

Heritage Resources Centre
Centre des ressources du patrimoine

Ontario Parks and Protected Areas Research Forum

*Proceedings of a Workshop
held on
Thursday April 11, 1996
Beachwood Resort
Peterborough, Ontario*

Edited by

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and
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INTRODUCTION

Motivation

The need for a wide array of historic, current and projected information on parks and protected areas is a major one in these demanding and changing times. Geologic, biologic and other scientific information is needed as is information on geographical information systems (GIS) and other advanced approaches to the understanding and planning of parks and protected areas. Archaeological, historical, land use, economic, social and related information on human activities is also increasingly necessary for better understanding, planning and management. Yet budgets are being cut and reallocated and funding to meet information needs often is less than seems to be required to do a good job with parks and protected areas. Many professionals and citizens are unaware of the details of budget, administrative and other changes that are occurring and of effects that they are having or likely to have on research and information needs and opportunities in the future.

Workshop

With the foregoing as motivation, the Heritage Resources Centre at the University of Waterloo and the Frost Centre for Development and Heritage Studies at Trent University collaborated with Parks Canada and Parks Ontario to convene this workshop on the idea of establishing an Ontario Parks and Protected Areas Forum to develop a more effective means of sharing research and information in these challenging times. The workshop was attended by 42 interested scientists and professionals from the federal and provincial governments, consulting firms, universities, and non-government organizations concerned with parks and protected areas in Ontario. A number of presentations and panel discussions were undertaken and three working groups met to discuss responses. The results are presented in these workshop notes as submitted by the speakers. Editing has been mainly for minor amendments and format.

Actions

Agreement was reached on the desirability of establishing an ongoing collaborative research forum as soon as possible. The general consensus was that the initiative should begin with basic linkage services including: an annual meeting to report upon and learn of new research; a newsletter; the preparation of a research directory; and an e-mail network or Internet site. After the workshop, some members of the Heritage Resources Centre, Frost Centre, Parks Canada, and Parks Ontario prepared a draft memorandum of understanding (MOU) which would provide the basic framework for an Ontario Parks and Protected Areas Research Forum. A copy is included in these proceedings. It is currently being considered by Parks Canada, Parks Ontario and other partners.

Acknowledgements

Funding support for this workshop was provided by Parks Canada, Ontario Region with the assistance of Bill Stephenson. Tom Beechey, Parks Ontario, provided advice and helped arrange speakers for the program and John Marsh, Trent University, made local arrangements. Lisa Weber and Patrick Lawrence, Heritage Resources Centre, were responsible for the organization of the registration and program.

*Gordon Nelson
Patrick Lawrence
Heritage Resources Centre, University of Waterloo
May 24, 1996*

WORKSHOP PROGRAM

Ontario Parks and Protected Areas Research Forum

*Thursday April 11, 1996
Beachwood Resort
Peterborough, Ontario*

Workshop Partners

Heritage Resources Centre, University of Waterloo
Parks Canada, Ontario Region,
Frost Centre for Canadian Heritage and Development Studies, Trent University
Parks Ontario

The aims of this initiative are to bring people together to exchange information on what is happening in research in parks and protected areas in Ontario; to learn about new approaches and needs; and to explore the prospects of meeting on an annual basis. This meeting would involve members of the research community in a wider sense, including academics, government, and the private sector.

It is intended that this workshop will focus on a number of important themes related to research in parks and protected areas in Ontario:

- research needs and fiscal restraints (funding and resources);
- learning from the experiences of others (national, regional, and local);
- integrated and cooperative approaches to research;
- role of universities, colleges, non-government organizations, and industry;
- relevant theory and methods in research;
- communicating research (publications, newsletters, e-mail);
- training and education;
- building continuity in research and its application;
- linking monitoring, assessment, and research;
- research priorities and needed actions.

9:00-9:15am

Welcome and Introduction
John Marsh, Trent University

The Challenges and the Workshop Aims
Gordon Nelson, University of Waterloo

9:15-10:00am

Key Note Presentations

The Role of Parks and Protected Areas and the Importance of Scientific Information in Decision-Making
Bill Stephenson, Parks Canada

Research in Parks and Protected Areas in Ontario:
The Role of Universities
John Marsh, Trent University

10:00-10:30am Break/Poster Session

10:30-11:30am Panel: Perspectives on Research and Parks and Protected Areas

Research plays an important role in understanding, planning, and management of parks and protected areas. It also plays an important role in interpretation, education and related activities. The participants will reflect on their experience in research and its application to parks and protected areas.

Stephen Woodley, Parks Canada
Tom Beechey, Parks Ontario
Gordon Nelson, University of Waterloo
Sean Bradley, Gartner Lee Consultants

11:30-12:00pm Discussion

12:00-1:00pm Lunch/Poster Session

1:00-2:00pm Panel: Approaches to Collaborative Research

The speakers will reflect on their experiences in the development of research programs in parks and protected areas from the perspective of attempts to implement broader attempts to research

Jarmo Jalava, Natural Heritage Information Centre
Gene Murphy, Boreal Ecosystem Science Co-operative
Mark Ridgeway, Long Term Ecological Research Program

2:00-2:30pm Discussion

2:30-3:00pm Break/Poster Session

3:00-3:15pm Introduction to the Working Groups

3:15-4:15pm Working Groups

Participants will be invited to join small working groups to discuss the planning for research in parks and protected areas in Ontario and develop specific actions and recommendations. Topics can include: establishing a field research centre; communicating research; preparing a provincial strategy for research; integrated and cooperative approaches to research; research priorities and needed actions; and developing an annual research forum.

4:15-5:00pm Final Plenary

KEYNOTE PRESENTATIONS

The Role of Parks and Protected Areas and the Importance of Scientific Information in Decision-Making

*Bill Stephenson
Parks Canada, Ontario Region*

Ecosystem Management and the New Protected Area Paradigm

Perspectives on the role of parks and protected areas are changing as the concept of ecosystem management — of relating the parts to the whole — takes hold.

Ecosystem management vs. managing ecosystems

- the broad social concept is applicable to protected areas not the production oriented version

Protected areas role in a more sustainable future

- in-situ biodiversity conservation requires protected areas and biodiversity conservation is an essential component of a more sustainable economic and social future

Linked, buffered, and hierarchical parks and protected area networks

- protected areas are a part of the land use mosaic and not 'set-a-sides'; they are connected by compatible land uses and the network is nested spatially

Ecological integrity/ecological health

- ecological integrity is a condition which may be low in urban areas and high in protected areas. At larger scales various areas with degrees of integrity should have overall ecological health.

