Spatial Context and Temporal Aspects of the Sensitive Area Concept in Ontario

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SPATIAL CONTEXT AND TEMPORAL ASPECTS OF THE SENSITIVE AREA CONCEPT IN ONTARIO.

By

BARBARA ELIZABETH ANDERSON

B.E.S. University of Waterloo, 1975

THESIS

Submitted in partial fulfilment of the requirements for the Master of Arts degree
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1979
ABSTRACT

The term "sensitive area" is a product of planning initiatives which have developed within the province of Ontario since the early nineteen seventies. As there are a number of closely related terms utilized, the sensitive areas concept generally is defined as the creation of a reserve or the removal of land from unfettered commercial development or intense human use. The concept has been associated with a broad range of environmental concerns such as, the protection of wildlife habitat, maintenance of ecologic function, retention of scenic areas and preservation of historic sites. Similar initiatives across North America are surveyed and the historic precedence for land reservation in Ontario is examined. The author concludes that there is widespread concern for this concept and that it is pockets of vested interest in traditional conservation modes which prevents a unified co-ordinated approach to sensitive areas planning in Ontario.
ACKNOWLEDGEMENTS

To a large degree the research and thought processes involved in this thesis have been a result of my work in the field of sensitive areas planning within the Ontario Ministry of Natural Resources. In this regard I am indebted to members of the Land Use Co-ordination Branch—Mr. Marc Cressman, Mr. Norm Gordon and especially Mr. Pete Anderson, and to members of the Special Areas Planning Committee in the Northwest Region of the Ministry of Natural Resources.

I must also express my appreciation of my thesis advisor Dr. Grant Head for the time he spent both in discussion and editorial criticism. Thanks also to Dr. Helen Parsons for her encouragement during the production process.

A very special thanks must be given to my parents for their constant encouragement and support in this endeavour. Thanks also to my typist Miss Christine Gurski for her many hours of labour, and a special thanks to Mr. Michael Gurski for his unfailing wit, good humour and support throughout the production of this thesis.
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INTRODUCTION

This investigation of the sensitive area concept was prompted by the fact that sensitive areas have been an active issue in planning circles for the past seven years. During this time, planning for sensitive area designation has been fraught with confusion. This confusion, which has been created by the utilization of both a variety of closely related terms and similar rationale seems to have hampered not only comprehensive policy formulation, but also, a co-ordinated approach to planning in this field.

In the Provincial Ministry of Natural Resources, the Division of Parks has spent eleven years on a Parks Policy which partially articulates the sensitive area concept. The Land Use Co-ordination Branch in both its Plan Review and Strategic Land Use Planning processes has advocated the identification of sensitive areas. The Regional Municipality of Waterloo has designated environmentally sensitive areas into their Official Plan. The Regional Municipality of Hamilton Wentworth and various counties has initiated similar environmentally sensitive areas concept into their official plans in conservation, environmental protection and hazard land designations.

As various levels of government try to handle the concept in a number of ways, none of which have gained complete ascendancy, agencies such as Ontario Hydro, the Ministry of
Transportation and Communications, developers and consultants require co-ordinated government policy direction if protection and planning is to be efficiently executed.

The purpose of this thesis is, through an examination of the sensitive area concept spatially, that is within the North American context, and temporally, that is, within the historic development of conservation in Ontario, to provide a clearer understanding of the current diversity within the sensitive areas concept. It is the belief of this author that such an understanding will facilitate sound policy planning initiatives in this field.
CHAPTER ONE
SENSITIVE AREA CONCEPT - ONE CONCEPT WITH MANY NAMES

The late sixties and early seventies saw a dramatic surge of public interest in the wilderness, in ecology and in the environment. Growing awareness of disturbing environmental changes and seemingly unchecked economic development at the expense of natural values prompted the formation, across the country, of public interest groups such as the Algonquin Wildlands League (1965), National and Provincial Parks Association (1967), The Canadian Arctic Resources Commission (1971), and the Society for Pollution and Environmental Control (1969). Much concern was expressed for the protection of endangered species, for the maintenance of environmental quality and for the need of a land ethic.

The "sensitive area concept" or, in broad terms, the creation of reserves of land isolated from the pressures of commercial exploitation, is associated with this period. The term "sensitive area" first appeared in the early 1970's. As it is essentially a planning term used to identify areas of land about which there might be one or a combination of a variety of environmental concerns, and as the concept does not appear to have been introduced to Ontario and its local governmental agencies through any one specific channel, a diversity of environmental ideas have appeared under the same term and, in addition,
under the guise of a number of related terms. To attempt to reduce confusion, we will use the term "sensitive area concept" as an over-riding term, embracing the broad range of concepts and terms under which Ontario lands are being recommended for removal from unfettered commercial exploitation and intense human use for a variety of environmental reasons.

We will first illustrate the diversity of initiatives in this field by examining briefly seven aspects of the sensitive area concept presently used in Ontario. We maintain that despite the variety of terms, the basic concepts are essentially similar, though differing in details and emphasis. The purpose of this section is not only to illustrate the confusion surrounding sensitive area planning, but also to cut through the semantics to illustrate the essence of the concepts.

"Nature Reserve": Parks Division, Ontario Department of Lands and Forests

The concept of nature reserves was developed by the Parks Division of the Ontario Department of Lands and Forests as part of their Park Systems Planning initiative in early 1967. Presently within the Ontario Ministry of Natural Resources, where the Parks Division now rests, nature reserves are defined as:

"... areas selected to represent the distinctive natural habitats and landforms of the Province, and are protected for education purposes and as gene pools for reseach to benefit present and future generations". 1
Figure 1 - Nature Reserve

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<th>Nature Vegetation Site Type</th>
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Source: Ontario Provincial Parks Planning and Management Manual, Nature Reserves-II-7
Figure 2 - Ojibway Prairie

Legend
- Major Residential Areas
- Proposed Acquisition Area
- Major Roads
- City Limits

SCALE 1: 25,000

SOURCE: Ojibway Prairie, Division of Parks
The intent of a nature reserve is also to protect faunal species of the province through preservation of representative natural habitats. Theoretical vegetative site types have been developed and are outlined in Figure 1. Evaluation is done by such specialists as biologists, geologists and geomorphologists. Presently there are twelve of these nature reserves designated and protected under the Parks Act. These designations range from heron rookeries (East Sister Island) to geological features (Quimette Canyon) to fossil sites (Schribber Channel).

An example of a nature reserve under the Parks Act is the Ojibway Prairie, located in Essex County on the outskirts of the City of Windsor. (Figure 2) The area contains vegetational species of the tall grass prairie of Saskatchewan and Alberta. It is a remnant of the original midwest prairie which extended east into Wisconsin, Illinois and Michigan. Fire is an essential element in the ecological cycle which maintains this ecosystem. In a management program that attempts to duplicate natural conditions periodic burning is necessary and one is planned for the summer of 1979.

"Sensitive Areas": Land Use Planning Section, Land Use Co-ordination Branch, Lands Division, Ontario Ministry Of Natural Resources

This agency was the first in Ontario to use the term "sensitive area". In 1972, as part of the Strategic
Land Use Planning (S.L.U.P.) exercise, an initiative to meet Ministry objectives on the land through an integrated and co-ordinated planning process, general guidelines were sent to each of the Ministry's five regions, and subsequently to its forty-eight districts, to initiate sensitive area data collection. Sensitive areas and features were defined in 1974 in this agency's Guidelines for Land Use Planning as "places that include some conspicuous value for one or more of the objectives of the Ministry that would readily be damaged by certain developments or uses." The broad objectives of the Ministry are outdoor recreation, land management and resource production. Types of sensitive areas recognized are: vegetation, fish and wildlife habitat, geology and landforms, historic and cultural, and complexes. The last term is taken to mean a number of the preceding types.

This inventory solicited a broad range of responses across the province. As the inventory was not directed to a particular division, individual reports were often swayed by the professional background of the person who collected the information locally. The result was a wide variance in the type and in the reliability of data collected. The validity of such a designation is questionable due to these problems in data collection and in evaluation methods. In a personal review by
Description:
A white pelican nesting area is located on a series of small islands on Lake of the Woods. It is the only known white pelican breeding and nesting grounds in the province of Ontario.

Potential for Damage:
Pelicans are sensitive to any type of human activity or development. Any disturbance would probably cause the pelicans to nest in other suitable areas and possibly to move out of the province.

Recommendations for Protection and Use:
Human activity and development should be discouraged in the immediate area. The location of the site ought not be publicized or viewing by the public encouraged.

Source: Kenora District Sensitive Areas Report, Ontario Ministry of Natural Resources.
this writer, the sensitive area reports from across the province appear to interpret the term sensitive area in two ways: firstly, as an area the individual himself considers special i.e. an area to which he is sensitive; and secondly, as an area which itself is perceived as being vulnerable, fragile or "sensitive" to any change. Thus these reports inventoried areas as diverse as deer yards, Indian graveyards, large trees, fossil sites, waterfalls, nice beaches and "Mrs. MacGillicuty's rose garden." 6

A site currently designated as a sensitive area by the Ministry of Natural Resources is Pelican Island on Lake of the Woods (Figure 3). This site contains a nesting habitat for the white pelican which is normally found considerably further south.

"Environmental Protection Areas": Plan Review Section, Land Use Co-ordination Branch, Lands Division, Ontario Ministry of Natural Resources

Also in 1974 the Plan Review Section of the Land Use Co-ordination Branch established "Environmental Protection Areas" for Plan Review purposes. This designation was aimed at "all lands having inherent physical/environmental hazards ..." 7 and included both hazard lands and sensitive areas. "Hazard Lands", of course, are lands which are considered to endanger man or his property and include such areas as flood plains, steep slopes, or areas of soil instability such as
Figure 4 - MacKenzie Island

SOURCE: West Patricia Land Use Plan, Sensitive Areas Inventory, Sensitive Areas Report 1978, Red Lake District, Ministry of Natural Resources.
leda clays or organic soils. Sensitive areas on the other hand are defined as "... serving one or several of these functions:

1) scientific research
2) educational and interpretation
3) species maintenance
4) preservation and/or conservation of unique species and fauna

As in the case of the Guidelines for Land Use Planning, developed in the Land Use Planning Section, neither criteria nor an evaluatory process are outlined. An example of such a designation would be an eagles's nest which is identified in the Red Lake Sensitive Areas Report. (Figure 4) Should a development proposal for this site be reviewed by the Ministry, development guidelines would be recommended. These guidelines would ensure a specific buffer zone around this nest.

Special Areas: Lake Planning Section, Land Use Co-ordination Branch, Lands Division, Ontario Ministry of Natural Resources

The Lake Planning Section of the Land Use Co-ordination Branch coined the term "special areas" in the Lake Planning Manual of 1976. These were defined as "areas (which) have natural features that because of their ecological sensitivity are easily damaged by certain developments or uses. Special areas may be vegetative, geologic, historic/archaeologic or a unique habitat. Neither criteria nor evaluation methods are outlined. The Lake Plan for Minitaki Lake, located just west of
Figure 5 - Minnitaki Lake

SOURCE: Minnitaki Lake Plan, (Draft), Ministry of Natural Resources 1979
Sioux Lookout, designated a number of these special areas. The Red Pine stands on Ruby Island for example, were so listed due to their unusual occurrence at this northern latitude. Pickerel spawning grounds, a bay with particularly good production of wild rice, and an historic log chute are other examples of special areas designated in this plan. (Figure 5)

"Special Influence Areas": Forestry Branch, Ontario Ministry of Natural Resources

Another aspect of the sensitive area concept was developed in 1976 in the Forestry Branch of the Ministry of Natural Resources. The consulting firm of Hough, Stansbury & Associates, a large environmental planning agency which has done much work for the government, was hired to produce a manual of Forest Management Guidelines. These introduced a new designation similar to previous definitions of sensitive areas. These "special influence areas" were defined as "containing some outstanding or significant natural or cultural attribute, requiring particular management techniques". The purpose of establishing a special influence area is "to protect, perpetuate, enhance or otherwise maintain some element of the environment deemed to have high, natural, social, recreational, educational, scientific or aesthetic values which supersede the other values of that unit of land". Four types of special influence areas are recognized. They
are natural, scenic, recreation and historic/archaeological. The guidelines suggest evaluation criteria such as uniqueness, rareness, representativeness, capacity to sustain use, attractiveness, sensitivity to levels and diversities of use and, finally access.

An example of a special influence area would be an eagle's nest which has specific development guidelines. These include size of buffer zones, timing and extent of allowable development.

Discussion: Ontario Ministry of Natural Resources

Sensitive area definitions, terms, inventory and evaluations thus display a broad range of concerns within the Ministry of Natural Resources. The relationship of the various departments can be seen in Figure 6. The terms overlap in concept and often in jurisdiction. As a result, the planning process appears to lack a clear goal or objective.

For example, the definition of "nature reserves" indicates concern for representative samples whereas, in this context "sensitive areas" seem concerned with the unique, rare or unusual. A site, however, could possibly fall into both categories. For example the Ojibway Prairie is representative of a former community in Ontario. At the same time it is a unique ecosystem and could be protected for its rarity. Presumably, all representative sites will become
Figure 6 - Ontario
Ministry of Natural Resources

rare because surrounding landscapes will not be protected from change. Another example is that of the eagle's nest - in one instance it is a sensitive area due to its location in a proposed development area due to its occurrence in a forest management unit. Whereas in many instances development is moderated considerably due to the sensitivity of the species, an example from southwestern Ontario presents another facet. Part of a trailer park development proceeded under an eagle's nest only to have the pair return to the nest the following season! Thus operational inconsistencies, as well as discrepancies in terms, types, evaluation methods and jurisdictions present a confusing picture which in turn prevents effective policy and planning initiatives.

"Environmentally Sensitive Areas": Official Plan, Regional Municipality of Waterloo

While the province was wrestling with the idea of sensitive areas in a variety of aspects of its planning functions, newly formed Regional governments were attempting to incorporate similar ideas into their Official Plans. Selection criteria for environmentally sensitive areas were initially outlined by a small group of ecology professors and interested local field naturalists working on a Ministry of the Environment
Summer Experience '75 grant with the University of Waterloo. These criteria include:

1. occurrence of rare indigenous species
2. unusual or high quality plant and/or animal associations and/or landforms
3. large undisturbed area with potential habitat for species intolerant of human disturbance
4. unique or remnant habitat
5. area of unusual diversity of plant and animal communities
6. area with linking system for wildlife movement
7. area performs vital ecological function such as water storage or recharge
8. area with one of above qualities and is threatened by human activities

An area fulfilling any one of these criteria is considered a sensitive area. Each of the sixty-nine "sensitive areas" designated was endorsed by a Regional Environmental Advisory Committee composed of developers, university professors, planning staff and interested members of the public appointed by the Regional Council. The Ontario Ministry of Housing gives final approval to these areas in the Official Plan document. The broad range of areas designated can be seen in Figure 7.

An example of an environmentally sensitive area designated in the Regional Municipality of Waterloo Official Plan is Schafer's Woods. (Number 17 in Figure 7) These woods contain remnant hemlock associations as well as the largest known growth of rock fern, (Polypodium virginianum) a rare fern within the Region.
Figure 7

REGIONAL MUNICIPALITY of WATERLOO
OFFICIAL POLICIES PLAN

FLOOD PLAIN AND ENVIRONMENTALLY SENSITIVE POLICY AREAS

Legend:
- Flood Plain
- Environmentally Sensitive Policy Area

48 Area Reference Number
17 Schaefer's Woods
"Environmentally Sensitive Areas": Official Plan, Regional Municipality of Hamilton-Wentworth

The Regional Municipality of Hamilton-Wentworth completed a similar study of environmentally sensitive areas for inclusion in its Official Plan. Both the selection criteria and definitions were similar to those developed and, indeed, developed form the same roots as those of the Region of Waterloo. The definition follows:

"Sensitive areas are those natural landscapes including those lands and/or waters of inherent biological sensitivity such as those areas containing aquifer recharges, headwaters, unusual plants, wildlife or landforms, breeding or overwintering habitats vital ecological functions, rare or endangered species, or other combinations of habitat and landform which could be valuable for scientific research or conservation education. These sensitive areas may or may not have been significantly affected by management or past human activity and they may or may not require intensive management in order to restore, maintain, or improve certain of their natural values and they are essentially remnant areas which have not been converted to intensive urban or agricultural uses." 13

The selection criteria developed are essentially the same as those for Waterloo Region. A criterion to consider amenity values was added and the criterion of human's threat was deleted.

The concept of 'Environmentally Sensitive Areas' as outlined by the Waterloo Region has subsequently spread across Ontario. By the fall of 1978, seven studies utilizing similar criteria
and definitions had been undertaken by various counties and regions. All of these were funded by the Ministry of the Environment under its Experience Program.

"Sensitive Area": Official Plan, Regional Municipality of Sudbury

Further north, the Regional Municipality of Sudbury has also incorporated a similar concept utilizing the term sensitive areas. These are defined as areas of,

"... land and/or water locations of ecologic, geologic, archaeological or historic importance which are significant because of their uniqueness and/or their importance in meeting regional resource production objectives. This significance is often related to one or more functions, such as: scientific research; education and interpretation; species maintenance; conservation or unique or representative occurrences of flora, fauna, landforms, geology, historical and cultural features". 15

Further illucidation of the concept states that "sensitive areas can be easily damaged by development because many of the features are fragile or dependant on ecosystems that are delicately balanced." Examples from the Official Plan include trout lakes under 500 acres, an elk range of provincial status (Figure 8), and geological features (Anthraxolite Deposit - Figure 9). Neither criteria nor an evaluation mechanism are further defined by the Regional Municipality of
Description:
At one time the Sudbury District had its own native elk, but these disappeared. During the 1930's the elk was re-introduced to the district when a number were imported for the Burwash Game Farm. At one time the Ministry tried to eliminate the elk because they were in competition with the domestic cattle of the area. Several animals escaped and established a small herd. Presently the size of the herd is described as fair, and some animals are permitted to be taken annually by hunters. A proposed management plan for this elk herd was submitted by Sudbury District in March, 1975.

Potential for Damage:
1. Poaching in the area continues to be a problem.
2. Logging roads dissecting more southerly late summer and fall range are increasing access while reducing range.
3. Changes in land use i.e. cultivation of crops on open fields, reduction of cedar, would render the range unsuitable. Major changes of this sort are not proposed.
4. Disease and fire continue to be natural hazards.
5. Any development such as increasing access and people utilizing this area is detrimental to the elk population and range.

Recommendations for Protection and Use:
Apply and enforce restrictions to logging, hunting and all land disposition.

Source: Sudbury District Sensitive Area Report, Ontario Ministry of Natural Resources, 1976
Figure 9 - Anthraxolite Site

Description:
A small vein, some 50 feet long by 3 feet wide, of anthraxolite, quartz, and pyrite, occurs in slates of the Onwatin Formation. Anthraxolite is a rare form of anthracitic carbon. This occurrence is the only one known in Ontario, and may be the only one in Canada. About 1896 a great "coal" boom was started in the Sudbury basin as the result of the discovery of this coal-like material, and subsequently an attempt was made to mine the deposit. Two adits and a small shaft mark the site of this early mining venture.

Potential for Damage:
1. Removal of the vein through mining by professional mineral collector, erosion through sample-collection by amateur mineral collectors.
2. Possible use of the area as a disposal site or for urban development might result in burial of or damage to the occurrence.

Recommendations for Protection and Use:
The site should be zoned so as to discourage or prohibit the removal of material from the site, to prohibit use of the site for disposal of material, and to prohibit development of the site. For the near future the site should remain in its present state. If the future development of roads in the area makes the site more accessible, and if demand warrants, the site could be developed as a small park possessing features of both historic and geological interests.

To further complicate the sensitive areas concept, another term emerged during this period. In the summer of 1977, the Conservation Council of Ontario sponsored a research project on the scope and definition of "natural areas" in Ontario. The Council is a non-profit, non-political, public service body which includes in its members thirty-eight provincial associations that have an active concern for the quality of the environment. A major part of the project was a survey of three hundred professional foresters, planners and biologists currently involved with some aspects of natural area protection. The survey concluded that the broad range of definitions for the term "natural area" in fact resulted in it being indefinable! The seven general categories, indicating why one would advocate protection of a natural area, were as follows: preservation for diversity, scientific benchmark, heritage education, recreation benefits, socio-economic for future use, land health (ecoplanning) and hazard lands. Here 'diversity' is considered a value in 'its own right'. To preserve diversity is seen as having positive value. A
scientific benchmark is a baseline or natural standard against which man-induced landscape change can be measured.

