

HEALTHY ECOSYSTEMS, HEALTHY PEOPLE: A MONITORING FRAMEWORK FOR ONTARIO PARKS

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ABSTRACT

Ontario Parks has developed a comprehensive monitoring framework to enable monitoring and tracking of ecological sustainability within the 600+ provincial parks and conservation reserves across the province. The framework, which is based on a criterion and indicators approach, is based on strategic direction by the Ontario Ministry of Natural Resources (OMNR). Monitoring will facilitate adaptive management and state of protected areas reporting.

GROWTH OF THE PROTECTED AREAS SYSTEM

Ontario's Provincial Park system has evolved over the past 100 years into a world class network of protected areas. This system, which began with Algonquin Park in 1893, grew slowly in the first half of the 20th century. The 1990s began with a system of 261 provincial parks including 6.3 million hectares of lands and waters. In the early years of the decade, 60 new areas and 900,000 hectares were added to the province's protected area system and conservation reserves were established under the *Public Lands Act* (Government of Ontario, 1990).

In the late 1990s growth was even more impressive, with the addition of 378 new protected areas totalling 2.4 million hectares of lands and waters. The result of these efforts is a protected areas system today of 636 Provincial Parks and Conservation Reserves encompassing an area of 9.5 million hectares. While this growth has been substantial, setting areas aside is merely the first step in protection. Over the past 30 years, public demand for outdoor recreation opportunities has grown tremendously, coupled with an increasing awareness of nature, wild spaces and the imperative to protect global biological diversity. As human population and demands on natural resources continue to grow, new pressures will pose difficult challenges and require innovative solutions. To help meet these demands, while ensuring ecologically sustainable management of protected areas, Ontario Parks has developed a comprehensive program to monitor and report on ecological, social and economic aspects of protected areas to support planning, management and informed decision-making.

ONTARIO PARKS GOALS AND OBJECTIVES

Ontario Parks has policy, planning and management responsibilities for provincial parks and policy and planning responsibilities for conservation reserves. Management responsibility for conservation reserves lies with *Field Services Division* of the Ontario Ministry of Natural Resources (OMNR).

The goal and objectives for Provincial Parks as set out in the *Provincial Parks Policy Statement* (OMNR, 1992) provide a strategic direction for Ontario Parks. The goal is:

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

This goal is supported by the following four objectives:

- *To protect provincially significant elements of the natural and cultural landscape of Ontario.*
- *To provide Provincial Park outdoor recreation opportunities ranging from high-intensity day-use to low-intensity wilderness experiences.*
- *To provide opportunities for exploration and appreciation of outdoor natural and cultural heritage of Ontario.*
- *To provide Ontario's residents and out-of-province visitors with opportunities to discover and experience the distinctive regions of the Province.*

The goal and objectives for Conservation Reserves, the second major type of provincial protected area in Ontario by the OMNR, is:

- *To protect natural heritage values on public lands while permitting compatible land use activities.*

This goal is to be achieved through the following five objectives:

- *To identify conservation reserves through a scientific process.*
- *To ensure that potential conservation reserves are withdrawn from staking.*
- *To confirm conservation reserves through a Ministry land-use planning process.*
- *To afford conservation reserves legal protection.*
- *To manage conservation reserves to protect the integrity of their natural values.*

This paper describes the rationale behind the monitoring and reporting framework, outlines the framework structure and provides details on the various components of that framework. The framework is applicable to both Provincial Parks and Conservation Reserves.

WHAT IS MONITORING AND WHY IS IT DONE?

Monitoring is the collection of data and information in a systematic manner, over time. Generally, the intent of monitoring is to detect change (or lack of change) in natural resources through time. The important terms to consider are *systematic*, *time* and *change*.

It is important that the data is collected in a *systematic* manner. This means that the data is collected in a standard way every time it is collected and in every location where data is gathered. This ensures that the information is consistent. Simply put, it ensures that we are comparing apples to apples, rather than trying

to compare apples to oranges. Therefore, the data is more reliable and defensible, allowing for better decision-making.

If *change* occurs in natural resources, the impact of that change could be either positive or negative. While some change may occur rapidly, other changes may be slow and barely noticeable from year to year. The *timeframe* over which change occurs may not be related to the severity of the impact of that change. Change may be swift and ecologically acceptable (wildfire is a natural component of boreal ecosystems) or may be slow and disruptive (climate change). It may be necessary therefore, to collect data for many years to determine whether or not change is actually occurring and the impact of that change.

