6	7-6	7-5	7-11
Hogs Back	7-4	7-3	7-2	7-2	7-2	7-3	7-3	7-3	7-2	7-3	7-2	7-3	7-5
Black Rapids	6-5	6-7	6-5	6-8	6-11	7-6	7-8	7-10	7-9	8-1	7-6	7-8	7-4
Long Island	6-6	6-6	6-2	6-6	5-11	6-4	6-7	6-9	6-7	6-8	6-9	6-1	6-5
Burritts	8-6	8-7	8-2	8-5	8-5	8-5	8-8	8-10	8-9	8-5	8-7	8-6	8-4
Nicholsons	7-4	7-4	6-2	7-4	8-5	7-4	7-6	7-9	7-8	7-7	7-3	7-5	7-2
Merrickville	6-0	6-1	6-0	6-0	6-0	6-1	6-3	6-3	6-2	6-1	6-2	6-2	6-2
Kilmarnock	6-9	6-11	7-11	6-8	6-8	6-10	6-10	7-0	6-9	6-9	7-0	6-9	6-8
Smiths Falls (DET)	7-3	7-4	7-3	7-3	7-4	7-2	7-3	7-6	7-3	7-3	7-4	7-3	7-4
Poonamalie	8-7	8-8	8-7	8-2	8-8	8-6	8-2	8-8	8-8	8-10	8-7	8-8	8-0
Christie*	3-11	4-2	4-1	4-3	5-4	3-8	3-6	4-3	4-4	4-2	4-0	4-3	3-10
Bobs*	10-9	10-10	11-0	11-0	11-3	10-11	11-0	11-2	11-0	11-4	11-2	11-3	10-11
Narrows	8-9	8-7	7-11	8-6	8-6	8-5	8-5	8-6	8-6	8-5	8-7	8-6	8-6
Wolfe*	5-1	5-4	4-11	5-4	5-4	5-3	5-3	5-4	5-4	5-4	5-5	5-4	5-2
Newboro	8-6	8-6	8-0	8-7	8-9	8-10	8-10	8-10	8-9	8-9	8-10	8-9	8-9
Chaffey's	7-3	7-7	7-4	7-6	7-4	7-6	7-6	7-6	7-6	7-6	7-5	7-6	7-6
Davis	7-4	7-7	7-6	7-6	7-5	7-6	7-5	7-5	7-5	7-6	7-6	7-6	7-5
Jones	7-4	7-3	7-2	7-7	7-6	7-2	7-3	7-6	7-3	7-1	7-5	7-4	7-2
Upper Brewers	8-6	8-7	8-8	8-9	8-9	8-11	8-10	9-0	9-2	9-2	9-0	9-2	8-10
Lower Brewers	6-3	6-7	6-9	6-6	6-11	7-0	6-11	7-0	6-6	7-0	7-1	6-4	7-3
Kingston Mills	6-3	6-3	6-1	6-7	6-8	6-2	6-5	6-9	6-0	6-7	6-9	6-5	6-3

WATER LEVELS ABOVE UPPER SILLS (in feet)

LOCKS AND LAKES\*

(Early June)

Courtesy Parks Canada

### PHYTOCENOLOGICAL DATA

Site: \_\_\_\_\_

Location: \_\_\_\_\_

Surveyors: \_\_\_\_\_

Date: \_\_\_\_\_

Temp: air surface bottom

Base Map: \_\_\_\_\_

Air Photo(s): \_\_\_\_\_

Wetland class \_\_\_\_\_

Disturbance

**Edge** \_\_\_\_\_

[illegible]



Species Cover

- r - 1 specimen only
- +
- 1 - <5%
- 2 - 5-25%
- 3 - 26-50%
- 4 - 51-75%
- 5 - 76-100%

Height class

- A - submerged
- B - .1-1 m. herb
- C - 1-2 m. dwarf shrub
- D - 2-8 m. shrub
- E - 8-30 m. tree
- F - 30 m. (+) tall tree

Sociability

- 1 - grows singly
- 2 - in tufts
- 3 - in small groups
- 4 - in large groups
- 5 - in extensive groups