Ecosystem Management for Ontario National Parks

Parks Canada policy

- the 1989 amendments to the National Parks Act and 1994 Policy open the door to ecosystem management, recognition of transboundary interests/involvement and assessing ecological integrity.

The macro-scale context

- protected areas system plans are boxes without arrows. While more boxes or adjusted box sizes are needed, arrows or connections reflecting macro-landscape functions are needed as well.

Ecological context for Ontario National Parks/Canals

- Point Pelee: movement across Lake Erie and part of the Carolinian Zone;
- Bruce Peninsula: Niagara Escarpment and exchange between Georgian Bay;
- Georgian Bay Islands: south-eastern Georgian Bay and adjacent watersheds over to Lake Simcoe;
- St. Lawrence Islands: the Frontenac Axis and St. Lawrence River Valley;
- Rideau Canal/Trent Severn Waterway: a set of watersheds along the 'compression zone' of southern remnants at the Canadian Shield interface;
- Pukaskwa: part of the Lake Superior watershed that links to the Hudson Bay watershed.

Research and Decision-Making Implications

Protected area management goals must be at landscape/ecosystem scale

- site, issue, or population specific goals must be complemented with goals reflecting higher levels of ecological organization

Previous approach (species/communities, sites) must continue

- these studies must integrate with larger scales and goals

Need to identify Greater Parks Ecosystems (GPE), ecological indicators (data, interpretation, refinement.)

- A GPE is the flip side of Areas of Co-operation and ecological indicators must allow comparison of the protected area in its geographical context vis-à-vis the goals

Also means integration of social-cultural, economic factors

Also means application research - share and communicate to influence values, resource/use allocation, land-use/practices, integrated planning

This is not new - but its context, the urgent need to move towards greater sustainability, is recent.

Ontario protected areas don't presently have this capability

- collectively provincial, federal, and private protected areas do not include connections and integration with their surroundings. This is a major shortcoming.

Research plus what makes it useful, is it used, does it have effects?

- knowledge for its own sake is recognized but if it doesn't contribute to better understanding by decision-makers/public, changes in values/attitudes and subsequently in improved land use or resource allocation decisions have not reached the level necessary for conservation of protected areas and in-situ biodiversity

The challenge is to re-focus research that is future oriented and develop mechanisms to make it happen.

- this forum can develop into a significant vehicle to improve, co-ordinate, and use research in Ontario parks and protected areas.

Role of a Park and Protected Area Network

Secure high quality protected areas should be the core of a hierarchically connected network including satellite natural areas, linkages, and compatible surrounding land and water uses. This network would

be designed as part of a planned land use mosaic, and along with contributions from agricultural, forestry, and human settlement lands, would ensure in-situ biodiversity conservation.

Protected areas of appropriate size usually provide habitat for widely dispersed, sensitive, or rare species, large-scale natural processes, and more complex, less disturbed ecosystems than elsewhere.

They act as baselines for change, controls for the land use experiments in their region and future pools from which natural resources may be drawn. As parks, they are also associated with a range of spiritual, educational, experiential, and economic benefits.

Ecosystem Management vs. Managing Ecosystems

Ecosystem Management:

- human biosphere paradigm
- multi-partner
- inclusive
- complex goals and objectives
- science based

Managing Ecosystems:

- production paradigm
- jurisdictional control
- exclusive
- simpler goals and objectives
- science dominated

Shifting Our Reality Paradigm Towards a More Sustainable Society

Dysfunctional human-biosphere relationship - *ecosystem management* - is a more functional relationship

Ecosystem Management to include: biodiversity conservation
population control
concern for quality of life
non-profit economy

Leading to a more sustainable society with a conservation based land use mosaic

Biodiversity Conservation includes: in-situ conservation
land use patterns
role of protected areas

Protected Areas Network elements: representation,
designation,
protection,
hierarchy,
scale,
core areas,
buffers,
linkages,
compatible resource use

Ecological Integrity and Ecological Health

The aggregate of various local degrees of ecological integrity results in a regional landscape with ecological health

Decision-Making Model

Informs adaptive management for goals, objectives and implementation as part of the decision-making environment

- conservation goals and objectives
- select/design ecosystem integrity indicators
- information to monitor: conservation data base
ecological/human dimensions
information to update
- assess ecosystem integrity indicators

Prerequisites

- recognize protected areas role in more sustainable future
- accept linked, buffered, hierarchical network of protected areas
- contribute to goal/objective assessment
- work in multi-interest/jurisdictional context

Types of Research

- landscape scale ecological processes, effective ecological integrity indicators, responses to management
- human dimensions: compare economic scenarios, determine values/quality of life
- communications: increased understanding, help adaptive decision-making, shift values

Research In Parks and Protected Areas In Ontario: The Role of Universities

*John Marsh
Frost Centre for Canadian Heritage and Development Studies
Trent University*

This paper reviews the need for research on protected areas and the commitment of universities to undertake research. It then focuses on means to link protected areas and universities to ensure relevant research is undertaken. Finally some cautionary comments are offered in the light of past experience with protected area - university research linkages and the current changes in government commitments, especially financial, to protected areas and universities.

Protected area agencies, such as Parks Canada and Parks Ontario, generally, though not always explicitly, recognize the need for various types of research to plan and manage parks. Some protected area agencies have occasionally published lists of research needs. However, most protected area agencies have limited internal capacity, in terms of staff, time and funding, to undertake all the research deemed desirable. Accordingly, they have sought assistance from consultants, academic institutions, and volunteers.

Universities are committed to undertaking research, as are some faculty and departments at colleges. The commitment may be to more or less academic or applied research. Some research may be funded by academic research funds, such as the National Science and Engineering Research Council (NSERC) and the Social Science and Humanities Research Council (SSHRC), some through contracts, while some is undertaken with very little financial support.

It has proved feasible therefore to link protected area agencies and Universities/Colleges to undertake research of mutual interest. However, many more, and more effective linkages, might be developed. The following are some suggestions for some prerequisites for linkages and ideas for more:

1. Inventory of protected area research needs.
2. Inventory of University/College protected area research capabilities.
3. Regular publication on protected area research by Universities/Colleges.
4. Annual forum and workshops on protected area research by Universities/Colleges and protected area staff.
5. Internet site to discuss protected area research.
6. A protected area research publication series,
7. Recognition of some Universities/Colleges as protected area research centres.
8. Identification of the research section/staff of each protected area agency,
9. Exchanges of protected area staff and University/College faculty,
10. Student internships, and voluntary placements in research sections of protected area agencies.
11. A travelling research seminar for protected area staff and University/College faculty.
12. Involvement of protected area staff on graduate student research committees.
13. Memoranda of Agreement between protected area agencies and Universities/Colleges regarding research.