The interpretation of the word "natural" was seemingly dependent upon the individual interviewed and a variety of perspectives were revealed. The state-of-the-art in natural area planning is such that there is a broad range of ideas on what should be considered a natural area. For example, a student working on the survey indicated to me that there was a difference of opinion as to whether Queen's Park should be considered a natural area or not!

Discussion: What is Natural?

As with the word "sensitive", the problem of terminology or jargon is a major cause of confusion. The term "natural area", as illustrated above can be interpreted in a variety of ways. The Regional Municipality of Hamilton-Wentworth refers to "natural" landscapes as including land and/or waters of inherent biological sensitivity.

The list of rationale for retention of natural areas leads to a number of planning considerations. An area can be perceived as 'natural' many years after it has undergone
intensive man-made changes. On the other hand the term may include only 'pristine' or 'unaltered' natural ecosystems. However, one cannot help but wonder if the recreational or heritage education values of a natural area are entirely dependent upon the pristine quality of the ecosystem. Would these benefits decrease if the site was somewhat altered from its 'natural' state? Queen's Park, although a radically altered natural area, provides a viable therapeutic recreational function. Similarly, the ecologic function aspects of a site may not be dependent upon the retention of its pristine character. An area which provides for water recharge or water storage may in fact better serve this function if altered in certain ways. An ecosystem which fulfills air filter or noise filter functions need not be the remnant of a pristine natural area. Hardier exotic species may adequately perform these functions.

Clearly, natural areas are closely related to the sensitive areas concept, i.e. the removal of land from unfettered commercial exploitation and intense human use. However, the precise relationship between this term and the term "sensitive area" is unclear.

As illustrated in this section, the sensitive
area concept has emerged from initiatives at various levels of government. A matrix of types and rationales appears in Figure 10. The legal basis for sensitive area planning is endangered by the utilization of a vast array of rationale for area designation and the proliferation of closely related terms. The same site could be designated a sensitive area for its rarity and a nature reserve for its representation. One could present a case for the 'natural work value' of a site, when perhaps this natural function could be better performed by an unnatural or altered system. Defense of potential sites in such a confusion of terms and concepts would present a problem at any semi-judicial planning hearing.

It is the intent of this paper to examine the roots of the sensitive area concept within both spatial and temporal contexts. The former will be done through an examination of a number of similar initiatives across North America, and the latter through an examination of the history of conservation in Ontario. A clearer understanding of the component parts of the sensitive area concept under a variety of nominal guises will, it is argued, provide a firmer basis for effective planning mechanisms at all
Figure 10 - Matrix

<table>
<thead>
<tr>
<th>1. Representative Habitats</th>
<th>2. Scientific Benchmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Habitat Maintenance</td>
<td>Production Objectives</td>
</tr>
<tr>
<td>Wildlife Movement</td>
<td>Landscape/Orientation</td>
</tr>
<tr>
<td>Ecologic Function</td>
<td>Nature Reserve</td>
</tr>
<tr>
<td>Aesthetic Value</td>
<td>Biosphere Reserve</td>
</tr>
<tr>
<td>Recreational Value</td>
<td>Special Area</td>
</tr>
<tr>
<td>Unique Flora and Fauna</td>
<td>Sensitive Area</td>
</tr>
<tr>
<td>Ecologic Sensitivity</td>
<td>Natural Area</td>
</tr>
<tr>
<td>Threatened Habitat</td>
<td>Area Influence</td>
</tr>
<tr>
<td>Habitat Diversity</td>
<td>Region Influence</td>
</tr>
<tr>
<td>Remnant Areas</td>
<td>Region/BSA</td>
</tr>
<tr>
<td>Linking Systems</td>
<td>Region Hammerstone-</td>
</tr>
<tr>
<td>Large and Undisturbed</td>
<td>Lake Planning</td>
</tr>
</tbody>
</table>

Source: Analysis by the Author

̣ = Rationale used
levels of government.
CHAPTER TWO
SIMILAR CONCERNS OUTSIDE OF ONTARIO

The "sensitive area concept" has not developed in Ontario in isolation from similar general concerns throughout North America. Although we cannot identify with any surety the actual functioning links through which the ideas and concepts may have been interdeveloped we must at least recognize the spatial context in which the concept has developed, or at least describe the components of the sensitive area concept as it emerged under a broad range of guises on this continent. The programs selected here are samples of various types of approaches.

Other Canadian Initiatives

"Ecological Reserves": Land Division Committee, Government of British Columbia

At the provincial level the government of British Columbia was the first to establish legislation in this field. In 1968, as part of the International Biological Programme, the government established a B.C. Ecological Reserves Committee to advise on the selection of potential reserve sites. The Ecological Reserves Act was passed in 1971.

The purpose of the Act is to reserve Crown
Land for ecological purposes, including:

a) areas suitable for scientific research and educational purposes associated with studies in productivity and other aspects of the natural environment

b) areas which are representative of natural ecosystems

c) areas that serve as examples of ecosystems that have been modified by man and that offer an opportunity to study the recovery of the natural ecosystem for such modification

d) areas in which rare or endangered native plants or animals may be preserved in their natural habitat

e) areas that contain unique or rare examples of botanical, zoological or geological phenomena.

Proposals are screened through the ecological reserves committee and relevant government Departments to resolve any resource conflicts. Areas proposed for recreational or scenic value are referred to the Parks Branch.

The distinction between parks and ecological reserves is clearly stated - whereas the former is established so people can enjoy recreation in a natural setting; the latter are established for scientific and outdoor classroom purposes.

To date over 100 reserves varying from 15 to 82,000 acres have been established in British Columbia. Similar legislation has been established in Quebec (1974), New Brunswick (1975) and Newfoundland (1977).
The purpose of a natural area designation in the province of Prince Edward Island is "To identify and protect representative or exceptional natural features, communities and systems of Prince Edward Island."²

Three types of natural areas are recognized. These are as follows:

a) Research Site: permitted use is limited to programs conducted by scientists. A written permit is required for all use.

b) Educational Site: both research and educational programs are permitted.

c) Natural Recreation Area: activities causing minimal impact (bird watching, hiking, etc.) permitted. Scenic areas included. ³

Integration into existing programs is accommodated by the establishment of separate areas or sub-areas within larger components. Administration is by the agency having jurisdiction over the larger unit provided that the objectives of the natural area are not compromised.

Selection criteria are prioritized as follows:

a) Significance - a measure of the public value to be derived from research, education or natural recreation.

b) Exceptional attributes.

c) Degree of endangerment.
d) Accessibility to permitted users

Evaluation is done by a provincial Advisory Committee which includes a balanced representation of scientists and concerned citizens.

"Natural Areas": Interdepartmental Natural Areas Committee, Government of Alberta

Natural Areas is also the term utilized by the province of Alberta. Natural Areas are defined as parcels of land designated to conserve environmental diversity in the province's natural zone. The three types of reserves include:

1) Ecological Reserves - primarily for conservation of genetic resources and for scientific research that will assist in natural resources management and utilization. There can be limited educational and recreational use of such areas in association with a systems plan to ensure representation of all natural zones.

2) Education Natural Areas - primarily for the use of educators and students in the field of natural history. These outdoor classrooms and laboratories will be close to major population centres so that students have access to them.

3) Recreational Reserves - for outdoor recreational purposes, especially non-mechanized forms such as canoeing, snowshoeing, hiking and nature photography.

An Interdepartmental Natural Areas Committee makes recommendation relating to policy development and program management. Both evaluation mechanism and selection criteria are forthcoming.
"National Landmarks": Parks Canada, Department of Indian and Northern Affairs, Government of Canada

At the federal level a policy on national landmarks presents a concept similar to that of sensitive areas. The concept initially considered in early 1976, is presently in a draft policy form. The objective of such a designation is,

"To encourage public understanding and appreciation of Canada's natural heritage by protecting for all time unique natural sites of Canadian significance in national landmarks." 6

The draft policy does not directly define a national landmark per se but refers to "unique natural sites of Canadian significance." As these sites are "an important part of our national heritage" they should be protected for "their educational and scientific value." 7 Rather than encompassing representative natural ecosystems they are generally small in size and are particularly important for their scientific value. Research activities are encouraged provided they are compatible with the protection of natural values.

Potential national landmarks will be selected according to the following criteria:

i) the site will be an exceptional natural site of Canadian significance; and

ii) the site will be of high scientific
value and public interest; and

iii) the site will be of a size and configuration so as to:

a) encompass a natural feature or phenomenon whose long-term protection is feasible; and

b) offer opportunities for research, public understanding and appreciation.8

In selecting potential national landmarks consideration will be given to:

i) the degree of protection or threat to the natural environment of the site; and

ii) competing land uses; and

iii) geographic balance of national landmarks throughout Canada; and

iv) the location and objectives of other protected natural areas; and

v) appropriate international criteria. 9

Potential national landmarks will be selected in consultation with provincial (territorial) governments and with the interested public.

Management of national landmarks will be primarily directed at the protection and preservation of a single feature or phenomenon. "Management may therefore be required when natural conditions threaten to alter or eradicate the protected feature or phenomenon."10
"Scientific Areas": Scientific Areas Preservation Council Wisconsin Department of Natural Resources, State of Wisconsin

The origins of natural or sensitive areas in the United States date back to 1945 when Aldo Leopold, as the Conservation Commissioner for the State of Wisconsin, created the Natural Areas Committee. The duties of this Committee were to "lay out a plan to acquire ... a system of small areas representing the native vegetation of Wisconsin." These areas were, "... to be held and used solely for educational and scientific purposes ..." This committee was replaced in 1951 by the State Board for the Preservation of Scientific Areas. The goals of this committee were established as:

"the preservation of sufficient scientific areas and other natural areas in each region of the state to provide examples of all types of biotic communities and unique natural features native to the region."  

The historical mapping of the State of Wisconsin as it appeared in the middle of the last century is complete. The Scientific Areas Preservation Council, formerly the State Board for the Preservation of the Scientific Areas, feels that representatives of all the thirty-two terrestrial communities and twenty-nine
aquatic communities should be preserved in at least one location in each educational use region where they occur naturally.

The council, composed of six members from universities, museums, and government agencies, is in an advisory position to the Wisconsin Department of Natural Resources. Potential areas are evaluated on vegetational characteristics which form a basis of comparing areas and establishing priorities for acquisition. The criteria used by the council are:

(1) Quality:  
   i) species diversity  
   ii) community integrity  
   iii) lack of disturbance (human)

(2) Degree of Commonness:  
   i) feature relative to its original extent in pre-settlement vegetation.  
   ii) amount of community remaining  
   iii) ease of destruction

(3) Threat

(4) Diversity - number of community types or other natural features.

(5) Use Value - amount of formal educational use, research use, etc. that the area affords.

(6) Site and Buffers - minimum size necessary to maintain original quality. 14

The method of preservation used by the Council is acquisition. At present they own 104 scientific
areas encompassing 0.04% of the state's land area and these areas are specially managed so as to meet the goals of preserving in them, examples of the pre-settlement vegetation of the state. Through prescribed burns to maintain prairie and savanna communities, and control of deer populations whose natural predators are long gone, the Scientific Areas Preservation Council through management maintains communities and prevents successional patterns. Timber harvest, water level management and the use of herbicides and pesticides, however are not considered compatible with the goals of the Council.  

"Nature Preserves": Nature Preserves Commission, Department of Conservation, State of Illinois

Illinois was the next state to realize the need for natural area preservation with the creation of the Illinois nature preserves system in 1963. The Illinois Department of Conservation and the Nature Preserves Commission share the responsibility for establishing, maintaining and protecting nature preserves "truly representative of the natural landscape of Illinois." The objectives of the Commission, composed of nine members from universities, science academies and naturalist clubs, are as follows:
"To preserve adequate examples of all significant types of natural features occurring in the state. To preserve habitats of rare or endangered species of plants or animals. To preserve unique and unusual natural features. To preserve wilderness remnants. To preserve natural areas in all portions of the state." 17

A natural geographic division system was devised for Illinois to provide a framework for the nature preserves system. The state was divided into fourteen regions (called "natural division") and thirty-three subregions (called "sections"). These natural divisions and sections are distinguished according to differences in topography, glacial history, bedrock, soils, and distribution of flora and fauna. The nature preserves system's goal is to represent each of the distinctive natural features within each division and section.

The evaluation of a potentially sensitive areas is done in the following manner. Each area is rated between +3 and -2, according to thirty factors. (See Figure 11). The numbers correspond to ratings from excellent to very poor, with the total providing a basis for comparing the values of a proposed project with others. The critical problem is of course that each factor should not, perhaps have equal weighting. The Commission realizes this fact and uses the evaluation form more for a checklist of relevant facts providing
## Figure II— Illinois Nature Preserve

### NATURAL AREA ACQUISITION PROJECT EVALUATION

<table>
<thead>
<tr>
<th>County</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section</td>
<td>Township</td>
</tr>
<tr>
<td>Date</td>
<td></td>
</tr>
</tbody>
</table>

---

**Value and use of area as a public holding (high—low)**

<table>
<thead>
<tr>
<th>Nature preserve value</th>
<th>Natural character</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Uniqueness or rarity of natural types present</td>
<td></td>
</tr>
<tr>
<td>2 Diversity of natural types present</td>
<td></td>
</tr>
<tr>
<td>3 Rare species present</td>
<td></td>
</tr>
<tr>
<td>4 Naturalness and lack of past disturbance</td>
<td></td>
</tr>
<tr>
<td>5 Wilderness character</td>
<td></td>
</tr>
<tr>
<td>6 Replication of existing preserves (no—yes)</td>
<td></td>
</tr>
</tbody>
</table>

**Scientific value and use**

<table>
<thead>
<tr>
<th>Educational value and use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public enjoyment</td>
</tr>
<tr>
<td>Nature observation</td>
</tr>
<tr>
<td>Scenic and esthetic attraction</td>
</tr>
<tr>
<td>Expected visitation and tourism</td>
</tr>
<tr>
<td>Recreational and other values</td>
</tr>
</tbody>
</table>

**Amount**

<table>
<thead>
<tr>
<th>Diversity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility and nearness to large population</td>
</tr>
<tr>
<td>Expected visitation and tourism</td>
</tr>
<tr>
<td>Recreational and other values</td>
</tr>
</tbody>
</table>

**Accessibility and nearness to large population**

| Expected visitation and tourism |
| Recreational and other values |

**Management and protection**

<table>
<thead>
<tr>
<th>Vulnerability (low—high)</th>
</tr>
</thead>
<tbody>
<tr>
<td>To surrounding influences</td>
</tr>
<tr>
<td>Topographic and hydrologic</td>
</tr>
<tr>
<td>Population pressure and urbanization</td>
</tr>
<tr>
<td>Attractive nuisances</td>
</tr>
<tr>
<td>Potential hazards and nuisances to people</td>
</tr>
<tr>
<td>To public works projects</td>
</tr>
<tr>
<td>Management problems (no—yes)</td>
</tr>
</tbody>
</table>

**Land**

<table>
<thead>
<tr>
<th>Visitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possible custodial arrangements (good—poor)</td>
</tr>
</tbody>
</table>

**Acquisition factors**

| Potential hazards and nuisances to people |
| Management problems (no—yes) |
| Visitors |
| Possible custodial arrangements (good—poor) |

| Threat of destruction (high—low) |
| Availability (high—low) |
| Alternate beneficial use (low—high) |
| Cost (low—high) |

<table>
<thead>
<tr>
<th>Per acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Relative to accessibility, population, and use</td>
</tr>
</tbody>
</table>

**Total checks**

| Percentage profile (total checks x 3.3) |
| Score (total checks x rating) |

| Total rating (max. +90, min. -60) |

---

a subjective opinion. Three individual evaluations are made by the Commission.

The method of protection employed in the system is acquisition through either purchase or donation. A crucial factor to acquisition may be the absence (or conversely, the presence) of land conditions which will require substantial or continuing management attention. The self-sufficiency of the natural ecosystem is also considered. It should be "a unit of sufficient size and buffer to prevent damage by pollution, sedimentation, alteration in drainage or groundwater, or by development of use of adjacent lands."\textsuperscript{18}

"Natural Areas": New England Natural Resources Center, Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont

In 1970 the first regional approach at natural area preservation was initiated in New England. This initiative involved a number of states and was the first and only instance of private conservation groups taking the initiative in such a venture. Conservation organizations in each of the New England states under the New England Natural Resources Center established the New England Natural Areas Project. The goal of this undertaking was to establish a permanent safeguard
of significant natural areas in New England. A Natural Area was defined as,

"areas of land or water not significantly altered by man that harbour plant or animal communities or exhibit natural features of significant educational and scientific value."19

The New England method does not use point ratings but relies upon the assessments of experts. General guidelines were set out by the Center, which established nine significant categories. These can be seen in Figure 12. An area considered by state naturalists or government agencies to be significant in any one of these categories is classified as a natural area. The New England Natural Heritage System is a resulting regional agency which, when fully operational, will encompass a network of protected and managed natural areas in both public and private ownership throughout New England. Protection is to be assured through outright ownership by a public or private agency through easement, or other enforceable regulation. Management is left to the discretion of the state concerned.

"Critical Environmental Areas": Division of State Planning and Community Affairs, State of Virginia

An approach similar to those cited above is that of "critical areas". Generally a critical
### Figure 12 - New England

<table>
<thead>
<tr>
<th>Natural Area Categories</th>
<th>Number of Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geologic</td>
<td>1409</td>
</tr>
<tr>
<td>Soils</td>
<td>18</td>
</tr>
<tr>
<td>Hydrologic</td>
<td>1513</td>
</tr>
<tr>
<td>Flora</td>
<td>500</td>
</tr>
<tr>
<td>Fauna: Terrestrial Animals</td>
<td>257</td>
</tr>
<tr>
<td>Fauna: Birds</td>
<td>244</td>
</tr>
<tr>
<td>Fauna: Aquatic Life</td>
<td>101</td>
</tr>
<tr>
<td>Archaeologic</td>
<td>399</td>
</tr>
<tr>
<td>Cultural/Aesthetic/Visual</td>
<td>317</td>
</tr>
<tr>
<td>Education</td>
<td>5</td>
</tr>
</tbody>
</table>

area designation goes beyond the natural or scientific areas concept to include such physical resources as: scenic and aesthetic areas, historic and archaeological sites, wildlife and water resources of greater than local concern.

This approach first appeared early in 1972, when the State of Virginia passed legislation concerning the State's critical environmental areas. These were defined as:

"... any portion of land regardless of size, which because of location, physical features, historical character, natural productive capability, scenic significance or unique flora or fauna contributes to the economic, aesthetic, or cultural well being of individuals or society and which because of these particular qualities is in limited supply." 20

More specific criteria for area identification were developed with the aid of state agencies, planning district commissions and local governments. Areas with more than one of these criteria were included as critical environmental areas:

1. An area which has unusual natural man-made features which are worthy of protection by state or local governments.

2. A natural area which is critical to an ecological system and should be protected from inappropriate development.

3. An area which includes certain natural, scenic or historic areas which are presently endangered or are in possible danger of destruction, alteration or loss because of the activities of man.
4. An area appropriate for future public use through acquisition by state or local acquisition.

5. An area which can be considered to contain a primary state resource, such as wildlife, mineral or agricultural production.

The Virginia method utilizes a point evaluation system. An environmental check list was designed to allow many individual field evaluations, objective quantitative measurements as well as subjective judgements. A sample evaluation sheet is included in Appendix III. It is intended that many people, agencies and groups evaluate each area to minimize bias.

"Critical Areas": Land Use Advisory Committee, Land Use Commission, State of Wyoming

A similar critical areas program was initiated by the State of Wyoming in 1975. The Wyoming legislature listed four examples of areas which might be designated as critical or of more than local concern. These are as follows:

1. fragile or historical lands
   Fragile lands are areas where the land itself or a natural part of the land could be easily destroyed. Historic lands contain sites, structures or objects which have significance relating to our heritage.

2. natural hazard lands

3. renewable resource lands
   Renewable resource lands provide a natural source of wealth or revenue
which can be replaced by natural ecological cycles or by sound management practices.

(4) new town lands 22

The critical areas program was initiated to encourage responsible land use decisions. "Local governments may find that they need support to control development threatening to the quality of life not only of their local citizens but of other citizens." The concern is for uncontrolled development which could damage the environment, peoples' lives or property or public interest in the area which is of more than local significance.

The state Land Use Commission with the recommendations of the Land Use Advisory Committee determine the significance of candidate areas. Development guidelines are then drawn up for the validated critical areas.

