An Analysis of the Scientific Research Undertaken in Ontario Provincial Park*†

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Abstract

Despite having a long history of scientific research, little was known until recently about the scope of the research undertaken in Ontario provincial parks. A research project was started during the summer of 1997. The main objective of the research project was to collect the approved research application records from the various park administrative offices. A database was created and an analysis of the records was undertaken. A number of findings help to provide insight into the scope of research in Ontario provincial parks. Biological research was by far the most common type of research undertaken. Research efforts in provincial parks tend to be concentrated in relatively few parks. The most intensive period for research in Ontario provincial parks was during the 1970s. Finally, most researchers are from Ontario and associated with universities or government agencies. Knowing the history of research undertaken in Ontario provincial parks has helped to refine our policies and strategic research directions.

Introduction

On February 28, 1996, the Ontario Cabinet approved a new business model for Ontario's provincial parks programme. Highlights of the business plan include a new name, a new board of directors, revenue retention and greater financial flexibility. As part of the efforts to shape the new organization, staff from the Planning and Research section of Ontario Parks undertook a review of science activities in parks. There has been a long-standing relationship between Ontario provincial parks and scientific research. Research undertaken by Ministry of Natural Resources (MNR) staff, as well as researchers from other government agencies and universities, has made a significant contribution to the protection and management of Ontario's natural heritage. The earth science, life science, cultural heritage and social science studies undertaken by parks staff represent a substantial body of knowledge. However, until recently little has been done to document the breadth

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* This paper arises from a poster paper at the 1999 Annual Meeting at the Parks Research Forum of Ontario.

† Two papers on research activities in Ontario Provincial Parks were presented at the 1999 Annual Meeting of the Parks Research Forum of Ontario. This paper by Mulrooney, Davidson and Beechey of Ontario Parks reported on initial work conducted in 1997 by the Planning and Research Section of Ontario Parks to develop a past research activity database and to undertake a preliminary analysis of the database. The following paper by Lussier, Van Osch and Nelson of the Heritage Resources Centre, University of Waterloo reported on a more detailed analysis and assessment of the database developed by Ontario Parks. This research was conducted mainly in the Fall of 1998 in co-operation with Ontario Parks.

of research activities in Ontario's provincial parks. Information will be presented in this paper regarding a record search, the development of a research application database and an initial analysis of research records.

Ontario Parks

Ontario Parks is part of a worldwide effort to protect the earth's significant natural and cultural features in parks and protected areas. Over 200 countries have established 30,361 protected areas including 13,245,527 square kilometers or 8.84% of the world's lands and waters (Green and Paine, 1997). Ontario Parks has both mission and goal statements. The Mission of Ontario Parks is to "Protect and Enjoy". The Goal of the Ontario Parks is to protect significant natural, cultural, and recreational environments, while providing opportunities for visitors to participate in recreational activities.

Protect

Ontario's provincial park system consists of 272 parks covering 7.1 million hectares or approximately 7% of the provincial land and water base. Provincial parks help to protect the diversity of Ontario's landscape, flora and fauna. The Ontario provincial park system is one of great contrasts. The largest and most northern park is Polar Bear. Situated on the shores of Hudsons Bay and James Bay, the park protects 2.4 million hectares of wilderness. The park has a sub-arctic climate and is part of the low, flat coastal plain of the Hudson-James Bay lowlands. Polar Bear Provincial Park is home to polar bears, caribou, walrus, seal, beluga whale and migratory birds. Situated approximately 1,500 km to the south is East Sister Island Provincial Nature Reserve. East Sister is an island of 53 ha, forming part of the Lake Erie Archipelago. The climate in this area is much like northern California or Rome, Italy. The island has never been cleared and the southern vegetation includes several plants that are rare in Canada, such as the Kentucky coffee-tree and Short's aster. The island is home to great blue herons, great egrets, shorebirds, waterfowl and snakes.