MAJOR WETLAND VEGETATION

<u>Common Name</u>	<u>Scientific Name</u>	<u>Symbol</u>
<b>Emergent:</b>		
Cattail	<i>Typha</i> spp.	Ty
Burreed	<i>Sparganium</i> spp.	Sp
Lythrum	<i>Lythrum salicaria</i>	Ly
Jewel weed	<i>Impatiens capensis</i>	Im
Button bush	<i>Cephalanthus occidentalis</i>	Cp
Meadowsweet	<i>Spiraea latifolia</i>	Sr
Smartweed	<i>Polygonum</i> spp.	Sm
Arrowhead	<i>Sagittaria cuneata</i>	Sg
Pickernel weed	<i>Pontederia cordata</i>	Kw
Wild rice	<i>Zizania aquatica</i>	Zz
Bullrush	<i>Scirpus</i> spp.	Sc
Flowering rush	<i>Butomus umbellatus</i>	Bu
Rushes	<i>Juncus</i> spp.	Ju
Nutsedge	<i>Carex</i> spp.	Ca
Spike rush	<i>Eleocharis palustris</i>	Eo
Bidens	<i>Bidens</i> spp.	Bi
Yellow cress	<i>Rorippa islandica</i>	Ro
Skull cap	<i>Scutellaria epilobiifolia</i>	Su
Bedstraw	<i>Galium</i> spp.	Ga
Quackgrass	<i>Agropyron repens</i>	Ag
<b>Surface:</b>		
Duckweed	<i>Lemna minor</i>	Lm
Duckweed	<i>L. trisulca</i>	Lt
Floating-leaf pondweed	<i>Potamogeton natans</i>	Pn
White water lily	<i>Nymphaea odorata</i>	No
Yellow water lily	<i>Nuphar luteum</i>	Nl
<b>Submerged:</b>		
Bladderwort	<i>Utricularia vulgaris</i>	Ut
Eurasian milfoil	<i>Myriophyllum spicatum</i>	Me
Common milfoil	<i>M. spp.</i>	Ms
Wild celery	<i>Vallisneria americana</i>	Va
Coontail	<i>Ceratophyllum demersum</i>	Ce
Elodea	<i>Elodea canadensis</i>	El
Sago pondweed	<i>Potamogeton pectinatus</i>	Pp
Richardsons pondweed	<i>P. richardsonii</i>	Pr
Mud plantain	<i>Heteranthera dubia</i>	He

nomenclature from Hotchkiss (1972)

Mammals of the Corridor<sup>1</sup>

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Hoofed		
white-tailed deer	<i>Odocoileus virginianus</i>	
Carnivores		
black bear	<i>Ursus americanus</i>	
lynx	<i>Lynx canadensis</i>	
bobcat	<i>Lynx rufus</i>	
raccoon	<i>Procyon lotor</i>	
skunk	<i>Mephitis mephitis</i>	
fisher	<i>Martes pennanti</i> .....	R
long-tailed weasel	<i>Mustela frenata</i>	
short-tailed " (ermine)	<i>M. erminea</i>	
mink	<i>M. vison</i>	
otter	<i>Lutra canadensis</i>	
gray fox	<i>Urocyon cinereoargenteus</i> .....	R
red fox	<i>Vulpes vulpes</i>	
coyote	<i>Canis latrans</i>	
wolf	<i>C. lupus</i> .....	R
Rabbits and hares		
European hare	<i>Lepus europaeus</i>	
snowshoe hare	<i>L. americanus</i>	
eastern cottontail	<i>Sylvilagus floridanus</i>	
Rodents		
beaver	<i>Castor canadensis</i>	
meadow jumping mouse	<i>Zapus hudsonius</i>	
woodland " "	<i>Napeozapus insignis</i>	
house mouse	<i>Mus musculus</i>	
Norway rat	<i>Rattus norvegicus</i>	
muskrat	<i>Ondatra zibethicus</i>	
deer mouse	<i>Peromyscus maniculatus</i>	
white-footed mouse	<i>P. leucopus</i>	
southern bog lemming	<i>Synaptomys cooperi</i>	
red-backed mouse	<i>Clethrionomys gapperi</i>	
meadow vole (field mouse)	<i>Microtus pennsylvanicus</i>	
woodchuck	<i>Marmota monax</i>	
chipmunk	<i>Tamias striatus</i>	
northern flying squirrel	<i>Glaucomys sabrinus</i>	
gray squirrel	<i>Sciurus carolinensis</i>	
red squirrel	<i>Tamiasciurus hudsonicus</i>	
porcupine	<i>Erthizon dorsatum</i>	
Bats		
little brown bat	<i>Myotis lucifugus</i>	
small-footed bat	<i>M. leibii</i>	
Keen's bat	<i>M. keenii</i>	
big brown bat	<i>Eptesicus fuscus</i>	
silver-haired bat	<i>Lasionycteris noctivagans</i>	
red bat	<i>Lasiurus borealis</i>	
hoary bat	<i>L. cinereus</i>	
eastern pipistrelle	<i>Pipistrellus subflavus</i>	