Although much research has been accomplished on protected areas by the agencies responsible for them, and by Universities/Colleges, probably much more can be done, if some of the above suggestions are implemented. Some cautionary remarks on this topic seem essential.

Research costs money whoever does it. Accordingly, protected area agencies may be looking to Universities/Colleges to get research done less expensively, while these institutions may be looking to agencies to supplement their limited academic research budgets. These possibly conflicting perspectives need to be considered when establishing linkages.

The research needs of protected area agencies and the research capabilities and interests of Universities/Colleges may be mismatched. Protected area agencies need to ensure they can respond when Universities/Colleges offer to do relevant research, and the Universities/Colleges need to be able to do the research as and when needed. The ownership of research results and rights to publication need to be clarified when protected area agencies and academic institutions collaborate on research.

The turn-over of protected area staff and University/College researchers, notably students, inhibits sustained and effective research. The current changes in government commitments, especially reduced financial commitments to protected area agencies and academic institutions, are causing both agencies and institutions to focus on activities, other than research, that are deemed more important and urgent.

Nevertheless, protected areas and Universities/Colleges will doubtless continue to exist, and cooperate to ensure the research essential for planning and managing protected areas is undertaken. Our task, is to consider how this can be accomplished more effectively, in new ways, in challenging times.

PANEL ON PERSPECTIVES ON RESEARCH AND PARKS AND PROTECTED AREAS

Science in National Parks Management - Current Science

*Stephen Woodley
Parks Canada*

Introduction

In the context of this meeting for an Ontario Parks and Protected Areas Research Forum four important points need to be made at the outset.

- major increases have been made to do research in Parks Canada in an internal capacity
- linkages with universities and research institutions are strong across the country
- a modern call has been made for science based management, but with little understanding
- we are data rich - information poor

Issues-Topics

Two cases where issues associated with science are raised include:

- Greater Fundy Ecosystem and Science
- Banff-Bow Valley Study

Two key issues in these cases and other similar situations are:

- social science vs natural science
- the lack of lateral thinking

Managing Science

This is rarely done well in protected areas

- managers often misunderstand the process
- we need to foster a science based culture
- science budgets and operational budgets don't mix well
- science cannot fit policy, but must critique policy
- science is never a substitute for good management
- science needs careful care and feeding to be of use

Characteristics of a Science Based Culture

A science based culture is important and should involve the following:

- trained staff - to international standards
- dedicated staff for research and resource management
- a context where inquiry is valued and rewarded
- time is allocated for design, research, publication and liaison
- evaluation is based on science, both formal and informal

Limitations to the Use of Science

Science is basic to good decisions but does have limitations including:

- rarely value free, despite its reputation
- rarely is the answer all by itself
- what is believed vs. ecological literacy
- distinction between science and action
 - gap between production of knowledge and its application
 - precision gap
 - paralysis pit

The need for a network?

In regard to the need for a research network:

- does one exist now ?
- what problems would a new or reformulated network address?
- perhaps focus on key questions where science can inform management?

Perspectives on Research for Parks and Protected Areas in Ontario

*Tom Beechey
Ontario Parks*

Purpose of Presentation

The major purposes of this commentary are:

- to provide views and context for research efforts in protected areas
- to summarize experiences on research activity in provincial parks
- to offer ideas on future directions and initiatives for research
- to provoke thinking on a provincial forum for research and protected areas

Why Research is Important for Protected Areas

Research is important for many reasons including:

- research strengthens the rationale for establishing protected areas and caring for them
- research adds philosophical, intellectual, scientific and educational dimensions to programming
- research generates data, information and knowledge essential for heritage conservation and management
- research provides an outlet for external ownership and advocacy for establishing and managing protected areas

Why Protected Areas are Important for Research

The importance of protected areas for research is often underestimated; among the major contributions are:

- protected areas incorporate a cross-section of unique and representative ecological areas
- protected areas serve as "reference areas", "benchmarks" and "baselines" for ecosystem characterization and assessing environmental change
- protected areas present a wide range of research and monitoring opportunities in highly varied landscape settings
- protected areas offer security of research investment needed for long-term time/trend studies of ecosystems and species
- protected areas offer potential for communications, advocacy and education through interpretative programming
- protected areas can provide access to accommodation logistic and financial support

New Motivations and Rationale for Research

In the last 5 to 10 years some important new reasons for research have emerged, including:

- protected areas are now recognized as cornerstones of ecological sustainability
- *Canadian Biodiversity Strategy* has set a national agenda for ecological sustainability and protected areas
- ongoing efforts to complete systems of parks and protected areas
- management crises arising from poorly designed protected areas
- discipline focus provided by new theory in conservation biology and landscape ecology

Research Streams

Research needs still fall into two basic classes:

- applied research - scientific enquiry aimed at satisfying a defined planning or management need - directly serves protected area(s) objectives
- pure research - scientific enquiry not necessarily aimed at satisfying park planning or management; pursuit of knowledge and understanding which enhances value of protected area(s)

Limitations of Current Research Programming

Some major limitations apply to current research programmes in relation to parks and protected areas in Ontario; these include:

- lack of a comprehensive research strategy
- very limited funding with no earmarked research fund
- few personnel dedicated to research on protected areas
- inadequate review, analysis and application of research results
- obscure promotions and communications efforts

Trends in Research Activity in Ontario's Provincial Parks

Some historic and current trends are:

- long-standing scientific interest and research activity in many provincial parks often predating park establishment
- initial research policy introduced in the 1960s to encourage, document and administer research activity
- promotion of research in provincial parks accelerates interest and activity in the 1970s and 1980s
- ongoing marketing of research opportunities through research catalogue, reporting and professional liaison
- increased focus on soliciting applied research that addresses park planning and management needs
- development of co-operative initiatives with other partners to share expertise and resourcing

A Diverse Record of Research in Ontario's Provincial Parks

Much has been accomplished in research related to provincial parks in Ontario; for example:

- geological surveys with reporting and mapping of bedrock and surficial geology in provincial parks

- shoreline geomorphology and dune ecology of provincial parks on the Great Lakes
- extensive floristic and faunistic surveys and biosystematic studies
- synecological studies including work on old-growth ecosystems, fire ecology, terrestrial and aquatic communities
- historical and cultural research including extensive archaeological surveys and excavations
- long-term, time/trend investigations and life history work on featured species
- socio-economic studies on visitor use and attitudes, recreation trends and tourism

Ontario Parks: A New Enterprise

The role of research can be expected to change with the creation of a new approach to provincial parks in Ontario. Ontario Parks is an Ontario government business model mandated to protect, plan, develop and manage Ontario's system of Provincial Parks while improving its financial self-reliance. Its activities are governed by the *Provincial Parks Act*, the *Ontario Provincial Parks Policy* and the *Ontario Provincial Parks Planning and Management Policies*. The basis of its mandate is the *Memorandum of Understanding between Ontario Parks and Treasury Board* and the *Memorandum of Understanding between the Ministry of Natural Resources and Ontario Parks*.