Similar diversity and contrasts can be illustrated using examples from the western side of the province and the eastern side of the province. A distance of 1,500 km separates Lake of the Woods and Voyageur Provincial Parks. Lake of the Woods Provincial Park is located in northwestern Ontario close to the Manitoba border. The park contains 11,800 ha of islands and open water in Lake of the Woods, which provide a safe nesting site for White Pelicans and Common Cormorants. The park's cultural resources include two pictograph sites and a graveyard. Local people use the islands for swimming, picnicking and camping. Voyageur Provincial Park consists of 694 ha situated on the south shore of the Ottawa River near the Ontario-Quebec border. The park provides extensive day use and camping opportunities for the residents of Ontario, Quebec and the United States. The park's forested areas and marshlands provide much needed habitat in this predominantly agricultural area. Polar Bear, Lake of the Woods, Voyageur Provincial Parks and East Sister Island Provincial Nature Reserve are typical of Ontario's unique natural and cultural heritage protected under the *Provincial Parks Act.*

Enjoy

During 1997, over 8.3 million visits were recorded to provincial parks. Ontario Parks provide approximately 18,500 car accessible campsites, 5,400 backcountry campsites and 6,000 educational programs. Millions of people visit Ontario provincial parks to commune with nature, to build family kinship and to re-create themselves. The majority of provincial parks are part of rural settings. Local communities benefit from the protection of the natural environment, the influx of money from park and visitor expenditures as well as increased services for local residents. Thus, provincial parks are enjoyed by people from around the world and are an important part of the natural and social fabric of Ontario.

Under its mandate, Ontario Parks must provide for the protection and enjoyment of Ontario's natural heritage. Natural and social science research can provide information to direct the planning and management of the park system.

Mandate for Scientific Research

Ontario Parks does not have a direct legislative mandate to conduct scientific research. However, regulations under the *Provincial Parks Act* state that "Except with the written permission of the Minister, no person shall, conduct research within a provincial park"; and in this indirect manner, the significant relationship between parks and scientific research is recognized.

There are other areas of policy that point more directly to a mandate for science. These include a mandate for science that emerges from the Cabinet approved goal of the provincial parks system: "To provide a variety of outdoor recreation opportunities, and to protect provincially significant natural, cultural, and recreational environments, in a system of provincial parks". As well there are the four objectives of the provincial park system—Protection, Recreation, Heritage Appreciation, and Tourism—and the nine guiding principles: permanence; distinctiveness; representation; variety; accessibility; coordination; system; classification; and zoning for the provincial park system. In addition, key operating principles upon which the Ontario Parks model is based provide a mandate for science. The operating principles are: natural and cultural heritage protection; customer service; self-reliance; and, accountability and entrepreneurial environment. Finally, Ontario Parks is part of the Ministry of Natural Resources which has a mandate for science and technology: "To develop and transfer timely, relevant and practical science and technology in support of the Ministry's goal to contribute to the environmental, social and economic well-being of Ontario through the sustainable development of natural resources" (Ontario Ministry of Natural Resources, 1996).

In recognition of Ontario Parks' mandate for science, a strategy for science and information has been developed which sets the direction for the research application database: "The Research and Information Task Team will now focus on preparing an inventory of past and present research and information activities and improving upon existing research and information policies and procedures" (Ontario Parks, 1997).

The lack of a clear legislative mandate and definitive policy direction for research in provincial parks has lead to problems which are noted in the following sections. Two of the most fundamental improvements would be to recognize the importance of research in the *Provincial Parks Act* and to provide a clear legislative mandate for scientific research.

Historical Records

In 1997, as part of the review of Ontario Parks science activities, it was found that a great number of research records from park staff were available. A large quantity of historical records have been kept regarding research applications. However, the research undertaken by MNR staff has often not been accompanied by a research application. There has been a long-standing policy requirement for external researchers to submit an application to conduct research in provincial parks. Sometimes, internal researchers have completed an application to conduct research in provincial parks. Often this is the only record of an MNR scientist undertaking research in provincial parks. The lack of clear and uniform policy has been detrimental to the documentation of research in provincial parks. This could be remedied through more definitive policies surrounding research and the need for an overall research strategy. Therefore, the analysis of records is limited to internal researchers having an approved research application and external researchers.