"Critical Resources": Department of Administration, State of Wisconsin

Wisconsin has initiated a critical resource inventory study with the objective of geographically delineating areas with resource capabilities which are critical or of 'high priority' to the inhabitants of the state. In determining the criticality of a significant resource it is evaluated as to its existing use and its potential
uses. Emphasis is on the utility and importance
to man. Resource uses are categorized as follows:

1. Preservation/Conservation
   a) Natural state function - the resource
      provides benefits to man directly.
   b) Research and education.

2. Recreation
   a) Water-oriented
   b) Land-oriented
   c) Scenic

3. Agriculture - crop production
4. Forestry - commercial forestry
5. Mineral Extraction

Relative criticality of a resource area is
based upon resource quality and size, location,
cost of maintenance, degree of present and future
scarcity. Evaluation and analysis is done based
on information collected from an extensive random
sample of 305 plots throughout the state. A sample
of various matrices can be found in Appendix IV by
way of criticality matrices based on the information.

"Environmentally Sensitive Areas": American
Society of Planning Officials

The American Society of Planning Officials,
an influential national planning organization,
cites a similar idea in describing environmentally
sensitive areas. These are defined as,
"... land areas whose destruction of disturbance will immediately effect the life of the community be either

1) creating natural hazards
2) destroying important public resources such as water supplies and water quality
3) wasting important productive lands and non-renewable resources. 26

Any of the above actions is felt to threaten the general welfare of the community and result in economic loss.
### Figure 13 - Matrix

<table>
<thead>
<tr>
<th>Rationale</th>
<th>Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature Reserve</td>
<td>1. representative habitats</td>
</tr>
<tr>
<td>Special Influence Area</td>
<td>2. scientific benchmarks</td>
</tr>
<tr>
<td>Natural Area</td>
<td>3. educational purposes</td>
</tr>
<tr>
<td>Sensitive Area (SLUP)</td>
<td>4. genetic resources and future generations</td>
</tr>
<tr>
<td>Sensitive Area (Plan Review)</td>
<td>5. genetic resources and future generations</td>
</tr>
<tr>
<td>Special Area (Lake Planning)</td>
<td>6. conspicuous value for Ministry objectives</td>
</tr>
<tr>
<td>Region Waterloo ESA</td>
<td>7. regional resource production objectives</td>
</tr>
<tr>
<td>Region Hamilton-Wentworth ESA</td>
<td>8. Historic (cultural) significance</td>
</tr>
<tr>
<td>Region Sudbury</td>
<td>9. recreational value</td>
</tr>
<tr>
<td>Ecological Reserves British Columbia</td>
<td>10. Ecologic sensitivity</td>
</tr>
<tr>
<td>Natural Areas P.E.I.</td>
<td>11. unique flora and fauna</td>
</tr>
<tr>
<td>Natural Areas Alberta</td>
<td>12. threatened</td>
</tr>
<tr>
<td>National Landmark Canada</td>
<td>13. Ecologic function</td>
</tr>
<tr>
<td>Scientific Areas Wisconsin</td>
<td>14. remnant areas</td>
</tr>
<tr>
<td>Nature Preserves Illinois</td>
<td>15. Sensitive areas for wildlife protection</td>
</tr>
<tr>
<td>Natural Areas New England</td>
<td>16. Large and undisturbed habitat</td>
</tr>
<tr>
<td>Critical Environmental Areas - Virginia</td>
<td>17. Species maintenance</td>
</tr>
<tr>
<td>Critical Areas Wyoming</td>
<td>18. Hazard lands</td>
</tr>
<tr>
<td>Critical Resources Wisconsin</td>
<td>19. Ecosystems</td>
</tr>
<tr>
<td>Environmentally Sensitive Areas - American Society of Planning Officials</td>
<td>20. Archaeologic sites</td>
</tr>
<tr>
<td></td>
<td>21. New town lands</td>
</tr>
<tr>
<td></td>
<td>22. Renewable Resource lands</td>
</tr>
</tbody>
</table>

**Source:** Analysis by the Author.
Discussion

The many aspects of the sensitive area concept are displayed in the matrix in Figure 13. These exemplify the variety of rationale which have been utilized for these designations across the continent. The influence of the International Biological Programme (IBP) is clearly evident in the provincial examples cited. The concern for scientific research and public education associated with the IBP are also evident in the Canadian impetus for national landmarks.

The British Columbian initiative specifically includes man-modified ecosystems in order that research and monitoring of these sites can offer an opportunity to study their recovery. This idea presents an entirely new perspective on the sensitive area concept which had largely dealt with 'natural', 'pristine' or remnant areas.

The American concept of critical areas also increases the breadth of the concept. Here, lands are reserved which are critical to resource production objectives. High quality mineral areas, agricultural land and forested areas are included. The Sudbury initiative is similar but does not include such intensive forms of production as
agriculture and mining. Rather natural productive activities such as deer yards, trout lakes and spawning areas are considered in both the Sudbury case and the Strategic Land Use Plan initiative.

Both Wyoming and the American Society of Planning Officials' documents refer to lands which provide benefits through natural ecological cycles, a concept similar to the vital ecological function or, let us say, 'work value' of natural systems noted by both the Regional Municipality of Waterloo and the Regional Municipality of Hamilton-Wentworth.

Historic and archaeologic sites add further breadth to the concept by consideration of cultural as well as natural aspects under this term. Similarly, the Wyoming reference to new towns causes one to wonder what other zoning designations are being utilized in land use planning.

The inclusion of natural hazard areas in the sensitive area concept is most unusual as there seems to be a fundamental difference between these two ideas. Whereas in the instance of hazard lands, man or his property is protected from nature, the sensitive area concept generally indicates concern for protection of certain
aspects of nature from man.

The critical areas approach presents a response to development pressure. However, the response was not just for the remnant natural areas which were to be protected for a variety of reasons. Presumably productive resource areas in the United States were perceived as being threatened and thus the institution of a critical areas designation which would include valuable natural areas as well as productive resource areas.
CHAPTER THREE
THE COMPONENTS OF THE SENSITIVE AREA CONCEPT:
ONE CONCEPT WITH THREE STRANDS

The problem of sensitive area planning obviously revolves around both a vast array of rationale for area designation and the utilization of a number of closely related terms. The purpose of this thesis is to examine the roots of the sensitive area concept within both spatial and temporal contexts.

The framework for the spatial analysis which will be utilized is a model of conservation rationale developed by Professor Roderick Nash, currently a member of the Department of History and Environmental Studies at the University of California in Santa Barbara. He has written a number of books and articles on wilderness and conservation in America. Nash's model of the development of conservation is presented in "The Gospel of Ecology", The American Environment—Readings in the History of Conservation and in "The Rights of Rocks: An Analysis and Implications of Aldo Leopold's Land Ethic", an unpublished paper from the University of California, 1975.¹

An assumption made in this thesis is that the sensitive areas concept is part of the conservation movement. Nash's model is utilized as it
provides a relatively clear and convenient framework for examination of the underlying rationale, or basis for, conservation designations. Thus, the utilization of Nash's framework will enable an examination of the motivation behind the creation of a reserve areas, regardless of the "label" which is attached to such a unit. That is to say, the rationale itself rather than the term, such as 'preserve', or 'sensitive area', 'natural area', 'reserve', or whatever will be examined.

This analytical framework was chosen as it was felt that it could effectively shed further light upon the present sensitive areas concept in the following way:

1) allow for comparison of historical forms of land removal according to the three trends of conservation outlined. This enables one to determine the basis of the present range of terms utilized within the sensitive areas concept

2) allow for the evolution of a new type of conservation by the fusion of the three trends into what Nash has dubbed the Gospel of Ecology. 2 This development allows for an examination of sensitive areas as part of this new conservation

Nash's model of the development of conservation in the United States is graphically illustrated in Figure 14. The Conservation Movement in North America is divided into three main trends:
Figure 14 – The Gospel of Ecology

utilitarian, aesthetic, ecologic. He maintains that these culminated in the late sixties in what is considered by some a fourth rationale for conservation, "The Gospel of Ecology".

The Utilitarian Rationale

The utilitarian rationale for conservation involves viewing nature "as a servant to man". Nash cites George Perkins Marsh who wrote *Man and Nature or Physical Geography as Modified by Human Action* in 1864 as the initiator of the utilitarian approach in the United States. The purpose of Marsh's book was to point out the extent of the changes produced from human action and to "suggest the possibility and importance of the restoration of disturbed harmonies" in the natural landscape. He maintains that man's power to transform the natural world should entail a commensurate sense of responsibility.

In 1898 Gifford Pinchot, who was the first American to choose forestry as a career, became the chief of the Federal Forest Division. Pinchot is often considered the driving force behind the Progressive conservation movement. With such strong advocates as President Theodore Roosevelt and Gifford Pinchot, the "gospel of efficiency"
or wise use gained momentum. Pinchot defined conservation as "first of all the recognition of the right of the present generation to the fullest necessary use of all the resources with which this country is so abundantly blessed." Conservation, however, demands the application of common sense to the common problems for the common good. Conservation also stood for the prevention of waste and the development of natural resources must be for the benefit of the many and not merely for the profit of the few. The concepts of sustained yield or wise use, were associated with this era of conservation.

Nash cities the early engineering controls of the Tennessee Valley Authority, a regional planning structure on a watershed basis, and the passage of Water Quality and Clean Air Acts in the sixties as further examples of the utilitarian approach to conservation. The motivating factor of this type of conservation, Nash defines as "enlightened self-interest".

For the purpose of analysis, Nash's utilitarian rationale for conservation will be defined as "enlightened self-interest adjusted to take long term needs into account." Man's material needs are paramount and the environment is seen primarily as a servant of man. Nash maintains that
the progressive conservationists with ideas of sustained yield were simply "more enlightened slave drivers than the pioneers".\textsuperscript{11} The utilitarian is motivated by a fear of running out of resources.

**The Aesthetic Rationale**

A strikingly different way of viewing man and nature was proposed by such men as Henry David Thoreau, Ralph Waldo Emerson and John Muir. The writings of both Thoreau and Emerson on the inspirational value of nature created the basis of a philosophical movement called transcendentalism. John Muir was a strong wilderness advocate in this own right. These rationale for conservation, Nash calls the aesthetic tradition. The spiritual or inspirational values of nature are paramount. He cites The Wilderness Act of 1964 and concern for the quality of the environment as further indications of this view.\textsuperscript{12}

The main motivation of aesthetic conservation is the fear of making the world ugly and uninspiring.\textsuperscript{13} This rationale for conservation, Nash contends, is just as concerned with man's interests as the utilitarian motivation. The only difference is that now it's man's spirit rather than his stomach that dominates decision-making.\textsuperscript{14} For analytical purposes this rational will be
defined as concerned with the inspirational benefits to man.

The Ecologic Rationale

The ecologic rationale proposed by Nash on the other hand, centers around a concept of conservation which defines "state of harmony between man and land."\textsuperscript{15} The ecologic viewpoint involves a non-anthropocentric motivation. Neither man's material nor his aesthetic interest are paramount. Man rather assumes a position of membership in the biotic community. It is then the welfare of this community and not man's welfare which becomes the criterion for judging environmental policy. Although the expression of anthropocentrism is still evident this new self-interest, Nash maintains, is "qualitatively different since it demands the subordination of old self to ecological imperative."\textsuperscript{16} That is to say that man would accept a humbler position and recognize and respect natural functions. For the purposes of this thesis the ecologic component will be defined as a belief in "a state of harmony between man and land".\textsuperscript{17}

The Gospel of Ecology

Nash contends that these three perceptions fused into a "gospel of ecology" in the late sixties. Fear, the catalytic agent, did not center on piecemeal
issues such as the loss of non-renewable resources or a particular wilderness area but the "health of the entire ecosystem, the life community and its non-living setting."18

The gospel of ecology is "a convergence around ecological concepts of the major rationales already existing for conservation".19 The fusion which involved the "logic of science" plus the "intuition of the poet and mystic"20, can be seen as "an intellectual collision between scientific and what might be called theological ecology".21 This resulted in "a holistic sense of oneness, of community that could stand the test of both fact and feeling".22 The term 'gospel' is utilized due to the intensity and evangelical character of this sudden surge of concern for conservation. The powerful combination of these three previously parallel concepts of conservation can be compared to a religion due to unshakeable belief in ecological integrity. This can be called a faith, what Professor Robert Dorney refers to as the triad of land, life and diversity23 or Albert Schweitzer called the 'reverence for life'.24 For analytical purposes in this thesis the 'gospel of ecology' will be defined as a mode of conservation which includes both scientific and ethical components.
Discussion

The multitude of terms that we have presented under the auspices of the "sensitive area concept" are clarified when categorized in the light of Nash's rationale. (Figure 15) The rationale of course, in a number of instances overlap into other categories.

Conceptual overlap occurs with the rationale of species maintenance. Species protection can be considered utilitarian if animals are maintained for hunting or food gathering activities. Hunting however, has therapeutic recreational benefits associated with the aesthetic motivation. Concern of gene pool preservation in the 'scientific benchmark sense' is an ecologic motivation, whereas, a belief or faith in 'species diversity' has the ethical tenor of the gospel of ecology.

Similarly, although the rationale of 'meeting Ministry objectives' is classified as utilitarian, the Ministry has objectives in its Parks Division which are oriented to both the aesthetic and ecologic motivations. The reason for the utilitarian classification is that the objectives of the Ministry of Natural Resources are primarily production or use oriented. Both utilitarian and aesthetic motivations are often involved in protection of historic/cultural
APPLICATION OF NASH'S FRAMEWORK TO THE RANGE OF RATIONALE PRESENTED IN FIGURE 10

**UTILITARIAN**
- new towns
- hazard lands
- gene pool research to benefit present and future generations
- conspicuous value for Ministry objectives
- regional resource production objectives
- renewable resource lands
- educational purposes
- archaeologic sites
- historic/cultural significance
- recreational value
- scenic value
- unique flora and fauna
- representative habitats
- representative landforms
- scientific benchmarks

**ECOLOGIC**
- ecologic sensitivity
- habitat diversity
- ecologic function
- linking systems for wildlife movement
- large and undisturbed habitat
- species maintenance
- man-modified ecosystems

**ADDITIONAL RATIONALE WHICH CAN NOT BE CATEGORIZED IN THE THREE TRENDS ABOVE AND ARE INDICATIVE OF A CHANGE - I.E. THE GOSPEL OF ECOLOGY**
- Source: Analysis by the author.
and archaeologic sites. There are intellectual as well as spiritual benefits to cultural heritage appreciation.

The broad categories outlined by Nash provided an excellent framework for analysis of the various aspects on conservation history within Ontario. However, a number of conservation rationale such as recreation, education and unique flora and fauna span more than one of these components. The simple definitions and broad categories which Nash presented could not be applied exclusively. The diagram in Figure 15 illustrates the inevitable overlap which occurs with the use of such broad categories.

There is also a lack of clarity concerning the actual gospel of ecology component of Nash's model. It is hard to decipher the temporal limits of this factor from either Nash's text or corresponding diagram. Whether this event extends over a one or five year period is certainly key to use of this model for analysis. The recession (after the gospel of ecology) component of the model could also be further explained. This again would aid in determining the events which do or do not fall into the 'gospel' section.

To determine if there were any critiques of Nash's framework in the literature a search was undertaken. It included the social science citation index, the social science subject index and various book review sources.
According to this information no critiques have been published.

Aside from the points noted, the model provided a viable framework for analysis of conservation and the sensitive area concept in Ontario.
CHAPTER FOUR
THE SENSITIVE AREAS TRADITION IN ONTARIO

Arguments are frequently presented in planning hearings that certain infringements or restrictions upon property rights have no precedence in Canadian or Ontario law. Indeed, with the introduction of an increasing variety of terminology and with apparently conflicting specific rationale for sensitive area designations, the argument of lack of precedents hardly seems necessary to justify dismissing such designations. However, it will be the argument of this thesis that there is considerable historical precedent for the broad concept of the creation of reserves of land free from the pressures of unfettered commercial exploitation or intense human use. Indeed, it will be argued that it is this tradition of creation of reserves that has created pockets of vested interests in the "sensitive area concept". The combination of new conservation ideas combined with these vested interests has prevented the co-ordinated use of the concept within one term.

This chapter will present a history of conservation in Ontario from the early nineteenth century until 1972, the year when the term "sensitive area" was first utilized in Ontario. The history
has been divided into five parts due to significant events in conservation which happened during these periods. Detailed aspects of the provincial conservation milieu can be found in Appendicies V through IX. Major events associated with conservation, and provincial initiatives in land reservation are analyzed in terms of Nash's framework. In this way, the development of the various components of the present sensitive area concept can be examined in a temporal context.
The Nineteenth Century

The fundamental principles of land and resource use in Ontario are based on the British system of Crown sovereignty. Whereas a settler in the United States owned all of the land resources when he bought a piece of land, in Canada he bought simply a place to settle. Both the timber and mineral resources on his land were owned and could be sold by the Crown.

With what seemed to be an inexhaustible supply of land and forest resources, the government's major concern in this period was to maximize its revenues. Money could be generated by selling both land and timber licences.

In theory, following the sale of timber licences the land would be cleared and could be sold again for settlement. By abolishing free land grants and requiring a minimum timber cut on leased land, the government sought to control land speculators and increase timber revenues. Certainly, if a "minimum cut" concept is instituted there can be no fear of a lumber shortage. Nelles maintains that, "the nineteenth century image of the forest was ... not unlike a giant mineral deposit which was permanent simply by virtues of its size and could be exploited only
once and then passed on to the farmers.¹

The required cut regulation caused overproduction and a subsequent depression in the lumber trade. To prevent such a reoccurrence government and industry, both dependent upon the revenue generated by the forest resource became closely associated. The annual report of 1856 states a three fold timber policy with no mention of the timber resource itself. A specific policy was that government revenue will be maximized. Although large areas of land were heavily burned from both settlers clearing land and lumbermen leaving slash, the lack of a fire policy indicated the government's perception of supply.

The first conservation Acts in the province dealt with fish and game, and were the result of declining supplies from overhunting or such harmful and destructive fishing habits as spear hunting during spawning season. However, The Fisheries Act of 1857 was the first legislation to be enforced by staff and funds. The Act's provision for fish hatcheries was the first positive step towards replenishing the declining fisheries. The chief mechanisms for fish and wildlife protection were management techniques
such as closed seasons and enforcement, rather than the creation of reserves or sanctuaries.

Although there was mention of "the protection of the forest from unnecessary destruction" as early as the Select Committee on the Lumber Trade in 1849 and again concern over "wanton or special wastes" in 1867 by Crown Commissioner Campbell, selling timber licences and opening new settlement areas were the major concerns of the government. As early as 1872 the utilitarian aspect of conservation was raised. Following the auction of 5,013 square miles of timber rights in Parry Sound and the Muskoka area, the Crown Lands Commission was accused of sacrificing the long term interests of the people of Ontario. Again in 1880, the United Fruit Growers Association in their monthly magazine expressed concern for forest preservation and propagation. Suggestions for reforestation also came from members of the lumbering industry such as James and William Little in The Lumber Trade of the Ottawa Valley published in that same year.

The aesthetic rationale for conservation in the form of rehabilitation is evident in both the 1871 Act to Encourage the Planting of Trees Along Highways and the 1883 Tree Act. However, the
philosophical aspects of the notion and the proposal for a reservation are not clearly articulated until 1885 when Alexander Kirkwood presents his Algonquin Park Proposal. He refers to the "quiet draughts of inspiration" and "the beauty and majesty of nature" in Algonquin which provide "for the benefit, advantage and enjoyment of the people of Ontario."\(^3\) The first land reservation created in Ontario was a park at Niagara Falls whose purpose was to "assure the right of the public at all times to view this work of nature."\(^4\) The aesthetic trend is the motivating force in this initial designation.

However, the Royal Commission on Game and Fish promoted both an aesthetic and a utilitarian approach. This Commission was established in 1890 due to lobbying from Dr. G. A. MacCallum and other sportsmen of the Hamilton area. The commission endorsed the Algonquin Park Proposal in support of fish and game protection to ensure a continuance of sporting activities. These are assumed to include both material and spiritual needs.

The idea of segregated land uses had been a bone of contention with lumbermen since 1849 when the Act for the Sale and Better Management of Timber Upon Public Lands of that year established three operating policies for the
Crown Lands Department. One of these was that boundary disputes be settled with the "least possible delay" and settlers were penalized for infringing upon timber cutting areas. The Free Grant and Homestead Act passed in 1868 was an attempt of the government to promote settlement but the timber companies opposed the Act until all pine timber areas had been reserved for lumbering purposes.