Goal: To protect provincially significant natural, cultural and recreational environments, and to provide a variety of outdoor recreational opportunities, in a system of provincial parks.

Objectives:

- Protection
- Recreation
- Heritage Appreciation
- Tourism

Vital Statistics:

- 265 provincial parks totalling +6 million hectares
- represent and protect many highly significant ecological areas
- total annual visitation in excess of 8 million people
- economic impact amounting to \$955 million and 14,000 person years
- more than 2 million participants in visitor services programmes
- capitol assets (excluding land) worth \$300 million

Ontario Parks: Strategic Research Direction

Ontario Parks will stimulate and oversee research on heritage values, socio-economic benefits, recreational resources and client/customer satisfaction for environmental protection, heritage discovery and use. In this context Parks Ontario will:

- conduct and encourage research
- explore and develop partnerships
- establish and monitor benchmarks
- develop supporting information systems
- administer research activities
- participate in research forums

Core Survey and Research Initiatives

- ecological surveys, floristic and faunistic inventories
- bedrock and surficial geological surveys
- heritage conservation and resource management studies
- visitor use, recreation, tourism and socio-economic research
- largely descriptive and documentary in scope

Science and Research Partners

Building partnerships is an important activity for Parks Ontario. Current science and research partners include:

- OMNR southern Terrestrial Ecosystems Research Section
- OMNR northern Terrestrial Ecosystems Research Section
- OMNR Aquatic Ecosystems Research Section
- Centre for Northern Forest Ecosystem Research
- Ontario Forest Research Institute
- Natural Heritage Information Centre
- OMNR regional Science and Technology Transfer Units

External Research Partners include:

- national organizations such as The Nature Conservancy of Canada and World Wildlife Fund
- federal government agencies such as Parks Canada and Canadian Wildlife Service
- provincial agencies such as Ontario Heritage Foundation and Royal Ontario Museum
- universities and other research institutions
- partnership initiatives involving Federation of Ontario Naturalists, volunteers and others

Priority Topics for Research

In spite of a history of research on provincial parks in Ontario, the context in which parks find themselves give rise to new information and research needs, including:

- greater park ecosystems and trans-boundary management
- community restoration and featured species recovery
- park system design, ecological integrity and adjacent uses
- marine parks and aquatic ecosystem conservation
- visitor use, carrying capacity and recreational impacts
- better understanding of ecological processes and functions

Ontario Parks: A Research Strategy

Ontario Parks is developing a research strategy which will involve:

- mandate and mission statement
- review of research policy and programme components
- outline of research products and programme outputs
- summary of current research needs and priorities
- approaches to funding and resourcing
- five-year work plan and programme evaluation

Developing a Research Collaborative

Collaboration in research is more important than ever because of basic changes in society and government, including:

- programme funding for research is being reduced
- actual and forecast reductions in scientific personnel
- fierce competition for remaining financial and human resources
- can no longer afford to survive independently
- co-ordination of effort is essential

Potential Partners

The partners we seek include:

- agencies and organizations active in parks and protected areas
- national organizations
- universities, museums and allied research institutes
- industry and other stakeholders

Roles for a Parks and Protected Areas Research Collaborative

An Ontario Parks and Protected Areas Forum could provide the following key services:

- develop common research needs and priorities
- assist in allocating resources to maximize outputs and products
- facilitate transfer and application of research results
- provide comprehensive reporting on "big picture" efforts
- provide new opportunities for professional development
- stage an annual meeting and periodic workshops
- strengthen profile and fund-raising capability

Initiatives to Invigorate Programming for Research

More specifically an Ontario Parks and Protected Areas Forum could stimulate and link key initiatives, including:

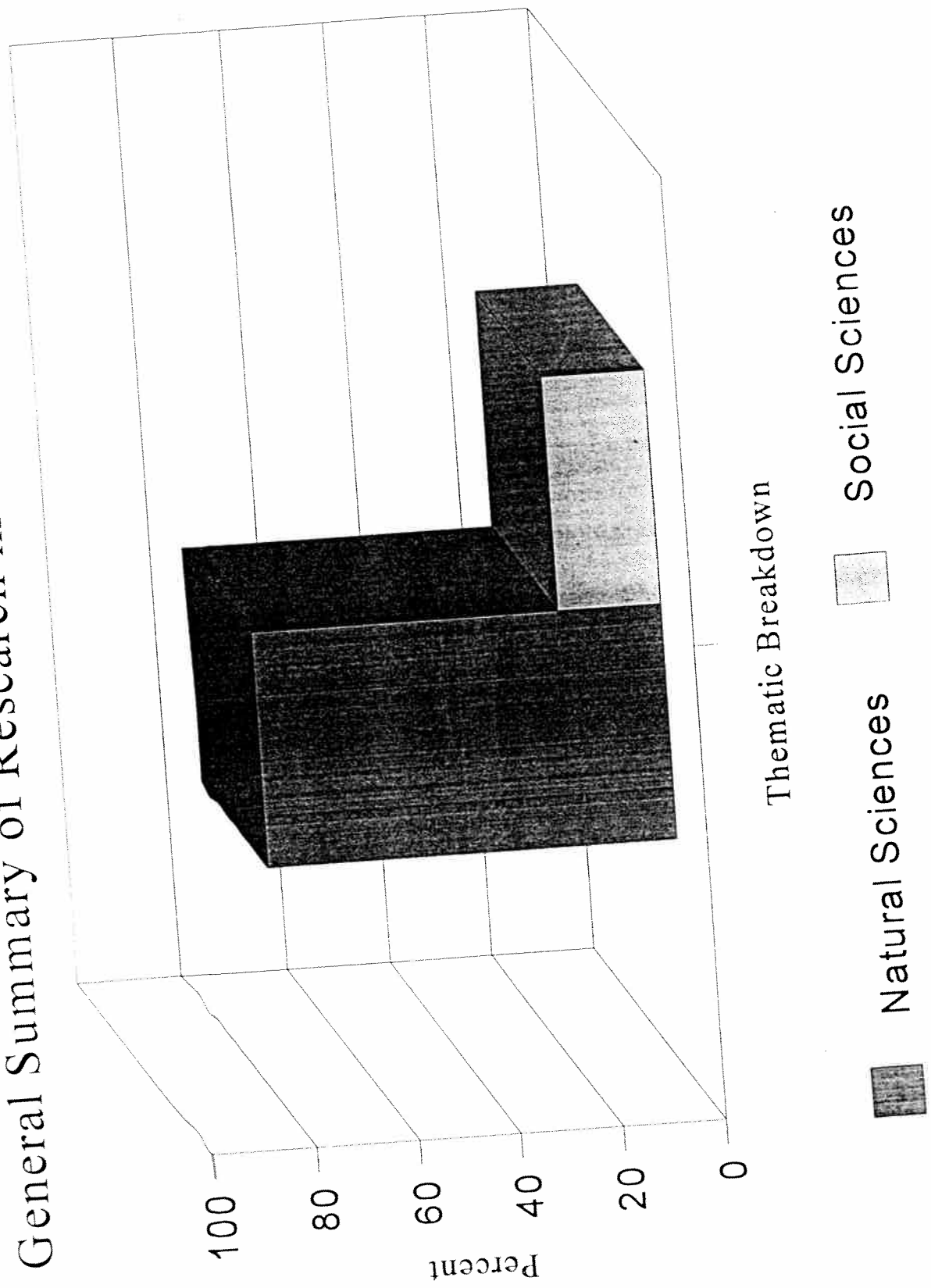
- more effective advocacy, communications and marketing with clients (i.e., World Wide Web, publications, newsletters, etc.)
- extended GIS applications and other technologies for data collection, analysis, reporting and information transfer
- innovative approaches and partnerships for funding and supporting research and its application for conservation
- developing a common prioritized agenda for essential research to serve the greatest collective need
- creating working collaboratives that could jointly sponsor and support core research needs
- developing research stations and other facilities in provincial parks
- enshrining responsibilities for research and monitoring for parks into core legislation and policy