<sup>1</sup>From Hodges (1978) and KFN (1977).

nomenclature from Burt and Grossenheider (1964)

Mammals of the Corridor

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Moles and Shrews		
hairy-tailed mole	<i>Parascalops breweri</i>	
star-nosed mole	<i>Condylura cristata</i>	
smoky shrew	<i>Sorex fumeus</i>	
masked shrew	<i>S. cinereus</i>	
water shrew	<i>S. palustris</i>	
pygmy shrew	<i>Microsorex hoyi</i>	
short-tailed shrew	<i>Blarina brevicauda</i>	

Birds of the Corridor<sup>1</sup>

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Pipits		
Water Pipit	<i>Anthus spinoletta</i>	
Waxwings		
Bohemian Waxwing	<i>Bombycilla garrulus</i>	
Cedar Waxwing	<i>Bombycilla cedrorum</i>	
Shrikes		
Northern Shrike	<i>Lanius excubitor</i>	
Loggerhead Shrike	<i>Lanius ludovicianus</i>	
Starlings		
Starling	<i>Sturnus vulgaris</i>	
Vireos		
White-eyed Vireo	<i>Vireo griseus</i>	
Yellow-throated Vireo	<i>Vireo flavifrons</i>	
Solitary Vireo	<i>Vireo solitarius</i>	
Red-eyed Vireo	<i>Vireo olivaceus</i>	
Philadelphia Vireo	<i>Vireo philadelphicus</i>	
Warbling Vireo	<i>Vireo gilvus</i>	
Warblers		
Black-and-white Warbler	<i>Mniotilta varia</i>	
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	
Tennessee Warbler	<i>Vermivora peregrina</i>	
Orange-crowned Warbler	<i>Vermivora celata</i>	
Nashville Warbler	<i>Vermivora ruficapilla</i>	
Parula Warbler	<i>Parula americana</i>	
Yellow Warbler	<i>Dendroica petechia</i>	
Magnolia Warbler	<i>Dendroica magnolia</i>	
Cape May Warbler	<i>Dendroica tigrina</i>	
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>	
Myrtle Warbler	<i>Dendroica coronata</i>	
Black-throated Green Warbler	<i>Dendroica virens</i>	
Cerulean Warbler	<i>Dendroica cerulea</i>	
Blackburnian Warbler	<i>Dendroica fusca</i>	
Yellow-throated Warbler	<i>Dendroica dominica</i>	
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	
Bay-breasted Warbler	<i>Dendroica castanea</i>	
Blackpoll Warbler	<i>Dendroica striata</i>	
Pine Warbler	<i>Dendroica pinus</i>	
Prairie Warbler	<i>Dendroica discolor</i>	
Palm Warbler	<i>Dendroica palmarum</i>	
Ovenbird	<i>Seiurus aurocapillus</i>	

<sup>1</sup>From Hodges (1978) and KFN (1977)

nomenclature from Robbins, Bruun and Zim (1966)

Birds of the Corridor

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Northern Waterthrush	<i>Seiurus noveboracensis</i>	
Mourning Warbler	<i>Oporornis philadelphia</i>	
Common Yellowthroat	<i>Geothlypis trichas</i>	
Yellow-breasted Chat	<i>Icteria virens</i>	
Wilson's Warbler	<i>Wilsonia pusilla</i>	
Canada Warbler	<i>Wilsonia canadensis</i>	
American Redstart	<i>Setophaga ruticilla</i>	
Weaver Finches		
House Sparrow	<i>Passer domesticus</i>	
Meadowlarks, Blackbirds & Orioles		
Bobolink	<i>Dolichonyx oryzivorus</i>	
Eastern Meadowlark	<i>Sturnella magna</i>	
Western Meadowlark	<i>Sturnella neglecta</i>	
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	
Baltimore Oriole	<i>Icterus galbula</i>	
Rusty Blackbird	<i>Euphagus carolinus</i>	
Common Grackle	<i>Quiscalus quiscula</i>	
Brown-headed Cowbird	<i>Molothrus ater</i>	
Tanagers		
Scarlet Tanager	<i>Piranga olivacea</i>	
Summer Tanager	<i>Piranga rubra</i>	
Grosbeaks, Finches & Sparrows		
Cardinal	<i>Richmondia cardinalis</i>	
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	
Indigo Bunting	<i>Passerina cyanea</i>	
Dickcissel	<i>Spiza americana</i>	
Evening Grosbeak	<i>Hesperiphona vespertina</i>	
Purple Finch	<i>Carpodacus purpureus</i>	
Pine Grosbeak	<i>Pinicola enucleator</i>	
Hoary Redpoll	<i>Acanthis hornemanni</i>	
Common Redpoll	<i>Acanthis flammea</i>	
Pine Siskin	<i>Spinus pinus</i>	
American Goldfinch	<i>Spinus tristis</i>	
Red Crossbill	<i>Loxia curvirostra</i>	
White-winged Crossbill	<i>Loxia leucoptera</i>	
Rufous-sided Towhee	<i>Pipilo erythrophthalmus</i>	
Savannah Sparrow	<i>Passerculus sandwichensis</i>	
Grasshopper Sparrow	<i>Ammodramus savaannarum</i>	
Leconte's Sparrow	<i>Passerherbulus caudacutus</i>	
Henslow's Sparrow	<i>Passerherbulus henslowii</i>	
Sharp-tailed Sparrow	<i>Ammodramus caudacuta</i>	
Vesper Sparrow	<i>Poocetes gramineus</i>	
Slate-colored Junco	<i>Junco hyemalis</i>	
Oregon Junco	<i>Junco oreganus</i>	
Tree Sparrow	<i>Spizella arborea</i>	

