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Report of the Commissioner of the Environment and Sustainable Development

CHAPTER 7

Ecological Integrity in National Parks

OAG

Office of the Auditor General of Canada

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CHAPTER 7

Ecological Integrity in National Parks

Performance audit reports

This report presents the results of a performance audit conducted by the Office of the Auditor General of Canada under the authority of the *Auditor General Act*.

A performance audit is an independent, objective, and systematic assessment of how well government is managing its activities, responsibilities, and resources. Audit topics are selected based on their significance. While the Office may comment on policy implementation in a performance audit, it does not comment on the merits of a policy.

Performance audits are planned, performed, and reported in accordance with professional auditing standards and Office policies. They are conducted by qualified auditors who

- establish audit objectives and criteria for the assessment of performance,
- gather the evidence necessary to assess performance against the criteria,
- report both positive and negative findings,
- conclude against the established audit objectives, and
- make recommendations for improvement when there are significant differences between criteria and assessed performance.

Performance audits contribute to a public service that is ethical and effective and a government that is accountable to Parliament and Canadians.

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Ecological Integrity in National Parks

Main Points

What we examined

"Ecological integrity" is a term used to describe an ecosystem that contains its full complement of native species and the processes that ensure their survival. According to Parks Canada, a national park has ecological integrity when it supports healthy populations of those plants and animals that are representative of the unique natural region that the park was established to protect, and that the natural processes that support park ecosystems, such as a fire cycle, are in place and function normally.

Parks Canada was established to ensure that Canada's national parks and related heritage areas are "protected and presented for this and future generations." The Agency's responsibilities include managing national parks for the benefit, education, and enjoyment of Canadians, and ensuring that the parks are maintained and made use of in a way that leaves them unimpaired for the enjoyment of future generations. The *Canada National Parks Act* specifies that maintenance or restoration of ecological integrity, through the protection of natural resources and natural processes, shall be the first priority when considering all aspects of the management of parks.

Our audit focused on whether Parks Canada is fulfilling its key responsibilities to maintain or restore ecological integrity in national parks. We examined park management planning and reporting, and the monitoring and research activities that support decision making for ecological integrity. We also examined a selection of ecological maintenance and restoration projects, as well as capital development projects and visitor activities undertaken in national parks. We did not examine national historic sites or marine conservation areas (the latter were included in the Commissioner's 2012 Fall Report, Chapter 3—Marine Protected Areas).

Audit work for this chapter was completed on 25 June 2013. More details on the conduct of the audit are in **About the Audit** at the end of this chapter.

Why it's important

National parks provide many benefits. They serve as storehouses of biological diversity; they provide ecosystem services such as carbon sequestration, stormwater surge protection, freshwater filtration, and pollination; they protect wilderness and natural beauty so that current and future generations will be able to appreciate their natural heritage; they serve as ecological benchmarks for research into the effects of human activities on natural processes; and they contribute significant economic benefits to communities across the country as a result of the millions of tourists they attract each year from across Canada and around the world. Canada's national parks are an important component of a worldwide endeavour to protect significant natural areas.

What we found

- Parks Canada has developed a solid framework of policies, directives, and guidelines for fulfilling the Agency's key responsibilities with respect to ecological integrity. The Agency has produced or updated specific guidance on park management planning, ecological restoration, and monitoring of ecological integrity.

- The Agency has carried out significant work in every area we examined. For example, it has identified key ecosystems and established indicators as well as some measures for monitoring their condition and trends. In addition, park management plans—providing a long-term vision and objectives for the parks as well as a basis for monitoring and reporting on progress—have now been produced for most of Canada's national parks. Projects for the restoration and maintenance of ecological integrity are carried out in accordance with Agency directives and guidelines. Park management routinely considered the impacts on ecological integrity when approving and implementing visitor activities and capital development projects.

- However, the Agency has been slow to implement systems for monitoring and reporting on ecological integrity. It has failed to meet many deadlines and targets, and information for decision making is often incomplete or has not been produced. For example, the Agency has not met its own target for establishing, by 2009, a fully functional and scientifically credible monitoring and reporting system for ecological integrity in Canada's national parks. Scientifically credible and up-to-date information on the condition of ecosystems is essential in making informed decisions and to understand and counter threats to ecological integrity. In addition, the Agency either does not know or has not met targets for maintaining ecosystems through the active management of fire in 74 percent of national parks with fire management targets.

- Spending on Heritage Resources Conservation at Parks Canada has recently decreased by 15 percent. Overall staffing for conservation has declined by 23 percent and the number of scientific staff positions has decreased by over a third. Parks Canada has not clarified how and by when, with significantly fewer resources, the Agency will address the backlog of unfinished work, the emerging threats to ecological integrity, and the decline in the condition of 34 percent of park ecosystems that it has identified. As a consequence, there is a significant risk that the Agency could fall further behind in its efforts to maintain or restore ecological integrity in Canada's national parks.

The Agency has responded. Parks Canada agrees with our recommendation on ensuring that plans and reports be prepared on time and within statutory deadlines. The Agency disagrees with our recommendation on carrying out an analysis of its resource capacity; however, it has agreed to undertake several actions to close implementation gaps identified in this audit. Its detailed responses follow the recommendations throughout the chapter.

Introduction

Protecting significant natural areas

7.1 The purpose of Parks Canada (the Agency) is to protect and present significant examples of Canada's natural and cultural heritage in national parks, in view of their special role in the lives of Canadians and the fabric of the nation. The Agency currently manages 44 national parks and **national park reserves** across Canada (Exhibit 7.1). Nine of these have been declared World Heritage sites under the United Nations Educational, Scientific and Cultural Organization (UNESCO).

National park reserves—Areas that Parks Canada protects and promotes in the same way that it does national parks, except that they are subject to claims by Aboriginal people, who may continue traditional activities there and may be involved in the management of these reserves. A national park reserve can become a national park after settlement of any outstanding claims and the development of agreements on its establishment as a national park.

Point Pelee National Park provides access to one of the last remaining freshwater marshes on the Great Lakes. The marsh is a UNESCO Wetland of International Significance and provides habitat for many species at risk.

Photo: Brian Morin / © Parks Canada / Point Pelee National Park

7.2 National parks provide many benefits. They

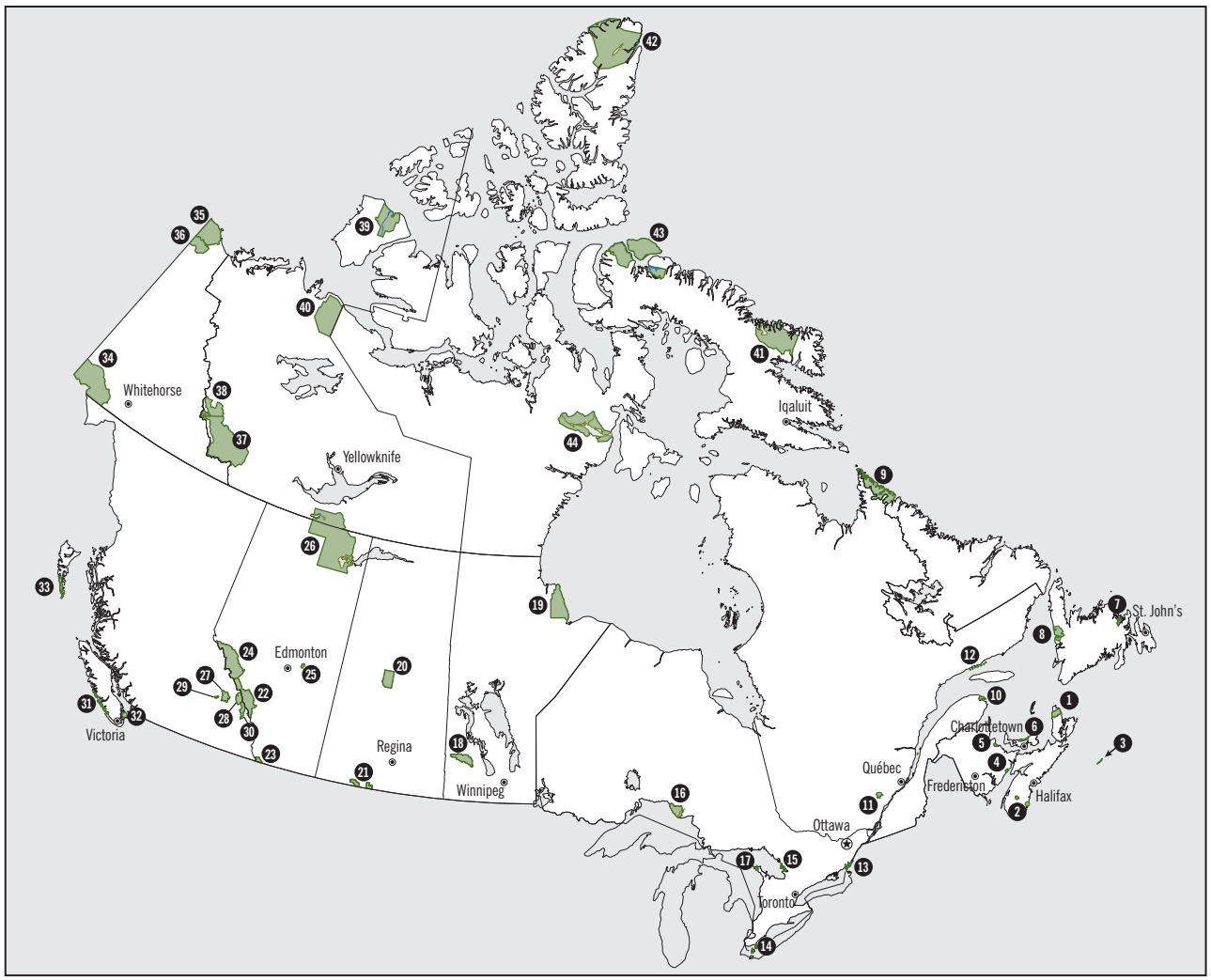
- serve as storehouses of biological diversity, including species at risk (see Chapter 6—Recovery Planning for Species at Risk);
- provide vital functions in the ecosystem, such as carbon sequestration, stormwater surge protection, freshwater filtration, and pollination;
- provide benchmarks for researchers to compare undisturbed ecosystems within national parks against lands outside of national parks that have been subject to human activities; and
- protect areas so that the present and future generations will have opportunities to connect with nature, appreciate natural heritage, and support its conservation.