Co-operative Approaches to Research in Parks and Protected Areas could include:

- jointly administered research facilities in protected areas

- engaging students at all academic levels on research projects
- hiring students through seasonal work programmes
- contracting university personnel and consultants
- contracting institutional services and support
- providing accommodation and logistic support for researchers
- joint endorsement of grant and funding proposals
- scholarships and awards

General Summary of Research in Provincial Parks



Comments for the Ontario Parks and Protected Areas Research Forum

*Gordon Nelson
Heritage Resources Centre
University of Waterloo*

I speak as a geographer and planner who has been involved in many park and protected area issues over three decades and as the chair of the Heritage Resources Centre at the University of Waterloo, a multi-disciplinary research and networking centre which has focused on linking heritage interests within and outside the university.

One general conclusion based on these experiences is that land use studies and planning can provide a focus or link among the geologic and biological sciences and the social sciences and arts. The need is to approach land use in terms of patterns, disturbances, frequencies, magnitudes, stresses, and historic changes. This approach - by use of mapping - can be used to tie the geologic, biologic, and the social, economic, demographic and social sciences together in an applied context.

Another general conclusion is that park and protected area planning and management issues can be approached in terms of how decisions are made:

- What information is used and how?
- Who the actors are?
- And what other factors are involved in decision-making at all levels in regard to land use and ecological and social changes in parks and protected areas?

In this context some of the major processes involved in decision-making have been found to be:

- understanding - generally fair to poor understanding
- communication - not well done or understood
- assessment - generally relatively well done professionally; not well understood by citizens
- planning - again generally well done and understood professionally, but only fair understanding by citizens
- implementation - generally fair to poor understanding
- monitoring - good recent work by national parks, but only fair understanding by citizens
- adaptation - generally fair with more knowledge and use of mediation and negotiation, joint management etc..

Research programs can be developed around the above.

The third general conclusion is that there is generally not good understanding of the context of decision-making and the fact that management and other forms of decision-making change with context; a command and control orientation for example, makes more sense in a park than in the buffer zone around the park.

The final general conclusion is the need based on the above for more sharing among parks and protected areas, more interaction, networking, and mutual learning as a basis for better research and improved decision-making.

Research on Parks and Protected Areas A Consultant's Perspective

*Sean Bradley and Catherine Dowling
Gartner Lee Limited*

The Consultant Role

Consultants are typically brought into a research initiative when there is a problem to solve, our work therefore is often applied science. Our work must be sound technically, reputations are built on this. Furthermore, we are often called on to present expert testimony in legal environments. In an Environmental Assessment Municipal Board hearing, or in public policy reviews for example, our work may be supporting the case of project proponents or assisting groups who are in opposition to a given undertaking. Either way, research must be defensible.

Often today consultants work is also being used to support new forums for decision making; that is, new approaches which replace or try to complement traditional governance and the confrontational, legal aspects of our systems. In emerging forums for community involvement and stakeholder participation in decision-making, the consultant can provide valuable background information, The research can be used as educational material and/or to clarify available choices and potential impacts of those choices.

Communicating Results

Public demand for involvement in decision making has also led to greater emphasis on communicating scientific research through appropriate text, images and a variety of other media. Study results often must effectively reach both public and technical audiences. Furthermore, as the public becomes better informed, information needs change and differences in information needs may become less pronounced. We should not underestimate the capability of the general public to question and understand research initiatives. There is always a need to consider the audiences before embarking on research.

Multi-disciplinary Research

An ecosystem approach to resource management and policy development may be defined as one which embodies the following six characteristics:

- a) the geographic area of concern based on natural system boundaries and community relationships, not solely on political jurisdictions;
- b) it is based on holistic and interdisciplinary research;
- c) decision making is democratic and inclusive;
- d) cross scale issues are addressed to ensure that there is co-ordination across time and spatial scales;
- e) implementation models are adaptive, promoting a mechanism for learning and building resiliency in natural and social systems; and,
- f) an ethic of sustainability is reflected, in which quality and integrity of human and natural systems underlies the initiative.

All of these characteristics provide topics which could be explored in this discussion of research for parks and protected areas. One area in which we as private sector consultants are trying to make progress is the development of interdisciplinary research.

Interdisciplinary Research

Interdisciplinary research (some refer to it as trans-disciplinary or cross disciplinary, to me they are all fundamentally the same) is essential to move our planning processes and policy implementation toward an ecosystem approach. Consultants who take a "problem solving" approach have internalized this in their work. Gartner Lee is a consulting firm specializing in environmental planning, ecological sciences, geosciences and engineering. Our approach emphasizes the value of drawing on a range of disciplines, research techniques, and experiences in order to create a research approach that will meet the needs of our clients.