Birds of the Corridor

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Chipping Sparrow	<i>Spizella passerina</i>	
Clay-colored Sparrow	<i>Spizella pallida</i>	
Field Sparrow	<i>Spizella pusilla</i>	
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	
White-throated Sparrow	<i>Zonotrichia albicollis</i>	
Fox Sparrow	<i>Passerella iliaca</i>	
Lincoln's Sparrow	<i>Melospiza lincolni</i>	
Swamp Sparrow	<i>Melospiza georgiana</i>	
Song Sparrow	<i>Melospiza melodia</i>	
Lapland Longspur	<i>Calcarius lapponicus</i>	
Snow Bunting	<i>Plectrophenax nivalis</i>	
Phalaropes		
Red Phalarope	<i>Phalaropus fulicarius</i>	
Wilson's Phalarope	<i>Steganopus tricolor</i>	
Northern Phalarope	<i>Lobipes lobatus</i>	
Jaegers & Skuas		
Parasitic Jaeger	<i>Stercorarius parasiticus</i>	
Long-tailed Jaeger	<i>Stercorarius longicaudus</i>	
Gulls & Terns		
Glaucous Gull	<i>Larus hyperboreus</i>	
Iceland Gull	<i>Larus glaucoides</i>	
Great Black-backed Gull	<i>Larus marinus</i>	
Herring Gull	<i>Larus argentatus</i>	
Ring-billed Gull	<i>Larus delawarensis</i>	
Franklin's Gull	<i>Larus pipixcan</i>	
Bonaparte's Gull	<i>Larus philadelphia</i>	
Sabine's Gull	<i>Xema sabina</i>	
Common Tern	<i>Sterna hirundo</i>	
Arctic Tern	<i>Sterna paradisaea</i>	
Caspian Tern	<i>Hydroprogne caspia</i>	
Black Tern	<i>Chlidonias niger</i>	
Alcids		
Thick-billed Murre	<i>Uria lomvia</i>	
Common Puffin	<i>Fratercula arctica</i>	
Pigeons & Doves		
Rock Dove	<i>Columba livia</i>	
Mourning Dove	<i>Zenaidura macroura</i>	
Cuckoos		
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	
Barn Owls		
Barn Owl	<i>Tyto alba</i>	