Some years later when the Ontario delegation returned from the American Forestry Congress in 1882 their first recommendation was that all non-agricultural land should be reserved as forest land. It is not surprising then that lumbering interests supported the Algonquin Park Proposal as timber cutting was not excluded. In fact, the establishment of Algonquin Park reserved the pine in that area for lumbering purposes. A principle benefit of the reservation was that the lumbermen could proceed without the interference of their traditional opponent - the settler. Private cutting was strictly forbidden. The Algonquin Park Act of 1893 incorporated the utilitarian, in terms of lumber and game protection, and the aesthetic in terms of scenic and inspirational concerns. Both are conservation components.

The impetus behind the creation of Rondeau Provincial Park the following year was essentially rec-
reational. Hunting was not allowed in the park. This designation incorporated the aesthetic considerations of supplying man's spiritual needs. However, the close of this era saw further land reservation for utilitarian purposes. The Forest Reserve Act of 1898 set aside lands as "deemed feasible for future timber supplies".5

The trend in rationale for the creation of reserves is of note. The first formal instance of land reservation in Ontario was at Niagara Falls. This designation promoted the aesthetic component of conservation. However, previous to this the government had established pine reservations in new settlement areas. This was to pacify the lumbermen's lobby which had a strong effect on the economy of the province. The establishment of Algonquin Park in 1893 however was the first formal designation of a similar forest reservation and settlers were forbidden. The entire park was essentially a pine reserve for lumbermen. Fish and wildlife concerns as well as recreation benefits, both aspects of the aesthetic component of conservation were also key in the designation of Algonquin Park.
Early Conservation: 1900 - 1920

The utilitarian and aesthetic components of conservation had received their initial thrust in the creation of Algonquin Park in 1893. This reservation did not cause conflict because the various land users were accommodated. Wildlife were protected, the lumbering of pine was allowed, and as the area was determined to be poor for settlers in any case, the government did not mind their exclusion.

The Forest Reserves Act of 1898, however, did not prove as palatable to the government when land management decisions had to be made in 1903. Established to protect reserves set apart as a "permanent perennial source of revenue"⁵, the initial designations were cutovers which were regenerating. When rich timber areas were reserved the government refused to attach management guidelines to timber operations in the reserves. Such guidelines would have ensured the areas as perennial sources of lumber and therefore revenue. The Forest Reserves Act proved to be a hollow piece of legislation in terms of conservation.

The establishment of the utilitarian concept of wise use in the long term, as promoted by Dr. Fernow, a leading American forester, and his students at the University of Toronto, was not easily accepted by government or industry. The traditional patterns
of interdependence established in the early 1850's were not easily removed. The establishment of the Canadian Forestry Convention in 1906 seemed to make little difference in government policy.

The Canadian Forestry Convention called by Sir Wilfrid Laurier in 1906, however, provided for an exchange of broad ideas. The ecologic component of conservation was expressed by B. E. Walker, a banker. He speaks of 'that balance which nature has given us' and expresses fear of man disturbing this equilibrium. Such a disturbance Walker considers the highest crime as it is against our descendants. Such an holistic view is highly enlightened in a period where such men as Dr. Fernow warn against the sentimentalists' view of the forest. The various splits in conservation ideas were evolving even at this early stage.

However, the diversity of the term conservation can be seen even within the utilitarian component, for the lumbermen's interpretation of land use segregation was a far cry from Fernow's sound forestry practices. Such a divergence within the Canadian Forestry Association caused the professional foresters to form their own Association of Forest Engineers.

The Commission of Conservation allowed for the free exchange of ideas between the industry, governments and academics. Senator Edwards, a Liberal lumberman
from the Ottawa Valley and unofficial spokesman for the Ontario timber companies, was the Chairman of the Forestry Committee of the Commission of Conservation. E. F. Booth, another influential Ontario lumberman, was also on this committee, as was Dr. Fernow. Although aspects of scientific forest management were common ideas, little direct influence of the Commission can be seen in Ontario. Pross, in his history of the Department of Lands and Forests does not mention the Commission and only passing reference is made to the Commission in the Annual Reports of that period.

The intent of the designation of Quetico Park as a wilderness area in 1909 was to protect moose. This is considered a utilitarian motive as Quetico was protected because it was considered to be the last great reservoir for moose left in North America. The intent of such a designation was that the moose reservoir would provide future hunting opportunities.

On the other hand, later in 1919, the National Conference on Wildlife advocated the creation of wildlife sanctuaries to protect "characteristic wildlife". The therapeutic and inspirational value of wildlife and their sensitivity to human interference is recognized.

In this period, although aesthetic and ecologic ideas are evident, conservation, in terms of land reservation, was for the most part, utilitarian.
Economic Difficulties: 1921 - 1941

The short term motives of both the political bodies and timber industries' "quick profit" incentives had been the drawback in the establishment of conservation concepts. It did not seem to make any difference which party was in power; timber concessions were paramount. The Drury administration of 1919 refused to change the Doyle Rule to enable accurate timber measurements and therefore accurate government revenues due to timber lobbies. The Ferguson government, which followed, allowed the northern forest resources to be divided among five pulp operations which later folded. The management of the forest was a political football and opposition accusations of mismanagement and concessions to timber companies often resulted in the defeat of the Government of the day. M. F. Hepburn came to power in 1934 on just such a platform and was defeated two years later by the same issues.

The close association of the government and lumber industries are illustrated throughout this thesis to emphasize the effect of this relationship in producing the present landscape in Ontario. Although the concept of land segregation appeared in the Forest Act of 1927 and the Provincial Forest Act of 1929 these Acts were considered as political window dressing for forestry concerns and the depression turned government concerns
elsewhere. E. J. Zavitz, the first provincial forester who was certainly concerned with such conservation measures as reforestation as early as 1912, found little support for his projects. The political nature of the government is illustrated in the replacement of Zavitz by a journalist as Provincial Forester in 1934. It was activities such as these which prompted the Royal Commission of 1940 to recommend that an independent commission control forest resources.

While the northern forest resources of the province were used to wield political power, concern for conservation was being raised on another level in the deforested areas of Southern Ontario. Here, where the vast majority of the people were located, the first glimmerings of ecologic conservation were beginning to gain support. While the general public could afford to discuss the broad implications of northern timber concessions, land monopolies and mismanagement, the long term effects of a lack of forests and their associated benefits were being felt by the farmers of the south. W. H. Porter, editor of the Farmer's Advocate, realizing the interdependent connections of the denuded countryside with soil loss, the floods and dried up wells and springs felt "something had to be done". Municipal representatives across Southern Ontario established the Ontario Conservation and Reforestation Association
Although this organization had no constitution, membership list, fees, salaries or expenses paid to officials, conservation was promoted by well planned field days and conservation tours. These were financed by annual grants from the counties of Ontario. Although land reservation was not a concern of this body or the (O.C.R.A.) the concern for forest reforestation is indicative of a recognition of land degradation. Rehabilitation measures were initiated due to the realization of a less than harmonious relationship between man and nature. A rehabilitated landscape was recognized as necessary to prevent the problems of drought. Nature must be aided and a position of balance promoted. The establishment of the Grand Valley Conservation Authority in 1938 provided an institutional structure such that ecologic functions and interrelationships are recognized. The ecologic tradition formally had begun to take root.

This period saw little development in the establishment of parkland. The government seemed hesitant to take initiatives on this aspect of land reservation. The local residents had to petition for six years in order that Ipperwash be established as a park. The other two parks established during this period were Long Point (1921) and Presqu'ile (1922). All of these sites were existing recreational areas.
and their reservation is indicative of the spiritual or aesthetic aspect of conservation. The Park Act of 1927 allowed for a withdrawal of some lands from cutting within parks. It was not the intent of the government to prevent cutting in parks but merely to control it with such legislation. However, the Act was not utilized until 1941 and only then as a result of public pressure from residents of Quetico Park.
Grassroots Conservation: 1941 - 1960

Ecologic conservation ideas continued to gain strength with the Guelph Conference of 1941. Federal and provincial government representatives, academics and private citizens were forced to recognize that the balance of nature was 'out of wack' in Southern Ontario. Rehabilitation was towards balanced redevelop­ment on a watershed basis. The need for integration and co-ordination between men was recognized as necessary when dealing with an integrated and co-ordinated natural system. The economic incentive however cannot be neglected as it was recognized that these resources could not be 'profitably' managed piecemeal. Conservation and restoration projects were also considered important contributions to the national problem of re-establishing men in civilian life after the war.

Reforestation, erosion control and rehabilitation were the major focus of conservation at this time. With Hurricane Hazel there was demand for immediate control of flood prone areas. Although the Federal Commission of Hurricanes

"... agreed to desirability of using the flood plains lands for recreation ... they gave no encouragement for the building of dams or hydraulic structures of any kind. On the contrary they stated that in their opinion the whole valley should be cleared of as many structures as possible. It was realized (by the Ontario Government) that these two amiable gentlemen were living in the past and were unfamiliar with the new philosophy
of conservation." 10

Thus the Conservation Authorities in the water control aspect of their mandate opted for what is often referred to as the 'technological fix'. The motive is long term self-interest. We can see today that this option is still not satisfactory - hazard land policies generally do not condone further growth on the flood plain but maintain a long term objective of removal of these non-conforming uses.

The ecologic basis of conservation, however, was evident in the philosophy of the Select Committee on Conservation in 1950. Conservation was promoted as: 'it is only wise for us to live in balance with Nature', we must allow Nature the fullest opportunity to replenish our renewable resources. Co-operation with Nature will yield far greater rewards than ruthless exploitation. 11

The Committee outlined areas for regeneration across the province. The mechanisms recommended to accomplish this included federal/provincial programmes, and agreements with townships, and counties and municipalities. Pollution was discussed with regards to municipal and industrial sewage but no recommendations made. However incorporation of these ideals into the government beauracracy was no small task. The Kennedy Commission of 1946 had advocated, among other
things, watershed units for timber harvests. This had not been implemented. However, with the introduction of multi-land use planning in 1959 the government began reorganizing the capability of certain lands for certain uses. Angus Hills, a government forester, defined the land use plan as striving to co-ordinate the bio-physical aspects of the land with socio-economic human considerations. This idea is certainly steeped in the ecologic tradition. However, Hill's method proved to be too cumbersome, costly and academic for incorporation into the government.

The utilitarian aspects of conservation were further promoted with the creation of the Ontario Water Resources Commission in 1957. Fish and Wildlife research can be considered as utilitarian. Research on the management of these resources was to maintain species for recreational use. This recreational motivation is primarily utilitarian, secondarily aesthetic. The latter however is not considered essential to the sport fishing or hunting experience. Whereas, the recreational aspects of parks are associated with scenic places with hunting and fishing, the sport rather than the landscape is paramount. During this period the concept of game preserves, which had been initiated to provide a reservoir for game in order that hunting be maintained, was replaced by wildlife management in 1948. A quota
system on registered traplines was set up in that year.\textsuperscript{14}

Other government activities which are related to land reservation in this period are parklands. As in the thirties, park designation was the result of repeated public pressure. However after the need for public recreation areas was recognized by the Select Committee on Conservation in 1950, a government program was initiated. The criteria for establishment of parkland included suitable beach area and public accessibility rather than ecological parameters.\textsuperscript{15} Classification is within aesthetic conservation due to the spiritual and inspirational associations of parkland recreational experiences.

However, the Wilderness Area Act of 1959 allowed the "setting aside of public lands for preservation as early as might be, in their natural state and for research and educational purposes, the protection of flora and fauna and the development of historic, aesthetic, scientific and recreational value."\textsuperscript{16} Although designations varied in type and size the Act specified that wilderness areas over six hundred and forty acres, one square mile, might be utilized for lumbering and mining purposes. The passage of this Act is indicative of an early concern for many of the current aspects of the 'sensitive areas concept'.
Although aspects of all the rationale are clearly evident here, the holistic fusion, or the gospel of ecology, has not yet developed. The Act is presently being recinded and the designated sites examined by the Parks Branch for inclusion in their nature reserve system.
Beginnings of Land Use Planning: 1961 - 1971

The Resources for Tomorrow Conference is often considered to be a hallmark event in Canadian conservation - the necessity of utilitarian conservation was recognized as a national reality.17

This period saw the beginnings of integrated resource planning thought. Of note is the early definition of the multi-use concept within the Department of Lands and Forests. Integration is to be planned so as 'to interfere with each other as little as possible'. Today perhaps we would use terms such as 'complimentary', co-ordinating, and synergistic. Certainly Professor Pearson, working on the government pilot study for the multi-use concept, can appreciate the developing landscape which he refers to as a 'living museum'.

However the government did take major initiatives in terms of reforestation and rehabilitation, both utilitarian and conservation measures.

The government accepted responsibility for regeneration of forest inventory of all timber operations and in conjunction with the federal government became involved in the Agricultural Rehabilitation and Development Scheme.

The fisheries management principles outlined at this time clearly illustrated a utilitarian approach
toward this resource. Harvest was for recreation which had both economic and moral benefits. Programmes were to be directed towards promoting rather than restricting use. Such a policy necessitate intensive nursery and stocking programmes of the government. Management was often on a put-and-take basis rather than rehabilitation of a resource to enable self-regulation.

Strong evidence of ecologic concerns was the International Biological Programme. Ontario tried to incorporate this concept into its parks policy. Parks objectives include protection (in terms of representation) tourism, recreation and heritage appreciation. The parks policy however does not fall into the gospel of ecology category but rather ecologic, utilitarian and aesthetic conservation modes. Whereas the gospel of ecology promotes man/land integration, parks provide aesthetic recreational opportunities and preserves representative biologic and geologic areas for scientific and educational uses. Whereas the gospel of ecology promotes membership in the biotic community, parks support separateness. Gene pool preservation was to ensure future utilitarian flexibility in science and technology. Recreational concerns were to satisfy man's aesthetic conservation needs.
However, the International Biological Programme recognized the value of man-modified sites as well as pristine representative areas and thus is considered a precursor of the gospel of ecology. Although the element of fear is not evident in this programme at the provincial level, it was presumably responsible for the international initiative.

Although basically utilitarian in its concerns, the 1966 Pollution and the Environment Conference revealed signs of ecologic conservation. Technical and institutional mechanisms for pollution identification and abatement were the key issues. However pollution was defined as 'wastes beyond the limits of man's tolerance' and 'nature's self-cleaning capacity' indicative of nature's limits and the need to redefine man's role in them. The initial bud of a theme which was to become increasingly popular was seen. That was 'quality of life'—certainly an obvious consideration when discussing pollution standards.

In the late sixties and early seventies the public concern was raised over DDT, pits and quarries, endangered species, industrial and domestic wastes.

A major issue was a perceived decreasing 'quality of life' and the need to recognize ecology in natural resource planning. Organizations like Pollution Probe maintained that our very survival hinged upon this.
for only in this way "can we hope to cultivate a reverence for nature that will convince us that something is right when it tends to preserve the integrity and beauty of our biotic community and wrong when it tends to do otherwise." 20

Evidence of a changed perspective on conservation was seen in a trend in our Universities. In several instances a Department of Environmental Studies or Planning had been established and courses on resource management and ecology flourished.

Magazines and books, television and radio proclaimed environmental crises - fear, the catalytic agent was widely evident. The gospel of ecology had arrived. The government responded to these concerns through legislation. The Endangered Species and Environmental Protection Act, Pits and Quarries Act, and the creation of a new Ministry. To provide a co-ordinated effort for environmental concerns the government created a Ministry of the Environment.

Aspects of all three conservation rationale can be found in defined goals of the Ministry of the Environment. The goal of 'Restoration and enhancement, or environmental quality' incorporates the aesthetic motivation. The goal to foster the improved management of waste and water to achieve a more efficient use of natural and material resources is in the interest
of long term wise use. Predetermined standards of environmental quality were to be established. The goals of this Ministry indicate recognition of the fact that a reassessment of the man/land relationship had occurred and that man's actions must be regulated both to avoid complete environmental degradation and retain a desirable quality environment.
Discussion

The concept of land reservation in Ontario was initially the result of conflicts between timber and settlement interests. The Free Grant and Homestead Act of 1868 was not passed by the legislature until pine reserves had been established ensuring timber rights. The utilitarian motives of protection of fish and game for hunting purposes and reservation of pine for timbering were key reasons for the creation of Algonquin Park in 1893. However both the reservation of Niagara Falls (1887) and Rondeau Park (1894) were to provide the inspirational and spiritual considerations of aesthetic conservation. It was only in response to repeated local pressure that these and subsequent recreation parks were established.

The impetus behind the Forest Reserves Act of 1898 was to provide areas for regeneration and "continuous supplies of timber." Mining and timbering were initially prohibited. However due to the traditionally strong alliance between government and industry, when it was suggested that cutting be controlled in these areas, the legislation was not upheld.

The roots of the ecologic aspects of the sensitive areas concept can be seen as early as the late thirties when the denuded countryside resulted in extensive soil
loss, spring floods and drought ridden wells. Protection as well as rehabilitation, were considered essential aspects of planning within the newly institutionalized watershed unit. A perspective of land and water management and reservation which recognizes the natural function of the landscape is indicative of an ecologic approach. However, following Hurricane Hazel for the most part, a technological approach to flood control was favored by the Conservation Authorities. The extent of land reservation for purposes of flood control, wildlife and recreation is dependent upon the particular Authority Board which is composed of local residents.

The Wilderness Areas Act of 1959 presented a broad range of land reservation rationale similar to the sensitive areas concept of the seventies. The fact that the Act does not protect areas, greater than one square mile from lumbering or mining and protection was cumbersome as each site required individual regulation, led to its present removal.\(^{21}\)

The concept of land segregation or zoning was bolstered with the land use planning initiatives which began developing in the early sixties. The International Biological Programme initiated by the International Union for the Conservation of Nature supported such key aspects of the sensitive area concept as scientific study and educational benefits.
As noted in Chapter Two, many other provinces subsequently drew up legislation to incorporate these ideas. Ontario, however, worked within its existing government structure.

Major aspects of the Parks Policy provide public recreational opportunities which is characteristic of the aesthetic trend in conservation. The Ontario Parks Branch in its "nature reserve" designation incorporated the idea of retaining representative landscapes for scientific study and gene pool preservation. These are utilitarian (man's material needs) and ecologic (for species maintenance) considerations. The gospel of ecology is not evident here for two reasons - firstly, a separateness between man and nature is promoted and secondly management is to retain a specific phenomena in a 'museum like' state. The major change which the gospel of ecology promoted was this recognition of one community of which both man and nature were a part. This included the intellectual and scientific knowledge of landscape interactions plus a belief in and respect for the diversity and function of the holistic community of which man was a part. In a nature reserve designation the holistic integrated community of man and nature is not recognized.
Sensitive Areas Planning

The gospel of ecology brought fear of threats to the entire ecosystem. Public outcry resulted in a government response of legislation and the creation of a new Ministry. Was the sensitive areas movement also a response to this gospel of ecology? Yes, indeed, sensitive areas concept appears to be part of this new conservation.

In Ontario, the term 'sensitive area' is itself indicative of a changed perception of the landscape. The inclusion of areas considered 'vulnerable or potentially vulnerable' in the provincial Strategic Land Use Planning exercise signifies a realization that there were parts of our natural and biophysical world which are vulnerable to certain types of development. However it was not really clear how, what or why, these areas were fragile. Hence the inventory was left open ended. The fact was that each individual in the field offices around the province was affected differently by the gospel of ecology and therefore had different perceptions and attitudes about what, if anything was sensitive. The result of this initiative was to ferret out what the 'people' were sensitive to, and how they had personally been affected by the gospel of ecology.
However, in the Plan Review Guidelines, further definition occurs - 'species maintenance' and 'unique flora and fauna' are considered sensitive to change by development. Although the holistic community approach is not evident here, the rights of other members of the biotic community are recognized.

When "sensitive area" is presented in the Guidelines for Land Use Planning it no longer recognizes the vulnerable or sensitive aspects of the landscape unless it has "conspicuous value for one or more of the Ministry objectives". An objective is defined as a quantifiable end. For example, a sport fishing objective is defined in terms of providing certain number of angler opportunities, a recreation objective in a certain number of user/days of recreation and a timber objective in a certain number of units of wood production. Landscape components are hence evaluated in terms of meeting Ministry objectives rather than as natural functioning systems in their own right.