7.3 National parks also provide economic benefits. They attract millions of tourists—at least 10 million each year between the 2000–01 and 2011–12 fiscal years from across Canada and around the world—and these visitors help to create jobs. Visits to national parks have been relatively stable for over a decade. Parks Canada reports that its protected heritage places (which include not only parks, but also marine conservation areas and historic sites) are significant economic drivers, contributing more than $3.3 billion annually to the Canadian economy, and to jobs in more than 400 communities across Canada.

Ecological integrity: Parks Canada's first priority

7.4 Parks Canada has legislative responsibilities to manage national parks for the benefit, education, and enjoyment of Canadians, and to protect and present these areas so as to leave them unimpaired for future generations. Parks Canada uses an integrated approach to fulfill these aspects of its mandate. As indicated in the Agency's 2008 Guide to Management Planning, "Integrated management planning requires

Exhibit 7.1 National parks and national park reserves of Canada



Nova Scotia
1. Cape Breton Highlands
2. Kejimkujik
3. Sable Island (R)

New Brunswick
4. Fundy
5. Kouchibouguac

Prince Edward Island
6. Prince Edward Island

Newfoundland and Labrador
7. Terra Nova
8. Gros Morne (WHS)
9. Torngat Mountains

Quebec
10. Forillon
11. La Mauricie
12. Mingan Archipelago (R)

Ontario
13. Thousand Islands
14. Point Pelee
15. Georgian Bay Islands
16. Pukaskwa
17. Bruce Peninsula

Manitoba
18. Riding Mountain
19. Wapusk

Saskatchewan
20. Prince Albert
21. Grasslands

Alberta
22. Banff (WHS)
23. Waterton Lakes (WHS)
24. Jasper (WHS)
25. Elk Island
26. Wood Buffalo (WHS)

British Columbia
27. Glacier
28. Yoho (WHS)
29. Mount Revelstoke
30. Kootenay (WHS)
31. Pacific Rim (R)
32. Gulf Islands (R)
33. Gwaii Haanas (R)

Yukon Territory
34. Kluane (R, WHS)
35. Ivvavik
36. Vuntut

Northwest Territories
37. Nahanni (R, WHS)
38. Nááts'ihch'oh (R)
39. Aulavik
40. Tuktut Nogait
26. Wood Buffalo (WHS)

Nunavut Territory
41. Auyuittuq
42. Quttinirpaaq
43. Sirmilik
44. Ukkusiksalik

WHS World Heritage Site
R Reserve

Source: Adapted from Parks Canada.

that solutions for all aspects of the mandate be carried out concurrently, and results in improvements to each aspect in a mutually supportive manner. Integration means looking at issues holistically: that is, planning for visitor experience and public education entails also planning for protection; making decisions about protection means also considering actions for visitor experience and public education."

7.5 However, the Agency's governing legislation and policies specify that the "[m]aintenance or restoration of **ecological integrity**, through the protection of natural resources and natural processes, shall be the first priority of the Minister when considering all aspects of the management of parks."

Ecological integrity—"[W]ith respect to a park, a condition that is determined to be characteristic of its natural region and likely to persist, including abiotic [non-living] components and the composition and abundance of native species and biological communities, rates of change and supporting processes."

Source: *Canada National Parks Act*

7.6 Ecological integrity is a characteristic of healthy ecosystems: those that have complete food webs; a full complement of native plants and animals that can maintain their populations; and functioning ecosystem processes such as nutrient, water, and natural fire cycles that ensure the survival of those species. The concept of ecological integrity is not new. The term was first used in the Parks Canada Policy of 1979, but the notion of the conservation of national park ecosystems dates back to the *National Parks Act* of 1930. Parks Canada is recognized as a world leader in developing guidance on ecological integrity. For example, the International Union for Conservation of Nature modelled its principles, guidelines, and best practices for ecological restoration of protected areas on Parks Canada guidelines.

7.7 Parks Canada manages ecological integrity in national parks through applied research, monitoring, and active management and restoration activities. Because of the complexity of ecosystems, park managers find that science-based information on plant and animal biodiversity, ecosystem processes, stressors, and threats is essential for making informed decisions. Moreover, long-term monitoring and measurement are necessary to understanding changes and trends. For these reasons, Parks Canada gathers information on park ecosystems through applied research and by monitoring selected indicators of ecosystem health.

7.8 Active management involves interventions that maintain or improve ecosystems. Under its Action on the Ground initiative, the Agency has identified 27 maintenance and restoration projects in 24 parks to address priority ecological integrity issues between 2009 and 2014. Active management includes controlling **hyperabundant species** and invasive alien species, conducting **prescribed burns**, and managing wildlife disease. It also includes restoration activities such as improving aquatic connectivity in streams by reducing barriers to the

Hyperabundant species—A species whose population has grown to the point where it exceeds the capacity of the landscape to provide enough suitable habitat.

Prescribed burn—A controlled fire in a prescribed area that safely imitates natural fires.

passage of fish, remediating contaminated sites, or reintroducing native plant or animal species that have been eliminated from an ecosystem (Exhibit 7.2).

Before and after—Removal of logs to enhance the health of the aquatic ecosystem of Lake Isaïe, La Mauricie National Park.

Photo: © Parks Canada / La Mauricie National Park

Exhibit 7.2 Reintroduction of native fish to lakes in La Mauricie National Park

Species within ecosystems have evolved to be interdependent. The introduction of a new species might not only displace a native species; it might also disrupt the balance of an entire ecosystem. Some species might become hyperabundant due to the removal of a natural predator, while others may become extinct in the area due to the removal of natural prey.

Between 1883 and 1970, fish and game clubs introduced numerous non-native species of fish into lakes, rivers, and streams, with the goal of improving fishing in the waters they managed. Most of these introductions proved disastrous to the native brook trout, causing a significant decrease or the complete disappearance of many populations. In 2005, Parks Canada took steps to enhance the health of aquatic ecosystems in La Mauricie National Park, successfully reintroducing brook trout in seven lakes while eliminating non-native fish populations and using natural barriers to prevent their return.

Source: Adapted from Parks Canada documents.

Previous audit work

7.9 In Chapter 2 of the Commissioner of the Environment and Sustainable Development's September 2005 Report, Ecological Integrity in Canada's National Parks, the Commissioner found that gaps existed in the monitoring of ecological integrity in national parks. The Commissioner also found that park management plans were not up to date and that annual reports on the implementation of park management plans were not being produced regularly by all parks. The Commissioner recommended that Parks Canada ensure that park management plans be updated, that the Agency report publicly on the measures being taken to improve monitoring and restoration at the individual park level, and that this reporting contribute to an annual park management plan implementation report. The Agency agreed to these recommendations. This audit examines, among other things, Parks Canada's progress in these areas.

Focus of the audit

7.10 Our audit examined whether Parks Canada had fulfilled its key responsibilities for maintaining or restoring ecological integrity in national parks and park reserves. We examined a selection of parks to determine whether park officials had

- implemented park management plans and reported progress against these plans;

- implemented systems to monitor the condition of ecological integrity;
- adhered to the Agency's principles and guidelines for ecological restoration; and
- assessed potential positive and negative impacts of selected visitor activities and development projects within parks, and of adjacent land-use activities, on ecological integrity.