Through monitoring, the status of natural resources can be determined at a point in time. Data can then be compared to similar assessments at another point in time to determine what change, if any, has occurred. The state of a resource can also be compared to the objectives that have been established for the resource to determine if those objectives are being met.

WHY SHOULD ONTARIO PARKS BE INVOLVED IN MONITORING?

Ontario Parks has responsibility for planning and management of the system of protected areas within Ontario. There are three major objectives associated with that responsibility that are supported by a monitoring program. First, monitoring will help to determine if the goal and objectives of Ontario Parks are being achieved. Second, monitoring will allow the establishment of undisturbed benchmarks in the system of protected areas against which conditions in the more disturbed intervening landscape can be measured. This helps to address the OMNR's ecological sustainability mandate, not only within protected areas, but also across the Provincial landscape. Third, Ontario Parks is accountable to the people of Ontario and the various partners and stakeholders with interests in the system of protected areas, to be able to demonstrate that the system is being managed in a sustainable manner.

ADAPTIVE MANAGEMENT

Timely, accurate and relevant knowledge and information are required to enable sustainable management of resources. Information and knowledge are supported through experience and research. As new information and knowledge are gained, Ontario Parks must be prepared to learn and adapt. An adaptive management approach is fundamental to ecologically sustainable management of resources (see Gray this volume for a detailed discussion on adaptive management). Monitoring supports an adaptive management approach by providing information to enable an evaluation of management activities in achieving program goals and objectives.

COMPREHENSIVE MONITORING FRAMEWORK

Our Sustainable Future: OMNR Strategic Direction

We are a part of the environment in which we live. As such, our existence demands that the resources that we depend upon to derive our enjoyment and our livelihood must be managed in an ecologically sustainable manner, now and in the future. This link between human life and resources has been recognised by OMNR and is expressed in its vision statement in the strategic direction document *Our Sustainable Future* (OMNR, 2005). The vision of OMNR is: "A healthy environment that is naturally diverse and supports a high quality of life for the people of Ontario through sustainable development." (OMNR, 2005: 6) This vision statement identifies three basic components that must be integrated in the decision-making process – environmental considerations, social needs, and economic objectives. This vision is built upon the principle that in meet-

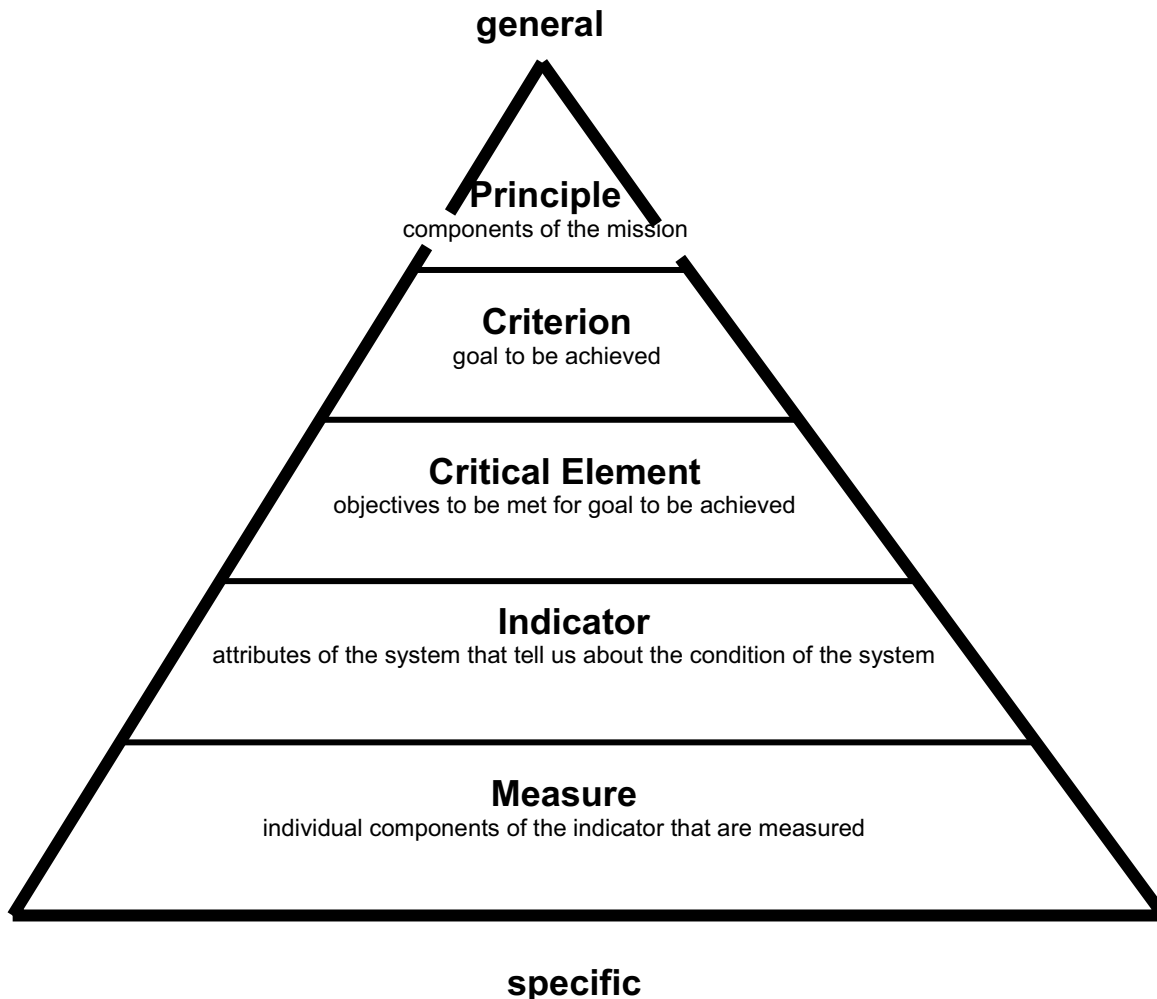
ing the needs of today, we must not compromise the ability to meet the needs of future generations. This is reflected in the mission statement of OMNR: "To manage our natural resources in an ecologically sustainable way to ensure they are available for the enjoyment and use of future generations." (OMNR, 2005: 6)