Another government initiative was the Special Influence Area, designed for the Forestry Branch by a private consulting agency. A broad approach is presented and certainly all aspects of the sensitive areas concept are noted. The flexibility of these guidelines allow the incorporation of gospel of ecology concepts but this trend is not specifically promoted.
The Lake Planning Manual produced in 1976 was another aspect of government planning which attempted to incorporate ecological principles. The concept of 'ecological sensitivity' was recognized and noted but not defined. The rationale of 'species maintenance' and scientific study, also ecologic concerns, were also promoted.

Although the roots of these initiatives can be seen in the array of traditional rationale for land reservation certain aspects of the sensitive areas concept such as ecologic sensitivity or vulnerability indicate broader conservation concerns. The way in which concepts are incorporated varies within each institutional framework. The government initiatives cited above cannot be considered as characteristic of the gospel of ecology. Although, as noted, some initiatives indicate a perception of vulnerability or ecological sensitivity of natural phenomena, the vital concepts of ecological integrity, of a holistic community in which man and nature are integrated are not present. The Regional Municipality of Sudbury presents a concept very similar to the government but regional resource production objectives are considered.

The environmentally sensitive area approach of the Regional Municipality of Waterloo is a clear protégé of the gospel of ecology. Land with 'inherent
biological sensitivity' which could be valuable for science or conservation education are included. Not only the natural vulnerability of the land but the positive values of wildlife habitat linkages, ecologic functions and habitat diversity are recognized. Important to note is that remnant natural areas which may or may not have been man-modified are considered. The community need not be pristine to be included. Nature is recognized as an important and integral part of our community, as we are part of it.

The Waterloo initiative however goes beyond the scientific to the moral belief in land reservation in terms of preservation of diversity. When elucidating upon the rationale for environmentally sensitive area designation Professor George Francis, who was involved in the Waterloo process, stated 'preservation of natural diversity' as a prime objective.22 This he related to a moral or ethical belief in natural diversity akin to Dorney's23 belief of reverence to land, life and diversity. The sense of community the scientific and theological components of the gospel of ecology are evident in both the Waterloo and Hamilton-Wentworth environmentally sensitive area studies and in the various county and township studies across the province which have followed these initiatives.
The samples of the sensitive areas concept from across North America fall into the broad range of sensitive area concept rationale. The concepts of natural areas (Illinois), areas of scientific study (Wisconsin) and heritage areas (New England) are similar to the Ontario 'nature reserve' initiative of the Provincial Parks Branch and therefore indicative of utilitarian and ecologic concerns. Representative samples of the natural landscape are protected. These are managed to maintain the natural features for which they are preserved. This same concept can be seen in the National Landmarks Programme of Parks Canada and in the British Columbia, Alberta and Prince Edward Island programmes. However both Alberta and Prince Edward Island have included the recreational rationale which is associated with the aesthetic conservation motivation.

The critical areas programme which has developed in a number of states includes not only man's activities on the landscape but also how the land functions. These initiatives are in this respect similar to the environmentally sensitive areas concept developed by the Regional Municipality of Waterloo and later Hamilton-Wentworth. The American concepts, however, extended the utilitarian component with the inclusion of key production areas such as agriculture, forest and minerals.
The breadth of the Ontario approach however does not extend itself to recognize this idea of productive use.

The concern for protection of representative components of the natural landscape appeared in North America before the gospel of ecology. However, this event (i.e. the gospel of ecology) added another dimension to the original concern for land reservation for scientific and educational purposes. The new initiatives considered not only what was on the land but how the land functioned - specifically the integrated man/land community. That these approaches are broad and many varied in indicative of both the difficulty of incorporating these various concerns into existing institutions.

Conclusions

Examination of the spatial context of the sensitive areas concept within North America has revealed a vast number of terms and rationale associated with the sensitive concept. These encompass a variety of environmental concerns. Indeed the very presence of such initiatives not only in Ontario, but across both Canada and the United States is indicative of wide-spread concern for reservation of land from unfettered commercial exploitation or intense human use. That
these concepts have emerged since the fear and resultant public outcry associated with the gospel of ecology is an indication of the recognized need for a broader and deeper conservation movement.

The historical examination of conservation and land reservation indicates that similar concerns have had long-standing roots in Ontario. The motivating rationale behind the reservation of lumbering areas, parklands, wildlife habitats, and wilderness areas have included aspects of the present sensitive areas concept.

The variety of terms associated with the sensitive areas concept are essentially all associated with the new gospel of ecology. However, the various agencies utilizing these terms have traditions in the utilitarian, ecologic, or aesthetic conservation trends. It is these diverse roots which interfere with the presentation of a unified basis for a comprehensive provincial sensitive areas policy.

The Waterloo Region was able to incorporate this gospel of ecology into a newly formed planning institution - The Regional Municipality. The pressure from seemingly uncontrolled development of what remained of the regional natural landscape was clearly visible. The incorporate of environmental concerns was facilitated by the fact that the regional institutional framework had no previous
history. The time was right for the incorporation of new ideas.

However, the traditional bureaucratic structure of the Ministry of Natural Resources seems to have been a major drawback in the integration of the ideas associated with the gospel of ecology. This Ministry had controlled resource production for one hundred and fifty years. To accede to the gospel of ecology, which promoted a oneness of man and nature, would dislodge long rooted traditions.

It is the belief of this author that although the gospel of ecology did happen in Ontario it did not completely unify the previous conservation modes. Each component of conservation was affected differently.

The sensitive areas concept, essentially a planning designation utilized to display environmental concerns, contains both the vestiges of old conservation ideas which were previously neglected or given low priority, for example, scenic areas or wildlife habitats, and relatively new conservation ideas such as the preservation of biologic diversity. Vestigial components of traditional conservation modes keep the concept divided rather than united.

The sensitive area concept, as a product of the gospel of ecology with deep roots in three previous modes of conservation, is potentially a very powerful planning
tool. However, until the factions within this diverse concept respect the variety of rationale utilized in sensitive area designation, in fact, accept the integrated approach propounded by the gospel of ecology, co-ordinated policy planning cannot proceed in this field.
FOOTNOTES

Chapter One - One Concept with Many Names


2. Currant nature reserve designation under the Parks Act. Personal communication. R. Beatty, (Parks Planner, Ontario Ministry of Natural Resources), Parks Planning, Outdoor Recreation Section.

3. Ibid.

4. Ibid.

5. MNR, Land Use Co-ordination Branch (LUCB) Guidelines for Land Use Planning, March 1974; p.32.

6. An example, apparently from Lindsay District Sensitive Area Report, which shows the extreme range of data collected.

7. MNR, LUCB, "Environmental Protection Areas", 1974; p.1.

8. Ibid., p.3.


11. Ibid.


14. These include; Halton Region, Hamilton-Wentworth Region, Northumberland County, Middlesex County, Grey County South.


16. Ibid.
Chapter Two - Similar Concerns Outside of Ontario


2. Prince Edward Island, Department of Tourism, Parks and Conservation Branch, Provincial Natural Areas Policy, 1975; p.l.

3. Ibid., p.2.

4. Ibid., p.3.


7. Ibid., p.2.

8. Ibid., p.3.

9. Ibid.

10. Ibid., p.4.

11. Scientific Areas Preservation Council, Wisconsin Scientific Areas, Department of Natural Resources, Madison, Wisconsin, 1973; p.3.

12. Ibid., p.4.

13. Ibid., p.2.


18. Ibid., p.9.


21. The Investigation of a Critical Resource Information Program (CRIP) for Wisconsin; Phase III Report, Recommendations for the Assessment, Inventory and Implementation of a Critical Resource Inventory Program (CRIP) for Wisconsin, Institute for Environmental Studies, University of Wisconsin - Madison, February 1974; p.16.


25. Ibid., p.29.


27. The International Biological Programme is outlined in Appendix VIII - Conservation in Ontario Beginnings of Land Use Planning.

Chapter Three - The Components of the Sensitive Area Concept: One Concept with Many Strands


5. Ibid., p.39.

6. Ibid., p.40.
Chapter Four - The Sensitive Area Tradition in Ontario


2. Ibid.

4. Ibid., p.170.
5. Forest Reserves Act, 61 Vict. c.10 (1898)
6. Ibid.
7. Richardson, A.H., Conservation by the People, University of Toronto Press, Toronto, 1974; p.3.
9. Ibid., p.10.
10. Ibid., p.13.
13. Ibid., p.433.
15. Ibid., p.484.
16. Ibid., p.468.
18. The International Biological Programme is outlined in depth in Appendix VIII.
20. Ibid.

2. Lambert, p. 102.

3. Lambert, p. 83.


5. Ibid., p. 125.

6. Ibid.

7. Ibid., p. 156.


11. Lambert, p. 132.

12. Ibid., p. 89.


15. Lambert, p. 151.

16. Ibid.

17. Lambert, Ibid.

18. Nettle, R. Salmon Fisheries of the St. Lawrence.


24. Lambert, p. 158.
25. Ibid., p. 95.
26. Ibid., p. 119
27. Ibid., p. 146.
29. An Act to Encourage the Planting of Trees Along Highway, 41 Vict., c.
32. Ontario Fruit Growers' Association, Report 1880, in the Commissioner of Agriculture and Arts, Report 1880; p. 146.
33. Lambert, p. 158.
34. Ibid., p. 179.
35. Ibid., p. 179.
37. Ibid., p. 167.
38. Ibid., p. 168.
39. Ibid.
40. Ibid., p. 169.
42. Ibid., p. 10.
43. Saunders, A., Algonquin Story, Department of Lands and Forests, 1963; p. 84.
44. Saunders, p. 84.
45. Lambert, p. 170.
46. Saunders, p. 85.
47. Lambert, p. 283.

49. Ontario Game and Fish Commission Report 1892 (Department of Lands and Forests, Toronto: 1892); p. 189.

50. Ibid., p. 189.


52. Lambert, p. 456.

53. Ibid., p. 184.

54. Ibid.

APPENDIX VI


5. Forest Reserve Act, 61 Vict. c. 10 (1898).

6. Ibid.

7. Lambert, p. 255.

8. Forest Reserves Act, op.cit.


12. Lambert, p. 258.

13. Ibid., p. 188.

16. Lambert, p. 189.
17. Ibid., p. 182.
18. Report of Canadian Forestry Convention, Ottawa January 10-12, 1906 (Ottawa 1906); p. 25. This report will be referred to as RCFC.
19. RCFC, pp. 171-5.
20. RCFC, p. 173.
22. Ibid.
24. Ibid.
25. Ibid., p. 182.
26. Ibid., p. 188.
27. Ibid., p. 190.
29. Ibid.
30. Ibid.
31. Ibid., p. 195.
32. Ibid.
33. O'Riordan, Perspectives on Resource Management, Pion Limited, 1971; p. 9.
34. Nelles, p. 201.
37. Thorpe, p. 4.


40. Ibid.

41. Ibid.

42. Nelles, p. 195.


46. Ibid.

47. Ibid.


49. Foster, p. 212.


53. Annual Report, 1913; p. xiii.

54. Lambert, p. 450.

55. Ibid., p. 452.

56. Ibid., p. 193.

57. Ibid., p. 193, p. 315.

58. Ibid., p. 193.

59. Ibid., p. 193.

60. Ibid., p. 264.
4. Ibid., p. 274.
5. Lambert, p. 231.
10. Lambert, p. 199.
11. Ibid., p. 201.
12. Ibid., p. 287.
12a. Ibid., p. 284
13. Ibid., p. 338.
17. Lambert, p. 452.
21. Richardson, p. 3.
22. Richardson,
24. Ibid., p. 343.
27. Lambert, p. 345.
28. Ibid., p. 345.
29. Ibid., p. 348.
30. Ibid., p. 350.
31. Ibid., p. 352.

APPENDIX VIII

2. Ibid., p. 357.
3. Ibid., p. 365
4. Ibid.
5. Ibid., p. 393.
6. Ibid., p. 396
7. Ibid., p. 397
8. Ibid.
10. Lambert, p. 400
13. Lambert, p. 402
14. Lambert, Chapter 18, The Reorganized Department
15. Lambert, p. 403
16. Ibid, p. 410
17. Richardson, op. cit., p. 9
18. Ibid., p. 10.
19. Ibid., p. 11.
21. Ibid., p. 10
22. Ibid., p. 17

23. Select Committee on Conservation Authorities, Queens Printer 1967, p. 5.
24. Ibid., p.x.
25. Richardson, Appendix A.
26. Smithies, op. cit., p. 15
27. Ibid., p. 27
28. Annual Report, 1946, p. 57
30. Lambert, p. 433
32. Ibid., p. 184.
33. Irving, op. cit., p. 14
34. Irving, p. 30.
35. Lambert, p. 477.
36. Vrancart,
38. Irving, p. 17.
41. Wilderness Areas Act, R.S.O., 1959.
42. Irving, p. 17.
44. White Paper, p. 5-11.
45. Lambert, p. 415
46. Ibid., p. 379.
47. Ibid., p. 434.
48. Ibid., p. 433.
49. Lambert, p. 454
50. Ibid.
51. Ibid., p. 460.
52. Personal Communication, Enforcement Officer Red Lake District Office.
53. Lambert, p. 530.
54. Ibid.
55. Richardson, p. 35.
56. Select Committee on Conservation, Kings Printer, 1950; p.
57. Personal Communication, Supervisor Land Use Planning Co-ordinator, Lands Division, Queen's Park.

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2. Ibid., p. 6.
3. Forest Study Unit Multiple Use of Forest and Related Lands, Toronto Department of Lands and Forests, 1966; p. 1.
4. Ibid., p. 10.
8. Ibid.
11. Smithies, p. 35.
12. Ibid., p. 37.
13. Ibid., p. 38.
18. Ibid., p. 23.
19. Ibid., p. 23.
20. Ibid., p. 25.
21. Ibid.
22. Introductory Remarks, Proceedings of Pollution and our Environment, Queens Printer, 1966; p. xx.
23. Ibid., p. xx.
24. Ibid., p. xxi.
28. Smithies, p. 44.
29. Ibid.
30. Ibid., p. 46.
31. Ibid., p. 45.
32. Ibid., p. 71.
33. Ibid., p. 83.
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Guidelines for Land Use Planning, Land Use Co-ordination Branch, Department of Lands and Forests, January 1, 1974.


"Report to the Ontario Legislature from the Select Committee on Conservation", Toronto: Baptist Johnston, Printer to the King's Most Excellent Majesty, 1950.


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APPENDICIES
Sensitive Areas and Features Report Form

<table>
<thead>
<tr>
<th>Description —</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential for Damage —</td>
</tr>
<tr>
<td>Recommendations for Use and Protection —</td>
</tr>
</tbody>
</table>

Note: Printed form will include a second page for additional information, photographs and maps.

APPENDIX II
CRITERIA FOR SELECTION OF ENVIRONMENTALLY SENSITIVE AREAS
REGIONAL MUNICIPALITY OF WATERLOO

(a) The occurrence of significant, rare or unusual indigenous species within the designated area;

(b) The identification of plant and/or animal associations and/or landforms which are unusual or of high quality regionally, provincially or nationally;

(c) The classification of the area as one which is large and undisturbed, thereby potentially affording a sheltered habitat for species which are intolerant of human disturbance;

(d) The classification of the area as one which is unique with limited representation in the Region of a small remnant of once larger habitats which have virtually disappeared;

(e) The classification of the area as one containing an unusual diversity of plant and animal communities due to a variety of geomorphological feature soils, water and micro-climatic effects;

(f) The identification of the area as one which provides a linking system of undisturbed forest for the movement of wildlife over a considerable distance;

(g) The performance of the area in serving a vital ecological function, such as maintaining the hydrological balance over a widespread area acting as a natural water storage or recharge areas; or

(h) The recognition of the area as one demonstrating any of the above qualities but suffering a reduction of its uniqueness or rareness by the intrusion of human activities.

Source: Larry Lamb, Kitchener-Waterloo Field Naturalists, Natural Areas Seminar, Metropolitan Toronto Library, October 21, 1977
### Environmental Checklist

**NATURAL, SCENIC, AND HISTORIC VALUE**

**CRITERIA FOR EVALUATING A CRITICAL ENVIRONMENTAL AREA**

Instructions: Fill in "scores" for the area being considered for evaluation as a critical environmental area based on the series of questions that follow. Answer those sections that are appropriate to the area, but carefully consider all sections before leaving them blank. Use margins and explain if extra space is needed. Scoring information is found in the parentheses after each question. A score may be a simple positive response (e.g., yes=10, no=0) or a range of percentage (e.g., 100%=10, 90%=9, 80%=8, etc.). Enter all scores in boxes in the left hand columns. When completed, enter scores in the "summary" below.

**SUMMARY**

<table>
<thead>
<tr>
<th>I. (Name of area)</th>
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</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>II. Analysis (A+B+C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ] A. Natural = (1x2+3+4+5)</td>
</tr>
<tr>
<td>[ ] 1. General uniqueness</td>
</tr>
<tr>
<td>[ ] 2. Land forms</td>
</tr>
<tr>
<td>[ ] 3. Water</td>
</tr>
<tr>
<td>[ ] 4. Wildlife</td>
</tr>
<tr>
<td>[ ] 5. Vegetation</td>
</tr>
</tbody>
</table>

| [ ] B. Scenic           |
| [ ] C. Historic         |

<table>
<thead>
<tr>
<th>III. Urban Proximity Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ] IV. Threat Factor</td>
</tr>
</tbody>
</table>
### Wisconsin Critical Resource Inventory Assessment Matrix

#### Criticality Assessment Matrix

**Cultural Features: Archeological Sites**

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>VARIABLE WEIGHTS</th>
<th>VARIABLE VALUES</th>
<th>VARIABLE RANKS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Archeological Importance (25)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level of connection of site to a particular culture, time period, type of site, cultural event or process</td>
<td>10.00</td>
<td>peripherally related, significantly related</td>
<td>1, 5</td>
</tr>
<tr>
<td>Importance of site in the history of archeological investigation</td>
<td>8.75</td>
<td>no distinguishing significance, some distinguishing significance, original find or significant verifying finds</td>
<td>1, 3, 5</td>
</tr>
<tr>
<td>Level of importance to locality, state, region, and nation</td>
<td>5.00</td>
<td>locality, state, region, nation</td>
<td>1, 2, 4, 5</td>
</tr>
<tr>
<td>Recognition by authorized organization</td>
<td>1.25</td>
<td>local org., regional org., state org., national org.</td>
<td>2, 3, 4, 5</td>
</tr>
<tr>
<td><strong>Scarcity (20)</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Locality</td>
<td>6.60</td>
<td>many, unique</td>
<td>1, 5</td>
</tr>
<tr>
<td>State</td>
<td>6.60</td>
<td>many, unique</td>
<td>1, 5</td>
</tr>
<tr>
<td>Nation</td>
<td>6.80</td>
<td>many, unique</td>
<td>1, 5</td>
</tr>
<tr>
<td><strong>Condition (15)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall condition</td>
<td>9.00</td>
<td>completely destroyed*, partially intact, intact</td>
<td>1, 3, 5</td>
</tr>
<tr>
<td>Effect of adaptive use</td>
<td>6.00</td>
<td>significant damage, moderate damage, no damage or no present use, use beneficial to site</td>
<td>1, 2, 4, 5</td>
</tr>
</tbody>
</table>

*Warning*
APPENDIX V
CONSERVATION IN ONTARIO NINETEENTH CENTURY

The nineteenth century is cited as "The Age of Waste" and "The Golden Age of Timber Exploitation" in a centennial history of the public lands, forests and wildlife in Ontario 1763 - 1967.¹

In the early eighteen hundreds the Crown Lands Department was the government agency directly responsible for settlement and agriculture. Throughout the century the duties of this department expanded to include land surveys (1845), mining claims (1846), timber license (1852), fisheries (1856), indian affairs (1860), and parkland (1887).² Although indian affairs and aspects of fisheries were taken over by the federal government at the time of Confederation, the Crown Lands Department remained the body responsible for the management of Ontario's natural resources.

The three major land users of the nineteenth century were the lumbermen, the settlers, and the land speculators, with the latter's opportunistic dealings creating major problems. In an effort to corral these speculative activities, the Land Act of 1837 abolished free land grants and instituted land auctions.³ Both this Act and the 1842 timber regulation requiring an annual minimum cut were initiated to obtain revenue from two areas of government control -- land sales and timber licenses.⁴
The 1840's were poor in terms of timber sales for three reasons. Firstly, the British preferential duty had been removed; secondly all readily accessible forest areas had been destroyed and operations were now at a more costly distance and thirdly, the minimum cut regulation of 1842 had caused over-production. In 1849, a Select Committee on Lumber Trade was appointed to examine the problem. Both the industry and the government realized that, although their individual aims were different, neither would be profitable with the industry experiencing the depression of the 1840's. In effect, the government grew more attentive to lumbermen. The greater threat of economic uncertainty had brought these two interests together. The Select Committee inquired into the causes of the depression including "... the protection of the forest from unnecessary destruction." 