Birds of the Corridor

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
<b>Typical Owls</b>		
Screech Owl	<i>Otus asio</i>	
Great Horned Owl	<i>Bubo virginianus</i>	
Snowy Owl	<i>Nyctea scandiaca</i>	
Hawk Owl	<i>Surnia ulula</i>	
Barred Owl	<i>Strix varia</i>	
Great Gray Owl	<i>Strix nebulosa</i>	
Long-eared Owl	<i>Asio otus</i>	
Short-eared Owl	<i>Asio flammeus</i>	
Boreal Owl	<i>Aegolius funereus</i>	
Saw-whet Owl	<i>Aegolius acadicus</i>	
<b>Goatsuckers</b>		
Whip-poor-will	<i>Caprimulgus vociferus</i>	
Common Nighthawk	<i>Chordeiles minor</i>	
<b>Swifts</b>		
Chimney Swift	<i>Chaetura pelagica</i>	
<b>Hummingbirds</b>		
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	
<b>Kingfishers</b>		
Belted Kingfisher	<i>Megasceryle alcyon</i>	
<b>Woodpeckers</b>		
Yellow-shafted Flicker	<i>Colaptes auratus</i>	
Pileated Woodpecker	<i>Dryocopus pileatus</i>	
Red-bellied Woodpecker	<i>Centurus carolinus</i>	
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	
Hairy Woodpecker	<i>Dendrocopos villosus</i>	
Downy Woodpecker	<i>Dendrocopos pubescens</i>	
Black-backed 3-toed		
Woodpecker	<i>Picoides arcticus</i>	
Northern 3-toed Woodpecker	<i>Picoides tridactylus</i>	
<b>Flycatchers</b>		
Eastern Kingbird	<i>Tyrannus tyrannus</i>	
Western Kingbird	<i>Tyrannus verticalis</i>	
Cassin's Kingbird	<i>Tyrannus vociferans</i>	
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	
Eastern Phoebe	<i>Sayornis phoebe</i>	
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	
Traill's Flycatcher	<i>Empidonax traillii</i>	
Least Flycatcher	<i>Empidonax minimus</i>	
Eastern Wood Pewee	<i>Contopus virens</i>	
Olive-sided Flycatcher	<i>Nuttallornis borealis</i>	
<b>Larks</b>		
Horned Lark	<i>Eremophila alpestris</i>	



Birds of the Corridor

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Swallows		
Tree Swallow	<i>Iridoprocne bicolor</i>	
Bank Swallow	<i>Riparia riparia</i>	
Rough-winged Swallow	<i>Stelgidopteryx ruficollis</i>	
Barn Swallow	<i>Hirundo rustica</i>	
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	
Purple Martin	<i>Progne subis</i>	
Jays & Crows		
Gray Jay	<i>Perisoreus canadensis</i>	
Blue Jay	<i>Cyanocitta cristata</i>	
Common Raven	<i>Corvus corax</i>	
Common Crow	<i>Corvus brachyrhynchos</i>	
Titmice		
Black-capped Chickadee	<i>Parus atricapillus</i>	
Boreal Chickadee	<i>Parus hudsonicus</i>	
Nuthatches		
White-breasted Nuthatch	<i>Sitta carolinensis</i>	
Red-breasted Nuthatch	<i>Sitta canadensis</i>	
Creepers		
Brown Creeper	<i>Certhia familiaris</i>	
Wrens		
House Wren	<i>Troglodytes aedon</i>	
Winter Wren	<i>Troglodytes troglodytes</i>	
Carolina Wren	<i>Thryothorus ludovicianus</i>	
Long-billed Marsh Wren	<i>Telmatorhynchus palustris</i>	
Short-billed Marsh Wren	<i>Cistothorus platensis</i>	
Thrashers & Mockingbirds		
Mockingbird	<i>Mimus polyglottos</i>	
Catbird	<i>Dumetella carolinensis</i>	
Brown Thrasher	<i>Toxostoma rufum</i>	
Thrushes		
American Robin	<i>Turdus migratorius</i>	
Wood Thrush	<i>Hylocichla ustulata</i>	
Hermit Thrush	<i>Hylocichla ustulata</i>	
Swainson's Thrush	<i>Hylocichla ustulata</i>	
Gray-cheeked Thrush	<i>Hylocichla minima</i>	
Veery	<i>Hylocichla fuscescens</i>	
Eastern Bluebird	<i>Sialia sialis</i>	
Wheatear	<i>Oenanthe oenanthe</i>	
Townsend's Solitaire	<i>Myadestes townsendi</i>	
Gnatcatchers & Kinglets		
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	
Golden-crowned Kinglet	<i>Regulus satrapa</i>	
Ruby-crowned Kinglet	<i>Regulus calendula</i>	

