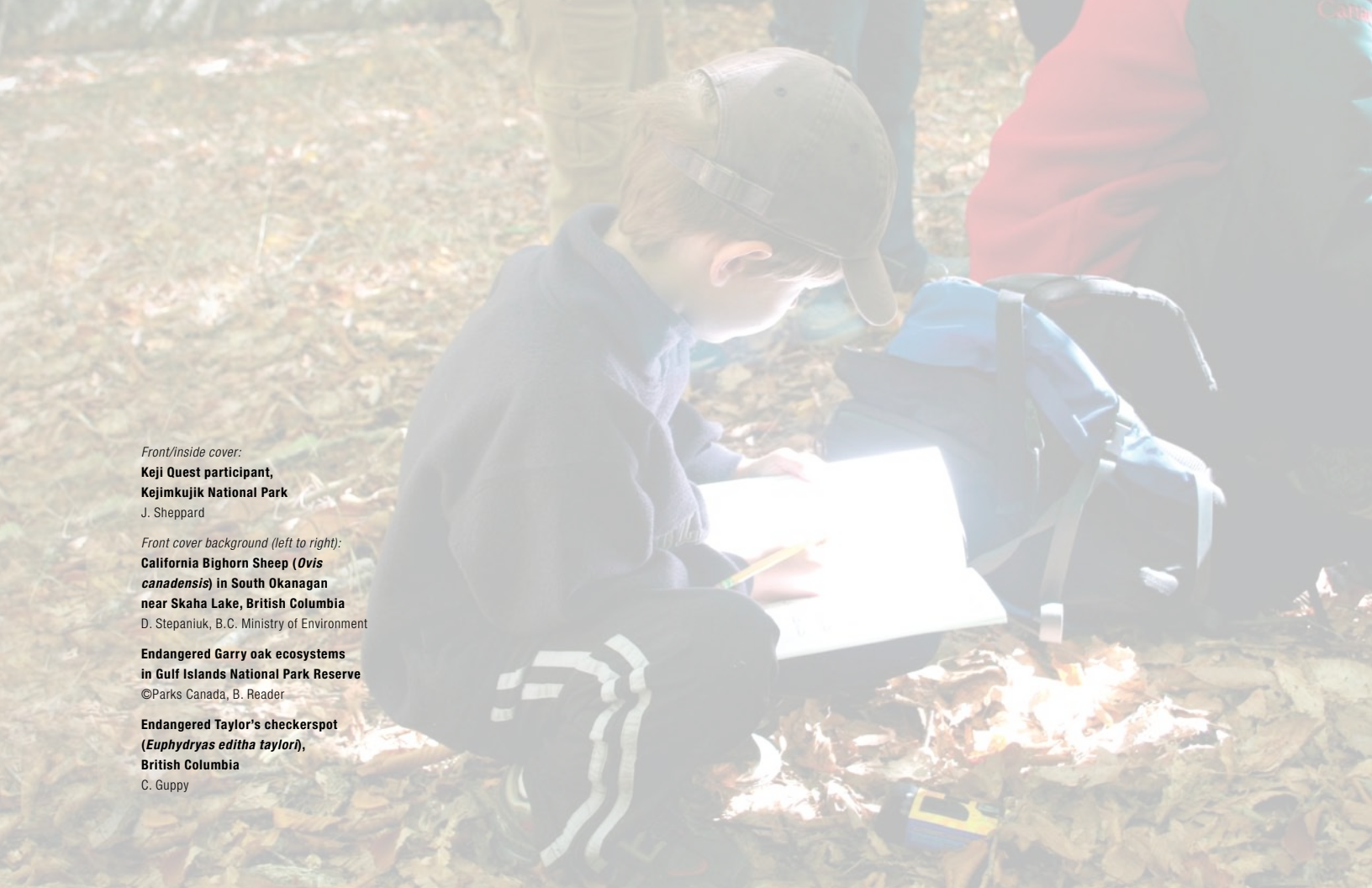
PARKS CANADA AGENCY

Action on the Ground II

Working With Canadians to Improve Ecological Integrity in Canada's National Parks

Parks Canada Parcs Canada

Canada



Front/inside cover:
Keji Quest participant, Kejimkujik National Park
J. Sheppard

Front cover background (left to right):
California Bighorn Sheep (*Ovis canadensis*) in South Okanagan near Skaha Lake, British Columbia
D. Stepaniuk, B.C. Ministry of Environment

Endangered Garry oak ecosystems in Gulf Islands National Park Reserve
©Parks Canada, B. Reader

Endangered Taylor's checkerspot (*Euphydryas editha taylori*), British Columbia
C. Guppy

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MINISTER'S MESSAGE

Canada's national parks and national marine conservation areas celebrate the natural beauty, grandeur and infinite diversity of our country's special landscapes. They contribute to defining Canada's collective soul, are revered by international audiences and are protected as a part of our nation's promise to its future generations. Canadians are passionate about their national parks and share a strong sense of connection to these wonderful places, which are protected for their irreplaceable natural values.

As the Minister of the Environment and Minister responsible for the Parks Canada Agency, I am fully committed to the conservation of Canada's national parks and marine conservation areas. Maintaining and restoring the ecological health of such vast areas is not an easy task, however this report highlights that with vigilant care, savoir-faire and passion, Parks Canada employees and their

partners in conservation are at work across the country to ensure that we keep these natural gems in a state for the enjoyment of future generations of Canadians.

I am greatly encouraged by the success that Parks Canada has been able to accomplish through actions on the ground in our national parks. Much remains to be done and we all have a part in environmental conservation. In that spirit, I invite every Canadian to discover and take good care of their country's natural treasures. Together we need to ensure that Canada's protected natural areas remain the inspiring places they are today.

The Honourable Jim Prentice, P.C., Q.C., M.P.
Minister of the Environment

MESSAGE FROM THE CHIEF EXECUTIVE OFFICER

I am proud to present this second edition of Action on the Ground II: Working with Canadians to Improve Ecological Integrity in Canada's National Parks. The Parks Canada team is hard at work in all regions of the country creating favourable conditions in which Canadians and international visitors can fully enjoy Canada's protected heritage places and create lasting personal memories. Direct engagement of Canadians in action on the ground initiatives, and the resulting memorable experiences, are at the heart of maintaining the relevance of these special places to all Canadians.

This report highlights examples of shared stewardship from across Canada and reflects a host of creative and innovative approaches used by park team members and Agency partners to address challenges specific to improving and maintaining ecological integrity in Canada's national parks.

To achieve such positive results in the face of internal and external factors such as climate change and a changing social environment, we have focussed our efforts on increasing our knowledge and understanding of ecosystems, community outreach and engagement and demonstrating respect to Canada's Aboriginal peoples by creating new relationship models built on trust and respect. We have also developed effective partnerships with the tourism industry, environmental groups and other partners.

Public support and involvement is essential to ensure that our natural and cultural treasures have a future. As our success depends on the involvement of all Canadians, we listen closely to the perspectives of Canadians and collaborate with them to better answer all needs.

I am very proud of the work highlighted in this report. It is a great illustration of shared leadership in Parks Canada, an engagement that goes far beyond words and translates into action on the ground. This is just the start and there is much work to be done. Fully engaging Canadians in our actions on the ground will ensure that together we will overcome the challenges of maintaining and improving their ecological integrity while fostering a deeper understanding and sense of attachment to our protected heritage places.

Alan Latourelle
Parks Canada Chief Executive Officer

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Purpose

Parks Canada's mandate is to protect and present nationally significant examples of Canada's natural and cultural heritage and to foster public understanding, appreciation and enjoyment of these areas in ways that ensure their ecological and commemorative integrity for present and future generations. In order to fulfill this mandate, the Agency has made a commitment to Canadians to maintain and improve the state of ecological integrity (EI) in Canada's national parks.

The path to meeting this commitment has evolved over the past ten years in light of a new understanding and appreciation of the complexity of maintaining or improving the state of ecological integrity as well as a growing recognition of the importance of integrating protection, public education and visitor experience in the delivery of the Parks Canada mandate. Parks Canada's work will continue to respond to these challenges and to other drivers of change over the coming decades.

Above:
Pointe Wolfe River, Fundy National Park
B. Limke

Previous page:
Franey Trail Summit, Cape Breton Highlands National Park
©Parks Canada, D. Wilson

Piping plover (*Charadrius melodus*), Kejimkujik National Park
©Parks Canada

The purpose of this report is to highlight progress made by Parks Canada in improving ecological integrity, with particular emphasis on actions taken on the ground that engage Canadians in a range of activities across the national parks system. Several of the stories report on progress since they were initially reported in the 2005 *Action on the Ground* report (http://www.pc.gc.ca/docs/). The majority, however, are new stories that highlight recent Agency successes in maintaining or improving the state of ecological integrity in Canada's national parks. In addition, this report fulfills the Agency's 2005 commitment to the Commissioner of the Environment and Sustainable Development (CESD Chapter 2: Ecological Integrity in Canada's National Parks, section 2.21) to periodically produce public interest documents that report on improving or maintaining ecological integrity (http://www.oag-bvg.gc.ca/internet/English/aud_parl_cesd_200509_e_1122.html).