7.11 We also examined whether Parks Canada had assessed its capacity to fulfill its key ecological integrity responsibilities in light of recent reductions in human and financial resources and developed plans to address any identified gaps.

7.12 We selected a cross-section of eight national parks in southern Canada:

- Prince Edward Island National Park (Prince Edward Island),
- Fundy National Park (New Brunswick),
- La Mauricie National Park (Quebec),
- Thousand Islands National Park (Ontario),
- Point Pelee National Park (Ontario),
- Riding Mountain National Park (Manitoba),
- Banff National Park (Alberta), and
- Kootenay National Park (British Columbia).

A ninth selection, Pacific Rim National Park (British Columbia), is a national park reserve.

7.13 We also collected information, such as figures on the completion of park management plans and state of the park reports, on all 44 national parks and national park reserves.

7.14 More details about the audit objectives, scope, approach, and criteria are in **About the Audit** at the end of this chapter.

Observations and Recommendations

Park management planning and reporting

7.15 Parks Canada (the Agency) recognizes that developing and implementing management plans is one of the most important ways to achieve its goals for maintaining or restoring ecological integrity. The Agency's 1994 policy states that "In keeping with park management plans, Parks Canada will establish measurable goals and management strategies to ensure the protection of ecosystems in and around national parks." The *Canada National Parks Act* requires that, within five years after a park is established, a management plan for the park must be prepared and must contain certain specific elements, including several related to ecological integrity.

7.16 We examined whether Parks Canada had updated its guidance for park management planning and reporting in light of commitments it had made in response to the recommendations of the 2000 Panel on the Ecological Integrity of Canada's National Parks, and by the Commissioner of the Environment and Sustainable Development in Chapter 2 of the September 2005 Report, Ecological Integrity in Canada's National Parks.

7.17 We also examined whether park management plans for each of the nine parks

- contained the required elements (such as management objectives that specify how ecological integrity would be maintained or restored);
- showed that a strategic environmental assessment had been completed;
- prioritized ecological maintenance and restoration activities; and
- had been prepared in consultation with partners and stakeholders.

7.18 In addition, we examined whether park management plan implementation reports and state of the park reports had been completed, as required, to inform the planning process. Our recommendation for the section on planning and reporting, along with the Agency's response, is at paragraph 7.31.

Guidance for park management planning and reporting is in place

7.19 We found that Parks Canada had updated its Guide to Management Planning in 2008. The Guide sets out the policy for management planning for all national parks and reconfirms ecological integrity as a key concept for managing the long-term preservation of

biodiversity and ecosystem processes. The Guide also specifies that Parks Canada's activities in the areas of resource conservation, education, and visitor experience all contribute, in an integrated manner, to maintaining or restoring ecological integrity in national parks. The Agency has established clear expectations and structured approaches for how parks are to plan, manage, monitor, and report on their efforts to maintain or restore ecological integrity in national parks.

Park management plans contain required elements

7.20 With minor exceptions, the park management plans for the nine parks we examined contained the required sections or elements. The plans included management objectives that specified how ecological integrity would be maintained or restored, providing a basis against which to measure progress. We also found that each of the plans included the required information on the monitoring of ecological integrity, maintenance or restoration activities, zoning, and visitor use. We found that the required strategic environmental assessment had been completed for each of the nine plans. Completing a strategic environmental assessment ensures that the directions and proposals contained in the plan respect and support the overall ecological integrity goals and objectives for national parks.

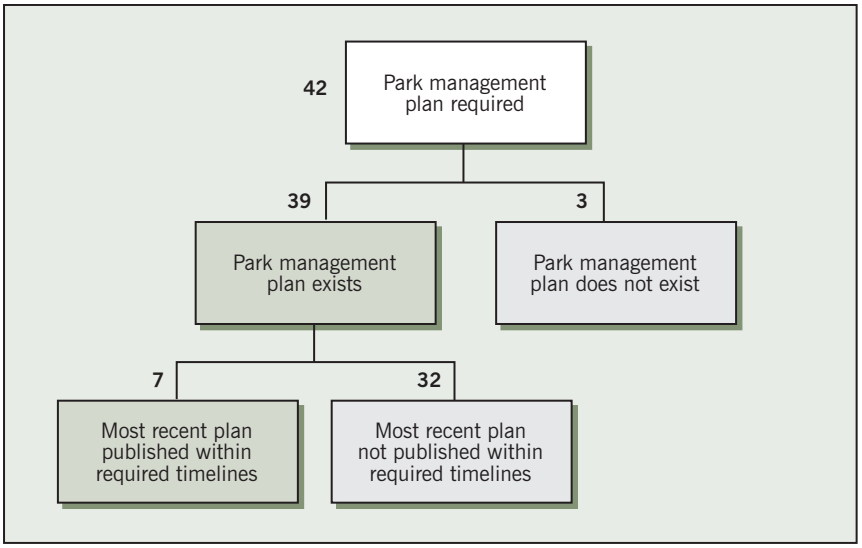
7.21 We found that each of the parks had also consulted with key partners and stakeholders on ecological integrity as part of the planning process.

Information to support park management has not been completed on time

7.22 **Park management plans.** The *Canada National Parks Act* requires a park management plan to be prepared within five years of a park being established. Park management plans must also be reviewed and updated to ensure that they reflect the results of past actions and continue to focus on key priorities for ecological integrity. We looked to see which of the 42 parks that were required to have a management plan had one in place and whether the most recent plan had been prepared on time.

7.23 In response to our 2005 audit, Parks Canada committed to producing park management plans consistent with management plan guidelines by March 2010. We found that the Agency had made satisfactory progress in this area: 39 of the 42 parks that were required to prepare a park management plan had one in place, providing objectives for the maintenance or restoration of ecological integrity. However, in 82 percent of cases (32 of the 39 parks), the plans had not been prepared within the time frame prescribed by the Act (Exhibit 7.3).

Exhibit 7.3 **Most park management plans are completed, but few were prepared on time**



Field unit superintendent—The top person responsible for the management of a field unit, which is a geographic area that usually includes one or more national parks, national historic sites, marine conservation areas, or historic canals.

7.24 Timely park management plans are important: they are the accountability tool between each park's **field unit superintendent** and the Agency's chief executive officer—and, in turn, between the chief executive officer and the minister. The plans also provide the goals and objectives for managing ecological integrity in each park over the planning period.

Annual reports on the implementation of park management plans have not been produced

7.25 **Annual park management plan implementation reports.** In 2000, the Agency committed to prepare annual park management plan implementation reports. The Commissioner's 2005 report found that these annual reports were not being produced regularly by all parks, and recommended that the Agency fulfill its commitment to prepare them. In response, the Agency again committed to preparing the reports. This annual reporting requirement was reconfirmed in its 2008 Guide to Management Planning. According to the Guide, reporting options range from a short written report to holding a professionally facilitated multi-day forum with stakeholders.

7.26 We found that the Agency's progress has been unsatisfactory, as only one of nine parks we examined had completed annual park management plan implementation reporting for each of the four years from 2009 to 2012. Five of the nine parks did no such reporting for any year. This reporting is an important basis for dialogue with partners, stakeholders, and Aboriginal peoples on what has been done to

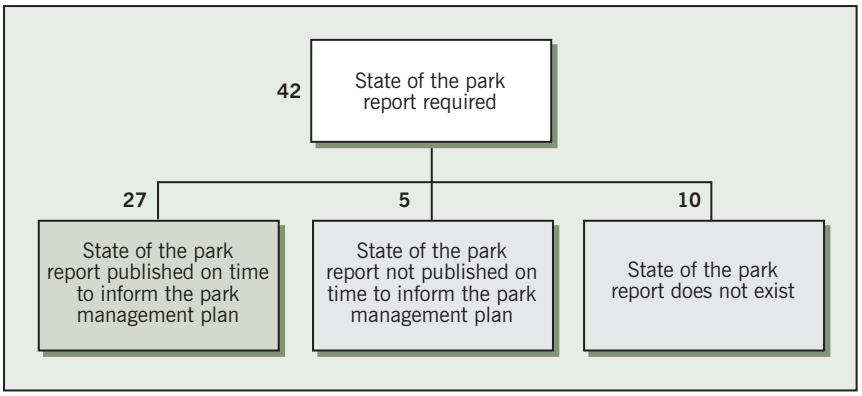
maintain or restore ecological integrity in the parks—as well as for evaluating the effectiveness of those initiatives and the need for corrective action.

7.27 **State of the park reports.** State of the park reports are another important tool for management planning. They contain information on the condition of ecological integrity in parks, which is essential for identifying priorities and for determining which maintenance and restoration activities have worked, and where corrective actions may be required to achieve the long-term ecological vision and the ecological integrity objectives for the park.

7.28 Parks Canada's 2002 guidelines indicate that a state of the park report for each park, including an assessment of the current condition of the park's ecological integrity, should be reviewed and updated every five years. We looked to see which of the 42 national parks that were expected to produce a state of the park report had done so and whether the reports had been prepared in advance of the park management plans they were meant to inform.