Birds of the Corridor

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
<b>Loons</b>		
Common Loon	<i>Gavia immer</i>	
Red-throated Loon	<i>Gavia stellata</i>	
<b>Grebes</b>		
Red necked Grebe	<i>Podiceps grisegena</i>	
Horned Grebe	<i>Podiceps auritus</i>	
Pied-billed Grebe	<i>Podilymbus podiceps</i>	
<b>Storm Petrels</b>		
Harcourt's Petrel	<i>Oceanodroma castro</i>	
Wilson's Petrel	<i>Oceanites oceanicus</i>	
<b>Pelicans</b>		
White Pelican	<i>Pelecanus erythrorhynchos</i> .....E	
<b>Gannets</b>		
Gannet	<i>Morus bassanus</i>	
<b>Cormorants</b>		
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	
<b>Hérons &amp; Bitterns</b>		
Great Blue Heron	<i>Ardea herodias</i>	
Green Heron	<i>Butorides virescens</i>	
Cattle Egret	<i>Bubulcus ibis</i>	
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	
Yellow-crowned Night Heron	<i>Nyctanassa violacea</i>	
Least Bittern	<i>Ixobrychus exilis</i>	
American Bittern	<i>Botaurus lentiginosus</i>	
<b>Ibises</b>		
Glossy Ibis	<i>Plegadis falcinellus</i>	
<b>Swans, Geese &amp; Ducks</b>		
Whistling Swan	<i>Olor columbianus</i>	
Canada Goose	<i>Branta canadensis</i>	
Brant	<i>Branta bernicla</i>	
Snow Goose	<i>Anser hyperborea</i>	
White-fronted Goose	<i>Anser albifrons</i>	
Fulvous Tree Duck	<i>Dendrocygna bicolor</i>	
Mallard	<i>Anas platyrhynchos</i>	
Black Duck	<i>Anas rubripes</i>	
Gadwall	<i>Anas strepera</i>	
Pintail	<i>Anas acuta</i>	
Green-winged Teal	<i>Anas carolinensis</i>	
Blue-winged Teal	<i>Anas discors</i>	
European Widgeon	<i>Mareca penelope</i>	
American Widgeon	<i>Mareca americana</i>	
Shoveler	<i>Spatula clypeata</i>	
Wood Duck	<i>Aix sponsa</i>	
Redhead	<i>Aythya americana</i>	

Birds of the Corridor

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Ring-necked Duck	<i>Aythya collaris</i>	
Canvasback	<i>Aythya valisineria</i>	
Greater Scaup	<i>Aythya marila</i>	
Lesser Scaup	<i>Aythya affinis</i>	
Common Goldeneye	<i>Bucephala clangula</i>	
Barrow's Goldeneye	<i>Bucephala islandica</i>	
Bufflehead	<i>Bucephala albeola</i>	
Oldsquaw	<i>Clangula hyemalis</i>	
King Eider	<i>Somateria spectabilis</i>	
White-winged Scoter	<i>Melanitta deglandi</i>	
Surf Scoter	<i>Melanitta perspicillata</i>	
Common Scoter	<i>Oidemia nigra</i>	
Ruddy Duck	<i>Oxyura jamaicensis</i>	
Hooded Merganser	<i>Lophodytes cucullatus</i>	
Common Merganser	<i>Mergus merganser</i>	
Red-breasted Merganser	<i>Mergus serrator</i>	
<b>Vultures</b>		
Turkey Vulture	<i>Cathartes aura</i>	
<b>Hawks &amp; Eagles</b>		
Swallow-tailed Kite	<i>Elanoides forficatus</i>	
Goshawk	<i>Accipiter gentilis</i>	
Sharp-shinned Hawk	<i>Accipiter striatus</i>	
Cooper's Hawk	<i>Accipiter cooperii</i>	
Red-tailed Hawk	<i>Buteo jamaicensis</i>	
Red-shouldered Hawk	<i>Buteo lineatus</i>	
Broad-winged Hawk	<i>Buteo platypterus</i>	
Swainson's Hawk	<i>Buteo swainsoni</i>	
Rough-legged Hawk	<i>Buteo lagopus</i>	
Golden Eagle	<i>Aquila chrysaetos</i> .....E	
Bald Eagle	<i>Haliaeetus leucocephalus</i> .....E	
Marsh Hawk	<i>Circus cyaneus</i>	
<b>Ospreys</b>		
Osprey	<i>Pandion haliaetus</i>	
<b>Falcons</b>		
Gyr Falcon	<i>Falco rusticolus</i>	
Peregrine Falcon	<i>Falco peregrinus</i> .....E	
Pigeon Hawk	<i>Falco columbarius</i>	
Sparrow Hawk	<i>Falco sparverius</i>	
<b>Grouse</b>		
Spruce Grouse	<i>Canachites canadensis</i>	
Ruffed Grouse	<i>Bonasa umbellus</i>	
Ring-necked Pheasant	<i>Phasianus colchicus</i>	
Gray Partridge	<i>Perdix perdix</i>	