An Act for the Sale and Better Management of Timber Upon Public Lands received passage in 1849. This Act, which left much leeway to the administrators, lasted until the end of the century as it met both industrial needs and government revenues. The Act provided for the sale of Crown timber and established licencing arrangements to meet three areas of timber policy -- regulation, revenue, and arbitration of boundary disputes. The latter was to be done with the "least possible delay". Frequent boundary disputes arose between two conflicting land users - the settler and
the lumbermen. The settler had always been a burden to
the lumbermen, both in terms of cutting and selling timber
on licenced lots and in allowing fires used to clear land
to spread uncontrolled. On the other hand the settlers
maintained that the "large amounts of slash left (by the
lumbermen) added to the fire hazard,"\(^1\) and threatened
their homesteads. In response to lumbering interests,
the government fixed the settler's cutting limits and
imposed penalties to offenders.\(^1\)

As a chief source of its revenue was land sales, the
government was always eager to encourage settlers.

The public Lands Act of 1853 established a Colonization
Fund for road building to populate Ontario. Although
these roads helped lumbermen get their products to market,
the resulting increased settlement was viewed in terms of
a loss in lumbering opportunities.\(^1\)

In 1856, the Crown Lands Department produced its first
Annual Report, a voluminous 200 page document which
examined in detail the scope and problems of the Department.
The report stated a threefold timber administration policy as
follows:

1. Government regulation was to be applied consistently

2. Government revenue from dues and rents was to be kept
   at the highest possible level

3. Arbitration of rival trade interests was to ensure
   reasonable prosperity of all parties. \(^1\)
In the same report, Commissioner Cauchon, with regard to declining salmon fisheries warned that "if measures were not taken ... for its protection, this branch of fisheries would come to an end." Mere mention was as far as the report went. Suggestions of revenue for the protection of these resources were not stated.

Both fish and wildlife resources had been the first to obtain legislative protection in the province. Between 1807 and 1856 there were six protective Acts passed. These were as follows:

1. prohibition of torchlight fishing, spearing and netting of salmon (1807), (1821)
2. a closed season for deer was established (1821)
3. Sunday shooting was prohibited (1839)
4. protection of waterfowl (1856)

However, it wasn't until the Fisheries Act of 1857 that the first attempts were made to provide enforcement by prohibiting the use of certain types of nets and salmon spearing by torchlight, as well as giving provisions to create fish hatcheries. It also empowered the Crown Lands Department to appoint one fishing superintendent and fifteen overseers in certain sections of the province. As a result two superintendents were appointed to patrol the Great Lakes and St. Lawrence Seaway.

Whitcher, one of the superintendents, returned an angry report in 1859. Referring to torch fishing of
spawning salmon, he spoke of the "luckless fish killed at a stage which make bare features of destroyal in the highest degree deplorable" and "the wrong to the public of suffering the richest and finest fish in Canadian Waters." The other appointed superintendent, Richard Nettle, published a book *Salmon Fisheries of the St. Lawrence* which dealt with the decline of this resource.

Another noteworthy figure in the fish conservation movement was William Gibbard, a land surveyor in Simcoe County. In 1863, while investigating torch fishing on Manitoulin Island, Gibbard ran into problems with the Indians and was mysteriously killed. With the death of Gibbard, fish conservation activities dissipated. Five years later, in 1868, wildlife conservation concerns received belated recognition. The Act for the Better Protection of Game in Ontario was instituted to replenish the overhunted wild turkey. An Upland game bird season was established and the taking or destruction of game bird eggs prohibited. Unfortunately the population did not recover.

In 1858, the Crown Lands Commissioner has issued a questionnaire to lumbermen calling attention to the great annual destruction of forests by fire. Previously, in 1855, the issue had been discussed with lumbermen who felt that partial responsibility fell to both settlers and squatters. Although as early as 1854 Ottawa lumbermen had proclaimed the need to segregate forest and settlement uses. The tension
between these two major land users had not yet been resolved. In 1863, another Select Committee was appointed to examine the State of the Lumber Trade. Again the problems of the land base being shared by lumbermen and settlers was an issue. Repeatedly, the government had tried to open up areas for settlement which subsequently proved unsuitable for agriculture. The Colonization Roads scheme was recognized as a failure. The settlers had left the land and the roads fell into disrepair. As a result, the Select Committee recommended that the Crown Lands Department "ascertain postively the character of the country before throwing open land for settlement." 

In the Annual Report of 1865, Alex Campbell, a senior clerk and later Commissioner recommended segregated land use and Scandinavian practices in resource management such as land classification and rotation harvest. Confederation saw the removal of Fisheries and Indian Affairs to the Federal Government. After Confederation, Campbell, the new Crown Lands Commissioner, attempted to tighten up timber regulation. Twenty to thirty woods rangers were hired to tour lumber camps checking cutting measurements and "to report generally on any wanton or special waste ...".

The Free Grant and Homestead Act of 1868 was another attempt to promote settlement, this time incorporating the notion of land suitability. The purpose of the Act was to speed up settlement between the Upper Ottawa River and
Georgian Bay. All pine timber areas were reserved with the intent to use timber revenue to build the necessary roads and public buildings. Surveying the land as to its agricultural suitability was now a necessity before any free grant decisions could be made. The timber companies had opposed the Act being passed until they "had been assured of a compromise that would protect their future timber rights." The free grant system proved less than a success due to the distance from markets and U.S. competition for settlers.

In 1872, Scott, the new Crown Lands Commissioner, vigorously promoted lumber sales in Parry Sound and the Muskoka area in order to open up further areas of the province. He initiated the largest timber action that had ever taken place, selling 5,031 square miles of land on the North Shore of Lake Huron and bringing 500,000 dollars to the provincial coffers. This produced an outcry from the opposition party that Scott (previously a legal representative of timber companies) was a "paid agent of the timber interests." The Commissioner was accused of sacrificing the long term interests of the people of Ontario for the short term commercial advantages of wealthy merchants.

This shift in timber areas, from the Ottawa area to the Lake Huron district, was directly related to the construction of railways and a result of exhausted timber stands in the
Lumbering in the Ottawa Region was followed by Parry Sound, Muskoka, the north shore of Lake Huron and finally the Thunder Bay - Rainy River Region.

Although the rudiments of a regulation system in 1872 included regulation, revenue and arbitration,

"... powerful lumbermen never found it difficult to influence or bribe officials whenever loopholes in the regulation were not broad enough to allow them their own way." 27

In effect, the huge investments of the timber company made its relationship with the provincial economy an intimate one.

In 1871, the legislature has passed "an Act to encourage the planting of trees along highways." 28 During the 1870's the lumber industry did not fare well. Raging fires threatened the industry in 1870, 1871, and 1877, while a trade depression, beginning in 1872 and lasting till 1877, crippled lumbering concerns. In 1878 a Bill to Preserve Forests from Destruction by Fire was passed. In his annual report of 1879, Commissioner Pardee noted the alarming waste of wood resources associated with the square timber business. 29 The following year two lumbermen from Montreal, James and William Little, published a small pamphlet on The Lumber Trade in the Ottawa Valley in which they urged the government to,

"... establish large nurseries of young pine on the banks of some of the tributaries of the Ottawa, where seed could be sown and the young plants protected and cared for." 30
Again in 1880 conservation concerns were expressed by a member of the United Fruit Growers Association of Ontario:

"How far from our serious thoughts of the future are the considerations of preservation, economical use, culture and propagation applied to our forests! ... If something is not speedily and effectually done ... we shall, before many years have swept their onward course, find ourselves compelled to forever inhabit a dismal treeless waste and an unfruitful region ..." 31

Conservation thoughts had been evident in North America since the 1860's when George Perkins Marsh had published his book on Man and Nature. 32 When an Ontario delegation attended the first American Forestry Congress held in Cincinnati in 1882, a number of concerns came to light. Man's destruction of nature's beauty, harmony and balance; the forest exploitation which altered climate, increased soil loss by erosion, resulting in flooding and loss of wildlife; and the decreasing supplies of merchantible timber were all discussed. The latter issue was associated with fire, poor wood utilization and wasteful cutting practices. Some speakers distinguished between this idea of "wise use" versus the other issues which were associated with emotional and religious concerns. 33

At the Congress, land classification was accepted as a fundamental principal and the first recommendation of the Ontario delegation on its return was that all nonagricultural lands should be reserved as permanent forests, and the wasteful practices in both the square timber and hemlock

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bark trade should be abated.\textsuperscript{34}

From 1882 onwards, the concept of forest management in Ontario expanded. In 1883, the first clerk and forester was appointed to the Department of Agriculture. Also in this year a Trees Act was passed which provided a bonus to municipalities that agreed to plant trees. Following in the footsteps of the American forestry movement, in 1885, the province instituted an Arbor Day. Trees were planted by school children across the province. Also in this year effective implementation methods were attached to the seven year old fire protection legislation.\textsuperscript{35}

The major responsibility of R. W. Phipps, the first forestry clerk, was to increase public awareness of forestry through newsletters, annual reports, travelling talks and news articles. He promoted many of the ideas discussed at the 1882 Congress, such as farm forestry, and the idea of forest reservation.

At the same time, the conservation movement in America influenced other members of the Ontario Government. In 1885, Alexander Kirkwood, a clerk in the Crown Lands Office, wrote to Commissioner Pardee with an idea to,

"... set aside a forest reserve principally for the preservation and maintenance of the national forests, protecting the headwaters and tributaries of the Muskoka, Petawawa, Bonêchere and Madawaska River, wherein it shall be unlawful for any person to enter and cut timber for any private use or destroy the fur-bearing animals. \textsuperscript{36}

He continued that the wildlife, forests, and waterways of
the area should be saved from destruction and made available for the public enjoyment in perpetuity. 37

Kirkwood's reasoning was that,

"... It is wandering through such scenes that the mind drinks deep but quiet draughts of inspiration and becomes intensely sensitive to the beauty and majesty of nature. It is here that the imagination of the poet kindles into reverie and rapture; and reveals an almost incommunicable luxury of thought." 38

Commissioner Pardee took no immediate action. However, in 1887, the government created a small park at Niagara Falls to "assure the right of the public at all times to view this work of nature." 39

In 1892, the government created a Royal Commission on Forest Reservation and National Parks. Alexander Kirkwood was appointed chairman. The Commission Report warned that "the wholesale and indiscriminate slaughter of forests brings a host of evils in its train." 40 It claimed "the waste of one generation must be atoned for by the enforced economy of the next." 41

The commissioners felt that the land, if left to settlers, "would soon be converted into a dreary and abandoned waste." 42 "Forest preservation," the report stated, "is in almost every civilized country, one of the most pressing and vital of economic questions." 43 Such discussions resulted in the establishment of Algonquin Park in 1893. The reasons cited for its creation were:

"(1) to maintain water supply

(2) to preserve primeval forest
(3) to protect wildlife
(4) to undertake experiments in forestry
(5) to make provisions for health in forestry
(6) to secure for the surrounding regions the advantages of climate and water supply that retension of a large block of forest could give." 44

The final summary statement affirmed that the proposed Act was intended to provide,

"... a public park and forest reservation, fish and game preserve, health resort and pleasure ground for the benefit, advantage and enjoyment of the people of the province." 45

Lumbering rights were still respected but restricted to pine trees. These it was felt were so numerous that,

"... even were the pine trees wholly removed the utility of the forests in their climatic, water maintaining and other aspects would probably not be impaired." 46

At the same time in the southern part of the province the town of Chatham was petitioning the Legislature for protection of Rondeau Harbour, a popular recreation area. Here in 1893, twenty acres of land had been leased to build a hotel for the accommodation of visitors at this oft frequented picnicing and duck hunting area. The park was created in 1894 with provisions for timber cutting similar to Algonquin. 47

Also of note in the last decade of this century was the question of fisheries which had been transferred to Federal jurisdiction at Confederation. However in
1885, Ontario had passed a Fisheries Act placing the control and management of fisheries of inland waters in the Department of Lands and Forests.48

Then in 1890, Dr. G. A. MacCallum of Dunnville and other sportsmen persuaded the government to establish the Royal Commission on Game and Fish. MacCallum as chairman produced a report two years later, in which he noted that,

"On all sides, from every quarter, has been heard the same sickening tale of merciless, ruthless and remorseless slaughter. Where but a few years ago game was plentiful, it is hardly now to be found ... the clearing of the land, the cutting down of forest ... indiscriminate hunting ... this is indeed a ... deplorable state of affairs." 49

MacCallum's report recommended increased enforcement and was supportive of the Algonquin Park proposal. What was needed, the report stated, was "a Provincial Game Park in which protection could be afforded to the game and fur-bearing animals of Ontario."50 This report was responsible for establishing a Game Board and the hiring of full time game wardens.51

In 1898, the year the Fisheries Branch was established, the Provincial/Federal jurisdiction dispute was finally settled by the Privy Council with the Fisheries Act of 1885 being upheld. However, the Dominion Fish Commissioner and Deputy Commissioner of Ontario had contradictory reports with respect to pollution effects on fisheries in 1899. Whereas the former made vague and non-conclusive statements, the latter said directly that "there can be
nothing more destructive of fish life than the depositing
of sawdust in the rivers and lakes.\textsuperscript{52}

Forestry management also gained much ground before
the turn of the century. In 1895 the Clerk of Forestry
position was transferred to the Crown Department. Thomas
Southworth, the Clerk at this time, stressed the need for
forest reserves, the observance of the twelve inch
diameter cutting limit and the improvement of forest
protection.\textsuperscript{53} As the pulp and paper industry grew near
the end of the century Southworth carried on studies on
such topics as white pine regeneration to aid in forest
reserves policy. He claimed that such studies led to
the government establishment of the Royal Commission of
Forest Protection in Ontario in 1897.\textsuperscript{54}

Both Southworth and Alexander Kirkwood were among
its members. The commission recommended the creation
of further forest reserves, the extension of fire ranging
and the control of the latter function to be placed
under the Crown Lands Department.\textsuperscript{55}

The Forest Reserve Act was passed in 1898 and lands
were set aside "as deemed feasible for future timber
supplies."\textsuperscript{56} Southworth became directly involved in
establishing the Eastern, Sibley, Temagami and Mississauga
Forest Reserves. By the turn of the century, Southworth's
office clerk of forestry was enlarged to a Bureau
and he was appointed director.
Appendix VI
Conservation in Ontario: Early Conservation: 1900 - 1920

At the turn of the century the industrial revolution promoted technology and science as the means to development and prosperity. The pulp and paper industry had begun to boom. The discovery of the Clay Belt of Northern Ontario in the land survey of 1900 prompted visions of "New Ontario" and "Empire Ontario." Forestry was associated with the ideal of most efficient development. In the Crown Lands Department, land reservation had already begun for forest and park purposes.

In 1903 the government disposed of 826 square miles of timber in the western part of Ontario. The timber interests had put heavy pressure on the government to dispose of more timber land and the Crown, always eager for revenue, invariably agreed. There had been no large scale timber sales since 1871-72. Besides, the best lumber had been removed from the Ottawa area and lumbermen sought greener fields. However, the government had set up conflicting policies.

The Forest Reserves Act of 1898 had set aside "such portions of the public domain as may be deemed adviseable for the purpose of future timber supplies." Settlement was not allowed as the areas were "to be kept in a state of nature as nearly as possible." They were to be centres for recreation, and initially mining and lumbering were to be
excluded. Lumbermen could hardly object to this on cutover areas. However, the rich forest of the Temagami Reserve raised questions as to the extent of lumbering which would be allowed. 

The Timber Act of 1849 had established the government as a revenue collector and an arbitrator in cases of conflict. The forest reserves, however, had been set apart as "a permanent, perennial source of revenue" and would therefore require that lumber operations be carefully supervised. To solve this dilemma, Southworth, the Director of the Forestry Bureau, had urged the establishment of certain restrictive regulations for forest industries when cutting in these reserves, these suggestions, however were not incorporated in the 1902 regulations. This precedent setting action allowed lumbering in forest reserves with no restrictions.

Forestry ideas, at the same time, gained increasing momentum as reflected in the 1900 establishment of the Canadian Forestry Association. In 1903, Dr. Bernard Fernow, the leading American forester from Cornell University, began a series of forestry lectures at Queens University, Kingston. He best summarized the change in this field with the statement that,

"... the main difference between them, between the forester and the lumbermen, is their attitude toward the future."
The recognition of forestry at this time was partly due to concern about the vast forests which had been destroyed by fire and logging, and partly the recognition of the more scientific idea of forestry as a renewable resource. Initially, the lumbermen considered the foresters as allies with respect to forest protection and land classification.

In 1904, the government hired J.F. Clark as the first professional forester. The Liberals lost the election of 1905, after 33 years of power, on the issue of poor management of forest resources. They were charged with neglect of the north which had been exploited by timber barons and a revenue hungry government, and with behind-the-door concessions to pulp companies. Although the government countered with data on reforestation and forest reservation, this was not enough for the voters.

Even with the new government, Clark found he could make no progress with forest management principles due to the strong industrial lobby. He expoused his radical views at the Canadian Forestry Convention called by Sir Wilfred Laurier in 1906. Timber companies, he felt, should be required to dispose of forest slash as a measure of fire prevention and reforestation. He also advocated the use of cubic square feet in timber measurement rather than the Doyle Scale which used board feet. The latter method frequently favored the
lumbermen at the expense of the government. Clark found that it was impossible to introduce forestry measures without "conflicting with privileges which have long been regarded as rights" and a "there was nothing expected of him except to talk: in 1906 he resigned, only two years after appointment. Another forester was not hired for six years.

Apart from the conservation movement, government policy, which was influenced by the Canadian Forestry Association, was in turn strongly influenced by the American concept of wise use and efficiency. Gifford Pinchot spoke at the Canadian Forestry Convention in 1906:

"We base our whole policy on the principle stated by the President, that we must put every bit of land to its best use no matter what that may be--put it to the use that will make it contribute most to the general welfare." 18

Also at the convention, B.E. Walker, a banker, gave a particularly futuristic plea:

"...there is no doubt that if we disturb the beautiful balance that nature has given us in our natural resources, the entire order of things in Canada may fall to pieces. It is not simply that our water powers will decline in value, but our coal areas will not be so valuable, nothing will be valuable. Nature has given us a curious opportunity for the strong northern man to exercise his brains upon and if we disturb the equilibrium we are criminals in the greatest sense that men can be criminals for we are criminals towards our descendents and to the future generations." 19

Walker presented both the practical benefits of conservation and its inspirational values. After Pinchot's utilitarian speech, Walker replied: ...the man who thinks that
the aesthetic side of forestry has nothing to do with the practical building of a nation is simply a species of a fool".  

At the same time, a School of Forestry was developing at the University of Toronto. Dr. Bernard Fernow became the first Dean in 1907. The philosophy of the school was tailored to the government needs, and forestry was emphasized as a sound business practice. However, Fernow was also concerned with public service and felt that the forester should consider the long range perspective which industry was incapable of taking.

Bernard Fernow's philosophy stemmed from the idea that forests grow to be used, and urged the Canadian Forestry Association to "beware of the sentimentalists who would try to make you believe differently." Whereas preservationists were interested in trees for their own sake; conservationists advocated for the permanent use of forests. The lumbering industry, influenced by changing social and scientific values, was undergoing pressure for forestry reform in terms of conservation. This emanated from a genuine movement of progressive businessmen, professionals and intellectuals.

Conservation gained general popularity not just among professional foresters and civil servants, but also with urban businessmen, intellectuals and some lumbermen as well. A large percentage of the people who joined the Canadian Forestry Convention were urbanites or lived in lumbering
towns. It has been suggested that businessmen understood the pleas for efficiency or wise-use as, "...the word conservation itself carried that special, reverent connotation, saving." On the other hand, conservation, as advocated by the foresters, meant the permanent use of the forest. It was not, therefore, surprising that lumbermen were at the head of the movement. Between 1907 and 1914, lumbermen served as presidents of the Canadian Forestry Association for six of the eight terms. Lumbermen, as members of the conservation movement, frequently used it to meet their own needs. For example, forestry was often interpreted as fire prevention which was translated into removal of settlers from forest lands.

