

Ecological Integrity in British Columbia's Parks and Protected Areas



Garibaldi Park

Definition and Performance Indicators

Introduction

BC Parks is committed to the proactive stewardship of ecological integrity (EI). EI is an important concept that drives management direction in many protected areas to ensure natural areas are well managed into the future. It provides strong justification for such actions as adapting to climate change, or dealing aggressively with invasive species. However, the system is comprised of areas ranging from pristine wilderness to highly developed recreation areas. Therefore, EI is not a management objective that is uniformly applied across all protected areas¹.

Ecological systems are not static, but change with seasons, climate and disturbances. BC Parks' intent is to allow natural processes to evolve over time. This will give ecosystems the best chance to remain healthy and continue to support all life, including human. However, this is neither practical nor appropriate in all protected areas. Recognizing the historic growth of BC Parks, the needs of conservation and recreation, and the built environment that facilitates public access and appreciation of the parks system, this document will clarify where ecological integrity objectives drive management decisions. The approach includes a common understanding of the meaning of EI and the performance indicators that will be used to ensure that BC Parks is consistently managing for EI across the province.

The definition has three general categories of protected areas where EI is managed in different ways:

1. Protected areas where EI plays a dominant role,
2. Protected areas where EI is addressed in a limited manner, and
3. Protected areas where components of EI are actively managed.

Allocating protected areas to the appropriate category provides an indication of how a protected area fits in the system with respect to ecological integrity and can begin to provide some guidance as to expectations around managing for EI.

Information, planning, monitoring and assessing are all key to good management. BC Parks utilizes a suite of tools such as Conservation Risk Assessment and Impact Assessment to facilitate conservation management. Performance indicators are used to assess effectiveness of management. As it is very difficult to measure ecological integrity directly and attribute observed ecosystem changes to specific actions, BC Parks makes the assumption that managing to maintain ecological integrity occurs when conservation tools are fully implemented. BC Parks will begin measuring performance based on these indicators in 2012/13. Performance on the indicators will be reported in the Annual Report beginning in 2012/13.

¹ In this document, the use of the term protected areas includes parks, protected areas, ecological reserves, recreation areas and conservancies.

Definition

Ecological integrity occurs when an area or network of areas supports natural ecosystem composition, structure and function, and a capacity for self-renewal.



Khutzeymateen Park (K'tzim-a-deen Grizzly Sanctuary)

The concept of an ecosystem is not complete without all three elements: composition, structure and function. Composition includes the pieces that make up the ecosystem (e.g. species, substrate), structure refers to the physical and spatial aspects of an ecosystem and function is about natural processes such as fire, floods, insect outbreaks and wind throw that shape it.

Degrees of Ecological Integrity

British Columbia's parks and protected areas system is one of the largest and most diverse systems in Canada. While British Columbians recognize their protected areas offer some of the best examples of our natural environment, there is also recognition that the system provides some of the best outdoor recreational opportunities anywhere.

The diversity of the system is reflective of the way the protected areas were identified over the last century. Through the decades, various initiatives resulted in parks and protected areas being selected for a range of purposes from high density front-country recreation to large back-country wilderness areas.

There are varying degrees of ecological integrity in the BC parks and protected areas system according to a continuum of management goals and objectives. Generally, protected areas fall into three basic categories:

1. Large wilderness protected areas or areas large enough to be ecologically self-sustaining.
2. Small areas primarily for recreation.
3. Interface areas supporting recreation and ecological integrity.



*Long Term Ecological Monitoring at
Kalamalka Lake Park*

1. Large wilderness protected areas or areas large enough to be ecologically self-sustaining.

Large protected areas are allowed to function with little to no intervention. Natural disturbances, species movements, predator-prey systems and other large processes can play out and evolve without interference. These protected areas may have small front-country areas that are heavily used, but for the most part they are difficult to access and generally have limited back-country use. This category accounts for the smallest number of protected areas but the largest total area in the protected areas system.



Tweedsmuir Park

2. Small Areas Primarily for Recreation

These tend to be small areas that attract visitors for camping or day use along lakes, rivers, ocean or other features. Although a natural setting, the ecological processes are often interrupted by planned human disturbance (recreation activities and facilities) or by proximity to urban, rural or industrial landscapes. These areas provide opportunities to gain appreciation for the value of protected areas. They contribute to ecological integrity by concentrating and managing the impacts of protected area facilities and the associated recreational activities by park visitors, taking pressure away from areas with more sensitive, scarce or critical ecosystems.



Okanagan Lake Park

3. Interface Areas Supporting Recreation and Ecological Integrity.

This category contains the majority of protected areas in the system. They have significant interactions with the surrounding landscape, but are large enough to sustain most ecological processes. In these areas, human use and enjoyment is managed for quality experience while minimizing impacts to ecological integrity. The protected area as a whole is managed to contribute to EI across a broader landscape.