7.29 We found that about a quarter of the required state of the park reports had not been produced. Of the reports that had been produced, five had not been prepared in advance of the park management plans. As a consequence, for more than a third of the parks (15 of 42), management did not have a state of the park report as a basis for developing the next five-year plan for maintaining or restoring ecological integrity (Exhibit 7.4). Up-to-date state of the park reports are a key source of information and data on the condition of park ecosystems, and a key means to identify priorities for maintaining or restoring ecological integrity.

Exhibit 7.4 **Many state of the park reports were not produced or were late**



7.30 Parks Canada guidelines indicate that these reports are also meant to inform the public—including stakeholders such as land-use partners, co-managers, other government departments, interest groups, local communities, visitors, academics, and international organizations—on progress toward realizing the long-term ecological vision and the ecological integrity objectives for the park. The reports are intended to answer questions such as: What is the state of ecological integrity? Is it getting better or worse? Do we have enough information to know this? When state of the park reports are not produced or are late, the Agency's partners and the public lack information on the condition of many park ecosystems and the effectiveness of past actions that would enable them to provide more informed input to the Agency in the preparation of future park management plans.

7.31 **Recommendation.** Parks Canada should ensure that park management plans be completed within statutory timelines, that annual management plan implementation reporting be carried out, and that state of the park reports be prepared on time so as to inform the park management plans.

The Agency's response. Agreed. Parks Canada will ensure that, in the future, park management plans are completed within legislative timelines, that annual plan implementation updates are carried out, and that an assessment of the state of the park is completed in a timely manner so as to inform the park management plans.

Monitoring ecological integrity

7.32 Parks Canada (the Agency) officials conduct ecological research and monitoring to gain a better understanding of natural ecological processes, biodiversity, and the state of ecosystem health in Canada's national parks. Parks Canada's Guiding Principles and Operational Policies document states that management should base decisions on the best available knowledge, supported by a wide range of research, including a commitment to scientific monitoring. Likewise, the *Canada National Parks Act* requires the development of ecological indicators as a basis for management planning. The knowledge generated by monitoring and research helps to guide the Agency's ecological maintenance and restoration activities.

7.33 In Chapter 2 of our 2005 report, Ecological Integrity in Canada's National Parks, the Commissioner of the Environment and Sustainable Development noted gaps in the Agency's systems for monitoring ecological integrity. In response, Parks Canada committed to

establishing a fully functional monitoring and reporting system by March 2009. Improving data management was to be a key component of the system.

7.34 We looked at the Agency's guidance for monitoring ecological integrity and whether the parks we examined had developed and implemented a monitoring system that included the required elements. Our recommendation for the section on monitoring ecological integrity, along with the Agency's response, is at paragraph 7.74.

Guidelines for monitoring ecological integrity have been developed

Eelgrass meadow monitoring at Pacific Rim National Park Reserve.

Photo: Jennifer Yakimishin / © Parks Canada / Pacific Rim National Park Reserve

7.35 We found that Parks Canada updated its guidelines for ecological integrity monitoring in 2011. The guidelines explain that monitoring activities support the Agency's commitment to maintain or restore ecological integrity in national parks. The guidelines also note that managers need credible information if they are to understand and communicate the condition of park ecosystems and assess their progress in achieving objectives. The guidelines also set out a monitoring approach with two interrelated elements:

- condition monitoring—the assessment of the condition of a park, and
- effectiveness monitoring—the assessment of the success of ecosystem maintenance and restoration projects.

7.36 The guidelines establish clear direction on how ecological integrity is to be monitored in national parks. Agency officials are to assess ecological integrity by examining the major park ecosystems, such as forests, wetlands, and fresh water. They are to assess the ecological condition of these ecosystems (good, fair, or poor) and the trend (improving, declining, or stable). The guidelines recommend that ecosystem **indicators** should comprise five **measures**, such as species abundance and rates of growth, to ensure scientific credibility and to mitigate the risk of false findings. The condition of each park ecosystem is to be derived from an assessment of **thresholds** that should be established for each measure. Finally, measurement is to be carried out in accordance with specific protocols that include standard operating procedures, rationales, methods, logistics, and responsibilities related to sampling, analysis, and assessment. The Agency also developed an intranet-based **Information Centre on Ecosystems** database to document all protocols, standards, and baseline data, and to archive monitoring data.

Indicator—A nationally consistent summary statement, based on a combination of measures, that provides a clear assessment of the condition of a major park ecosystem.

Measure—Monitoring data that contribute to a specific ecological integrity indicator, that are collected over time following a strict protocol, and that measure current conditions and change since the previous measurement.

Threshold—A level of an indicator or measure that represents the point at which the condition changes (for example, between good and fair, or fair and poor). Thresholds are science-based and are determined independently of management targets, or ability to influence their condition.

Information Centre on Ecosystems—A Parks Canada database that centralizes information on ecological integrity nationwide, and allows standardized reporting on the state of parks' ecosystems.

Key elements for scientifically credible monitoring are missing

7.37 **Plans, indicators, measures, thresholds, and protocols.** Parks Canada management told us that, in 2008, all parks developed five-year monitoring plans as a basis for requesting funding. However, we found that the plans for the nine parks we examined were based on out-of-date budget assumptions and that none had been updated to reflect the Agency's 2011 monitoring guidelines or revised budgets for ecological integrity monitoring. Parks Canada documents indicate that the 2008 monitoring programs could not be implemented as designed within current resource allocations, and that these programs were consequently stalled, delayed, reduced, or only partially implemented. Officials in some of the parks we examined told us that they were in the process of revising their monitoring programs to align with the 2011 guidelines and new funding allocations.

7.38 Despite the out-of-date monitoring plans, we found that officials in all nine parks we examined had identified the major ecosystems that had to be monitored to assess and report on the ecological integrity of the park. We also found that all of the parks we examined had identified some measures for each indicator. However, we found only three cases where at least five measures had been identified for each ecosystem, as recommended by the Agency's guidelines to ensure scientific credibility and to mitigate the risk of false findings. Other elements of a scientifically credible monitoring program, such as measurement protocols and thresholds, were also frequently missing. None of the nine parks we examined had put in place all the elements identified by the Agency for a scientifically credible monitoring system. Nevertheless, Parks Canada produces a national report, and some state of the park reports, based on the information that it does collect.

Muskoxen, Aulavik National Park, Northwest Territories

Photo: Wayne Lynch / © Parks Canada / Aulavik National Park

7.39 **Ecological monitoring in northern parks.** We looked at the general state of monitoring in Canada's northern parks. (Exhibit 7.1 shows the locations of these parks.) The Agency noted that northern parks face the biggest challenges to developing a functioning ecological monitoring system because of weather, resources, high staff turnover, and the remoteness and large geographic areas of most of these parks. For example, at 30,000 km^2, Nahanni National Park Reserve is the size of Belgium, while Quttinirpaaq National Park, at 37,775 km^2, is almost as large as Switzerland.

7.40 The approach to ecological integrity monitoring in the North is different than for southern parks because of these challenges. In contrast to southern parks, where on-the-ground monitoring is more feasible, remote sensing (such as through satellite data) is a

cornerstone for monitoring in the North. However, some on-the-ground testing is still needed to verify satellite data, and to monitor ecosystem conditions where remote sensing cannot be used, such as for monitoring water quality.

7.41 Though monitoring plans have been required in southern parks since 2008, due to the many challenges of monitoring ecosystems in remote northern regions, they will not be required for northern parks until 2014. Nevertheless, we found that draft plans are in development. We also found that at least two key ecosystems had been identified in each of these parks as bases for monitoring ecological integrity, as required by the Agency. Some monitoring was being carried out in most of the northern parks through on-the-ground monitoring sites, traditional knowledge, or remote sensing. However, monitoring in northern parks remains relatively weak as compared with southern parks. Parks Canada has not yet determined the condition of many northern park ecosystems (good, fair, or poor) or the trends (improving, stable, or declining). The Agency has not yet collected enough information to permit reporting on the condition of these park ecosystems.

Monitoring information is not updated regularly

7.42 Parks Canada guidelines indicate that methods, protocols, data, and analyses for ecological integrity measures should be documented in the Agency's Information Centre on Ecosystems (ICE). For most of the parks we examined, we found that the required information had not been uploaded in accordance with the guidelines. Parks Canada's 2013 evaluation of its Heritage Resources Conservation also noted that data was not being consistently entered into ICE and that program staff viewed the database as out of date. Updating the ICE database is important, because Parks Canada's State of Canada's Natural and Historic Places report rolls up the data available in ICE to provide a national assessment of the state of ecological integrity in Canada's national parks.

Cliff erosion at Prince Edward Island National Park is increasing due to sea-level rise and severe storms related to climate change.