Organizational change has added to the complexity of the task. Through successive re-organizations, retirements, turn-over, attrition and office moves, it became clear that files were missing, particularly from the mid-1980s through to the 1990s—a time of intense change in the Ontario government. During the summer of 1997 a records search was undertaken at park administrative zone offices across the province (Figure 1). A more extensive collection of records was completed, however, not all of the records were recovered for each administrative zone. It was decided to work with the files that were collected and to try to collect the missing records over the long term. Thus, this analysis of scientific research in provincial parks is limited to the completed and approved research applications retrieved in 1997 and it does not represent a complete record of scientific research undertaken in Ontario provincial parks. It is hoped that over time, through ongoing efforts and policy changes, a full accounting of scientific research in parks will be recorded.

Creation of a Research Application Database

The volume of paper records did not allow for easy summary and analysis so a database was created to help to manage the research application information. The database was created using Microsoft Access software. The research applications contained a wealth of information, however, the following 22 fields noted in Table 1, were found to be most useful for summarizing and analyzing research activities.

Each field contains unique information about the research project. However, over the years the research policy has changed, as has the MNR and administrative

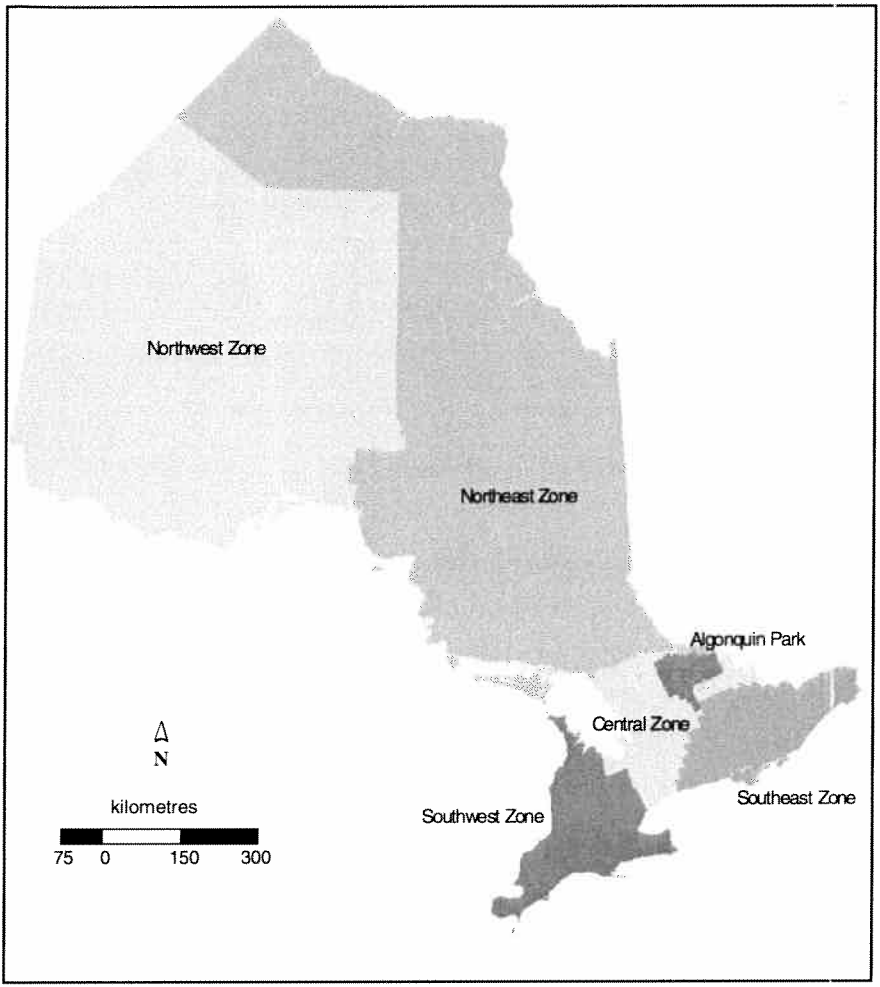

Figure 1: Ontario Parks Administrative Zones

structure. The organizational and policy changes affected the structure of the information collected. Essentially, the fields in the database are a mix of old and new. The newer fields such as interim report, results, and location of publication reflect the new direction toward the tracking of research in parks. For the purposes of this paper, information from the following six fields was analyzed and presented: year, discipline, park, zone, institution and address.