Cultus Lake Park

Performance Indicators

Ecological Integrity is a complex concept and difficult to measure directly. While there are a few indicators that are related to the design of the protected areas network, most are related to business processes. An assumption is made that the BC parks and protected areas system will be managed for ecological integrity when there is consistent application of conservation tools (such as: Annual Management Planning, Conservation Risk Assessment, Impact Assessments, Park Use Permits, Management Plans, Compliance and Enforcement, and Conservation Program Policies). Each of these tools interacts with the others so without full use and understanding of the whole suite of tools, ecological integrity on the ground is at risk. To evaluate the application of these tools, performance indicators have been developed.

Protected Areas Network Design:

Deliberate representation of ecosystems in the protected areas system is an effective way to begin to capture the breadth of the biodiversity in the province. Connectivity is an important measure of the ability of ecosystems to change with changing conditions. One measure of the connectivity of the network is the size of contiguous protected areas or protected area complexes.

1. Percent (%) of province protected.
 - a. Percent (%) of terrestrial, aquatic and marine ecological units protected. The best ecological classification scheme available will be used in each realm.
2. Percent of the terrestrial Protected Areas Network in complexes greater than:
 - a. 2700² km²
 - b. 1000 km²
 - c. 500 km²
3. Percent of the nearshore protected area network in complexes greater than:
 - a. 270³ km²
 - b. 100 km²
 - c. 50 km²

² This threshold was identified as the minimum size of reserve to ensure the sustainability of ecological processes such as intact predator prey systems for terrestrial mammals (Gurd et al, 2001. Conservation of mammals in eastern North American wildlife reserves: how small is too small? Conservation Biology 15:1355-1363). The smaller numbers (b and c) are indications of progress toward large landscape connectivity within the protected areas system.

³ In the nearshore environment where BC Parks has marine protected areas, there is little research to determine optimal size. Based on Halpern 2003 (Halpern, B.S. 2003. The impact of marine reserves: do reserves work and does reserve size matter. Ecological Applications 13:S117-S137) and other work from California, the role of protected areas in connectivity of near shore ecosystems may be optimal at an order of magnitude less than in the terrestrial environment.

Business Processes and Tools:

Annual Management Planning: Consistent identification of priority issues and planning across the province will help all regions focus on priorities. It contributes to ecological integrity by providing an opportunity to identify and focus conservation issues.

4. Number (#) of administrative sections conducting Annual Management Planning.

Conservation Risk Assessment: This tool is the backbone of conservation management in BC Parks. It works closely with Annual Management Planning, Management Planning and Impact Assessment as the repository for knowledge about the ecological values in the protected areas system, the means for tracking threats to conservation and management actions, and an assessment of the conservation design of each protected area.

5. On an annual basis, percent (%) of the administrative sections that used Conservation Risk Assessment to inform Annual Management Plans.
6. On an annual basis, number (#) of management areas that have added data to the special features and/or threats database in the Conservation Risk Assessment.



Broom removal at Trial Islands Ecological Reserve

Long-term Ecological Monitoring: Over time long-term ecological monitoring will provide information on ecological changes occurring in protected areas.

7. Number (#) of long-term monitoring sites with a protocol tested or in place.
8. Number (#) of management areas that had a long-term monitoring plot measured.

Impact Assessment: The impact assessment protocol assures that no management actions that have the potential to impact ecological integrity proceed without full knowledge and risk mitigation.

9. Percent (%) of projects that were informed by an Impact Assessment.
10. Percent (%) of mitigations carried out that were identified in an Impact Assessment.
11. Percent (%) of mitigations that considered climate change adaptation.

Note: Subsamples of impact assessments may be used depending on overall number of completed impact assessments.



Long Term Ecological Monitoring at Ten Mile Point

Management Planning: Management plans contribute to ecological integrity by identifying actions that are appropriate and consistent with the goals for the protected areas. As these plans will affect future management, it is important that they recognize and address the potential effects of climate change in order to maintain fully functioning ecosystems.

12. Percent (%) of Management Plans completed in the year that address climate change adaptation⁴.

Compliance and Enforcement: Compliance and enforcement work contributes to ecological integrity by identifying issues that may place ecological integrity in jeopardy. Working effectively on compliance and enforcement creates an environment that discourages trespass and provides an opportunity to identify areas that require restoration.

13. Percent (%) compliance and enforcement files (unauthorized use, trespass) actioned.
14. Percent (%) compliance and enforcement files that required restoration that have been successfully completed.

⁴ There will be a range of considerations depending on the role and values of the protected area. All management plans should address adaptation to climate change in some way. In some plans, the considerations may be small and focused on visitor attendance and experience, while others may give more comprehensive consideration to adaptation to climate change.