The "amiable and indomitable" Senator W.C. Edwards, a Liberal lumberman from the Ottawa Valley, was their unofficial leader. At the Canadian Forestry Convention, the lumbermen, with Edwards as their spokesman, denied responsibility for the condition of the forest and accused settlers and government regulations as the cause of timber destruction. Booth, another influential lumberman, claimed that "if fires were kept out of the forest there will be more pine in this county one hundred years from now, than there was fifty years ago."

The Annual Report of the Canadian Forestry Association in 1909 reveals antagonism between the Ontario Lumberman and
the professional foresters through their spokesmen, Senator Edwards and Dr. Fernow respectively. The latter's suggestion of "sound forestry principles" brought cynicism and laughter from Edwards and his followers. The foresters had established their own Canadian Society of Forest Engineers in 1908 but remained members of the Canadian Forestry Association.

Both Edwards and Fernow were Ontario representatives on the Commission of Conservation. This commission was instituted by Prime Minister Wilfred Laurier in 1906 on the recommendation of an Ontario delegation which had attended the United States National Conservation Congress earlier that year. Under President Theodore Roosevelt, the idea of conservation had gained momentum in the United States. Two further congresses were held in 1910 and 1911. Canada sent a representative only to the first as by 1911 the Commission of Conservation was well under way.

The commission provided for an integration of both levels of government and the universities. The membership included key people in the various fields of interest to the commission and one representative from a university in each province. The provincial civil servant who was responsible for the natural resources of his province was an ex-officio member. The role of the commission was to "act as a co-ordinating agency and clearing house for studies being undertaken and
work being done across Canada to further the case of conservation." ³⁵

In the opening address, the chairman, Clifford Sifton, made it clear that conservation and development were not mutually exclusive:

"I have heard the view expressed that what Canada wants is development and exploitation, not conservation. It will not, however, be hard to show that the best and most highly economic development and exploitation in the interest of the people can only take place by having regard to the principles of conservation." ³⁶

In the twelve years of its operation, the commission examined a broad range of topics which included forestry reserves and reforestation, fish and wildlife protection, water storage, waste of fuels, town planning and public health. ³⁷

Both American and British conservation ideas were evident in the work of the commission. In 1909, the Canadian government hired Dr. Gordon Hewitt, an English biologist, Manchester educated, as the first Dominion entomologist. Dr. Hewitt and James Harkin, the Dominion Parks Commissioner were instrumental in the passage of the Migratory Birds Convention Act in 1917. Both these men were in touch with the conservation movement in the United States. Harking frequently quoted John Muir, a leading American preservationist, in his departmental reports. W.F. Hornaday, Director of the New York Zoological Society, sent his book Our Vanishing Wilderness to both Harking and Hewitt. ³⁸
Provincial involvement in the activities of the Commission of Conservation centred on various papers which were presented both by public citizens and members of the commission. In 1910, Dr. Fernow presented a paper on "Scientific Forestry in Europe: Its Values and Applicability in Canada." He urged that timber be conserved "as a crop capable of reproduction" rather than looking at the forest "as a mine which is bound to be exhausted." He elucidated that three reasons for forest perpetuation as:

1. continuous wood supply
2. the influence of forest cover on soil and water conditions
3. sound political economy (i.e. best use of marginal agricultural lands).

What was required, he felt, was "a radical change in the attitude of our people and government from that of exploiters to that of managers."

That same year, Mr. Kelly Evans' paper on "Fish and Game in Ontario", stressed the economic advantages of fish and game protection and warned that "we are face to face with the approaching absolute depletion of our supply." In 1910, Dr. Fernow was involved in a project for the Commission of Conservation -- this time it was as Director of the Trent Watershed Survey. Other input from Ontario included a paper by J.B. Challies, presented in 1914, advocating the creation of a Forest Reserve in the Lake of the Woods district.
Challies promoted the creation of a reserve for reforestation and protection of water power interests. 44

Many other conservation ideas emerged throughout the reign of the commission. Wildlife was the focus of a conference sponsored by the commission and held in 1919. A major concern at this time was for wildlife sanctuaries which Harkin stated could "provide assurance for all time that there was no danger of disappearance of characteristic wildlife". 45

Gordon Hewitt, consulting zoologist, spoke on the "Need for Nationwide Effort in Wildlife Conservation". He stated that in the last decade in Canada, there has been an awakening that, "...of all our natural resources, wildlife is the most sensitive to human interference". 46 Hewitt recognized both the therapeutic and inspirational value of wildlife. With reference to Banff National Park, he stated that:

"It is the presence of mountain sheep that gives an added charm to the landscape, and the decorative value of our wildlife makes a special appeal to tired dwellers of our cities seeking refreshment in the wild solitudes ...: 47

In 1920, the federal government decided to disband the commission due to its apparent duplication of government work. 48 Some cite jealousy and rivalry which had existed between the government and this semi-autonomous body as the reason for its closure. 49 The facts concerning the issue are not historically clear. In the same year, Hewitt died of pneumonia. In many ways both these events signalled an end to the con-
ervation cause. Hewitt was in the process of writing a book entitled Conservation of Wildlife in Canada, which was subsequently published in 1921.

Certain conservation ideas were born or endorsed by this commission such as tree planting of headwaters, wildlife sanctuaries, the adoption of professionally acceptable forestry practices by lumbermen, the benefit of forests to stream regulation, health planning and town planning. All of these can be seen surfacing later in the conservation movement.

Conservation advances were being made along these same lines on a provincial level. Burlington Beach, a local recreational spot, was established as a park in 1907. In 1913, Quetico was proclaimed a park. It was the increasing concern for wildlife protection, especially moose, which led to the initial reservation of Quetico as a "wilderness area" in 1909. Both W. A. Preston, MPP Rainy-River, and General C. C. Andrews, the Minnesota State Forestry Commissioner, claimed that Quetico was the last great reservoir for moose left on the North American Continent. The Deputy Minister, Aubrey White, expressed concern for the large stands of pine still remaining in the area. Although initially only protected as a forest reserve in 1909, when the provincial park was created in 1913, protection of game was stated in the Annual Report to be the chief objective of the park.
Meanwhile, the Fisheries Branch, which was established in 1898, was incorporated into the Game and Fisheries Branch in 1907. Later, in 1914 it acquired a Deputy Minister, effectively establishing the Department of Game and Fisheries. As early as 1903, the sale of game fish was prohibited by an order in council to abate depletion. In 1909, Kelly Evans conducted a Royal Commission into the state of Ontario's game and fisheries which stated that although the laws were adequate, the department needed enforcement.

Also during this period, much research on reforestation was being done by E. J. Zavitz, a forester at the Ontario Agricultural College at the University of Guelph. In 1908 Zavitz published a report on the "Reforestation of Wastelands in Southern Ontario" through the Ministry of Agriculture. Also, in that year he started a continuing reclamation project in Norfolk County where he grew and distributed trees for regeneration purposes. The County Reforestation Act of 1911 allowed the county to enter into agreement with the province in the establishment of forests of ten thousand acres or more. Later in 1912, Zavitz was hired as the first Provincial Forester in the new Forestry Branch.

Although he brought his reforestation section with him, Zavitz found the chief concern in this new department was not regeneration but fire protection. The administrative head, Aubrey White, died in 1915 and with him ended a whole era of history. With White gone and World War 1 in progress,
the Department floundered. Zavitz and his assistant, Dr. J. H. White, collaborated to define the programmes and priorities of the newly established Forestry Branch for the post-war years. Three lines of policy were established:

(1) regeneration work in Southern Ontario

(2) Forest Fire Protection Act of 1917 as a basis for sound forestry work in the North

(3) forest inventory throughout the province

Following World War I, economic expansion was favourable to the development of new forestry programmes. Zavitz had hired twelve professional foresters in his department by 1922. Both regulation and management, however, were needed since the Timber Enquiry of 1920 had already revealed a four man empire that controlled extensive forest and mine lands. These were staked for mining and subsequently stripped of timber. Zavitz now had a policy and staff prepared for this next decade.
The 1920's were a decade of growth for Canada in general.\textsuperscript{1} The pulp and paper industry was booming to feed a voracious American market and professional foresters were filling the ranks of the government's Bureau of Forestry.

Premier Drury, while the Timber Commission of 1920 was still sitting, took steps to reorganize the Department of Lands and Forests. His ideas, somewhat influenced by the Canadian Forestry Association, included elimination of patronage, establishment of a Forest Advisory Board and the transfer of responsibility of forest resources to competent, technically trained personnel.\textsuperscript{2} To complete this task, Drury hired Dr. J. H. Clark, the former first provincial forester, in 1904.

Clark's report was considered radical as it dealt directly with the political associations of the government and lumber industries.\textsuperscript{3} He stated that,

"...hard luck stories of sick wives and children, personal losses and interesting angles of local political situations and such, have absolutely no place as a part of a business transaction, having to do with the care of the public forest laws or the sale of the public forest products". \textsuperscript{4}

He recommended, as he had sixteen years earlier, that the Doyle Rule for measuring timber was inaccurate as it tended to underestimate the sums which the lumbermen should be paying to the province. The lumbermen's wrath was again raised and the government decided that a change was not worth
the political trouble it would cause. Other suggestions in Clark's report were not implemented for in 1923, Drury's government was replaced by the Conservative administration of G. H. Ferguson.

That same year the Second British Empire Forestry Conference was held in Montreal. Both European and Indian influences were strong, and the experts, by implication, criticized Canada for the inadequacy of her conservation activities. However, the early twenties did see the establishment of two provincial parks--Long Point in 1921 and Presqu'ile in 1922. Both of these parks had long been recreational areas where much land was either sold or leased to cottagers.

When the government changed hands again, the Honorable G. H. Ferguson based his resource policy on the encouragement of development and industrial expansion. The quote below best exemplifies his view of government and industrial relations:

"What the Crown expects is a reasonable compliance with the covenants and obligations and it is always ready and willing to give consideration to difficulties that may arise to prevent the strict observance of the letter of the contract...we are in a way the latest shareholders (in your company), because we contributed the power and timber at a very reasonable price that will undoubtedly enable your organization to flourish". 8

It was this attitude which enabled the Thunder Bay Company, Nipigon Corporation, Provincial Paper, Fort William Paper and Great Lakes Paper to divide among themselves "practically the entire forest resources of the Lake Superior Region". The pulp and paper industry expanded and flourished.
Within the Department of Lands and Forests, Forestry was given an elevated status with the appointment of Zavitz as Deputy Minister of Forestry in 1926. The following year the Forestry Act of 1927 gave the Minister the power to expropriate land for forestry purposes. Both this act and the Provincial Forests Act of 1929 reinforced the idea of land segregation. The Pulpwood Conservation Act of 1929 required all pulp companies to supply an inventory of their holdings and to plan on a sustained yield basis.

Although the Forestry Act of 1927 did set up a board of foresters to advise the government on research needs, the legislative measures cited above amounted to little in practice. With the Trade Depression, the forestry branch became one of the victims of economic cutbacks and by 1929 the advisory board was defunct.

Of note is this period is the Parks Act of 1927. This Act gave the Minister the right to withdraw timber from cutting within parks for "watershed protection, game preserves and shelters, or any other purpose." The Act however required a barrage of public pressure to initiate its enactment in 1941.

The expansion of the pulp and paper industry in the earlier years, resulted in large surpluses when the Depression hit in 1929-30. Ontario lumberyards were full of unsold timber and newsprint was stocked in the warehouses. Many huge pulp companies had fallen into receivership with no markets.
To compensate for the economic hardship, the government made a series of concessions to lumber companies. Firstly, in 1930 they were allowed spread payments of Crown dues over a longer period without interest. In 1933 payment was reduced outright to sixty percent. In 1934 reductions of fifty and eighty percent were offered. These were considered small favours by the industry.¹⁴

The early thirties also saw the result of years of deforestation in Southern Ontario -- damaging floods. In 1931, the Boards of Trade representing municipalities along the Grand River petitioned the government to help find a solution.¹⁵ No action was taken. Also in that year, the Federation of Ontario Naturalists resulted from a meeting of seven local naturalist clubs in Toronto. The impetus behind this union was that "concerted action could be taken on matters such as governmental legislation affecting wildlife".¹⁶

Although the Department of Game and Fisheries had established a biological section in 1952, and an Experimental Fur Farm the following year, it was a small department and inadequate enforcement was still a problem.¹⁷ Though Lakes and Rivers Improvement Act of 1927 contained a section prohibiting water pollution, little use was made of it by the Department.

In 1934, the Conservative government which had been in power for ten years was called on the carpet for gross mismanagement of the forest resources. Mitchell Hepburn, the
young Liberal leader, maintained that the revenue from the forest resources was not being used for the people of Ontario but to support the Department of Lands and Forests. He also accused the government of allowing monopolies to control large areas of land while the forest industry stagnated. The Conservative government, given the industrial concessions of the 1920's had no defence and fell.

In 1934 Hepburn, the new Liberal Premier, announced that his government would "make our natural resources available to enterprise...we will revive our forest industries and restore the Provincial revenues".

The new government brought an overzealous shake-up to the Department of Lands and Forests. The reign of Frederick Noad, formerly a journalist, who replaced Zavitz as Deputy Minister of Forests, is remembered as a traumatic experience. Only eight officers retained their positions after a purge which involved many firings and demotions.

Outside the government, local municipalities were becoming concerned about conservation and reforestation. A very dry season in 1936 intensified their concerns. Watson H. Porter, managing editor of the Farmers Advocate Magazine, London, stated:

"Wells that never failed before went dry, springs dried up. The situation indeed was serious and one could see that the ill effects of drought had been intensified by the needless slaughter of trees and the denudation of the countryside. It was obvious that something had to be done".

This problem prompted, in 1936, an initial meeting of nine county representatives of southwestern Ontario in London.
Staff of both the Forestry Branch and Department of Agriculture were present. The following year, a meeting of thirteen counties west of Toronto took place at the Ontario Agricultural College in Guelph. The province was divided into five zones with a provincial committee of fifteen representatives known as the Ontario Conservation and Reforestation Association.\(^{22}\)

In the same year the Hepburn government passed the Forest Resources Regulation Act designed to get the pulp industry on its feet. This act allowed the re-allocation of undeveloped forest lands to encourage more operators. The Department of Lands and Forests in its attempts to stabilize the economy, had informally been policing the forest industry both by the reallocation regulation cited above and in some cases, financial backing.\(^{23}\)

The northwestern section of the Canadian Society of Forest Engineers strongly voiced dissent over the lack of policy in the Lands and Forests Department. When in 1938, a government backed company folded it was suggested that,

"...competent foresters and economists (establish a) qualified, non-political, non-partisan forest service vested with full authority to administer all publicly owned forest lands in the best interest of the people of Canada". \(^{24}\)

On the other hand in the late thirties, the Liberal government became involved in the grassroots conservation movement, associated with Southern Ontario Municipalities.
A survey undertaken by the Ontario Hydro and the Lands and Forests Department led to the formation of the Grand River Valley Conservation Act in 1938. This Act authorized dam construction at Fergus with federal, provincial and local cost sharing. Also in 1938, Ipperwash park was created by Order in Council. A popular swimming and picnicking area on Lake Huron, it had been the object of repeated public representations for six years.

In 1939 Premier Drew, having ousted the Liberals on a platform of forest reforms, initiated an inquiry into the causes of stagnation of the forest products industry and "...all matters pertaining to the administration, licensing, sale and supervision and conservation of natural resources by the Department of Lands and Forests". When the committee met in 1940, Drew pointed out "the very clear necessity for some defined policy on the part of the Department" and expressed hope that a long range programme for protecting the resources managed by the Department could be devised.

With World War II, timber resources were increasingly necessary both for present industry needs and future reconstruction activities. The committee's major task was the establishment of a permanent timber policy.

The Report of the Select Commission, despite its initial objective, did not examine the cumbersome administration of the Department, but rather timber policies. The result was
broad recommendations which generally stated that the sustained yield approach to forest exploitation was a good thing.\textsuperscript{29} The opposition's minority report was somewhat more radical in its recommendations. The major reform suggested was the establishment of a commission which would completely divorce forestry from politics and operate under the direction of men having the highest type of business ability.\textsuperscript{30} Such an administration could protect the resources for the future and plan for post-war employment in the forest industry. Although it was obvious from the Enquiry that the Department's goals were vague and ill-defined and procedures too informal and haphazard, no major changes were instituted. However when F. A. MacDougall was appointed deputy minister in 1941, he had one major objective in mind—reorganization.\textsuperscript{31}
In terms of conservation, the forties were a time of change and initiative both inside and outside the government. Within the Department of Lands and Forests a new era in Ontario land policy was beginning. Following the Select Committee investigation of 1939-40, F. A. MacDougall was appointed Deputy Minister to the Department of Lands and Forests. Reorganization was his chief concern, but since the country was in the throes of the war the process was to be a gradual one. MacDougall was influenced by an American book *Governmental Problems in Wildlife* written by R. H. Connery in 1935.

With the 1941 reorganization, sustained yield forest resources became increasingly important. In reorganizing the structure of the Department, MacDougall created the new branch called Reforestation and Conservation. Under this Branch, which promoted both forest management and reforestation, six reforestation zones were created in the province to serve local residents.

Reorganization also involved the establishment of District foresters in the north. To protect him from the political influences which had plagued the past, five regions were created, each headed by a Regional Forester. However, in the southern part of the province, which was still permeated by political intrigue, district foresters were not employed.

During the war, to control management of woods operation,
the government instituted agreements which were renewable contracts between operators and the Crown. These were valid for 21 years. The Department's role, after these contracts were negotiated and endorsed by the Minister, was to see that they were enforced. Harmful management practices such as highgrading in accessible areas had to be tolerated due to the war.5

The idea of a Forest Resources Commission which would ensure freedom from political influence had not died. Legislation was approved authorizing the commission but no action was taken. Although this proved embarrassing in the election of 1945, the conservatives remained in power. Also at this time, quarrels were arising between the pulp and sawlog operators of the north. Sound management advocated both operators on the same tract of land but they were unwilling to share timber limits.6

To investigate this problem and that of the Commission, the government called a Royal Commission of Enquiry in 1946. As terms of reference for the Commission included a dedication to implementing sound forestry principles. The professional foresters' hopes were raised.7

The Kennedy Report opposed the establishment of a Forestry Commission with the notion that the administration should be responsible to the people through the legislature.8 Kennedy however recommended a Ministers' Advisory Board composed of representatives from labour, education and industry to create a check on arbitrary ministerial power. This was not implemented.
However, serious consideration had been given to timber administration. Kennedy criticized the "tremendous almost incredible waste" and concluded that:

"...unless the public is willing to spend large sums of money on forestry in the next quarter-century, efforts towards improvement or even maintenance of the present forest conditions will be little more than a gesture".9

Not only were industrial operations inefficient but government management and controls were "many varied, diffused and so often in conflict with one another that ignorance of the law threatened to become unavoidable".10

The worst feature of the government agreements, next to inconsistency, was "their assumption that Ontario had large tracts of virgin timber still to be exploited".11 Kennedy clearly stated that this assumption was false—only the Patricia area far to the north and with difficult access remained uncut. Both government and industry, he felt, must work within these limits when establishing forest reforms.12

What Kennedy proposed was a suspension of all timber licences for at least ten years and the pooling of all Crown Lands to assure the industry adequate supplies. All timber areas would be redistributed by watershed and company need. Such measures were "necessary to protect a probable majority of operators against their own folly in wasting wood resources...".13 Also included in his recommendations was that the Doyle Scale be replaced and field staff be increased to ensure enforcement. Although Kennedy's recommendations were not followed immediately,
various changes were already underway within the Department.  

In 1946, with the aid of Professor D. M. Mathews of the University of Michigan, an inventory of the forest resources of the province was launched by the Department of Lands and Forests. In that same year, a Timber Management Division circular stated that the basic aims of a forest management policy was to keep industry in business, and to support its dependent communities. 

With passage of the Ontario Forest Management Act in 1947, the government attained increased control over forest resources by requiring all companies to submit management plans for government approval. In 1951 the Petawawa Management Unit was approved by the Minister--it provided an excellent example of co-ordinated commercial utilization on a sustained yield basis.