Chapter 1 of this report sets the context for these actions while Chapters 2 through 4 highlight some of the Agency's best practices across the country. For instance, Chapter 2 profiles actions to establish the EI monitoring and reporting program that documents the health of our parks. Chapter 3 and Chapter 4 detail efforts to actively manage for the protection and recovery of species at risk and the restoration of ecological integrity.

Chapter 5 summarizes some of the lessons learned from actions taken to date and invites Canadians to join with the Parks Canada Agency in expanding the scope and reach of these activities. In so doing, we can all help maintain and enhance ecological integrity while building a strong sense of connection to the unique natural areas that make up our national parks system.

1.0 Context for Action

Canada's national parks continue to resonate for Canadians as a significant symbol of our natural heritage. National parks and other protected areas provide opportunities for Canadians to experience, discover, understand and appreciate their natural heritage. They help conserve biodiversity for generations to come; they generate economic benefits to adjacent communities all across the country; and they can serve as living laboratories to help us to understand the state of our ecosystems.

The Agency's View of the Future

"Canadians have a strong sense of connection, through meaningful experiences, to their national parks, national historic sites, and national marine conservation areas, and these protected areas are enjoyed in ways that leave them unimpaired for present and future generations."

Parks Canada Agency's Strategic Outcome, 2008-09 – 2012-13 Corporate Plan
http://www.pc.gc.ca/docs/pc/plans/plan2008-2009/2008_e.asp

Previous page:
Grasslands National Park
©R. Postma

Ecological Restoration Principles for Action

In 2008, Parks Canada, in collaboration with provincial and territorial protected area agencies, published a set of guiding principles for ecological restoration in protected natural areas that are consistent with the Agency's mandate.

The three principles are: (http://www.pc.gc.ca/docs/pc/guide/resteco/index_e.asp).

- Effective in restoring and maintaining ecological integrity;
- Efficient in using practical and economic methods to achieve functional success; *and*
- Engaging through implementing inclusive processes and by recognizing and embracing interrelationships between culture and nature.

The Parks Canada Agency is responsible for establishing and managing national parks in ways that ensure their ecological integrity (EI) while fostering public understanding, appreciation and enjoyment of these areas. Facilitating memorable experiences and a sense of connection for visitors plays a vital role in building long-term support for the protection of ecological integrity and the preservation of the parks system as a whole. Reaching out to Canadians where they live, work and play also ensures that national parks remain relevant across the country.

Parks Canada has established a comprehensive framework for action to maintain or restore ecological integrity in Canada's national parks, in partnership with local communities, stakeholders and park visitors. One key element of this framework is the establishment of new protected areas in both the terrestrial and marine ecosystems. The Agency continues to make major strides in its efforts to ensure that each of Canada's natural regions is adequately represented within the national park system (http://www.pc.gc.ca/progs/np-pn/system/index_e.asp) and the National Marine Conservation Area system (http://www.pc.gc.ca/progs/amnc-nmca/index_E.asp).

Lake Superior shoreline, Pukaskwa National Park
©Parks Canada, M. Finkelstein

The generation of knowledge is another critical aspect of this work. Information from the EI monitoring and reporting program and from research partnerships is used by the Agency to inform and shape planning at the park level. This includes the preparation of State of the Park reports, which highlight major issues facing individual parks, as

Park staff monitoring for aquatic invertebrates, Waterton Lakes National Park

well as park management plans, which provide clear commitments on how to maintain or restore ecological integrity and provide opportunities for public education and visitor experiences.

Active management and restoration priorities are identified on the basis of this information, and reflected within the park planning process. These actions aim to ensure that the characteristic conditions of each park's natural region persist over time while ensuring that all opportunities for learning and visitor experience are addressed.

In order to be truly effective, the Agency recognizes that its EI efforts must reflect direct and meaningful participation by the public, Aboriginal partners, local communities, and park visitors. Meaningful participation is achieved by being responsive to the public and enabling interested groups and individuals to help shape the type of engagement they feel would be significant or meaningful to them. Through active involvement,

Canadians can enhance their understanding and appreciation of these places, develop a sense of personal connection and support their long-term protection and presentation. The engagement of Canadians effectively requires the Agency to pursue strong collaborations with a diverse range of groups — individuals, local communities, non-governmental and 'friends of' organizations, academia, and others.

In particular, Parks Canada is working to strengthen and deepen its relationship with Aboriginal peoples in and around national parks by establishing a formalized Aboriginal advisory relationship for each national park within five years. These relationships – many of which have been strained in the past – are now leading to creative partnerships that suggest a bright future for joint planning, management and stewardship, as well as enhanced educational and cultural experiences for park visitors.

Park Interpreter, Pacific Rim National Park Reserve

New kinds of Aboriginal partnerships

Efforts underway at St. Lawrence Islands National Park illustrate the unique partnerships that are emerging between national parks and Aboriginal peoples.

Smokey Fire Ceremony, St. Lawrence Islands National Park
©Parks Canada

For example, in 2007, St. Lawrence Islands National Park took part in a Smoky Fire Ceremony, a rich Mohawk tradition aimed at building trust, respect, and new working relationships between cultures. Since then, Aboriginal perspectives have been integrated by including traditional knowledge in decision-making related to resource management, visitor experience and educational programming.

In addition, representatives of the Mohawk Council of Akwesasne and the Traditional Council have played a key role in the development of the Hill Island Hyperabundant Deer Management Plan, which concluded that a reduction in herd size was required to restore the forest ecosystem to health. In January 2008, representatives of the Mohawk Council of Akwesasne successfully carried out a hunt that reduced the herd size and was also able to provide deer meat for a community ceremony.

Other joint projects with the Mohawk Council of Akwesasne include a study of traditional medicinal plants and Aboriginal traditional knowledge in the Thousand Islands Ecosystem, as well as a series of video vignettes recording Akwesasne community members telling stories about their connection to the park and surrounding ecosystem. This project will ensure that regional residents and visitors are exposed to the Akwesasne community's historical and contemporary connection with the park, as well as their stewardship principles and traditional names for natural features in the area.

This report highlights initiatives that have achieved significant success in involving Canadians in on-the-ground actions, particularly those focused on knowledge generation and active management and restoration of ecological integrity. These examples span the length and breadth of the country and reflect a host of creative and innovative approaches taken by park staff to address the particular ecological integrity challenges they face.

The next three sections of this report tell these stories. They describe how these projects are achieving concrete, meaningful results while involving local residents, park visitors and others in ways that create lasting memories and a connection to these places that continue far beyond the life of each individual project.

2.0

2.0 Generating Knowledge for Management Decisions

Previous page:
Inuit Guide Charlie Inuarak, East coast of Bylot Island, Sirmilik National Park
©Parks Canada, W. Lynch

Maintaining or restoring the ecological integrity of Canada's national parks involves ensuring that the diversity of native species and communities, as well as key ecological processes such as fire, are kept largely intact in each of our national parks. This section outlines the approaches adopted to generate knowledge to help inform active management decisions within Canada's national parks.

Supporting new approaches

As part of its commitment to knowledge generation, Parks Canada is supporting the development of new and innovative methods for monitoring and research. For example, researchers in the Rocky Mountain National Parks have helped evaluate non-invasive monitoring techniques to collect DNA samples from bears. These techniques – such as hair collections from rub trees – have the potential to significantly enhance future monitoring efforts, while lowering the costs associated with this work.

In addition, the Agency supports the research of the Canadian Barcode of Life Network (www.bolnet.ca), a consortium of government and university participants working together to identify and catalogue genetic "barcodes" for life on the planet. This method for identifying plants and animals will accelerate the Agency's ability to monitor and report to Canadians on park biodiversity over time.

2.1 EI MONITORING AND REPORTING

Monitoring and reporting plays a critical role in the Agency's management decisions for National Parks and efforts to maintain or restore ecological integrity. Parks Canada's ecological integrity monitoring and reporting program focuses on measuring and reporting to Canadians on the condition and trends of national park ecosystems. Monitoring activities provide the Agency with critical information on ecological changes that may be underway, which can in turn guide management decisions over time. As well, the Agency is developing social-values research and a monitoring process to gain an understanding of visitor and audience interests and expectations.

The framework used by Parks Canada to monitor and report on EI includes measuring the state of and changes in biological diversity (i.e. the natural variety of plant and animal species, as well as the existence of exotic species) and ecosystem processes (i.e. the physical, chemical

and biological processes that shape our environment, such as fire or vegetation growth and decomposition). Threats to the state of ecological integrity are also identified as part of this approach. These may include land-use activities, habitat fragmentation, pollutants or climate shifts.