Field	Description
Year	Determined by the year the research was conducted in the park.
Discipline	Biology, Botany, Zoology, Geology, Bedrock Geology, Geomorphology, Environmental Studies, Physical Geography, Ecology, Anthropology, Business Administration, Economics, History, Marketing, Sociology, Leisure and Recreation Studies, Geography, Recreation/Resource Planning, Land Use Planning, Landscape Architecture/Site Planning, Computer Science, Engineering, Forestry, Archaeology.
Park	The park or parks in which the research is being undertaken.
Old Region	The previous regional administrative structure under which parks were administered.
New Zone	The current park administrative structure.
Old District	The previous district administrative structure under which parks were administered.
Title	The title of the research project as stated on page one of the research application.
Name	Name of principal researcher or team leader.
Address	Address of principal researcher or team leader.
Telephone	Telephone number of principal researcher or team leader.
Internet	Internet e-mail address of principal researcher or team leader.
Advisors	The names of any advisors. Primarily, for student research applications.
Institution	The name of the supporting institution or foundation.
Grant Support	The name of the granting institution or foundation.
Application Date	The date upon which the application was received.
Approval Date	The date approved by an authorized MNR official.
Conditions of Approval	Any special conditions of approval are noted in this field.
Validation Period	Generally once a research application is approved it is for a period of one year. However, the approval can be shorter and is noted under a special validation period.
Interim Report	A field to note if the interim was received. Interim or field reports are sometimes requested. The reports are generally to be received before the end of the fiscal year - March 31st.
Validation Period	Generally once a research application is approved it is for a period of one year. However, the approval can be shorter.
Final Report	The date when the final research report, publication or thesis was received.
Results	The stated objective or objectives of the research as it pertains to Ontario provincial parks. This information is generally stated in the research application.
Location of Publication	Publications and theses.

Table 1: Database Fields

Analysis of Records

The information was analyzed using the table and query features in Microsoft Access. At the time of the analysis the database contained a total of 1059 records.

Research Projects by Administrative Zone

As displayed in Figure 2, Algonquin Park had the highest number of approved research projects at 399. The Southeast and Northeast zones followed at 180 and 138 research projects respectively. A number of research projects were not linked with an actual zone and are represented by the unspecified category. In addition, a number of parks that have been deregulated are accounted for in the deregulated category.

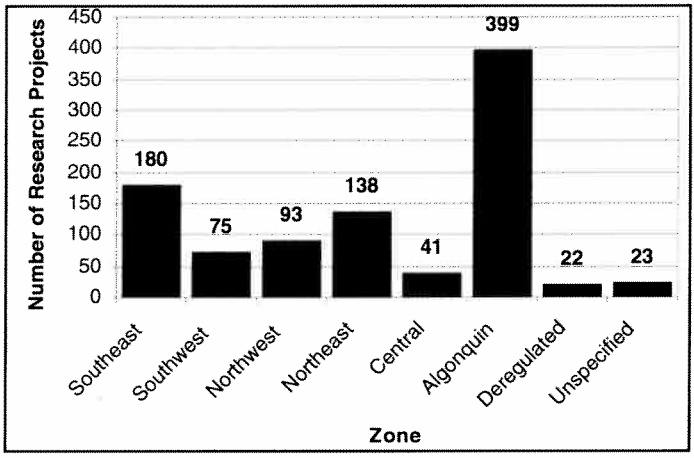

Figure 2: Research Projects by Zone

Research Activity by Park

As per Figure 3, Algonquin Provincial Park had the highest number of research projects. Five other provincial parks—Killarney, Rondeau, Presqu'ile, Long Point and Lake Superior—recorded significant, but much lower levels of research activity. Algonquin's research dominance can be explained by its age (105 years), the wilderness-like setting close to the large urban centre of Toronto, an established research infrastructure (Wildlife Research Station, Harkness Fisheries Research Station) and historical links to internal and external researchers. The five other parks noted above, are easily accessible to a large percentage of the Ontario population.