At the same time, on another level, concern for conservation was gaining strength, as evidenced in meetings in the thirties and in the subsequent formation of the Ontario Conservation and Reforestation Association (O.C.R.A.) At the Annual meeting in 1941, O.C.R.A., "realizing the vital necessity of conserving our natural resources and appreciating the fact that Canada will be confronted with a vital problem of rehabilitation following the present war", appointed a committee to examine this issue. Later that same year, O.C.R.A. in conjunction with the Federation of Ontario Naturalists sponsored the Guelph Conference; a gathering of all the concerned agencies and interest groups of the day.
The Guelph Conference published a brochure which stated that all the renewable natural resources of the province were in an unhealthy state due to unplanned individualistic exploitation. It was recognized that "natural resources form a delicate balance system in which all parts are independent" and that this necessitated an integrated and co-ordinated approach. Four major objectives agreed upon were:

1. To give coherence and co-ordination to a programme of conservation.

2. To make available to government or municipal bodies the advice and guidance of its members who are recognized as specialists in their respective fields.

3. To give impetus in every possible way to implementing recommendations regarding conservation measures.

4. To disseminate information relating to the present status of our renewable resources and the need for undertaking adequate measures for their restoration.

The Guelph Conference was attended by Federal and Provincial government representatives in Agriculture and Lands and Forests as well as University professors and concerned citizens.

Later that year Premier Hepburn was approached by the O.C.R.A. and an Interdepartmental Committee on Conservation and Rehabilitation was instituted. A. H. Richardson, a Forester with the Department of Lands and Forests was appointed chairman. This body co-ordinated the production of the Ganaraska Report: a pilot watershed study funded by both the Federal and Provincial governments.
The study was to determine "how balanced redevelopment of the watershed could be carried through..." and outlined a rehabilitation programme which would employ 600 men for two years. The provincial government was enthusiastic about the results and in 1944 established a Conservation Branch in the Ministry of Planning and Development. That same year, Professor A. F. Coventry in his remarks at the Conference on River Valley Development in London, 1944 stated, "What river valley development means is the restoration and preservation of all the natural resources of the river valley for they are inseparably parts of a total balance and cannot profitably be managed piecemeal".

In 1946, the Conservation Authorities Act was passed which outlined the three basic principles of the concept as:

1. local initiative necessary to establish an authority
2. cost sharing with the province and federal governments
3. jurisdiction in the watershed

The Conservation Branch in Toronto would provide technical expertise to the autonomous Conservation Authorities. The municipal response was good. In 1946 three authorities were established, and by 1953 there were fifteen. Also in that year the Conservation Authorities Act was amended to encourage recreational use of lands.

This was also the year that Hurricane Hazel hit and the government of Canada appointed a Commission on Hurricane Damage in Ontario. The resulting report laid out the conservation programme which each conservation authority should
carry out. These included; water land use, forestry, wildlife and recreation. However, most of the early authorities saw flood prevention as their principle goal and grants were available for this purpose as well as reforestation. The scope of the authority's activities depended, as it does today, to a large degree on the particular authority.

To return to the Department of Lands and Forests, although enforcement regulations were initiated in the forties, in practice co-operation with industry was the reality. The Kalamazoo Vegetable Parchment Company situation is a case in point.

Commercial fisherman and tourist operators downstream from the KVP Kraft Mill on the Espanola River succeeded in sueing for damages and gaining an injunction for the mill's closure due to the gross pollution it was causing. The provincial government proceeded to amend the Lakes and Rivers Improvement Act to allow the economic advantages of the mill to be considered but the previous verdict was upheld by the Supreme Court of Canada and the Privy Council in London. Finally, to save the mill from closing, the government in 1950 put through a special KVP Act whereby the injunction was dissolved. The government's position on conservation with respect to industry is quite clear.

However, in the late forties, there was evidence that the Department of Lands and Forests was concerned with planning. The Annual Report of 1946 noted that "some study has been given to the best method of development of lands
for recreational, agricultural and other purposes". Again in 1947, the Royal Commission on Forestry advocated the concept of land use in conjunction with planning natural resources. In recommending province-wide land classification, it stressed that is "...only by properly weighing all these (ie. multi-use possibilities) factors that sensible land use may be decided upon". By 1950, an agricultural policy allowed for land disposition for pasturage of fuel supply as well as agricultural use.

Also in 1950 a Select Committee on Conservation was established. The Committee generally dealt with the promotion of good agricultural practice related to soil, drainage, reforestation and demonstration farms rather than urban or industrial conservation related issues.

Conservation was defined as (1) soil depletion (2) drainage (3) flood control (4) reforestation (5) local demonstration farms (6) soil analysis. The recommendations of the report included:

(1) no new townships in Northern Ontario until a basic land use survey recommends it

(2) Provincial Inter-Departmental Committee and Regional advisory Board from the region to make such a study

(3) Government should "formulate a policy with respect to acquiring land for public recreational purposes in Southern Ontario".

With respect to the final recommendation on recreational lands, the process of park establishment up to this time had been haphazard and unstructured. By the beginning of the 1950's the people of Ontario had
become, to an unprecedented degree, an urban, industrialized and affluent society. Sibley and Lake Superior Provincial Parks had been established in 1944 due to vocal public pressure. In the case of the former, this involved one decade of campaign by the Fort William and Port Arthur Chamber of Commerce, who believed such action would reduce unemployment.

In 1953 the government decided to take the task to had and sent seven regional foresters from the Department of Lands and Forests to the United States. The purpose of their visit was to gather information on various national, state and provincial parks with the intent of drawing up a provincial parks policy for Ontario. There was general agreement about the urgency of the need and the provision of more public recreation areas.

In 1954 a new Provincial Parks Act was passed and later revised in 1958. All parks were placed in the Department of Lands and Forests and a Parks Integration Board, which had been established in 1956, was endorsed in its role of developing consistent parks policy. The board consisted of the chairman of the Niagara Parks Commission, the chairman of the St. Lawrence Parks Commission, the Provincial Treasurer, the Minister of Planning and Development and the Minister of Lands and Forests. Later in 1964 the Ministers of Agriculture, Tourism and Information, Energy and Resource Management and Public Works were added to the board's membership. Until its disbandment in 1972, the Board played a key role in the fields of policy and acquisition.
The newly created Parks Division within the Department of Lands and Forests was responsible for park establishment and the number of parks grew quickly. Whereas in 1954 there were only eight parks, by 1965 there were ninety. In park designation beaches were popular sights. In northern Ontario the major consideration for parks was the access from major highways for tourist use, whereas in southern Ontario the criteria was the geographical distribution of the population. Provincial parks were in principle one or two hours drive from main urban centres with the emphasis on "recreational activities which cannot be indulged in at home".

While parks were pursuing a recreational bent, some naturalist groups felt that parks were not fulfilling their role of preservation. "Recreation which interferes with the preservation of natural conditions, such as organized games should be restricted to definite areas..." It was this view which led to the creation of the Wilderness Areas Act in 1959. Areas of public land as near as they might be in their natural state were to be preserved for research, educational purposes, the protection of flora and fauna and the development of historic, aesthetic, scientific and recreational values. The Act specified that resource utilization would be allowed beyond a one-square-mile site designation.
On the other hand, in the larger wilderness type parks—Algonquin and Quetico—fishing was allowed by licence but hunting was generally forbidden. Hunting however, was permitted in certain cases. Waterfowl hunting was allowed at Rondeau, Presqu’ile, Holiday Beach, Darlington and Long Point. Moose and deer hunting was allowed in two townships in Algonquin. 42

In the meantime the Department of Lands and Forests as a whole was making some headway in the field of multi-resource use. In 1954 a "White Paper" entitled "Suggestions for a Programme of Renewable Resources Development" was introduced into the legislature by the Minister of Lands and Forests. The concept of multi-use was clear. The paper stated that the Forest Resource Inventory could provide a basis for the,

"...many and varying uses of land for forests and recreation with their uses for wildlife, the use of streams and lakes for hydro development with their use for log driving and fishery management". 43

Analysis of the timber resources suggested that the government "could only provide for present requirements and normal expansion for twenty years after which immature stands would have to be utilized". 44 To maintain the sawlog industry, the white paper recognized that a shift would have to come as red and white pine stands were no longer available. Reforestation on both public and private lands was seen as a critical key in the remedial programme. 45
In 1956 the first district forester was assigned to southern Ontario and found that he could handle the political aspects of the job. The concept of multi-use and land use planning was moving into the southern district.

In the same year, recreational zoning committees were being established in the districts of the Department of Lands and Forests. This concept of a recreational planning committee was extended to Southern Ontario the following year. A recreational zoning plan, thus established, was to fit into an overall land use plan and the Glackmeyer Report of 1960 was the first attempt at multi-use planning. The intent was to produce a practical solution to land use within a scientific framework. Angus Hills in his Ecological Basis to Land Use Planning defined the plan as the bio-physical capability of the land consistent with the social and economic welfare of the people.

An age-old problem within the Department was that of agricultural settlement. Finally in 1960, a Public Agricultural Lands Committee was established. The committee included the district forester, a local agricultural representative, and the district lands supervisor. Following an examination of resource data and a series of interviews with the applicant, a report was drawn up and taken to Toronto where head office representatives of the Department of Lands and Forests and the Department of Agriculture reviewed it. Finally recommendations were made to the Minister of Lands and Forests. Inappropriate land uses with respect to agriculture were thus minimized.
With respect to fish and wildlife resources in this period, in 1946 the Department of Game and Fisheries merged with Lands and Forests. Under the direction of Dr. W. J. K. Harkness, whose field laboratory had been Algonquin Park since 1937, the emphasis of the new administration shifted from protection and conservation to management. A major problem recognized by this group was the water pollution of the Great Lakes which had already caused the loss of the salmon fisheries. Later, in 1946-47, and again in 1949, the Department hired a chemical engineer to investigate cases of pollution in Southern Ontario. Finally, in 1951, a Pollution Control Board was set up to handle the increasingly large number of water pollution prosecutions, and in 1957 the Ontario Water Resources Commission took over this responsibility.

Wildlife management began in this period with the institution of highway check stations for deer information in the late forties. As early as 1945, the government had established a wildlife research station in Algonquin Park. In 1949 and 1950 the moose season was closed to enable evaluation of the state of the moose. The census taken revealed an abundance not initially expected. Extermination of other wildlife was encouraged by the bounty system. Both bear and wolves had bounties from 1942 and 1830 respectively. The bear bounty was lifted in 1961 and the wolf bounty in 1969.
The concept of game preserves which started with Jack Miner in 1917 was replaced by the idea of management in 1948. A programme of trapline management involving the quota system was initiated in that year. By 1950 all the Crownland in the province was under this system which aimed to adjust the harvest to the supply.

This era saw the formation of the Conservation Council of Ontario in 1952. The seventeen member organization included representatives from field naturalists, agriculture, and anglers and hunters' groups. These public groups both individually and as a unit became increasingly vocal in the later years.
In the opening address of the National Resources for the Tomorrow Conference in 1961, Hon. Walter Dinsdale, Federal Minister of Northern Affairs and National Resources stated the purpose as:

"...to discuss the wise management of renewable resources...in the interest of generations yet unborn". 1

He stated that man, essentially egocentric, is inclined to be short-sighted and suggested that "the Conference was on a high moral plane; indeed (he felt) it expressed the essence of our Christian ethics". Through conservation "we must be able to turn resources into income and employment opportunities". The conference put an end to the idea of resource inexhaustibility in Canada and advocated the idea of regional planning to optimize resource use. The Canadian Council of Resource Ministers was established as a result of the conference.

Recognizing the broad aspects of multi-land use, the Department of Lands and Forests established a Land Use Planning Section in 1962. The multi-use concept was described as:

"...the deliberate and carefully planned integration of various uses of land so as to interfere with each other as little as possible with due regard for their importance in the public interest". 3
This included the production of timber; provision of nature reserves; fish and wildlife habitat protection; provision of outdoor recreation; protection of watershed land for the growing of trees and maintenance of water supplies; and the development of other resources such as agriculture and mining.\(^4\)

In 1962 the Government created the Killarney Recreation Reserve designed to initiate the multi-use concept into the recreation field. Professor Norm Pearson, a town planner with the University of Waterloo, was hired and the project was enlarged to the North Georgian Recreation Reserve. Pearson's approach to the project was that,

"...we have a duty to treat the whole region as a living museum, a way of explaining some of the mysteries of geological evolution--some of the fascination the ecologist feels in describing the way landscapes develop..."\(^5\)

Related to this thrust for land use planning was a federal-provincial co-operative agreement in the Agricultural Rehabilitation and Development scheme. Both levels of government recognized that agricultural land was being lost due to increased costs and financially encouraged three types of projects: (1) projects for alternate land use (2) rural development project (3) soil conservation.\(^6\)

At the same time management policy was developing in other parts of the department. Dr. C.H.D. Clark,
who took over the Division of Fish and Wildlife in 1960, stated the following management principles in a 1961 circular:

1. sustained yield maintained by an annual harvest
2. harvest of game and fish if at all possible should include the entire annual increment
3. fish and wildlife concerns should be integrated with other land use planning concerns
4. as recreation was important, both for our economy and the morale of the population; any plans, programmes or legislation must be directed towards promoting rather than restricting use.

Logging was recognized as an important tool which managers must learn to use.

In 1962 Rachael Carson's popular book, Silent Spring was published. This book is considered to be the spark which aroused public concern for the environment in North America. Also in this year the Conservation Authorities joined the Department of Lands and Forests. Originally concerned with flood control; the scope of their activities had widened to include soil conservation, land use, forest conservation, wildlife preservation and recreation. The union, however, was an unhappy one; and in 1964 the Branch moved to the new Department of Energy and Natural Resources.

The management of forest lands on a sustained yield basis had been the responsibility of the timber industry since the 1950's. In 1963, with an increasing backlog
of cutover areas unattended, the government took control
and accepted the financial responsibility for regenera-
tion.\textsuperscript{12} By the end of the sixties the government also
had assumed responsibility for the forest inventory which
was required within each timber limit area.

In 1966 with increasingly low supplies of hardwoods
in Southern Ontario, the government passed the Woodlands
Improvement Act.\textsuperscript{13} The Act enabled the proponent to
write off taxes on land managed by the Department.
Most of the expense and management would be carried by
the Department at the owner's discretion.

The sixties revealed increasing concern for recrea-
tional pursuits both within and outside of parks.
In 1963 the Land Acquisition Section was created to
provide public access to Crown and public lands for
hunting, fishing, forestry and recreation. In 1966
this branch was united with the Land Use Planning Section.
Of great significance in the evolution of the parks
system was the 1967 policy paper on park classification
and land zoning. Its purpose was to "provide a mean-
ful framework for the administration of the provincial
parks system".\textsuperscript{14} A specific objective was:

"to protect by explicit policy declaration out-
standing areas of natural, cultural, historic
and scientific significance for the recreational
and educational use and enjoyment of present
and future generations".\textsuperscript{15}

Five classes of parks were established in 1967:
primitive, wildriver, natural environment, recreation
and nature reserve. Each class of park was planned for
varying amounts of use. Each class was subsequently defined as follows:

Wilderness Parks - are substantial areas where the forces of nature are permitted to function freely and where visitors travel by non-mechanized means and experience expansive solitude, challenge, and personal integration with nature.

Nature Reserves - are areas selected to represent the distinctive natural habitats and landforms of the Province, and are protected for educational purposes and as gene pools for research to benefit present and future generations.

Historical Parks - are areas selected to represent the distinctive historical resources of the Province in open space settings, and are protected for interpretive, educational and research purposes.

Natural Environment Parks - incorporate outstanding recreational landscapes with representative natural features and historical resources to provide high quality recreational and educational experiences.

Waterway Parks - incorporate outstanding recreational water routes with representative natural features and historical resources to provide high quality recreational and educational experiences.

Recreational Parks - are areas which support a wide variety of outdoor recreation opportunities for large numbers of people in attractive surroundings.

During this period, on the international level, Canada became involved in a programme sponsored by the International Union for Conservation of Nature and Natural Resources.

The International Biological Programme involving fifty-eight participating nations, was started in 1964 to "study the biological productivity of the earthland and the biological --basis of human adaptability and welfare". A specific mandate of the programme was
"to identify and preserve samples of the world's biological communities for research, demonstration and education and as baselines for assessing human impact on the world". As the programme guidelines were broad there were variances in the methods and definitions proposed. However, the Canadian subcommittee composed of University and Government scientists from across the country adopted the following mandate: (1) protection and maintenance of ecological and genetic diversity (2) outdoor laboratories for basic and applied research on natural ecosystems (3) environmental 'benchmarks' with which to compare landscape changes. A definition of these areas, called ecological reserves, was presented by the Maritime Panel of the Canadian subcommittee:

"An Ecological Reserve is a legally protected natural area where human influence is kept to a minimum. Change itself a natural phenomenon, is not interfered with, but is allowed as far as possible to proceed uninterrupted by man. Natural areas are segments of a regional landscape--samples of environmental systems or ecosystems. They contain examples of characteristic of rare plant and animal communities or are areas of biological or physiological importance. Though most natural areas comprise areas with a history of relatively little human disturbance, ecosystems that have been modified by man have value for scientific research. Such areas offer an opportunity to observe developmental processes in the modified ecosystem and to study distinctive habitats, soil conditions and plant associations that result from man's influence". 20
The thrust of this programme versus other types of recreational areas is also clearly outlined by the Panel.

"Ecological Reserves are established for scientific research and educational use. They are NOT another type of recreational area. The term "reserve" is used rather than "preserve" to emphasize the productive use of these areas for scientific and educational purposes and to indicate the function these perform as natural reservoirs of living materials". 21

International Biological sites (IBP-sites) were identified across the province of Ontario. Field crews operated out of the University of Toronto during the ten year programme.

On the national level the Canadian Council of Resource Ministers sponsored a conference on Pollution and our Environment in 1966. Pollution was recognized as a reality and defined as "wastes beyond the limits of mans' tolerance and nature's self-cleaning capacity". 22 The objectives of the conference were, to discuss the nature, extent and effects of pollution and assist in the establishment of control measures. 23 The problems of pollution were recognized as "the product of a high degree specialization occurring in our society". 24

At the conference Ontario's establishment of the Ontario Water Resources Commission in 1958 was recognized as a leader in the transition from the public health phase of water pollution control to the broader multi-use aspect. Ontario's legislation on Air Pollution was also the first in the country. 25 A concern of the
conference was dealing with, planning for, and safeguarding the "quality of life which our children and our children's children have a right to expect". 26

Another national conference of note was held in 1968. Canadian National Parks Today and Tomorrow was sponsored by the University of Calgary and the National and Provincial Parks Association. The broadening aspects of park use were expressed in such papers as "The Role of Ecology in National Parks" by Ian MacTaggart Cowan, "Research Needs in National Parks" by Robert Lucas and "Education and National Parks" by Doug Pimlott. 27

In 1970 President Nixon, in a report to the United States Congress called the environmental concern the first attempt at a conscious and systematic appraisal of the quality of the national environment. 28

The increase in environmental concern in Ontario cannot be pinned to an exact date--suffice to say the mid-sixties to early seventies. At the 1967 Ontario Conference of Pollution Control the main theme was dissemination of information to the public. 29 In 1969 there was a public outcry against the use of DDT until finally, in 1972, it was banned except for bat control. Pollution Probe, an environmental activist organization, was formed in 1969. The Niagara Escarpment Protection Act was passed in 1970 to prevent destruction of the escarpment landscape and its amenities. 30 In that same
year, with the growing problem of soil pollution and industrial and domestic wastes, the Waste Management Act was passed. Control of Pits and Quarries were introduced by the province in 1972 as public tolerance to the noise and resultant landscape destruction increased. 31

In 1971 the Ministry of the Environment was established and the Environmental Protection Act incorporating the provisions of both the Air Pollution Control Act and the Waste Management Act was passed. This new Ministry provided a centralized agency concerned with pollution control and environmental management of air, water and waste disposal. 32 The broader concept of natural resource management was presented in the goals of the newly created Ministry of the Environment. These are:

"To ensure proper control over the emission of contaminants into the natural environment for the purpose of achieving and/or maintaining predetermined standards of environmental quality.

"To ensure that proposed programs, projects, policies and legislation in Ontario or affecting this province incorporate the necessary environmental safeguards through involvement of this Ministry in all aspects of provincial land use planning.

"To foster the improved management of waste and water to achieve a more efficient use of natural and material resources.

"Where the above measures are not sufficient, to develop specialized techniques for the restoration and enhancement of environmental quality".33
With this government reorganization, the Department of Lands and Forests with the addition of the Conservation Authorities became the new Ministry of Natural Resources. In 1971, the Endangered Species Act was passed and in 1972, the Land Use Co-ordination Branch of the new Ministry initiated a strategic land use planning process.