The Agency's monitoring programs provide the knowledge foundation for the State of the Park Reports that are generated every 5 years. Currently, these reports summarize the best available knowledge regarding the health of individual parks from across the national system. In the future, these reports will evolve with sections dedicated to providing the best available knowledge on the effectiveness of the provision of learning opportunities and the facilitation of visitor experience, and details on Aboriginal perspectives.

Above:
Planning meeting, Gwaii Haanas National Park Reserve
©Parks Canada, C. Cheadle

Previous page (top to bottom):
Prescribed burn in Terra Nova National Park
©Parks Canada

Woodland Caribou (*Rangifer tarandus*), Mount Revelstoke National Park
©Parks Canada, W. Lynch

The EI Monitoring Program
A core team of Parks Canada ecologists is now in place across the national parks system to monitor the condition and trends of these ecosystems based on the biological diversity, ecosystem processes and ecological threats framework discussed in the text.

The State of the Park report in turn informs and shapes the Park Management Plan, which responds to the issues and challenges that need to be addressed to achieve outcomes that support the Agency's mandate. Park Management Plans outline key objectives, targets, strategies and management activities to be undertaken to address the issues identified. Examples of the types of active management approaches that may be prescribed in these management plans are highlighted in Chapters 3 and 4.

As part of its approach to monitoring and reporting, Parks Canada has emphasized strong partnerships with a variety of stakeholders. The Agency has also made growing efforts to educate and involve local communities and visitors in its EI monitoring efforts, in order to increase understanding of potential challenges to individual parks and their surrounding areas, and to identify how stakeholders can contribute to addressing these challenges. The rest of this chapter offers examples of these approaches in action across the country.

2.2 CITIZEN SCIENCE

Citizen science programs have become an important aspect of Parks Canada's public engagement work in recent years. These programs connect participants to nature, enhance their understanding of the natural world, help build a growing constituency of volunteers and supporters within the communities in and around national parks, and generate knowledge to support park management decisions.

Public Outreach and Engagement

Citizen-based monitoring is emerging as an important component of the EI monitoring program that engages Canadians in stewardship activities and helps to build a culture of conservation in and around Canada's national parks.

Kejimkujik National Park and National Historic Site

A great example of citizen science in action is underway in Kejimkujik National Park and National Historic Site in Nova Scotia (Keji). Keji has established strong participatory monitoring programs that generate important information while facilitating opportunities for hands-on activities for both visitors and local residents.

One such program is the Keji Quest, which provides Grade 4 students with curiculum-linked nature activities or programs while involving them in the park's ecological monitoring and reporting program.

Following extensive development work and pilot testing, the park focused the program on two field measures — salamander abundance and the rate of soil decay.

Keji Quest provides an extensive outreach education and interpretation program for schools, which includes pre-visits to participating schools, on-site activities in the park and monitoring plots, and post-visit follow up. Teachers are encouraged to have students continue monitoring changes in their environment through activities such as Leaf Watch and Ice Watch, which collect vital data for the Environmental Monitoring and Assessment Network's (EMAN) Nature Watch program. Results from this program are integrated in the Parks Canada's EI monitoring and reporting program.

Participant Voices

"Keep up the great work! I have noticed some of the children showing more respect for wooded areas and places where insects etc. may be living! Thanks for everything!"

Grade 4 Teacher
Greenfield, Nova Scotia

"That was really fun at Keji…What I liked about it was looking at salamanders."

Grade 4 Student,
Bridgetown, Nova Scotia

Previous page:
Keji Quest participant,
Kejimkujik National Park and Historic Site
©Parks Canada, J. Sheppard

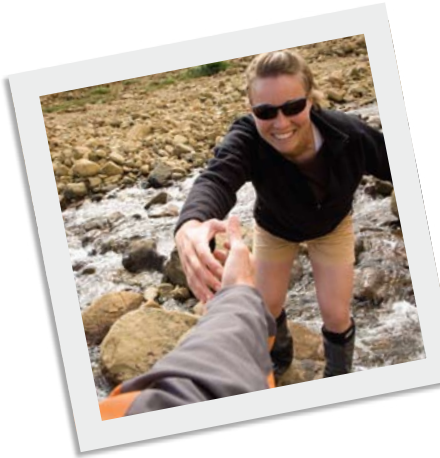
Keji Quest participants,
Kejimkujik National Park and Historic Site
©Parks Canada, J. Sheppard

Three long-term monitoring forest plots have now been established through the program, which has involved almost 1000 students from 10 schools over the past two years. A critical factor in the success of the program has been the strong relationship the park has built with teachers, local school boards and the provincial education department, in order to ensure that the program is directly and effectively tied to school curriculum. For more information, see http://www.friendsofkeji.ns.ca/kejiquest/index.html.

Gros Morne National Park

In Gros Morne National Park, students, teachers and park staff have participated in an aquatic invertebrate monitoring program that aims to involve youth in the park's EI monitoring and reporting program. Freshwater ecosystems are an important component of Gros Morne National Park, constituting 8.8% of the park's overall area.

A pilot project in 2006 involved 69 students from four local communities. The project was designed to link the park's ecological integrity monitoring to Grade 10 science curriculum outcomes. Students used Environment Canada's Canadian Aquatic Biomonitoring Network (CABIN) protocol to assess macroinvertabrate communities in local rivers. The program included a classroom presentation, field sample collection, and a lab session to identify invertebrates. Park staff worked with students and teachers to compile the results, which were shared among the four schools. Another 65 students participated in the program in 2007.



Gros Morne National Park
©Parks Canada, D. Wilson

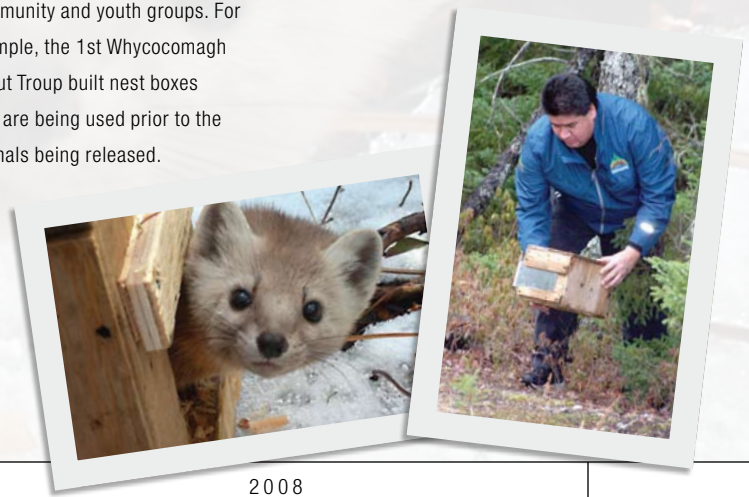
Monitoring Species at Risk — *Cape Breton Highlands National Park*

The American Marten (*Martes americana*) is native to Cape Breton Island and is in decline. With the current size of the population estimated to be less than 100 animals, the Cape Breton marten population has been declared endangered by the province of Nova Scotia.

Cape Breton Highlands National Park is partnering with the Nova Scotia Department of Natural Resources and the Unama'ki Institute of Natural Resources in efforts to restore a viable population of the marten. This involves trapping marten in New Brunswick for relocation, releasing the animals once equipped with radio collars, and monitoring and analyzing subsequent data for patterns of habitat use. In addition to aerial radio-telemetry, bait stations and hair snags are used to monitor released animals on the ground.

Project partners have initiated a strong communications program, which includes workshops for trappers and forestry workers and articles in both trapper's publications and broad media outlets. The project is also actively involving a range of local players, including the local Mi'kmaq community and youth groups. For example, the 1st Whycocomagh Scout Troup built nest boxes that are being used prior to the animals being released.

To date, 30 animals have been released into the park and a nearby provincial wilderness area. Project partners intend to supplement the Cape Breton Island population by up to 150 animals over the next few years.



Left:
American marten (*Martes americana*) emerges from its next box in the Highlands of Cape Breton
K. Chin

Right:
American marten (*Martes americana*) release in Cape Breton Highlands National Park
A. MacDonald

2.3 STRATEGIES FOR EI MONITORING AND REPORTING IN THE NORTH

Monitoring and reporting for ecological integrity in northern parks presents a number of unique challenges related to their remoteness, vast tracts of space, and in many cases, the lack of available basic information. To overcome these obstacles, Parks Canada has pursued a number of innovative approaches that build on strong partnerships with a variety of collaborators across the north. In particular, in collaboration with local Aboriginal communities, these approaches include initiatives that encourage Aboriginal peoples to reconnect with their traditional cultural landscapes. Through this process, the Agency respects and values Aboriginal Traditional Knowledge, which can then meaningfully inform park planning and management.


Canada

Inuit Knowledge in Northern Parks

A major project is underway to enhance understanding of Inuit Qaujimajatuqangit (Inuit knowledge) of national parks in Nunavut, including Auyuittuq, Sirmilik and Ukkusiksalik National Parks. The project involves Inuit researchers, graduate students, and park staff in five local communities (Pond Inlet, Arctic Bay, Qikiqtarjuaq, Pangnirtung, and Repulse Bay).