Photo: James Reinhart, Office of the Auditor General of Canada

7.43 **Progress since 2005.** A fully operational monitoring system is especially important for guiding the Agency's efforts to understand and counter existing and emerging threats to park ecosystems. The Agency has identified increasing numbers of species at risk and invasive alien species, the emerging impacts of climate change, and the effects of habitat degradation and biodiversity loss outside of national parks as key threats that challenge its ability to maintain or restore ecological integrity in national parks. In 2011, Parks Canada revised its

monitoring guidelines. The Agency is still working on completing requirements for a fully functional monitoring system that will support decision making and help it understand and counter existing and emerging threats to ecological integrity. We found that the Agency's progress in establishing a fully functional monitoring and reporting system by March 2009 is unsatisfactory.

Gaps remain in baseline data on park ecosystems and processes

7.44 In addition to monitoring, Parks Canada's Guiding Principles and Operational Policies document requires basic and applied research on species and ecosystem processes, to support planning and operational decisions. In 2001, Parks Canada developed a directive on ecological data management to strengthen the systematic collection, access, storage, retrieval, and application of data, information, and knowledge in support of ecosystem management.

7.45 We examined whether park officials had

- developed a park data management plan in accordance with the 2001 directive;
- gathered the prescribed baseline information on natural ecosystem processes (such as fire and hydrology), biodiversity (plant and animal populations), abiotic components (non-living chemical and physical factors in the environment, such as climate, geology, and soils), and on stressors (such as climate change, disease, visitor activities, and hyperabundant and invasive alien species) that pose a threat to the ecological integrity of the park; and
- identified gaps in baseline information and put plans in place to address those gaps.

Red fox, La Mauricie National Park

Photo: Jacques Pleau / © Parks Canada / La Mauricie National Park

7.46 In all nine parks we examined, we found that park officials had collected some baseline information on natural ecosystem processes and abiotic components, and had identified threats and risks to ecological integrity. However, for all nine parks we examined, Parks Canada officials had also identified some gaps in baseline data—such as inventories of selected plant and animal species—that are considered essential for managing ecological integrity. We also found that data management plans required by the 2001 directive had not been prepared for any of the nine parks. At the end of our audit, Parks Canada management advised us that the directive is currently inactive, as it is being reviewed and updated.

Maintaining or restoring ecological integrity

7.47 Ecological maintenance and restoration activities in national parks are intended to counteract threats to ecological integrity, such as incompatible land use, habitat fragmentation, invasive alien species, air and water pollution, and climate change. Under its Action on the Ground initiative, Parks Canada (the Agency) identified 27 maintenance and restoration projects in 24 national parks, for the period 2009 to 2014. Maintenance and restoration activities include

- replacing culverts under roads that have created barriers to the passage of fish;
- eliminating, reducing, or managing hyperabundant species (such as unusually high populations of deer) that threaten the ecological integrity of park ecosystems; and
- restoring natural ecosystem processes (such as fire cycles) that have been altered by humans.

7.48 In Chapter 2 of our September 2005 Report, Ecological Integrity in Canada's National Parks, the Commissioner recommended that actions the Agency was taking to improve ecological restoration, including preparing guidelines for restoration activities, be completed and consistently implemented at the park level. The Agency agreed.

Guidance for ecological maintenance and restoration is now in place

Wildlife overpass on the Trans-Canada Highway, Banff National Park

Photo: Hans Reisenleiter / © Parks Canada / Banff National Park

7.49 We found that the Agency fulfilled its 2005 commitment. In 2008, Parks Canada developed Principles and Guidelines for Ecological Restoration in Canada's Protected Natural Areas. These principles and guidelines supplement other directives and guidance that the Agency has in place to assist park staff in planning and implementing ecological maintenance and restoration projects, including the directives on the management of alien species in Canada's national parks, the management of hyperabundant wildlife populations in Canada's national parks, and fire management.

Restoration and maintenance projects are carried out in accordance with Agency guidelines

7.50 We examined whether park management had adhered to Agency guidelines and directives in the planning and implementation of ecological maintenance or restoration projects. We selected one project from each of the nine parks and examined whether Parks Canada staff had

- consulted with partners and stakeholders in developing project plans,

- considered potential adverse environmental effects,
- developed a restoration plan that contained the required elements,
- undertaken monitoring to assess the effectiveness of the projects, and
- reported results.

7.51 With minor exceptions, we found that the ecological maintenance or restoration projects we examined were planned and implemented in accordance with Agency requirements. Key partners and stakeholders had been consulted, information had been collected to assess the condition of the ecosystems, and potential adverse environmental effects had been considered. Restoration plans included key elements (such as well-defined goals, monitoring strategies, and performance measures); requirements were in place for project follow-up to determine their effectiveness in achieving planned results; and results had been reported.

Targets for fire management are not being met

7.52 Fire is a natural process that is essential to maintain ecological integrity in many parks (Exhibit 7.5). The government-appointed Panel on the Ecological Integrity of Canada's National Parks recommended that, in appropriate parks, the Agency should restore fire to 50 percent of the historical average area burned. As part of this recommendation, the Panel identified $6 million per year in additional funding as the amount required to achieve the target. The Agency decided that attaining the target was not feasible with the funding available, and established an overall national target of 20 percent, with five parks retaining individual targets of 50 percent. Both wildfires and prescribed burns contribute to the achievement of fire targets.

Before and after—Use of fire to restore wildlife habitat near the Redstreak Campground at Kootenay National Park.

Photo: Alan Dibb / © Parks Canada / Kootenay National Park

7.53 Factors that affect the timing and implementation of prescribed burns include weather as well as the availability of program staff to manage the fires, public safety, and protection of species at risk. Because any one of these variables could prevent the achievement of fire targets in any given year, the parks measure their fire targets and performance over 10-year periods.

7.54 We examined whether fire targets were met during the period from 2003 to 2012. We found that, for 7 of the 35 parks with fire-dependent ecosystems, insufficient data had been gathered by the Agency to estimate the area historically burned. Therefore, the Agency does not know if targets were met in those parks. Of the

remaining 28 parks with fire-dependent ecosystems, targets were achieved in 9 parks. As a result, the Agency either does not know or has not met its fire targets in 74 percent of national parks that have fire targets.

7.55 The 20 percent overall target established by the Agency is less than half of the 50 percent target considered necessary for maintaining ecological integrity. Failure to achieve fire targets can lead to a buildup of fuel and the potential for catastrophic, high-intensity wildfires. Such out-of-control fires can alter entire ecosystems and pose significant risks to human lives and facilities. However, Parks Canada officials told us that fire management is multi-faceted and includes a variety of measures in addition to the use of prescribed burns to help protect people, infrastructure, and surrounding lands from wildfire. Examples include the creation of fire breaks, the removal of fuel, and the nationwide FireSmart program, which is intended to inform homeowners and communities of simple steps they can take to reduce the impact of wildfire. Our recommendation on fire targets, along with the Agency's response, is at paragraph 7.74.

Exhibit 7.5 Fire management is critical to maintaining ecological integrity

Fire recycles nutrients in the soil, encourages new plant growth, controls invasive alien species, and creates important habitat for birds and animals. For decades, fire was actively suppressed in national parks to reduce the threats to public safety and infrastructure. This practice resulted in significant habitat changes, including the accumulation of dead wood and debris, which can lead to more intense wildfires.

Prescribed burn, Banff National Park, 2009

Photo: Jane Park / © Parks Canada / Banff National Park

Parks Canada has reintroduced fire in the form of prescribed burns, to restore and maintain ecosystems and to reduce the risk of wildfires around critical areas such as town sites. Climate models predict increased occurrences and intensity of wildfires, which Parks Canada has acknowledged will challenge fire management.

An additional challenge is the availability of sufficient human resources to meet the needs of Parks Canada's fire management program. The Agency's 2010 National Fire Management Plan indicates that "staff noted an increasing difficulty mobilizing Incident Management Teams and other human resources to manage wildfire incidents and prescribed fire projects." The Plan also notes that "as the demand for human resources increases through escalating wildfire incidence and severity, and through 'Action on the Ground' fire restoration projects, future shortages are likely."

Source: Adapted from Parks Canada documents

Assessing impacts of visitor activities and development

Jones Creek Trail Boardwalk, Thousand Islands National Park—Floating archway bridge designed to reduce impact on the creek and wetland.

Photo: Tom Lusk / © Parks Canada / Thousand Islands National Park

7.56 Parks Canada Guiding Principles and Operational Policies document clearly states that ecological integrity through the protection of natural resources will be the first priority when considering visitor activities and capital development projects (facilities, accommodations, and infrastructure) in national parks. Furthermore, this document states that

- only outdoor activities that promote the appreciation of a park's purpose and objectives, that respect the integrity of the ecosystem, and that call for a minimum of built facilities will be permitted;
- human activities that threaten the integrity of park ecosystems will not be permitted; and
- fostering appreciation and understanding of ecological integrity is the foundation for public use and enjoyment.