Ecosystem sustainability is recognised as the foundation of sustainable development. The social and economic benefits that our society derives from natural resources, now and in the future, are dependent on sustainable ecosystems. Since we are part of the environment, our own health and wellbeing is intricately connected to the sustainability of ecosystems. Achieving sustainable development in a context of ecological sustainability is based upon the strategic direction provided through *Our Sustainable Future* (OMNR, 2005).

Framework Structure

Ontario Parks has developed a comprehensive, ecosystem-based approach to monitoring to support planning and management of protected areas across Ontario. The framework is hierarchical, simply meaning that it is composed of a series of connected levels ranging from broad-based to the specific. Within this hierarchical framework (Figure 1), Ontario Parks has adopted a criterion and indicator approach, with principles (broad-based), criteria, critical elements, indicators and measures (most specific). Reference values are the standards against which measures and/or indicators are compared to determine if objectives are being achieved.

Figure 1. Hierarchical framework of criterion and indicator approach.



The monitoring and reporting framework is an Ontario Parks perspective on *Our Sustainable Future* (OMNR, 2005). The framework begins with a vision – *Healthy Ecosystems, Healthy People* – which reflects the ecological, social and economic roles of protected areas. *Healthy Ecosystems* refers to the sustainability mandate of OMNR and within that, the protection mandate of Ontario Parks. *Healthy People* indicates the role parks play for outdoor recreation, opportunities to explore the natural and cultural heritage of Ontario and peace of mind in knowing that the heritage values of the province have been protected in a system of protected areas. Protected areas also have a role to play in local economies and the provincial economy through employment and tourism, a further contribution to society.

This vision is supported by a mission of ecological sustainability, consistent with OMNR strategic direction. Ecological sustainability is an all encompassing term, referring to three inter-related, supporting principles: *ecological integrity, social wellbeing* and *economic health*. Associated with each of these three principles are criteria – three ecological, four social and two economic – which provide an Ontario Parks perspective on the strategic direction set out in *Our Sustainable Future* (OMNR, 2005). Table 1 highlights the three principles and nine criteria of the Ontario Parks monitoring and reporting framework.

Table 1. The three principles and nine criteria of the Ontario Parks monitoring and reporting framework.

PRINCIPLE	CRITERION
ecological integrity	<ul style="list-style-type: none"> - protection of significant values and features - maintenance of eco-diversity - sustainable resource management
social well-being	<ul style="list-style-type: none"> - outdoor recreation available - life, property and natural resources protected - use and transfer of best knowledge and science - public involvement
economic health	<ul style="list-style-type: none"> - fair return for resource use - economic potential maintained

PRINCIPLE: ECOLOGICAL INTEGRITY

Ontario Parks has adopted the following definition of ecological integrity (EI): “*Ecological integrity refers to a condition in which biotic and abiotic components of ecosystems and the composition and abundance of native species and biological communities are characteristic of their natural regions and rates of change and ecosystem processes are unimpeded.*” (Government of Ontario, 2005) In addition to contributing to measuring EI, certain aspects of the criteria within this principle establish benchmarks within protected areas against which the intervening, managed landscape can be compared.