Inuit Knowledge Working Groups, composed of elders, youth, and representatives from local Hunters and Trappers organizations based in Nunavut communities, are guiding this work, which seeks to improve knowledge related to the ecosystem and to environmental changes in the Arctic. In addition, the program aims to increase the capacity of Parks Canada staff and communities adjacent to these parks to engage in collaborative research and decision-making, while gaining greater awareness of Inuit knowledge, skills, expertise and perspectives.

Above:
Seabird cliffs on Bylot Island, Sirmilik National Park
©Parks Canada, E. Le Bel

Previous page:
Participants of a Sea Ice Workshop, Sirmilik National Park
M. Manseau

The working groups identified the need to document extensive Inuit knowledge of the environment and in particular of sea ice. Through a combination of interviewing and mapping techniques, regular experts meetings and on-the-land activities in key park areas, the project has documented a variety of ice conditions, identified indicators of sea ice and environmental changes, and gained expert advice from elders and hunters on areas of ecological importance, approaches to conservation, safety practices, and ecosystem management.

Additional projects include research into traditional and scientific knowledge of arctic fox (*Vulpes lagopus*), red fox (*V. vulpes*) and snow geese (*Chen caerulescens*) in the Sirmilik National Park area, the transmission of Inuit knowledge to the youth of Pond Inlet, and a short documentary on Elder Cornelius Nutarak Sr's knowledge of polar bears (*Ursus maritimus*) and environmental changes.

Results from these projects are contributing directly to park management, planning and reporting. The program aims to build a sustainable framework for integrating Inuit Qaujimajatuqangit into Nunavut national park management and operations, and also fulfills Parks Canada's commitments to actively involve Aboriginal people in park management. For more information, please see www.lecol-ck.ca.

Torngat Mountains National Park

While a large number of Canada's national parks have coastal and near-shore marine environments, limited information about these areas exists, particularly in the north. Developing relevant EI monitoring measures for marine ecosystems will therefore be an important challenge for these parks.

Previous page (top to bottom):
Sea ice breakup, Sirmilik National Park
©Parks Canada, L. Narraway

Evaluating ice thickness at the Sea Ice Workshop in Auyuittuq National Park
K. Johansson

Parks Canada Base Camp — *Connecting Inuit, Researchers and the Landscape*

In 2007, Parks Canada established a base camp near the southern boundary of Torngat Mountains National Park. The base camp provided a central location where scientists, Inuit from Nunatsiavut and Nunavik, and Parks Canada staff could live and work while conducting eleven different research projects in the area. The base camp operates as both a logistical support centre and as a unique social and cultural meeting ground for researchers and local Inuit to learn from each other and the local environment. This venue enables Aboriginal traditional knowledge to meaningfully inform aspects of the research. In addition, the camp provides opportunities for the local Aboriginal people to connect with their traditional landscapes. The camp will be established again in 2008, and offers a unique model that could be applied in other northern parks.

Torngat Mountains National Park is participating in a unique project, known as ArcticNet Nunatsiavut Nuluak, that will advance marine research and monitoring for all northern parks. The project involves a detailed study of the environment in Nachvak Fjord, which is largely pristine. Results will be compared with two other Labrador fjords that have been exposed to ecological stressors such as PCB contamination and large-scale industrial development. The resulting information will then be used to develop potential measures and protocols for long-term EI monitoring and reporting of the park's near-shore marine environment.

This project will contribute to a greater understanding of the role that fjords play in the ecological integrity of the park ecosystem. Important baseline knowledge is being generated that will inform future State of the Park reports, support park management decisions and improve understanding of the impacts of climate change and development on marine ecosystems in northern Labrador.

ArcticNet has been extremely successful in engaging a broad and diverse range of partners in this work, with a particular focus on Inuit researchers. Other partners include the ArcticNet Network of Excellence, the Nunatsiavut government, a range of federal and provincial agencies, and several university researchers and experts in the field. (see http://www.arcticnet-ulaval.ca for more details).

Above:
Nachvak Fjord, Torngat Mountains National Park
©Parks Canada, I.K., MacNeil

Previous page:
Parks Canada Base Camp, Torngat Mountains National Park
©Parks Canada, A. Chute

Tosiuyak Arm in Nachvak Fjord, Torngat Mountains National Park

As part of the project, a "Schools on Board" program was delivered from the research vessel, the Canadian Coast Guard Ship (CCGS) *Amundsen*, to raise understanding and appreciation among youth. Parks Canada staff delivered lectures on various topics including EI monitoring and Inuit history in the Torngats. A series of posters outlining the work of the research team has also been developed for scientific meetings. These posters are now posted throughout Nunatsiavut.

While Parks Canada's involvement in the project has focused primarily on the Nachvak Fjord, its investment has helped leverage other partners and generate a growing interest in Labrador-based research and monitoring. It is anticipated that the monitoring project will expand into the terrestrial environment to establish a "sea to sky" approach to looking at the ecological linkages between different ecosystems within a single watershed.

Kluane National Park and Reserve

In the Yukon's Kluane National Park and Reserve (KNPR), a stakeholder-driven inter-agency research project has been underway since 2004 to determine factors contributing to the decline of Kluane's population of kokanee salmon (*Oncorhynchus nerka kennerlyi*). These salmon are the only naturally occurring population of kokanee salmon in the Canadian park system; they complete their entire lifecycle in the fresh waters of the Kathleen Lake ecosystem.

Kokanee salmon spawning numbers have been monitored for almost thirty years, and serve as a key indicator of the area's ecological integrity. In recent years, however, these counts have dropped far below the minimum threshold target used to indicate the health of the population.

Researchers have launched a series of activities to try and determine the underlying causes of this decline. For example, the project has measured changes in stream flow, temperature and water chemistry in the spawning stream; collected data on weather and climate; conducted hydro-acoustic surveys to learn more about population dynamics in the Kathleen Lake ecosystem; and measured the abundance of plankton, the main food for kokanee fry. Researchers have also enhanced spawning counts and investigated potential diseases in order to both monitor the health of the existing population and determine possible stresses on the population over time.

Previous page:
Spawning Sockeye salmon (*Oncorhynchus nerka*), a larger ocean-going relative of the Kokanee salmon (*Oncorhynchus nerka kennerlyi*)

While no one factor has been determined to be responsible for the decline of the salmon, a slight increase in the stocks has been observed in the last few years. One of the more interesting research findings to date was an increasing trend in stream temperatures since 1945. It found that in several years since 1990, the fall spawning stream temperatures were at or above the suggested upper tolerable limits for spawning kokanee under similar conditions. Researchers will continue to explore the potential relationship of climate change to water temperature and flow regimes as it might be associated with spawning numbers in the park.

Kluane National Park and Reserve
J. Good

Active participation by the community and local stakeholders has been key to the project. Participants include the Champagne and Aishihik First Nations, local fishers and trappers, and representatives from a number of federal and territorial agencies. Efforts have been made to integrate local First Nations and their traditional knowledge into research activities through preparation of a traditional knowledge report and ongoing workshop discussions. The kokanee salmon project was also featured during a Healing Broken Connections Workshop aimed at exploring how Traditional Knowledge and scientific knowledge can work together in KNPR.

Healing Broken Connections Workshop, Kluane National Park and Reserve
C. Mckinnon

The park has built a strong outreach and engagement and interpretation program, to ensure that local stakeholders are involved in helping to determine next steps, and to communicate with park visitors and others about their results. In addition to regular articles in local media outlets, the park has incorporated the project into its visitor programs, developed interpretive signs, and provides regular updates to its web-site (http://www.pc.gc.ca/pn-np/yt/kluane/natcul/natcul4_e.asp). In addition, the park offers curriculum-linked school programs on kokanee, including a Grade 8 classroom program locally, and web-based lesson plans for teachers across the country.

2.4 INTEGRATING KNOWLEDGE SYSTEMS

La Mauricie National Park

In 2001, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) listed the Eastern Wolf (*Canis lycaon*) as a species of special concern. Given the existence of several wolf packs in the park, La Mauricie National Park subsequently launched a three-year project using social science to evaluate and advance its Eastern Wolf conservation program.

The purpose of this research project was to use social science to gain an understanding of attitudes, perceptions and behaviours of key target audiences in the park (including hunters, trappers, local residents and visitors) as it relates to wolves, and to improve the communications and educational components of interpretation and conservation.

Above:
Eastern Wolf (*Canis lycaon*), La Mauricie National Park
©Parks Canada, J. Pleau

The research involved a series of information collection activities which included: workshops, in-depth interviews with representatives from the park's target audiences, mail surveys of hunters and trappers, a face-to-face survey of park visitors, and a phone survey of local residents. These different approaches were used to profile the park's target audiences, and to better understand their factual knowledge of and experiences with wolves, as well as their perceptions, attitudes, and motivations regarding wolves and wolf management in the park.