Birds of the Corridor

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
<b>Rails, Gallinules &amp; Coots</b>		
King Rail	<i>Rallus elegans</i>	
Virginia Rail	<i>Rallus limicola</i>	
Sora	<i>Pirzaba carolina</i>	
Yellow Rail	<i>Coturnicops noveboracensis</i>	
Common Gallinule	<i>Gallinula chloropus</i>	
American Coot	<i>Fulica americana</i>	
<b>Plovers &amp; Turnstones</b>		
Semipalmated Plover	<i>Charadrius semipalmatus</i>	
Piping Plover	<i>Charadrius melodus</i> .....E	
Killdeer	<i>Charadrius vociferus</i>	
American Golden Plover	<i>Pluvialis dominica</i>	
Black-bellied Plover	<i>Squatarola squatarola</i>	
Ruddy Turnstone	<i>Arenaria interpres</i>	
<b>Woodcock, Snipe &amp; Sandpiper</b>		
American Woodcock	<i>Philohela minor</i>	
Common Snipe	<i>Capella gallinago</i>	
Whimbrel	<i>Numenius phaeopus</i>	
Upland Plover	<i>Bartramia longicauda</i>	
Spotted Sandpiper	<i>Actitis macularia</i>	
Solitary Sandpiper	<i>Tringa solitaria</i>	
Willet	<i>Catoptrophorus semipalmatus</i>	
Greater Yellowlegs	<i>Totanus melanoleucus</i>	
Lesser Yellowlegs	<i>Totanus flavipes</i>	
Knot	<i>Calidris canutus</i>	
Purple Sandpiper	<i>Erolia maritima</i>	
Pectoral Sandpiper	<i>Erolia melanotos</i>	
White-rumped Sandpiper	<i>Erolia fuscicollis</i>	
Baird's Sandpiper	<i>Erolia bairdii</i>	
Least Sandpiper	<i>Erolia minutilla</i>	
Dunlin	<i>Erolia alpina</i>	
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>	
Short-billed Dowitcher	<i>Limnodromus griseus</i>	
Stilt Sandpiper	<i>Micropalama himantopus</i>	
Semipalmated Sandpiper	<i>Ereunetes pusillus</i>	
Western Sandpiper	<i>Ereunetes mauri</i>	
Buff-breasted Sandpiper	<i>Tryngites subruficollis</i>	
Marbled Godwit	<i>Limosa fedoa</i>	
Hudsonian Godwit	<i>Limosa haemastica</i>	
Sanderling	<i>Crocethia alba</i>	

Fishes of the Corridor<sup>1</sup>

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Silver lamprey	<i>Ichthyomyzon unicuspis</i>	
American brook lamprey	<i>Lampetra lamottei</i>	
Lake sturgeon	<i>Acipenser fulvescens</i>	
Longnose gar	<i>Lepidosteus osseus</i>	
Mooneye	<i>Hiodon tergisus</i>	
American eel	<i>Anguilla rostrata</i>	
Lake cisco	<i>Coregonus artedii</i>	
Lake whitefish	<i>Coregonus clupeaformis</i>	
Rainbow trout	<i>Salmo gairdnerii</i>	
Brown trout	<i>Salmo trutta</i>	
Arctic charr	<i>Salvelinus alpinus</i>	
Brook charr (trout)	<i>Salvelinus fontinalis</i> .....R	
Lake charr	<i>Salvelinus namaycush</i>	
Rainbow smelt	<i>Osmerus mordax</i>	
Northern pike	<i>Esox lucius</i>	
Muskellunge	<i>Esox masquinongy</i>	
Central mudminnow	<i>Umbra limi</i>	
Northern redbelly dace	<i>Chrosomus eos</i>	
Finescale dace	<i>Chrosomus neogaeus</i>	
Carp	<i>Cyprinus carpio</i>	
Brassy minnow	<i>Hybognathus hankinsonii</i>	
Silvery minnow	<i>Hybognathus nuchalis</i>	
Golden shiner	<i>Notemigonus crysoleucas</i>	
Blackchin shiner	<i>Notropis heterodon</i>	
Blacknose shiner	<i>Notropis heterolepis</i>	
Spottail shiner	<i>Notropis hudsonius</i>	
Rosyface shiner	<i>Notropis rubellus</i>	
Sand shiner	<i>Notropis stramineus</i>	
Mimic shiner	<i>Notropis volucellus</i>	
Bluntnose minnow	<i>Pimephales notatus</i>	
Fathead minnow	<i>Pimephales promelas</i>	
Longnose dace	<i>Rhinichthys cataractae</i>	
Creek chub	<i>Semotilus atromaculatus</i>	
Fallfish	<i>Semotilus corporalis</i>	
Pearl dace	<i>Semotilus margarita</i>	
Cuillback	<i>Carpionides cyprinus</i>	
Longnose sucker	<i>Catostomus catostomus</i>	
White sucker	<i>Catostomus commersonii</i>	
Silver redhorse	<i>Moxostoma anisurum</i>	
River redhorse	<i>Moxostoma carinatum</i>	
Shorthead redhorse	<i>Moxostoma macrolepidotum</i>	
Greater redhorse	<i>Moxostoma valenciennesi</i>	