7.57 We examined whether park management had assessed the potential impacts of visitor activities and capital development projects (such as developing new hiking trails, reconstructing dams, and repairing highways) on ecological integrity, and had identified and implemented measures required to address any negative impacts. We selected one project or activity from each park and examined whether park managers followed requirements to ensure that ecological integrity was considered. We examined whether

- an environmental assessment had been completed where required,
- Parks Canada managers could show that obligations stemming from the environmental assessments had been fulfilled, and
- effectiveness monitoring had been carried out on the impacts of the project or activity on ecological integrity.

Impacts on ecological integrity were considered when planning and approving projects

7.58 We found that, for each of the visitor activity and development projects we examined, park managers had followed Agency requirements to consider the impacts they might have on ecological integrity. Environmental assessments were completed where required, and these included an assessment of cumulative impacts. Where mitigation measures applied, Parks Canada managers had taken steps to obtain assurance that the measures had been implemented. Through its environmental assessment processes, Parks Canada determined that follow-up was unnecessary for most of the projects we examined. In cases where follow-up monitoring was deemed necessary, we found that

either follow-up was done or that plans were in place to do so at the appropriate time.

7.59 However, stakeholders have raised concerns about the potential impact of certain visitor activities on wildlife and wildlife habitat. They maintain that visitor activities involving commercial developments such as ski areas are incompatible with the Agency's top priority of maintaining or restoring ecological integrity in national parks, and that there is no evidence that these types of activities promote the appreciation of a park's purpose and objectives, or foster an appreciation or understanding of ecological integrity as called for by the Agency's guiding principles (Exhibit 7.6). The Commissioner has also received several **environmental petitions** on these matters.

Environmental petition—A formal means, established under the *Auditor General Act*, for Canadians to bring their concerns about environmental issues to the attention of federal ministers and departments and to obtain a response. For further information on the petition process, please consult Chapter 9 in this report.

Exhibit 7.6 Visitor activities at Mount Norquay concern some stakeholders

In May 2013, the Minister of the Environment (responsible for Parks Canada) approved a Long Range Plan for the Mount Norquay ski area in Banff National Park. The Plan, prepared by the ski resort operator, outlines the development and operation of the ski area for 5 to 15 years. Approved development under the Plan includes *via ferrata* (climbing routes that use cables, ladders, and bridges fixed to a mountain's upper cliffs), a new observation deck, and summer operation of the upper mountain tea house and chairlift.

Parks Canada received both positive and negative public comments on the Plan. Some commented that the Plan was a good example of environmental stewardship. Others were concerned that the decision essentially reversed the ban on summer operation of the chairlift and tea house that had been in place since 1989. Key concerns were the impacts that summer use activities could have on sensitive vegetation and wildlife. In particular, there are concerns about further encroachment by larger numbers of visitors into grizzly bear habitat and the wildlife corridor.

Consistent with our findings related to the other visitor activities and capital development projects we examined, Parks Canada officials had assessed the potential impacts of the proposal on ecological integrity. A strategic environmental assessment and an environmental impact assessment had been completed and the Agency had analyzed public comments received on the Long Range Plan. The Long Range Plan that was approved by the Minister reflected key mitigating measures related to summer use stipulated in the site guidelines for the Norquay ski area and in the Environmental Impact Assessment of the development proposal.

Source: Based on Parks Canada documents.

7.60 Parks Canada officials told us that visitor experience and education are integral components of its approach to maintaining or restoring ecological integrity in national parks. According to the Agency, visitor activities allow people to experience Canada's national parks, and this translates into public support for the Agency's mandate and programs for protecting ecological integrity. For example, new activities such as mountain biking, aerial parks, hang gliding, and *via ferrata* have recently been approved in principle for national parks.

Parks Canada provided us with some studies and survey information on the link between park visitation and support for national parks, but further study to validate that such activities satisfy the Agency's criteria of fostering an appreciation and understanding of ecological integrity and the purpose and objectives of national parks could help to alleviate stakeholder concerns.

Assessing the impacts of adjacent land use

7.61 Parks Canada's (the Agency's) 2011 State of Canada's Natural and Historic Places report identifies adjacent land use—such as industrial forestry operations—as a key threat to ecological integrity. The report notes that forestry operations and other land developments adjacent to national parks may directly affect the health of a park's flora and fauna. This is especially true for animal species that regularly move beyond park boundaries to meet basic needs such as breeding, or rearing young. When adjacent land use is incompatible with conservation, parks become isolated, reducing their effectiveness.

7.62 Parks Canada's Guiding Principles and Operational Policies document requires national parks to make concerted efforts to encourage compatible activities on adjacent lands and to discourage incompatible ones, and to establish measurable goals and management strategies to ensure the protection of ecosystems in and around national parks. Where activities outside a park threaten ecological integrity, Parks Canada is expected to initiate action with adjacent land managers, with the aim of eliminating or reducing the threat.

7.63 We examined whether Agency officials had

- identified and assessed the potential impact of adjacent land-use activities,
- identified actions for addressing adjacent land-use activities that may have an impact on ecological integrity within the park,
- established measurable goals and management strategies for addressing the potential impacts,
- participated in regional land-use planning with the aim of mitigating the impact of adjacent land-use practices on park ecosystems, and
- worked with adjacent land managers to alleviate the impact of incompatible adjacent land use.

Actions have been taken to address the impacts of adjacent land uses on parks

7.64 Park officials use various means to understand risks of adjacent land use, such as participating in regional land-use planning exercises, sitting on public advisory boards related to resource-extraction industries, and partnering with local organizations such as conservation authorities. We found that officials in all nine parks had identified the potential impacts on ecological integrity from adjacent land-use activities such as agriculture, forestry, urbanization, and hydroelectric dams.

7.65 Although no systematic approach was in place to establish measurable goals and strategies to alleviate the effects of incompatible land uses on the park ecosystems, we found that officials in most parks could demonstrate that they had taken action and worked cooperatively with adjacent land managers on selected issues (Exhibit 7.7).

Exhibit 7.7 Working with adjacent land managers helps mitigate the impacts of development

At Thousand Islands National Park, park officials were invited to comment on plans of surrounding municipalities. Their input led some adjacent townships to include sustainability considerations in their official plans, thus helping to buffer park lands from surrounding development and maintaining connections between park ecosystems and the larger ecosystem. For example, one municipality's official plan includes a requirement to consult with Parks Canada and other authorities when development or site alteration is proposed adjacent to Crown or conservation lands.

Source: Adapted from Parks Canada documents.