Information generated through this project has provided invaluable insights into public perceptions of the park's wolf population, as well as the attitudes of different target audiences towards them. Park researchers found that many respondents overestimated the number and health of wolves in the region, although they recognized the importance of the Eastern Wolf and the role the park can play in ensuring its persistence. At the same time, the studies helped to discern the different

Previous page:
Interpreter talking to visitors about wolves, La Mauricie National Park

attitudes of various target audiences towards protection efforts, which will be critical to the evaluation and redesign of the park's educational and communications programs, as well as the development of action plans for moving forward with species recovery efforts.

Human, wildlife conflict in Pacific Rim National Park Reserve
J. Satore

Pacific Rim National Park Reserve

Pacific Rim National Park Reserve is home to one of the most heavily used overnight backcountry areas in the park system. In response to the marked increase in interactions between people and carnivores, such as wolves and cougars since the late 1990s, the WildCoast Project is exploring how carnivores and people can co-exist peacefully in the park.

The project takes a truly integrated approach to knowledge generation, by seeking to collect and explore socio-ecological, Aboriginal Traditional Knowledge, and local knowledge to both understand and safely manage these encounters in the park. Work to date has focused on establishing

monitoring programs and collecting baseline information on key species, while also working to better understand the human behaviours that are contributing to increased interactions with carnivores. Local First Nations have been extensively involved in the project, in recognition of the importance of these species to Nuu-chah-nulth culture. Local community and youth volunteers have also been active in the project, contributing 250 person days in one season alone to the completion and reporting on predator-prey surveys.

Pacific Rim National Park Reserve

On-going monitoring of the ecology of carnivores and human interactions will continue to build on knowledge over the long term. A strategy has been developed for communication and education initiatives to share the knowledge gained.

2.5 SUMMARY

Parks Canada's commitment to developing an EI monitoring and reporting program throughout the national parks system has led to a number of new and innovative initiatives. The growth of citizen science programs, along with the development of unique approaches for monitoring in the north, both signal major progress in creating a robust knowledge foundation for understanding the overall state of EI and in linking Canadians to nature in new ways that foster their understanding and connection to the national parks system.

These activities emphasize collaborations with a broad range of stakeholders and partners as well as the integration of research and monitoring in national parks with broader ecosystem-based initiatives. At the same time, the Agency is working to ensure that a broader suite of knowledge inputs — including social science and Aboriginal Traditional

Knowledge are integrated into park management planning in more holistic ways. This will help strengthen our understanding of ecological integrity issues within the national park system and help us develop priorities for active solutions that can involve Canadians at all levels and in partnership.

A Champagne and Aishihik First Nations Elder teaches ground squirrel harvesting techniques, Kluane National Park and Reserve
S. Gaunt – Champagne and Aishihik First Nations

3.0

3.0 Active Management to Protect and Recover Species at Risk

Parks Canada's work in recent years has demonstrated the critical role that active management can play in conserving ecological integrity. Active management can make a particularly significant contribution to efforts to protect and recover species at risk across the country.

Parks Canada is responsible for the protection and recovery of species and their critical habitats on lands and waters managed by the Agency. Since 2000, the Agency's Species at Risk Program has focused on fulfilling its responsibilities under the Species at Risk Act (SARA) (http://www.sararegistry.gc.ca) and contributing to the improvement of EI in Canada's national parks. At the same time, federal efforts

Previous page:
Blanding's turtle (*Emydoidea blandingii*), Ontario
G. Bulté

Endangered Pitcher's Thistle (*Cirsium pitcheri*), Ontario

are closely integrated with provincial and territorial programs, as anticipated under both the Canadian Biodiversity Strategy and the National Accord for the Protection of Species at Risk (Canadian Biodiversity Strategy).

Strong inter-agency partnerships are a hallmark of Parks Canada's efforts to protect and recover species at risk. In addition, the Agency works closely with Aboriginal governments, local communities, and numerous stakeholder groups to ensure the protection and recovery of species at risk within greater park ecosystems. The protection and recovery of species at risk activities supports the Agency's commitment to maintaining or improving the overall state of ecological integrity in Canada's national parks. Chapter 4 further highlights the Agency's integrated approach to restoring EI in Canada's national parks.

3.1 ACTIONS ON THE GROUND

Kejimkujik National Park and National Historic Site

Kejimkujik National Park and Historic Site and its surrounding ecosystem are Atlantic Canada's hot spot for species at risk. Fourteen species in the area are listed under the Species at Risk Act, including the Blanding's turtle (*Emydoidea blandingii*), eastern ribbonsnake (*Thamnophis sauritus*) and water-pennywort (*Hydrocotyle umbellate*). Key issues facing the park and the species it protects include water control (as many of its waterways have been dammed or altered), forestry, and rapidly expanding cottage development outside the park.

In their own words:

"Our youth environmental group is helping to monitor the Blanding's turtle and other rare species in Kejimkujik…This is part of our double focus on cultural revival in Mi'kmaw communities and monitoring of rare species."

Shalan Joudry
L'sitkuk, Bear River First Nation

"It is a great privilege to work on species at risk in Kejimkujik. Sue and I love every minute of it."

Norm Green, Volunteer

Volunteers check screened turtle nests, Kejimkujik National Park and Historic Site
©Parks Canada

Recovery efforts are focusing on enhancing critically small populations to remove them from imminent risk of extinction while defining and addressing the root causes of their decline. The Park and Historic Site has established a strong volunteer stewardship program to involve visitors, local community members, and the local Mi'kmaq in recovery activities.

Keji's work in this area has focused primarily on Blanding's turtles. Since 2005, over two hundred volunteers have been involved in a combination of nest screening to protect eggs from predators and increasing protection for road-edge nesting turtles. Together these volunteers have tallied almost 10,000 hours in restoration activities.

Keji is on track to release, in the summer of 2008, 36 Blanding's turtles that have been incubated and reared since 2006 bringing the total animals released to over 100. In an amazing encounter in 2007, long-time Keji volunteers discovered a new population of turtles in an area adjacent to the park and historic site — only the fourth such population in the province.

In addition to the volunteer efforts, the Agency participated with the Mersey Tobeatic Research Institute and other partners to prepare a stewardship guide - the 2008 Species at Risk in Nova Scotia: Identification and Information Guide (http://www.speciesatrisk.ca/SARGuide/) to raise awareness of species that reside in Nova Scotia.

Gulf Island National Park Reserve

Garry oak ecosystems are among the most rare and diverse in the country. These ecosystems are normally characterized by the presence of Garry oak (*Quercus garryana*) and can be found in many habitats including Garry oak woodlands, meadows, and rocky outcrops. Hundreds of species are found in these ecosystems, including over one hundred nationally and provincially listed species at risk.

Endangered Garry oak ecosystems, British Columbia
©Parks Canada, B. Reader

Controlling invasive species in Garry oak ecosystems, British Columbia

Only 5% of Garry oak ecosystems are now left in near-natural condition, and are found only in a small area of southern Vancouver Island, the nearby Gulf Islands, and two small areas on the B.C. mainland. In addition to urbanization, the spread of invasive alien species – such as agricultural grasses and the shrubs Scotch broom (*Cytisus scoparius*), Himalayan blackberry (*Rubus discolor*) and English ivy (*Hedera helix*) has posed a major challenge to the ecological integrity of these ecosystems.

Within Gulf Islands National Park Reserve, many successful volunteer "broom bashes" have helped ten of the most ecologically sensitive islets (small islands) from being overtaken by invasive shrubs such as Himalayan blackberry and Scotch broom. Work continues with plans to restore two more islets through the seeding and planting of native plants following invasive species removal.

Efforts are also underway to ensure the survival of SARA-listed butterfly species. As a first step, park staff has been assessing sites within the park reserve based on specific rare butterfly habitat requirements. Potential butterfly introduction sites have been identified, and species such as the endangered Taylor's Checkerspot (*Euphydryas editha taylori*) can be released once successful captive rearing programs are in place. Additional study on the biology, genetics and habitat requirements of these butterflies is planned or underway to increase the likelihood of success of these programs.

The National Park has made significant efforts to educate visitors about all of these restoration efforts. This has included development of interpretive signs and public education programs. Parks Canada has also been instrumental in developing the BC Ferries naturalist program on routes that traverse the waters of Gulf Islands National Park Reserve.

Endangered Taylor's checkerspot (*Euphydryas editha taylori*), British Columbia
C. Guppy

BC Ferries Coastal Naturalist Program

Initiated in 2006, the Coastal Naturalist Program is a key element of BC Ferries' Coastal Experiences customer engagement initiative. Delivered in partnership with Parks Canada, the program provides Parks Canada-trained naturalists on ferry crossings to educate and inspire locals and visitors with regards to everything from Orcas to imperiled Garry oak ecosystems. The program, which has reached more than 130,000 passengers on 1300 sailings, has helped to promote public understanding and appreciation of both the unique coastal ecosystems of British Columbia, and Parks Canada's mandate and work in the region.