The three criteria within the EI principle are:

Criterion 1: Protection of Significant Values and Features.

This criterion refers to the representation aspect of the protected areas system, dealing with park class targets on an eco-regional and eco-district basis, the representation of earth and life science features and values, and landscape level targets for old growth forest.

Criterion 2: Maintenance of Eco-diversity.

This criterion deals with the current state of protected area resources. The term eco-diversity is used to represent the full spectrum of diversity associated with protected areas including both earth and life science features. This criterion represents a measure of the state of a protected area at a point of time, against which another measure at another point in time can be compared. This criterion covers a broad ecological spectrum, including terrestrial, aquatic and atmospheric perspectives of protected area environments.

Criterion 3: Sustainable Resource Management.

This criterion is focussed at the individual protected area level and deals with issues on a park by park basis. Aspects of this criterion include ongoing research and monitoring activities, whether conducted by Ontario Parks' staff or by partners such as colleges, universities, other government agencies and non-governmental organizations (NGOs). Guidance for priority setting for monitoring and research is aided by the *Ontario Parks Research Strategy* and by an ecological stress identification process conducted by Ontario Parks.

PRINCIPLE: SOCIAL WELL-BEING

Ontario has a complex and diverse society. Numerous groups of people are interested in protected areas, some with singular interests, while others have multiple interests. Generally, these interests include resource protection, access, outdoor recreation, exploration of natural and cultural values, and economic opportunities. The public has an interest in the management of protected areas, to know that protected areas are accessible, protected and properly managed.

The four criteria associated with the principle on *Social Well-being* are:

Criterion 4: Outdoor Recreation Available.

This criterion deals with opportunities for outdoor recreation and involves access to protected areas, the recreational facilities and programs that are available, and the demand for recreation.

Criterion 5: Life, Property and Natural Resources Protected.

This criterion addresses the protection of protected area cultural and historical resources and infrastructure, and the safety and security of protected area staff and visitors. This involves both preparedness (pro-active) and responsiveness (reactive) of Ontario Parks to issues of protection, safety and security.

Criterion 6: Use and Transfer of Best Knowledge and Science.

This criterion involves the use of information and knowledge to support informed decision-making an adaptive management approach to protected area planning and management. Ontario Parks both conducts and supports research in and about protected areas. Further to this is the need to distribute this information within Ontario Parks, to the public and to the broader scientific community.

Criterion 7: Public Involvement.

This criterion deals with the association and involvement of First Nations and the public in general with park values and initiatives, and planning and management.

PRINCIPLE: ECONOMIC HEALTH

Increasingly, there is a general understanding and acceptance that environmental protection and the conservation of the earth's natural resources are essential to sustain human life and economic development. Parks and protected areas provide a host of economic benefits to individuals, communities and the province. The social and economic health of many communities across the province is dependent, all or in part, upon a Provincial Park or Conservation Reserve.

The two criteria associated with the principle on *Economic Health* are:

Criterion 8: Fair Return for Resource Use.

This criterion addresses the valuing of resources and opportunities, and about pricing (economic value, rent, willingness to pay, comparable pricing, etc.). This relates to the cost of doing business and the gap between costs and revenues. The ability to close this gap depends on the cost to provide the service, the number of users and the willingness to pay.

Criterion 9: Economic Potential Maintained.

This criterion refers to the capital stock (built and natural) associated with protected areas, the market goods and services provided by protected areas (revenue and output) and the contribution of protected areas to local economies and the Provincial economy (employment, income and expenditures).

WHERE WILL THE INFORMATION COME FROM?

Ontario Parks is not alone in the management of natural resources on the Ontario landscape. There are many other monitoring and management activities being conducted by other branches of OMNR, other Ontario ministries, municipal governments and non-governmental organizations (NGOs). Whenever possible, Ontario Parks intends to build upon the activities and experiences of these other resource managers, making use of existing data, rather than creating an entirely new monitoring system. This integrated and coordinated approach will be more efficient and more cost effective in the long run. However, Ontario Parks will continue to conduct monitoring and research within protected areas and will also encourage similar activities by various partners, including colleges and universities.

STATE OF THE PROTECTED AREAS REPORTING

The results of these monitoring activities will inform Ontario Parks planning and management and help Ontario Parks achieve the goals and objectives of Ontario Parks and OMNR. Ultimately, monitoring will enable *State of the Protected Areas Reporting*, which will help to demonstrate Ontario Parks performance in managing protected areas.

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