The work that the Environmental Planning group within Gartner Lee tends to undertake often involves co-ordination of many disciplines in order to meet the requirements of a planning process. This may mean for example, building a framework for evaluating the impact of a policy or undertaking on the natural and social environments. We would co-ordinate, facilitate and assess public and agency input and develop recommendations on mitigation to address a range of issues. Some of our most interesting work deals with the interface between resource policy and human needs and expectations.

Case Study: Snowmobiling and the Environment

The Ontario Federation of Snowmobile Clubs (OFSC) contracted Gartner Lee to conduct an environmental study of the full range of snowmobile activities. The goal of the study was to allow the OFSC to better understand the positive and adverse effects of snowmobiling. This case is an interesting example of how expertise developed through the field of impact assessment can be applied to a proactive planning context.

University, Government, and Private Sector Research Partnerships

In considering the research needs for parks and protected areas, we would like to explore the benefits of structuring research which builds on the expertise and resources available through universities/government and private sector firms. Economic realities are necessitating that we find efficient ways to produce timely, sound research. More exchange between all three parties and opportunities to work co-operatively may move us in this direction.

PANEL ON APPROACHES TO COLLABORATIVE RESEARCH

Collaborative Research Involving the Ontario Natural Heritage Information Centre

Jarmo Jalava

Ontario Natural Heritage Information Centre

The mandate of the Ontario Natural Heritage Information Centre (NHIC) is "to generate and maintain a permanent and dynamic atlas and database on the distribution, character and conservation status of natural areas, critical flora and fauna, natural communities and special features in Ontario". The NHIC was created in late 1993 by four founding partners: The Nature Conservancy (U.S.) (TNC), the Nature Conservancy of Canada (NCC), the Natural Heritage League and the Ontario Ministry of Natural Resources (OMNR). In doing so NHIC became one of more than 80 such heritage programs in five Canadian provinces, fifty U.S. states and a number of Latin American, Caribbean and Pacific Rim nations. These programs use a common methodology and data base system known as the Biological and Conservation Data System (BCD), developed by TNC to track species, communities and natural areas.

The approach developed by TNC, and adopted by the NHIC, contributes to biodiversity protection by tracking species and identifying significant natural areas on the basis of rarity and degree of threat, and by providing management and stewardship advice about species, communities and areas to agencies and organizations that engage in conservation and land-use planning. One of the first tasks facing NHIC biologists has been to assess the status of the province's biota and vegetation communities or elements, and to establish lists of the elements that are most imperilled and in greatest need of immediate protection. To date, lists showing the status of Ontario's vascular plants, mosses, liverworts, mammals, birds, reptiles, amphibians, fish and butterflies have been produced by the NHIC.

A species' or taxon's status in the province is known as its "S-rank" (subnational rank). The S-rank is measured on a scale of 1 to 5, with a rank of S5 indicating that an element (species or community) is very common in the province (more than 100 occurrences), while an S1 indicates that an element is extremely rare (5 or fewer occurrences) and probably on the verge of extirpation unless conservation action is taken immediately. In order to formulate credible provincial status lists, NHIC biologists are also actively engaged in the verification of species records, in the development of an ecological land classification system, and in the evaluation of the "quality" of element occurrences.

For example, an extant population of 100 individuals of a species at a provincial nature reserve is a much higher quality occurrence than a 1970s sighting of an individual of the same species in an area that has since been developed into an industrial park. The latter record would most likely not even be considered in the evaluation of the species' current status in the province. Locations of highly ranked (S1 to S3) elements are mapped by the NHIC's GIS specialist, and the NHIC's data manager maintains the BCD and Natural Areas databases. NHIC biologists also produce "characterization abstracts" that outline the basic biology and conservation needs of rare species and communities.

The NHIC's S-ranks are periodically downloaded to The Nature Conservancy's main office in Arlington, Virginia, where elements are given G-ranks (global ranks), based on their abundance or rarity throughout the world. The TNC's use of S-ranks to assign global ranks underscores the importance of having a standardized ranking methodology for all sub-national and international data centres. The global ranking contributes to range-wide conservation planning for globally rare species and communities. This involves collaboration among heritage programs in the TNC network, as well as other conservation agencies. The International Alvar Conservation Initiative is an example of one such project concerned with inventory and conservation planning for a globally rare community type and involving agencies and researchers from at least three U.S. states and one Canadian province.

With the formulation of status lists and the mapping of element occurrences, it becomes possible to pinpoint Ontario's areas of highest conservation priority. Through a kind of "gap analysis," the NHIC's stewardship ecologist can take the dot maps showing significant element occurrences (beginning with G1's and G2's and working down the hierarchy to S2's and S3's) and overlay them with maps showing park, nature reserve, Areas of Natural and Scientific Interest (ANSI) and land ownership boundaries, to determine which species are already well protected within managed areas, and which sites are in the greatest need of land acquisition, conservation easements, or other stewardship or management procedures.

Such information is disseminated to agencies such as The Nature Conservancy of Canada, Parks Ontario, Ontario Ministry of Natural Resources (OMNR) District Offices, the Federation of Ontario Naturalists, municipalities, and other local and federal organizations in the business of natural heritage protection and/or land-use planning. With its focus on rare elements, the TNC/NHIC method differs somewhat from the methodology used by the OMNR to identify ANSIs and candidate nature reserves in its site district reports; ANSI identification is weighted more heavily on representation of characteristic physiographic and vegetation patterns in a given site district.

The stewardship ecologist position has only existed at the NHIC since autumn 1995. To date, a manual filing system and resource library has been set up to document roughly 2,500 of the province's most significant natural areas including, parks, conservation areas, provincially significant wetlands, ANSIs, environmentally sensitive areas (ESAs), and non-governmental organization (NGO) reserves. I have also assisted the data manager in improving the NHIC's Natural Areas Database (NAD) and in populating this database for selected sites. The NAD is used by the NHIC to track and maintain information on the areas of conservation interest in the province, and may be made available to other agencies and organizations for input of information on natural areas of interest to them.

Since its inception, the NHIC has been involved in a wide range of collaborative projects with other agencies and institutions. Most have relevance to parks, protected areas and conservation planning. The NHIC is generally very interested in any research projects that contribute to improving our knowledge of the population size, distribution, quality of occurrences, life history, threats, conservation and management needs, habitat restoration, and population recovery plans of rare species and communities in the province.

One such project that is still in its early, conceptual phase is the Great Lakes Wetlands Biomonitoring Project. This project is part of a collaborative effort among Environment Canada, The Nature Conservancy of Canada and the NHIC, and will involve a number of additional agencies and individuals, including members of the academic community.