The BC Ferries and Parks Canada coastal naturalists outreach program display centre
©Parks Canada, D. Mumford

In concert with the Garry Oak Ecosystems Recovery Team, Parks Canada is also involving local municipalities, land conservancies, landowners and developers in efforts to protect Garry oak habitat. In 2007, the Garry Oak Gardener's Handbook was developed with Parks Canada support (download your copy at http://www.goert.ca/pubs_general.php.). This publication aims to inspire the park's neighbours to protect Garry oak ecosystems in partnership with the Agency.

3.2 SUMMARY

Species at risk of extinction can serve as potent reminders to Canadians of the importance of maintaining healthy intact ecosystems. They can also provide powerful incentives for Canadians to get involved in on-the-ground activities to ensure that these species are not lost. While benefiting species at risk, these activities raise understanding and awaken the curiosity of project participants by connecting them to nature in unique and powerful ways.

Five-lined skink (*Eumeces fasciatus*), Point Pelee National Park, Ontario

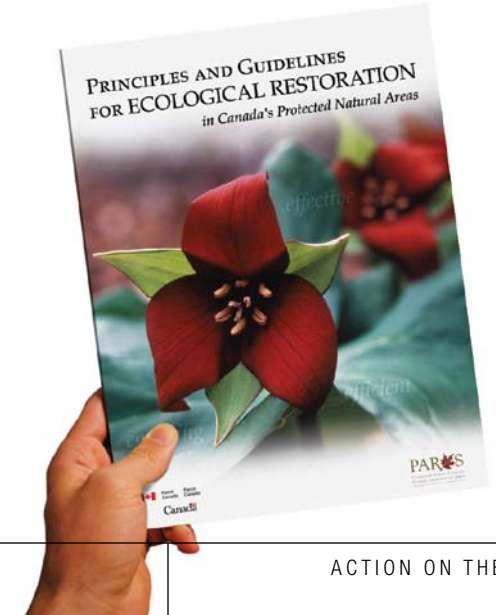
Parks Canada has initiated a number of active management programs aimed at protecting species at risk within the national park system. At the same time, the Agency is participating in a range of broader initiatives to support species at risk outside of park boundaries, including those that have been designated as being at risk under provincial legislation. These programs make a very real – and timely – contribution to the Agency's efforts to maintain or restore ecological integrity.

4.0

4.0 Restoring Ecological Integrity

The ecological integrity of many national parks is being degraded as a result of habitat fragmentation, air and water pollution, negative impacts of climate change, invasive species and incompatible land uses. Ecological restoration offers tools to help halt or reverse this degradation while creating opportunities for meaningful public education, and engagement. Ecological restoration efforts can take many forms. While some of these efforts focus primarily within park boundaries, others involve broader partnerships with organizations within the greater park ecosystem.

Previous page:
Marsh Boardwalk,
Point Pelee National Park



Parks Canada recently led the development of the first-ever Canada-wide guidance for ecological restoration practices: *Principles and Guidelines for Ecological Restoration in Canada's Protected Natural Areas* (http://www.pc.gc.ca/docs/pc/guide/resteco/index_e.asp). These principles and guidelines have been endorsed by all Ministers responsible for national, provincial and territorial parks in Canada, as well as by the Canadian Council on Ecological Areas. Consistent with the Agency's mandate, they promote an approach that integrates restoration, visitor experience, public education, and the protection of cultural resource values. This integrated approach is reflected in many of the stories below and in the approach to recovering species at risk as described in Chapter 3. The visitor experience component is expected to evolve and be strengthened in future action on the ground activities as the concept is advanced within the Agency.

4.1 RESTORING FIRE AND OTHER NATURAL PROCESSES

One goal of ecological restoration efforts can be to re-introduce natural processes such as fire into the landscape. While uncontrolled fires can represent a risk to public safety and human infrastructure, fire also plays a vital role in maintaining the health of natural ecosystems.

In both forest and grassland ecosystems, fires recycle nutrients in the soil, help encourage new plant growth, control invasive alien species, and create important habitat for birds and other animals. When fire is removed from these systems, forest in-growth can lead to significant habitat changes as well as the accumulation of dead wood and debris that can in turn lead to more intense wildfires.

Prescribed burning in Redstreak Restoration Area, Kootenay National Park

Fire Smart/Forest Wise Program

The Fire Smart-Forest Wise Program in Jasper National Park combines research, ecosystem restoration, education and stewardship to protect Jasper residents from the threat of wildfires. Dense, overgrown forests around the town are now being selectively thinned to restore more natural conditions in areas that were traditionally burned on a frequent basis by Aboriginal people or lightning-ignited fires. Working with the community, the Fire-Smart Forest Wise Program has teamed with the Métis Nation of Alberta to provide Métis youth work experience through the restoration activities. The ultimate goal is to create a 350 hectare buffer area around the town to enhance public safety in a way that restores ecological conditions while simultaneously reconnecting Métis with traditional cultural landscapes.

Following page (top to bottom):
Restored winter habitat for Bighorn sheep (*Ovis canadensis*) following prescribed burning in Kootenay National Park, British Columbia
©Parks Canada, A. Dibb

Radio-collared Bighorn sheep (*Ovis canadensis*)
©Parks Canada

Maintaining and restoring ecological integrity therefore requires the Agency to both manage wildfires and safely re-introduce fire to the landscape. As a result, Parks Canada is now using prescribed burns to re-establish historical ecological conditions into national parks across the country.

Strong education and outreach programs are vital to these efforts, as public understanding of the positive role that fire plays in ecosystem regeneration is often limited.

Kootenay National Park

A century of fire suppression and subsequent forest in-growth in Kootenay National Park had degraded traditional winter habitat for bighorn sheep (*Ovis canadensis*), the "ambassador" species for this initiative. The in-filled forest that resulted from fire suppression activities no longer provided the long sightlines the sheep and other species require to spot potential predators. Research into the issue found that the sheep had adjusted their use of the area away from their traditional winter range, which increased the risks they then faced of car and railroad collisions.

To address this issue, since 2002 the park has restored approximately 200 hectares of land near the Redstreak Campground in Radium Hot Springs to its historical state. Through a combination of forest clearing and prescribed burn, the area is now more hospitable for bighorn sheep and other species that depend on open forest/grassland habitat. Radio-tracking indicates that the sheep are beginning to use the restored area.

Public outreach efforts over the past two years have contributed to Kootenay's success. Programs such as the Bighorn in Our Backyard and the Head Bangers Tour have been created to build on the interest of visitors and local residents to observe wildlife by offering them a unique opportunity to observe the bighorn sheep in their natural habitat during the fall rut. It is hoped that newly created interpretive trails will also significantly increase interest and understanding about the sheep, their habitat, and ecological integrity issues within the park as well as help the visitor live a memorable experience. In addition, the project has reached national and international audiences via a Canadian Geographic Kids TV episode and as a feature project on the United Nations Environmental Programme - World Conservation Monitoring Centre website.

Following page (top to bottom):
Grasslands National Park
©Parks Canada, C. Masecar

Monitoring prairie grasslands, Grasslands National Park
J. Wilmshurst

Grasslands National Park

The restoration of large herbivore grazing by bison and the re-introduction of other natural processes has been the focus of the "Prairie Persists" project in Grasslands National Park. This area in southwestern Saskatchewan was home to millions of free-roaming bison prior to European contact. The disappearance of the bison in the late 19th century has had profound impacts not only on the traditional cultural landscape of local First Nations but also on grassland ecosystems in the Prairies. These ecosystems were historically dependent on grazing by large herbivores to create the diverse pattern of vegetation required to sustain a wide variety of native species.

As a result of habitat destruction and cultivation, prairie grasslands are now one of the most threatened ecosystems in the country. Only 19% of Saskatchewan's original mixed grass prairie ecosystem remains intact, and much is fragmented into small parcels. Grasslands National

Above:
Bison Herd on Snakepit Dogtown, Grasslands National Park
©Parks Canada, N. Finney

Following page:
Bison (*Bison bison bison*) herd with calf, Grasslands National Park
J.R. Page

Park is the only national park in Canada set aside to protect this special ecosystem, and represents one of the last remaining large contiguous areas of mixed grass prairie in western Canada.

To improve ecological integrity in the park the Agency initiated the "Prairie Persists" project to recreate the ecological processes that are linked to large herbivore grazing and natural fires, while also restoring cultivated lands within the park.

In May 2006, 71 plains bison were successfully released into the 17,800 hectare West Block of the park. Cattle are being used in other areas of the park to restore the grazing process. Progress has also been made in reducing the prevalence of agronomic exotic species such as crested wheatgrass (*Agropyron pectiniforme*) and preventing the spread of invasive species such as leafy spurge (*Euphorbia esula*) into the park. In combination with revegetation efforts in previously cultivated fields in the park, over 280 hectares have been restored.