Research By Decade

The earliest records of approved research activity were during the 1930s (Figure 4). Research activity remained relatively flat until the 1960s and peaked in the 1970s. Research activity has been in decline since the peak of the 1970s. The research peak in the 1970s can be attributed to the rapid expansion of the Ontario provincial parks system coinciding with a high point in the environmental movement. This expansion generated increased interest and more government funds were available to support research projects.

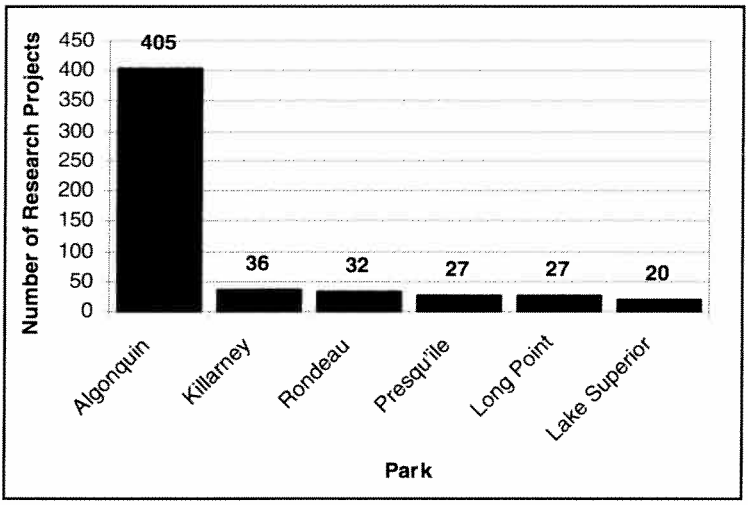

Figure 3: Number of Research Projects by Park

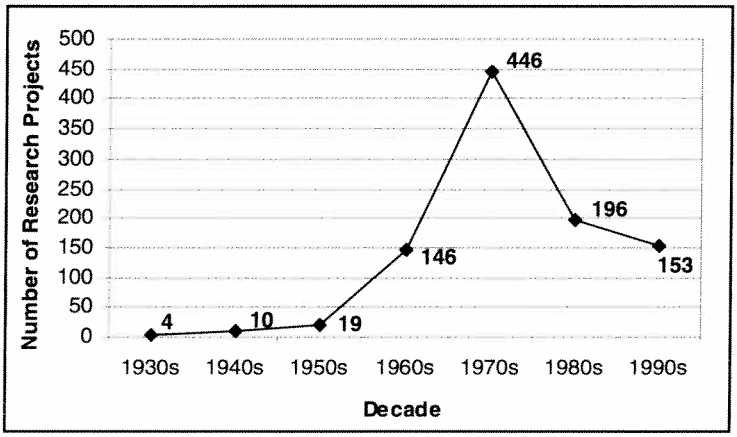

Figure 4: Research by Decade

Institutions

Research has largely been undertaken by Ontario universities and agencies (Figure 5). Specifically , the University of Toronto and the University of Waterloo have been leaders in conducting parks related research. The prominent involvement of these two universities is largely due to faculty interest and not the efforts of provincial parks. Other leading institutions include Agriculture Canada and the University of Guelph.

Origin of Researchers

The great majority of researchers have been from Ontario followed by the USA and other Canadian provinces (Figure 6). This is most likely due the proximity of parks in southern Ontario relative to the universities. Greater travel distances consume research funding.