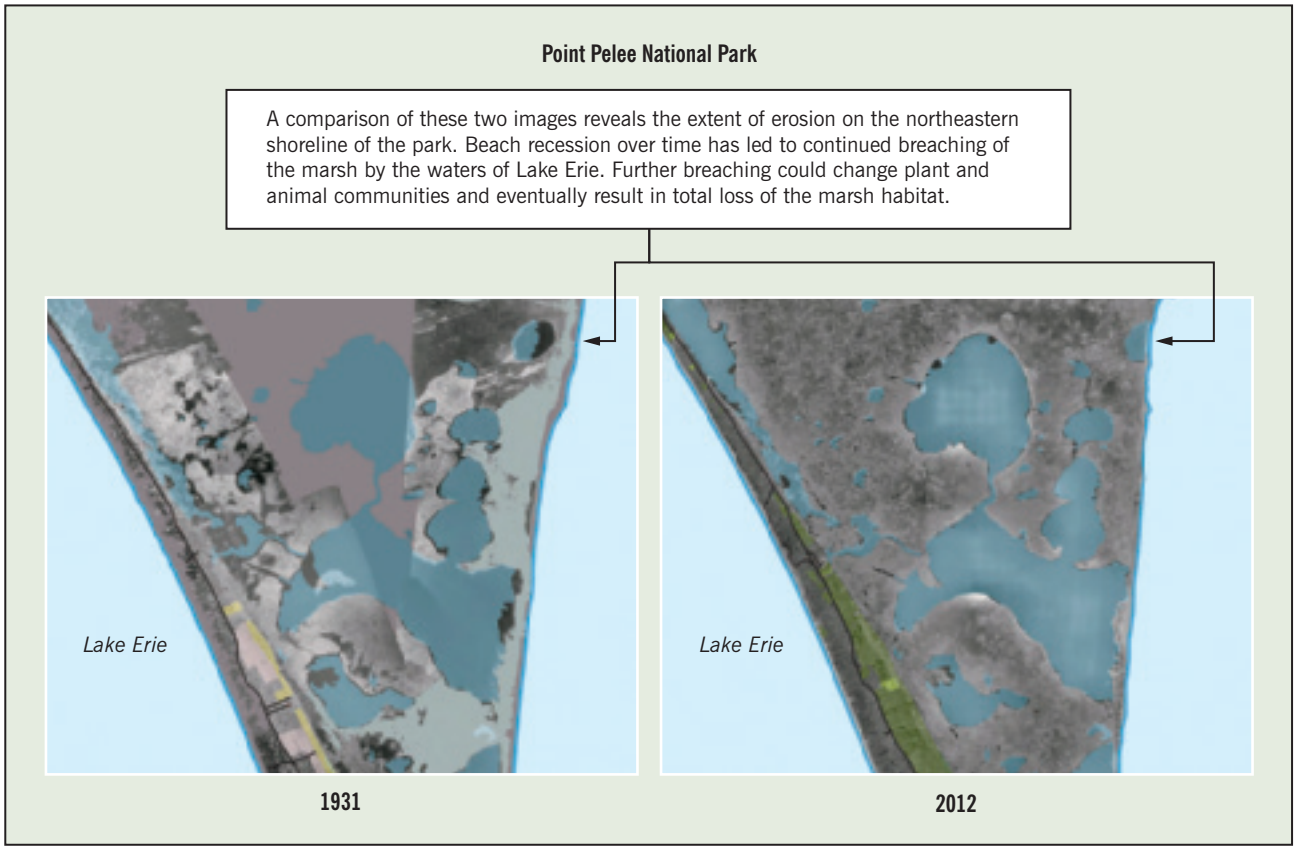
Adjusting to resource reductions

Challenges to maintaining ecological integrity are intensifying

7.66 Maintaining or restoring ecological integrity is challenging. It involves gathering, analyzing, and using ecosystem data to address environmental issues involving multiple species and dynamic habitat conditions. Parks Canada's (the Agency's) 2011 State of Canada's Natural and Historic Places report noted that it had not yet assessed the condition of ecological integrity for 41 percent of the parks' ecosystems, and expected to take several years to do so. The report revealed that less than half of the assessed ecosystems in Canada's national parks were in good condition, and noted that it was a cause for concern that 43 percent of the ecosystems assessed by the Agency to be in fair condition were showing a declining trend. The Agency also found declining trends in the ecosystems it had assessed as good and poor. Overall, we noted that 34 percent of the ecosystems assessed by the Agency were found to be in decline.

7.67 At the same time, threats to park ecology—including invasive alien species, climate change, and habitat degradation outside of national parks—are intensifying, and the Agency has identified them as key risks. For example, Point Pelee National Park has reported that extensive loss and degradation of coastal wetlands and near-shore habitats have disrupted natural lake and shoreline processes in the Lake Erie basin. The total beach area of the park has declined by more than half since 1931 (Exhibit 7.8). While erosion and deposition are natural disturbances to the shoreline habitat, this accelerated erosion is thought to be caused by harbour structures in nearby towns, public and private shoreline protection, and sand mining carried out over the past century. The Agency reported in 2011 that the condition of this coastal ecosystem was poor and in decline.

Exhibit 7.8 Accelerated shoreline erosion at Point Pelee National Park threatens marshland and coastal ecosystems



Source: Adapted from Parks Canada.

Resources for maintaining ecological integrity have been reduced

7.68 We found that overall spending on Heritage Resources Conservation decreased by 15 percent in the 2012–13 fiscal year, compared with the average of the preceding six years, with further reductions planned as part of decisions flowing from the 2012 federal budget. The planned staffing numbers in Heritage Resources Conservation were reduced by 23 percent in the 2013–14 fiscal year compared with the average of the previous seven years. More specifically, staffing in the science work stream was reduced by 33 percent during this period, as 60 of 179 positions were eliminated. We also found that the number of positions that are seasonal increased from 37 percent to almost 60 percent for the 2013–14 fiscal year. This exacerbates the impact of the reduction in the number of positions because seasonal staff work for only part of the year.

7.69 When Parks Canada originally developed ecological monitoring programs for national parks in 2008, the Agency allocated $42,000 per park in supplemental funding for program implementation. Actual funding was subsequently reduced to $15,000 per park. An assessment by Parks Canada in 2010 noted that some monitoring programs had stalled and were being cut back after the funding change. Surveys of Parks Canada officials carried out as part of a program evaluation by the Agency's Office of Internal Audit and Evaluation elicited the following responses:

- "monitoring measures have to be eliminated and protocols revised given the underfunding of the monitoring program";
- "the biggest constraints are inadequate staffing and eroding budgets"; and
- "significant investment was made to design the monitoring program, however over time money has drained away and…thus our ability to accurately describe what is happening in ecosystems is limited."

A response by Parks Canada for one of the parks we examined revealed that the 2008 monitoring program could not be implemented because of the decrease in financial resources, compounded by a 47 percent drop in staff resources available for ecological monitoring in that park.

7.70 As noted earlier, other important gaps exist in the Agency's systems for maintaining and restoring ecological integrity, such as completing priority research and producing park management implementation reports and state of the park reports.

Analysis of the Agency's capacity to maintain ecological integrity is lacking

7.71 In light of recent significant reductions in budgets and staff for Heritage Resources Conservation, we examined whether the Agency had assessed its capacity to fulfill its key responsibilities across Canada's national parks and whether it had developed plans to address identified implementation gaps and the decline in the condition of many park ecosystems.

7.72 We asked the Agency for its capacity analysis and action plan for closing the implementation gaps and addressing the decline in the condition of many park ecosystems. Management told us that the Agency had made adjustments to adapt to reduced budgets and staff for Heritage Resources Conservation. For example:

- More scientific capacity was required during the development phase of the Agency's monitoring program than is now required to implement it. As a result, fewer science positions are needed.
- Park monitoring programs are being modified to reflect the 2011 guidelines.
- Reallocation of law enforcement and visitor duties previously carried out by resource conservation officers has allowed for a reduction in their numbers with no loss of capacity.
- The Agency has reassessed the types and numbers of staff needed to carry out the Agency's core responsibilities in each park.

7.73 We noted that most of these adjustments had begun before the most recent budget reductions. The adjustments reallocate fewer resources across the Agency's various responsibilities for maintaining or restoring ecological integrity; furthermore, the Agency provided no quantitative analyses to show that these actions are sufficient to address the resource reductions. Neither Parks Canada's national office nor any of the nine parks we examined could provide a concrete plan showing how and when, with significantly fewer resources, the Agency would clear the backlog of work necessary to fully implement its systems for maintaining or restoring ecological integrity, while continuing to fulfill its key responsibilities.

7.74 **Recommendation.** In light of recent resource reductions, Parks Canada should carry out a capacity analysis and take action to close the following implementation gaps. The Agency should clarify how and by when it will

- address identified gaps in priority research to establish baseline data on park ecosystems;

- produce park management implementation reports and state of the park reports;
- complete the implementation of a scientifically credible, fully operational system to monitor and report on the state of ecological integrity in Canada's national parks;
- ensure that the information gathered through the monitoring system is uploaded to the Agency's Information Centre on Ecosystems database in a timely manner;
- meet its targets for active management of fire; and
- address the decline in the condition of many park ecosystems.

The Agency's response. Partially agreed.

The Agency does not consider that it needs to carry out additional capacity analysis as it has already ensured that the capacity within the new organizational model for the resource conservation function was aligned to meet Parks Canada's conservation priorities.

Parks Canada agrees that, based on its current capacity, it will undertake the following actions:

- Ensure that park management plans are completed within the legislative timelines, that annual plan implementation updates are carried out, and that an assessment of the state of the park is completed in a timely manner so as to inform the park management plans.
- Ensure that information gathered through monitoring is uploaded to the Information Centre on Ecosystems database on an annual basis.
- Align individual park monitoring programs with the Parks Canada 2011 Guidelines for Ecological Integrity Monitoring in Canada's National Parks to ensure that fully operational monitoring programs are in place in each park in time to inform the assessment of state of the park and the management planning process.
- Invest, on average, $15 million annually in its Action on the Ground initiative, implementing active management and ecological restoration projects (including the active use of fire) to address key ecological issues (as informed by ecological monitoring and research) and improve one ecological integrity indicator in 20 national parks by March 2015.

Conclusion

7.75 Parks Canada (the Agency) is fulfilling its key responsibilities for maintaining or restoring ecological integrity in Canada's national parks. The Agency has developed a solid framework of policies, directives, and guidelines for fulfilling its key responsibilities for maintaining or restoring ecological integrity. Since the 2000 Panel on the Ecological Integrity of Canada's National Parks and our 2005 audit, Parks Canada has improved its guidance in many areas. The Agency has updated its guidelines for park management planning and reporting, developed principles and guidelines for ecological restoration, and issued a series of guidelines for monitoring ecological integrity.

7.76 Park officials considered the potential impacts on ecological integrity of the capital development projects and visitor activities that we examined. The ecological maintenance and restoration projects that we examined were carried out in accordance with the Agency's guidelines and directives. The Agency has carried out significant work in every area we examined.