Grass Dancer in Grasslands National Park
©R. Postma

A core element of the "Prairie Persists" project is a host of educational programs for local youth offered through the Prairie Learning Centre - an innovative educational partnership between Chinook School Division and Grasslands National Park (http://www.prairielearningcentre.ca/).

These restoration efforts are not only contributing to the long-term ecological integrity of the park, but are also helping to restore First Nations' relationships with the land. Canadians now have the opportunity for a unique and powerful visitor experience by being able to see free-ranging plains bison – a powerful symbol of the prairies and Canada's history.

4.2 INNOVATIVE APPROACHES FOR RESTORING ECOLOGICAL INTEGRITY

A host of other innovative approaches are underway to restore ecological integrity throughout the national park system.

Banff National Park

The Bow Valley is a critical movement corridor for Grizzly bears, listed as a species of "special concern" by the Committee on the Status of Endangered Wildlife in Canada http://www.cosewic.gc.ca, and other wildlife. However, the area is also home to Lake Louise – a key destination for the thousands of visitors to the park each year.

The Trans Canada Highway through Banff carries over 24,000 vehicles each day in summer, with attendant impacts on wildlife. As a result, the Park initiated the design of a highway twinning-mitigation project to keep key wildlife species like grizzly bears and their habitats connected.

Wildlife crossing structure on the Trans-Canada Highway in Banff National Park
©Parks Canada

Lake Louise Area Strategy
The Banff Wildlife Crossings project forms part of the Lake Louise Area Strategy — a comprehensive set of projects aimed at addressing traffic congestion and wildlife movement, restoring grizzly habitat while improving the trail system, engaging visitors in stewardship initiatives, and providing enhanced educational and recreational hiking opportunities in the park. Specific projects include forest thinning and prescribed burns, adjustments to the hiking trail system and certain backcountry campsites away from preferred grizzly habitat, and enhanced interpretation programs aimed at new and repeat visitors.

Twenty-four wildlife-crossing structures – including underpasses, overpasses, and fences – have been constructed to date. The two 50-m wide overpasses were the first wildlife crossing structures of this magnitude in North America. Placed in areas of preferred wildlife crossing points, these overpasses and the rest of the project have received international attention and accolades.

The Wildlife Crossing Project has a strong focus on public education. Staff have visited over 22 schools and engaged over two thousand students in contests and projects to raise awareness of the project. In addition, the Canadian Parks and Wilderness Society (http://www.cpawscalgary.org/campaigns_nationalparks/nationalparks_index.php) has created a documentary video about Banff's efforts to reduce wildlife mortality in the park.

Lessons learned from this project are informing the new discipline of road ecology (for examples, see results from a recent symposium at the Toronto Zoo http://www.torontozoo.com/conservation/RoadEcologyGroup.asp), and are also being shared with stakeholders and interested parties, including Transport Canada.

Grizzly bears (*Ursus arctos*)
©Parks Canada

Jasper National Park

Restoration efforts are also underway in Jasper National Park. The growing popularity of both hiking and mountain biking, particularly in off-trail areas, has had a significant impact on the health of the trail system as a whole. In addition, many of these trails are located in areas that wildlife, such as Grizzly bears, depend on for habitat and movement. Consequently there has been a growing recognition by the Agency and users alike that new approaches are required.

Keeping Their Eyes Close to the Ground

Park staff are keeping their eyes close to the ground — literally — in Waterton Lakes National Park, where a unique approach to restoration is underway to help restore a population of long-toed salamanders. The salamanders must cross a high traffic road to move to and from their breeding grounds, a problem that was compounded when a new sidewalk was built that was too steep for the salamanders to climb. As a result, the park has begun to install specialized tunnels that allow the salamanders to pass under the roads instead of over them. The park expects this unique project to help increase the population of long-toed salamanders and other amphibians over time. In addition, as these new structures are close to the park's visitor centre, there is a great opportunity to initiate interpretive and educational programs with visitors and local community members in the coming years.

Representatives from the community formed the Jasper Trail Stewards in 2001. Together, this group has worked with the park to develop a set of guiding principles to help trail planning. Building on this foundation, the Jasper Trails Project is working closely with an advisory group to help set strategic direction. It is also working with a local working group to develop a new trails strategy through workshops, focus groups, and considerable input from local and regional trail users.

The strategy will detail a reconfigured trail network that will both improve the trail system and reclaim key wildlife areas. Some trails will be rebuilt as part of the

project, while others in more sensitive areas are being re-routed or rehabilitated. New trails are also being designed in less sensitive areas to accommodate the growing user population. This will help maintain and restore ecological integrity in the park while still ensuring high-quality recreational experiences for park users.

Changes to the trail network have already begun with nine kilometres of new trails built by park crews and volunteers. The Jasper Trails Project Volunteer Program, developed in partnership with Friends of Jasper National Park, provides a unique opportunity for locals and visitors to live meaningful experiences. The park will complement these efforts with revised interpretive and educational materials, in order to help park visitors understand and appreciate the impact of these collaborative efforts.

Above:
Volunteers working on a trail re-route, Jasper National Park
©Parks Canada, J. Dubois

Previous page:
Long-toed salamander (*Ambystoma macrodactylum*), Waterton Lakes National Park
©Parks Canada, M. Taylor


Before Restoration


After Restoration

La Mauricie National Park

There is a long history of human activity in La Mauricie National Park. One key issue facing the park is the effect of log drives in the area (which involved damming many lakes and have left large accumulations of sunken wood), and the introduction of non-native fish species that have negatively affected native fish such as brook trout (*Salvelinus fontinalis*). A number of genetically distinct populations of brook trout exist in the park.

Within the context of a larger restoration project, efforts were launched in 2005 to enhance the health of aquatic ecosystems in the park. The main goals of this project are to restore water levels in six lakes by removing dams and other infrastructure, to restore riparian habitat in eight lakes, and to improve the integrity of native fish populations in a series of lakes by removing introduced species and re-introducing indigenous species.

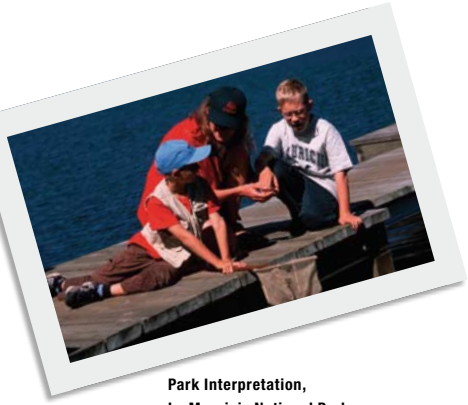
By the end of 2007, Parks Canada had successfully reintroduced brook trout (*Salvelinus fontinalis*) while duplicating the genetic diversity of unique strains, controlled non-native fish populations in five lakes, and removed approximately 12,000 14-foot logs, mainly consisting of hemlock. Banks have also been restored around several lakes. These efforts will help improve spawning areas for key species while restoring hydrological function.

Efforts have been underway since the project's inception to inform and engage Canadians in this project, with a particular focus on visitors and local and regional residents. The park has also worked to reach out to fishermen who regularly use the area.

As the project enters into its final phase, increased emphasis will be placed on outreach and "hands on" activities to engage Canadians, especially youth, in the project. The project will continue to be a major feature of the

Above:
A genetically unique population of brook trout (*Salvelinus fontinalis*) in lac Waber, La Mauricie National Park
©Parks Canada, A. Van Dijk

Previous page (top to bottom):
Before and after aquatic ecosystem restoration showing log accumulation and removal from lac Isaïe, La Mauricie National Park
©Parks Canada, A. Van Dijk



Park Interpretation,
La Mauricie National Park
©Parks Canada, A. Van Dijk

park's interpretation program. Efforts to measure the visitor's experience will also be conducted as part of this phase of the project.

Gwaii Haanas National Park Reserve and Haida Heritage Site

Parts of Gwaii Haanas National Park Reserve experienced extensive industrial activity prior to park creation. In the case of Lyell Island, intensive clear-cut logging over sixty years had major impacts on the ecological integrity of the area. While significant restoration efforts were initiated on the island following creation of the park reserve, no work was done to restore a number of damaged streams that provided salmon spawning and rearing habitat.

As a result, park staff have launched a restoration project to assist native salmon populations by restoring the streams they rely upon. Following an extensive initial assessment process, several areas were identified for priority in-stream and riparian restoration.

Working closely with a group of local partners, including the Haida Fisheries Program and members of the Hecate Strait Streamkeepers, park staff have made significant efforts to further assess and restore priority stream ecosystems. Assessments have been conducted at nine priority sites and two control sites, and fish population assessments have been conducted in seven streams.