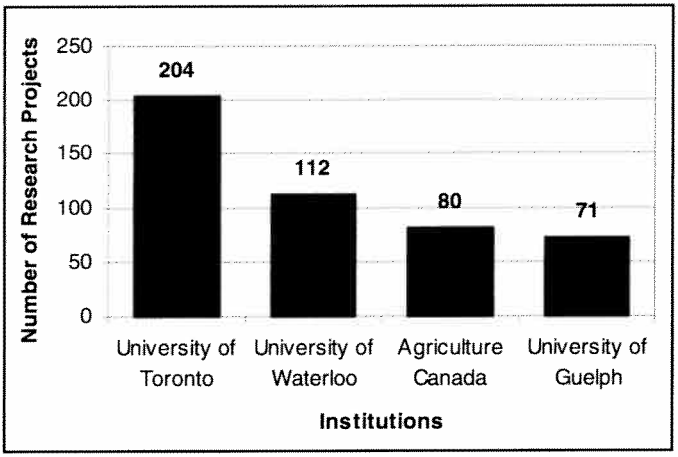

Figure 5: Most Active Institutions

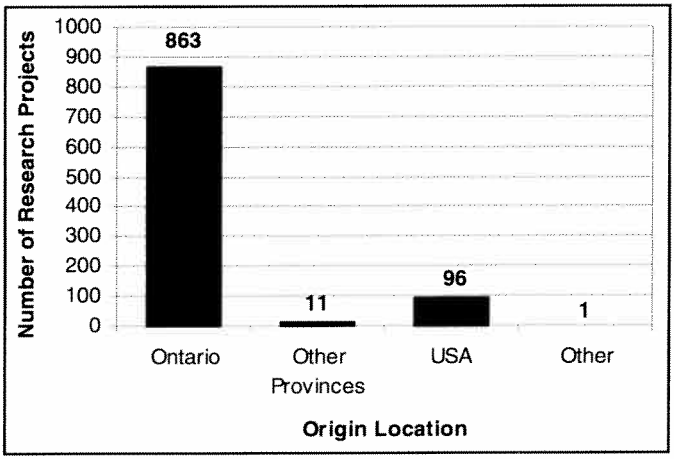

Figure 6: Origin of Researchers

Research by Discipline

Life science research was by far the most common type of research undertaken in provincial parks. The second most common was research with integrating disciplines. The third most common type of research was social science (Figure 7). To a great degree the research at Algonquin provincial park has skewed the results toward life science.

Conclusions and Implications

Ontario Parks needs science to effectively plan and to manage a large and diverse park system. The creation of a research application database was an opportunity to review the direction of research undertaken in provincial parks. As noted previously, the research findings are limited by the records that were available. However, some general trends have emerged. Research in provincial parks seems to be concentrated in six parks in southern Ontario. Research activity appears to

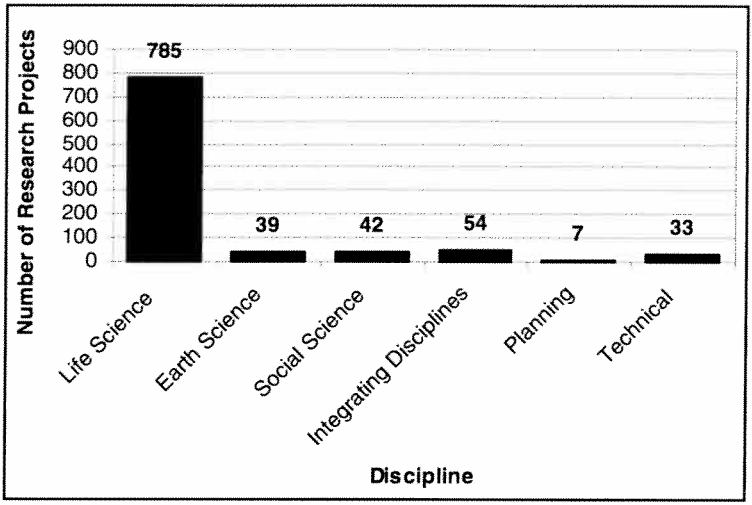

Figure 7: Research Activity by Discipline

have peaked in the 1970s, is in decline, and is most frequently undertaken by researchers in Ontario at University of Toronto and the University of Waterloo. The vast majority of the research undertaken in parks has been life science oriented.

Finally, a number of implications can be drawn from the analysis:

1) A clear legislative mandate would help to strengthen and focus research in provincial parks.
2) Research policy and procedures need to be revised for both internal and external researchers.
3) Research applications and records need to be centralized to ensure proper processing and tracking.
4) More centres of research excellence, such as Algonquin Park, need to be encouraged and developed across the province.
5) Ontario Parks needs to promote parks as places to conduct research and attract a greater range of universities and agencies.
6) Further analysis is required to assess historical research efforts and how effectively they have been applied for park planning and management.
7) Publications emanating from research in parks should be documented.
8) A bibliography of system-wide research in parks should be published.
9) Develop a plan to support research in parks and the development of support programs.

Acknowledgments

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