<sup>1</sup>From Hodges (1978) and KFN (1977)

nomenclature from Scott (1972)

Fishes of the Corridor

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Yellow bullhead	<i>Ictalurus natalis</i>	
Brown bullhead	<i>Ictalurus nebulosus</i>	
Channel catfish	<i>Ictalurus punctatus</i>	
Stonecat	<i>Noturus flavus</i>	
Tadpole madtom	<i>Noturus gyrinus</i>	
Margined madtom	<i>Noturus insignis</i>	
Burbot	<i>Lota lota</i>	
Trout-perch	<i>Percopsis omiscomaycus</i>	
Banded killifish	<i>Fundulus diaphanus</i>	
Brook silverside	<i>Labidesthes sicculus</i>	
Rock bass	<i>Ambloplites rupestris</i>	
Pumpkinseed	<i>Lepomis gibbosus</i>	
Bluegill	<i>Lepomis macrochirus</i>	
Smallmouth bass	<i>Micropterus dolomieu</i>	
Largemouth bass	<i>Micropterus salmoides</i>	
Black crappie	<i>Pomoxis nigromaculatus</i>	
Iowa darter	<i>Etheostoma exile</i>	
Fantail darter	<i>Etheostoma flabellare</i>	
Johnny darter	<i>Etheostoma nigrum</i>	
Tessellated darter	<i>Etheostoma olmstedii</i>	
Yellow perch	<i>Perca flavescens</i>	
Logperch	<i>Percina caprodes</i>	
Channel darter	<i>Percina copelandi</i>	
Sauger	<i>Stizostedion canadense</i>	
Walleye	<i>Stizostedion vitreum</i>	
Freshwater drum	<i>Aplodinotus grunniens</i>	
Mottled sculpin	<i>Cottus bairdii</i>	
Brook stickleback	<i>Culaea inconstans</i>	
Threespine stickleback	<i>Gasterosteus aculeatus</i>	
Ninespine stickleback	<i>Pungitius pungitius</i>	

Reptiles and Amphibians of the Corridor<sup>1</sup>

R - rare  
E - endangered  
Status

Common NameScientific NameREPTILESTurtles

snapping	<i>Chelydra serpentina serpentina</i>
eastern spiny softshell	<i>Trionyx spinifer spinifer</i> ....R
midland painted	<i>Chrysemys picta marquinata</i>
map	<i>Malaclemys geographica</i>
Blanding's	<i>Emydoidea blandingi</i> .....R
wood	<i>Clemmys insculpta</i> .....R
spotted	<i>C. guttata</i> .....R
musk	<i>Sternotherus odoratus</i>

Snakes

black rat	<i>Elaphe obsoleta obsoleta</i> .....R
eastern milk	<i>Lampropeltis dolia triangularum</i>
eastern garter	<i>Thamnophis sirtalis sirtalis</i>
eastern ribbon	<i>T. sauritus sauritus</i>
northern water	<i>Natrix sipedon sipedon</i>
eastern smooth green	<i>Opheodrys vernalis vernalis</i>
eastern ring-necked	<i>Diadophis punctatus edwardsi</i>
De Kay's	<i>Storeria dekayi dekayi</i>
red-bellied	<i>S. occipitamaculata occipitamaculata</i>

AMPHIBIANSNewts and Salamanders

mudpuppy	<i>Necturus maculosus</i>
blue-spotted salamander	<i>Ambystoma laterale</i>
greater blue spotted	<i>A. tremblayi</i>
yellow-spotted salamander	<i>A. maculatum</i>
red-spotted newt	<i>Notophthalmus viridescens viridescens</i>
red-backed salamander	<i>Plethodon cinereus cinereus</i>
four-toed salamander	<i>Hemidactylium scutatum</i>
northern two-lined salamander	<i>Eurycea bislineata bislineata</i>

Toads and Frogs

american toad	<i>Bufo americanus americanus</i>
northern spring peeper	<i>Hyla crucifer crucifer</i>
eastern gray tree-frog	<i>H. versicolor</i>
western chorus frog	<i>Psuedacris triseriata triseriata</i>
bull frog	<i>Rana catesbeiana</i>
green frog	<i>R. clamitans melanota</i>
mink frog	<i>R. septentrionalis</i>
wood frog	<i>R. sylvatica</i>
leopard frog	<i>R. pipiens</i>
pickerel frog	<i>R. palustris</i> .....R

<sup>1</sup>From Hodges (1978) and KEN (1977)

nomenclature from Conant (1958)

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