7.77 However, implementation of systems for monitoring and reporting on ecological integrity has been slow, and the Agency is challenged to meet many of its deadlines and targets. For example, key elements for a scientifically credible system for monitoring ecological integrity are either missing or only partly developed. In most cases, the Agency has not carried out annual reporting against park management plans or updated information to support planning and reporting. Also, targets for maintaining ecosystems through the active management of fire have not been met.

7.78 The Agency has not clarified how and by when, with significantly fewer resources, it will address the backlog of unfinished work, the emerging threats to ecological integrity, and the declines it has identified in the condition of many park ecosystems. Consequently, there is a significant risk that the Agency could fall further behind in its efforts to maintain or restore ecological integrity in Canada's national parks.

About the Audit

All of the audit work in this chapter was conducted in accordance with the standards for assurance engagements set by The Canadian Institute of Chartered Accountants. While the Office adopts these standards as the minimum requirement for our audits, we also draw upon the standards and practices of other disciplines.

As part of our regular audit process, we obtained management's confirmation that the findings reported in this chapter are factually based.

Objective

The objective of this audit was to determine whether Parks Canada has fulfilled its key responsibilities for maintaining or restoring ecological integrity in national parks.

Scope and approach

We examined Parks Canada's responsibilities for terrestrial national parks. We did not examine the Agency's responsibilities for marine conservation areas or for national historic sites. We focused on the Agency's responsibilities for maintaining or restoring ecological integrity in national parks. We did not examine its responsibilities for public education or for enhancing visitor experience.

For our detailed examination work, we selected a sample of parks:

- Prince Edward Island National Park (Prince Edward Island)
- Fundy National Park (New Brunswick)
- La Mauricie National Park (Quebec)
- Thousand Islands National Park (Ontario)
- Point Pelee National Park (Ontario)
- Riding Mountain National Park (Manitoba)
- Banff National Park (Alberta)
- Kootenay National Park (British Columbia)
- Pacific Rim National Park Reserve (British Columbia)

We selected these parks because they are located across seven provinces and in a variety of ecological regions, and because they are diverse in terms of their geographic size, number of annual visitors, and the severity of the ecological pressures they face.

To determine whether Parks Canada has fulfilled its key responsibilities in maintaining or restoring ecological integrity in national parks, we examined whether each of the nine parks had

- implemented park management plans to maintain and restore ecological integrity, and reported progress against those plans;
- implemented systems to monitor the condition of ecological integrity, and gathered the baseline information necessary to determine the management activities required to maintain or restore ecological integrity;
- adhered to Agency guidelines and directives for the implementation of selected maintenance or restoration activities;
- assessed the potential impacts of selected capital development projects or visitor activities on ecological integrity; and
- assessed the potential impacts of adjacent land-use activities on ecological integrity within the parks, and identified measures within their mandated control to mitigate these impacts.

We selected maintenance or restoration projects and capital development projects or visitor activities in each of the nine parks for detailed examination. These encompassed a range of the types of projects and activities that the Agency undertakes. We selected projects that had been substantially completed.

We also examined broader considerations beyond our work in the nine selected national parks. We collected information, such as figures on the completion of park management plans and state of the park reports, on all 44 national parks and national park reserves. We examined the extent to which monitoring systems had been developed for the northern national parks. We also examined whether Parks Canada had assessed its capacity to fulfill its key responsibilities for maintaining or restoring ecological integrity in light of recent reductions in human and financial resources.

In addition to reviewing Agency documentation, we interviewed key individuals at Parks Canada's national office and at selected parks across Canada. We also conducted interviews with selected First Nations partners and park stakeholders.

Criteria

Criteria	Sources
To determine whether Parks Canada has fulfilled its key responsibilities for maintaining or restoring ecological integrity in national parks, we used the following criteria:	
Parks Canada has implemented management plans to maintain or restore ecological integrity, and has reported progress for selected national parks.	• *Canada National Parks Act*, *2000* • *Parks Canada Agency Act, 1998* • Parks Canada Guiding Principles and Operational Policies, 1994 • Parks Canada Guide to Management Planning, 2008

Criteria	Sources
To determine whether Parks Canada has fulfilled its key responsibilities for maintaining or restoring ecological integrity in national parks, we the following criteria (continued):	
Parks Canada has implemented systems to monitor the condition of ecological integrity and the effectiveness of management actions to maintain or restore ecological integrity in selected national parks.	• Parks Canada Guiding Principles and Operational Policies, 1994 • Consolidated Guidelines for Ecological Integrity Monitoring in Canada's National Parks, Parks Canada, 2011 • Monitoring and Reporting Ecological Integrity in Canada's National Parks, Volume 1: Guiding Principles, Parks Canada, 2005 • Monitoring and Reporting Ecological Integrity in Canada's National Parks, Volume 2: A Park-Level Guide to Establishing EI Monitoring, Parks Canada, 2007 • Ecological Integrity Monitoring in Northern National Parks: The Path Forward to 2014, Parks Canada, 2010
Parks Canada has gathered the baseline information needed to determine the management activities required to maintain or restore ecological integrity in selected national parks.	• Parks Canada Guiding Principles and Operational Policies, 1994 • Management Bulletin 2.4.9: Ecological Data Management, Parks Canada, 2001
Parks Canada has adhered to its directives and guidelines for the implementation of maintenance and restoration activities in selected national parks.	• Principles and Guidelines for Ecological Restoration in Canada's Protected Natural Areas, Parks Canada, 2008 • Directive on the Management of Alien Species in Canada's National Parks, Parks Canada, 2008 • Management Directive # 4.4.11: Management of Hyperabundant Wildlife Populations in Canada's National Parks, Parks Canada, 2007 • Management Directive # 2.4.4: Fire Management, Parks Canada, 2005 • Parks Canada Guiding Principles and Operational Policies, 1994
Parks Canada has assessed the potential impact (positive or negative) of selected visitor activities and capital development projects on ecological integrity, and identified and implemented measures required to address any negative impact.	• Parks Canada Guiding Principles and Operational Policies, 1994 • *Canadian Environmental Assessment Act*, *1992* and *2012* • Parks Canada Interim Directive on Implementation of the *Canadian Environmental Assessment Act 2012* • Management Bulletin 2.6.10: on Recreational Activity and Special Event Assessments, revised 2010
Parks Canada has assessed the potential impact of adjacent land-use activities on ecological integrity within parks, and identified and implemented measures within its mandated control to mitigate the impact.	• Parks Canada Guiding Principles and Operational Policies, 1994

Management reviewed and accepted the suitability of the criteria used in the audit.

Period covered by the audit

The audit covered the period between January 2006 and June 2013. Audit work for this chapter was completed on 25 June 2013.

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Appendix List of recommendations

The following is a list of recommendations found in Chapter 7. The number in front of the recommendation indicates the paragraph number where it appears in the chapter. The numbers in parentheses indicate the paragraph numbers where the topic is discussed.

Recommendation	Response
Park management planning and reporting	
7.31 Parks Canada should ensure that park management plans be completed within statutory timelines, that annual management plan implementation reporting be carried out, and that state of the park reports be prepared on time so as to inform the park management plans. **(7.15–7.30)**	Agreed. Parks Canada will ensure that, in the future, park management plans are completed within legislative timelines, that annual plan implementation updates are carried out, and that an assessment of the state of the park is completed in a timely manner so as to inform the park management plans.
Adjusting to resource reductions	
7.74 In light of recent resource reductions, Parks Canada should carry out a capacity analysis and take action to close the following implementation gaps. The Agency should clarify how and by when it will • address identified gaps in priority research to establish baseline data on park ecosystems; • produce park management implementation reports and state of the park reports; • complete the implementation of a scientifically credible, fully operational system to monitor and report on the state of ecological integrity in Canada's national parks;	Partially agreed. The Agency does not consider that it needs to carry out additional capacity analysis as it has already ensured that the capacity within the new organizational model for the resource conservation function was aligned to meet Parks Canada's conservation priorities. Parks Canada agrees that, based on its current capacity, it will undertake the following actions: • Ensure that park management plans are completed within the legislative timelines, that annual plan implementation updates are carried out, and that an assessment of the state of the park is completed in a timely manner so as to inform the park management plans. • Ensure that information gathered through monitoring is uploaded to the Information Centre on Ecosystems database on an annual basis.

Recommendation	Response
• ensure that the information gathered through the monitoring system is uploaded to the Agency's Information Centre on Ecosystems database in a timely manner; • meet its targets for active management of fire; and • address the decline in the condition of many park ecosystems. **(7.66–7.73)**	• Align individual park monitoring programs with the Parks Canada 2011 Guidelines for Ecological Integrity Monitoring in Canada's National Parks to ensure that fully operational monitoring programs are in place in each park in time to inform the assessment of state of the park and the management planning process. • Invest, on average, $15 million annually in its Action on the Ground initiative, implementing active management and ecological restoration projects (including the active use of fire) to address key ecological issues (as informed by ecological monitoring and research) and improve one ecological integrity indicator in 20 national parks by March 2015.