One of the first steps in this project has been to accumulate background source data, and to identify a number of benchmark sites for biomonitoring. The preliminary list includes many sites that are already contained within provincial and national parks and other protected areas. This early list consists of many of the highest quality wetlands on the Ontario side of the Great Lakes.

To be more comprehensive, and to allow for comparisons of trends, it has been suggested that a number of more degraded wetlands also be included in the study.

To date, the NHIC's role in the Great Lakes Wetlands Biomonitoring Project has been to compile data on and map the vegetation communities, rare species, park zone boundaries, wetlands and other significant features of a few selected sites. Much planning for this potentially long-term project remains to be done. Biomonitoring methodology, selection of indicator species, selection of study sites, scope and duration of the project, and the roles and responsibilities of interested agencies, institutions and individuals have not yet been determined.

I think the present forum provides an excellent opportunity to invite discussion regarding the direction a biomonitoring project of this kind should take, and also possibly to recruit interest and participation of additional collaborators in the project.

Boreal Ecosystem Science Co-operative and Federal Provincial Parks Council

*Gene Murphy
Lakehead University*

Boreal Ecosystem Science Co-operative

The Co-operative is a partnership of organizations interested and involved in the development of scientific and technical knowledge that will help manage natural resources in the boreal ecosystem on a sustainable basis.

The goal of the Co-operative is to facilitate collaborative research, technology development and transfer among members of the Co-operative. Facilitation occurs through:

- a. promoting inter-agency linkages and partnerships by serving as a forum for exchange of ideas and identification of needs and priorities;
- b. helping members initiate and build collaborative, interdisciplinary ventures which are implemented efficiently;
- c. identifying potential research funding opportunities;
- d. building the Co-operative.

The Co-operative provides an institutional structure for nurturing collaborative research ventures:

Expertise - Members are sources of expertise which is shared internally with other members

Facilities - Members can provide access to each other's research facilities and data and share each other's resources when practical

Communications - The Co-operative provides opportunities to discuss common needs, interests, share ideas and collaborate on joint ventures. The Co-operative provides a voice in protecting the interests of its members.

Funding - Members are a source of funding. The Co-operative, on behalf of its members, has access to and can seek out funding which otherwise may not be available.

Our Partners -

- Abitibi-Price
- Canadian Forest Service
- Centre for Northern Forest Ecosystem Research
- Domtar Inc.
- E.B. Eddy Forest Products
- Lake Abitibi Model Forest

- Lakehead University
- Northeast Science and Technology Unit
- Northwest Science and Technology Unit
- Northwest Fire Management Centre
- Ontario Forest Research Institute
- Parks Canada
- Ontario Parks
- Stone Consolidated Inc.

- Potential Partners
- private sector (e.g. forestry, mining)
 - public utilities
 - First Nations
 - conservation groups (e.g. Federation of Ontario Naturalists, Ducks Limited)
 - universities and colleges
 - federal and provincial agencies

- Research Funding
- private sector
 - governments
 - granting agencies
 - foundations
- e.g. NSERC \$1.00 private sector, matched by \$1.00 grant

Federal-Provincial Parks Council

The mission and role of the council is to provide: a national focus; co-ordinated inter-governmental leadership; and action on parks issues in Canada.

- Key Roles:
- leadership and issue resolution
 - fostering awareness, understanding, and support of park values and benefits
 - networking and co-ordination
 - focal point for representation of parks views in Canada
 - forecasting trends and anticipating change

Related Initiatives:

Increase the protection of existing parks and their resources through sharing of research and experiences on subjects such as protection and management of natural resources, facilities, users, etc...

Action:

Establishment of a Standing Research Sub-committee to identify opportunities for collaborative applied research among member agencies which address high priority shared concerns in the areas of resource management, protection, outdoor recreation, tourism and the economy and fiscal issues relevant to parks.

Long Term Ecological Research Program in Algonquin Provincial Park¹

*Mark Ridgeway
Ontario Ministry of Natural Resources*

The Long-Term Ecological Research (LTER) program was launched in 1991 as part of the Sustainable Forestry Initiative to conduct research necessary for sustainable ecosystem policy development and operational management. The LTER Research Plan Committee selected inland forest-lake ecosystems as its specific area of research because of the benefits lakes and forests provide to Ontarians and the significant overlap in resource uses in Ontario forests and lakes. Studies are currently being conducted at the Swan Lake Forest Reserve in Algonquin Provincial Park and the Atikokan Coldwater Lakes Research Area west of Thunder Bay, Ontario.

Swan Lake Reserve, Algonquin Provincial Park

Over a dozen small brook trout and bass lakes occur within the Swan Lake Reserve, where the primary focus of the LTER research projects is the aquatic-terrestrial interface (ecotone) and vectors of energy and nutrient transfer within the ecotone. The site is underlain by the Pre-Cambrian Shield and has a variety of glacial till and outwash deposits. Forest cover types within the 2000 ha reserve include mature stands of shade-tolerant hardwoods (sugar maple, American beech, and yellow birch), conifers (eastern hemlock, eastern white pine and red spruce), and a small component of mid-tolerant and intolerant mixed woods.

The Ontario Forest Research Institute (ORFI) works co-operatively with the Algonquin Provincial Park staff in co-managing the Swan Lake Reserve. The majority of research occurs on Scott Lake. The Ontario Ministry of Natural Resources also maintains research installations in Algonquin Provincial Park for fisheries, wildlife, and natural history.

In 1994, significant progress was made on research at the Swan Lake Reserve:

- completion of Scott Lake terrestrial and wetland vegetation surveys;
- identification of 8 amphibian, 37 bird, and 730 arthropod species at Scott Lake;
- construction of tree-ring chronologies from dating live hemlock trees (several with nearly 500 annual rings), live white pine trees (several with over 300 annual rings), and coarse woody debris (most with 300-350 annual rings);
- characterization of soil sampled at Scott Lake and determination of nitrification and mineralization rates;
- completion of a study on water movement and nutrient dynamics in spruce plantations.

¹ amended with permission from: Hayes, A.E., Donnelly, M. and Cole, W.G. (1995). *Long-Term Ecological Research Program - 1994 Annual Report*. Ontario Ministry of Natural Resources, Ontario Forest Research Institute, Sault Ste. Marie, Ontario.

On-going Research at Swan Lake Reserve

- aquatic vegetation surveys in Scott Lake;
- brook trout population ecology and habitat assessment;
- evaluation of the colonization of leaves and coarse woody debris by invertebrates in the Scott Lake littoral zone;
- analysis of carbon movement across the forest-lake ecotone at Scott Lake;
- examination of nutrient cycling in coniferous forest ecosystems.

Program Clients

The LTER Research Planning Committee and Steering Committee have identified the primary clients as the following:

- Terrestrial Ecosystems Branch
- Aquatic Ecosystems Branch
- Research, Science and Technology Branch
- Regional Science and Technology Transfer Units
- District Management Staff

Secondary, but important, program clients include:

- provincial, national and international scientific community
- general public and special interest users, such as the forest industry, anglers, and cottage owners

Program Deliverables

The LTER program is designed to observe and understand forest-lake ecosystems over decades, but we are committed to producing and communicating short-term annual and periodic results to our clients. Our primary program deliverables are the following:

- scientific contributions to OMNR and Canadian resource conservation policies and guidelines;
- increased scientific expertise and awareness developed in Ontario including graduate and undergraduate students, OMNR scientists and technology specialists, OMNR provincial, regional, and district management staff, university scientists and technical specialists, and OMNR policy development staff;
- OMNR information reports and field guides;
- discovery and communication of new knowledge about ecosystem structure, health, and sustainable use;
- development of new tools and technology for effective ecosystem scale research and monitoring (e.g. field sampling methods, remote sensing applications, GIS tools, predictive computer models)
- peer reviewed research articles in international scientific journals;
- graduate student thesis and reports;
- research site field tours and training workshops;
- oral and poster presentations at meetings, conferences and workshops.

WORKING GROUPS

Working Group # 1

Facilitator: Mary Alice Snetsinger

1. Do we need an Ontario Parks and Protected Areas Forum; if so, why? What roles would it play?

We took a yes answer for granted, but came back to this question at the very end of our group's discussion. We felt that it is very important that the benefits of such a forum be clearly identified.

Assuming yes, then, the group identified potential roles:

- avoid duplication
- co-ordinate and prioritize research, cost effectiveness benefits would be realized.
- list of research needs could be developed
- potentially help maintain active research on protected areas in Ontario
- public relations and communication role
- advocacy role
- create and maintain a registry of projects, researchers and their skills, and on-going research
- integration of social and natural sciences, i.e. interdisciplinary

Tools of potential value: newsletter, Internet site, web page, maintenance of a mailing list on the Internet. We note that these roles are not necessarily recommended, but rather are potential roles that could be considered. The group must shape its own path as it develops, and that will depend upon the expertise and interests of its members. This point was brought out in later discussions of this working group.

2. How could such a forum be organized? How could it be administered and funded?

- a central organization or group is needed to take the lead.
- the Boreal Co-op that Gene Murphy spoke about is a possible model.
- Staffing of some sort would be needed (for example, to implement the tools mentioned above).
- there is a need for some start-up funding.
- the group should be semi-formalized at least. For example, terms of reference should be developed, an executive structure agreed upon, etc.
- a fee could be part of the participation requirement, a graduated fee structure, allowing in-

- kind contributions (for example, of information and services)
- We should approach implementation in two stages, looking for a "sugar daddy" to get the forum initiated.
- Private-sector funding must also be obtained.
- The group will need to develop a clear set of goals quickly, in order to prove itself of value as soon as possible.
- Central location? Possibilities mentioned included: Natural Heritage Information Centre? Ontario Ministry of Natural Resources ? Heritage Resource Centre ?
- We can't be seen to be creating a new organization, a new layer of bureaucracy.
- A product line must be developed that is attractive to a broad constituency. For example, a registry of research going on or completed across Ontario? A summary of major findings? Twinning parks? A map of protected areas?

3. What are the major research strengths and needs in parks and protected areas in Ontario?

Strengths:

- A long history of monitoring may provide valuable benchmarks.
- There is lots of expertise out there: academic, government, community, native,..

Needs

- Systems approach, pulling the pockets of information together into one system.
- Need to generate money.
- Communications are critical to success!
- Protected areas as part of a working landscape.
- Local participation must be strengthened -e.g. Conservation Authorities and municipalities should have been at this workshop.
- Native and other cultural issues need to be brought into the equation.

How can the strengths be used more effectively ?

Communications! Communications! Communications!

How can the weaknesses be addressed?

Perhaps there is a role for the forum in addressing the weaknesses. It is important to link with public outreach people and to synthesize information.

What persons make up the research community and what is their expertise?

This list will be extensive. Start with those that we know (those already around the table), build from there. There are likely to be MANY in the community. A balancing act will be needed.

What role can a Forum play in this regard?

- co-ordination
- focus-communications
- identification of experts
- provision of a central location
- setting priorities
- identification of issues
- fund-raising

But it needs to be kept contained, product-oriented at the outset. People will come on board if they perceive it to be worth their while.

4. What should be the next steps, if any, regarding an Ontario Parks and Protected Areas Forum?

Some steps are outlined in discussion of preceding questions.

An interim steering committee might be brought together to explore the idea, develop some draft Terms of Reference, communicate with potential partners, develop strategy, and develop budget outline. Key steps would be to identify where something could be centered, and to explore what foundations might be targeted to solicit funding. There is a need to go after commitment quickly and keep the momentum of the meeting.

Working Group #2

1. Do we need an Ontario Parks and Protected Areas Forum; if so why? What roles would it play ?

- increased focus on social research
- more applied research
- needs will change in settled vs non-settled landscapes
- communication to policy-makers and public ?
- connect research communities
- need to include non-governmental organizations

2. How could such a Forum be organized? How could it be administered and funded?

- bringing people together
- content? issue specific or regional focus ?
- thematic forums or geographic forums
- develop newsletters, Internet or Web site
- write a section on research for *Seasons* magazine

3. What are the major research strengths and needs in parks and protected areas in Ontario ?

- population biology
- animal ecology

How can the strengths be used more effectively?

- improved communication

How can the weaknesses be addressed?

- develop new funding relationships

What persons make up the research community and what is their expertise?

- role of non-governmental organizations ? Are they into research at all ?

What role can a Forum play in this regard?

4. What should be the next steps, if any, regarding an Ontario Parks and Protected Areas Forum?

Working Group # 3

1. Do we need an Ontario Parks and Protected Areas Forum; if so why?
What roles would it play ?

- exchange of information and ideas
- interdisciplinary approach
- need to update existing knowledge
- role as a retreat
- develop provincial/regional chapter of existing forums

2. How could such a Forum be organized? How could it be administrated and funded?

- informal with poster sessions
- some structure with presentations
- minimize costs
- keep it simple and easy
- ability for park managers to communicate needs

3. What are the major research strengths and needs in parks and protected areas in Ontario ?

How can the strengths be used more effectively?

How can the weaknesses be addressed?

What persons make up the research community and what is their expertise?

What role can a Forum play in this regard?

4. What should be the next steps, if any, regarding an Ontario Parks and Protected Areas Forum?

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