Stream restoration in Gwaii Haanas National Park Reserve and Haida Heritage Site

Above:
Monitoring juvenile coho salmon (*Oncorhynchus kisutch*) populations, Gwaii Hanaas National Park Reserve and Haida Heritage Site
©Parks Canada

Following page (top to bottom):
Before and after view of shoreline restoration at Mallorytown Landing, St. Lawrence Islands National Park
©Parks Canada, J. Harvey

Progress has also been made in restoring fish habitat. Over 2400 m within two streams have been carefully restored using low-impact techniques. This has typically involved large woody debris that is strategically placed to promote channel diversity and to improve fish spawning habitat.

To date, over 85% of the restored sites have resulted in improvements to salmon spawning habitat and the physical complexity of the channel — two of the project's critical objectives. Long-term monitoring of these sites, as well as two control streams, will help the Agency compare the effects of restoration activities over time.

St. Lawrence Islands National Park

A different kind of restoration project is underway in St. Lawrence Islands National Park. Over a number of years, the Mallorytown Landing site was transformed from a pristine shoreline with native vegetation and a wetland complex to a human-made landscape consisting of a maintained lawn, sand beach and hardened shoreline.

A restoration project is now underway to remove these human influences and return the area to a more natural state. The project has involved removing constructed features such as a canal-like rock drainage corridor, together with efforts to re-naturalize the area with native vegetation. Combined with hands-on workshops and interpretive programs, this restoration project has helped create a living example for visitors and local residents of what restoration can do in a relatively short time.


Before Restoration


After Restoration

Roger's Pass contaminated site clean-up, Glacier National Park

Glacier National Park

Some challenges to a park's ecological integrity stem from past sources of pollution. Contaminated sites are a legacy of past activities, many of which pre-date our current understanding of the environment. The Parks Canada Agency is making many strides in addressing this legacy, by identifying, remediating, and restoring contaminated sites to new uses.

An example of this approach is the Rogers Pass Compound within Glacier National Park. Several sites within the compound were contaminated with hydrocarbons (fuels) in the soils, one of which had heavy metals (lead and zinc) contamination. As a result, this creek site became a top priority for remediation. Building on an earlier remediation project, efforts were made in 2005 to remove the contaminated materials and dispose of them appropriately, as part of an integrated creek restoration project that also included efforts to restore and enhance bull trout habitat in the area. As part of this initiative, over 1000 cubic meters

of material have now been removed, and the area has been restored to a state that is consistent with residential parkland guidelines.

The project is an excellent example of how contaminated site remediation can be integrated into broader efforts to maintain and restore ecological integrity within a park ecosystem. Ongoing monitoring will help ensure that this site remains a success story.

4.3 ECOLOGICAL INTEGRITY WITHIN THE GREATER ECOSYSTEM

Maintaining or restoring ecological integrity, especially in smaller parks, often requires Parks Canada to look outside park boundaries. In some cases, restoration efforts extend into the greater park ecosystem.

Elk Island National Park

Elk Island National Park is relatively small (194 km^2), but forms the core of a much larger area known as the Cooking Lake Moraine. This region is home to a mix of agricultural and industrial uses, as well as a mosaic of land ownership patterns. As a result, park staff are working with local and regional organizations in the context of a sustainable community partnership known as the Beaver Hills Initiative.

The Initiative, which began in 2000, involves a broad range of federal, provincial and municipal agencies, as well as conservation organizations such as Ducks Unlimited and the Nature Conservancy of

Canada. Grant funding was first secured in 2004, and since that time, work has been underway to understand and address the impacts of habitat fragmentation on the ecosystem as a whole.

Working primarily with municipal representatives from the four counties surrounding the park, the Beaver Hills Initiative has developed a Land Use Planning and Land Management Framework that identifies ecologically sensitive areas within the Cooking Lake Moraine. Municipal planners are using this information as they evaluate subdivision requests. To continue the work of the Land Management Framework, a feasibility study was recently produced that considers Transfer Development Credits as a method of creating habitat corridors for key species. In addition to this important land use planning work, other efforts to date have focused on assessment and monitoring work, such as conducting a fire history and establishing wetlands monitoring protocols. For more information, see http://www.beaverhills.ab.ca.

Elk Island National Park
D. Tuplin

Above (top to bottom):
Wasagaming Townsite on the shores of Clear Lake, Riding Mountain National Park
©Parks Canada, K. Frazer

Algae blooms from neighbouring South Lake, Riding Mountain National Park
©Parks Canada, K. Bachewich

Riding Mountain National Park

Clear Lake is one of the most recognizable and beloved features of Riding Mountain National Park, and has been the focal point of recreation in the park since its creation. However, the lake's crystal blue waters are threatened by a number of pollutant sources that include extensive algae blooms from an adjacent lake and poor wastewater treatment.

As a result, efforts are underway to improve water quality in the area while enhancing the quality of visitor experience. The Clear Lake project has also provided a unique opportunity for the park to strengthen its relationship with the Keeseekoowenin Ojibway First Nation (KOFN), a community that was removed from the park in 1935.

Key activities to date have included the establishment of a monitoring program in the Clear Lake Basin, as well as the creation of a working group to bring together key partners, including the municipality and local residents. Riding Mountain has also launched a number of high-profile water-quality projects, such as an emissions initiative to promote cleaner-technology boat engines and provide complimentary inspections for recreational boat users in the area. The park's lower emissions program has been extremely successful, achieving 95% voluntary compliance with a prohibition on conventional two-stroke outboard marine motors.

In addition, KOFN and park staff are working to develop a common vision and cooperative management regime for the park. In particular, this partnership is focused on involving KOFN in efforts to manage the local fishery resource. Working together in this way is helping build a new relationship to heal long-standing resentments by this community towards the park.

Above (top to bottom):
Clear Lake, Riding Mountain National Park
©Parks Canada

Keeseekoowenin Ojibway First Nation signing ceremony, Riding Mountain National Park
©Parks Canada

High school students propagating native tall-grass prairie species in the Long Point Biosphere Reserve
P. Gagnon, Long Point Region Conservation Authority

Biosphere Reserves

Biosphere reserves are an important mechanism for the Agency to work towards ecological integrity within the greater park ecosystem. Biosphere reserves are designated by UNESCO (the United Nations Educational, Scientific and Cultural Organization) to promote and demonstrate innovative approaches to conservation and sustainable development (UNESCO). They include core protected areas with strict legal protection (such as national parks), buffer areas, as well as lands with agricultural or industrial development.

Parks Canada is participating in a number of biosphere reserves and associated projects across the country (Canadian Biosphere Reserves Association). For example, St. Lawrence Islands National Park is working with other partners in the Frontenac Arch Biosphere Reserve to develop and implement a model for regional coordination that will support the ecological integrity of the park. This involves building a

strong network of partners and exploring a number of joint initiatives, such as integrated reporting and identification of habitat priorities in the region.

Similarly, Kejimkujik National Park is a core area within the Southwest Nova Biosphere Reserve. Park staff are working with its biosphere reserve partners, including the Mersey Tobeatic Research Institute Co-operative, to collaborate on research, monitoring and management projects to better understand the area's ecological health as well as best practices that can help maintain and improve its ecological integrity.

Southwest Nova Biosphere Reserve — Partners in Solutions

The Mersey Tobeatic Research Institute was established in 2004 to improve understanding of the stresses to ecological integrity in the Southwest Nova Biosphere Reserve and to bring people in the reserve together to develop research-based solutions to these challenges. Since then, over 100 individuals and organizations, including local forestry companies, academic institutions, governments (at the municipal, provincial and federal level), non-government organizations, and local community members have partnered to address common interests and conservation priorities.

Between 2005 and 2007, an integrated regional research and monitoring program was developed and co-operatively implemented to assess the state of the aquatic health and landscape connectivity in the biosphere reserve. This work found that the landscape is becoming more fragmented through forest cover loss and road development. These results have guided partners in their collaborations to ensure the long-term sustainability of best practices and other priority initiatives for research, monitoring and management.

An active outreach education program has been an integral part of this initiative. The program has garnered community support, generated enthusiasm, and fostered environmental stewardship throughout the region. Much of the success has been achieved by connecting researchers and the public and by making local research and monitoring results accessible and relevant to the communities in the biosphere reserve. The park has also supported an “interpreter on wheels” to visit all the schools within the biosphere reserve. This ‘cycling crusader’, who rode his bike 435 km and visited over 800 high school students in 2006, has helped to inspire students to both participate in park programs and undertake other conservation initiatives in their homes and schools.

4.4 SUMMARY

This report represents a snapshot of the types of activities underway to address the range of challenges faced by our national parks and the species that depend on them.

These examples demonstrate the Agency's commitment to fostering the engagement of Canadians in stewardship activities that both help improve ecological integrity and build a sense of personal connection with Canada's natural heritage.

Parks Canada continues to work closely in partnership with Aboriginal peoples on various projects that enable Aboriginal traditional knowledge to take its meaningful place along with other forms of knowledge. Such projects share the common theme of encouraging Aboriginal peoples to reconnect with their traditional cultural landscapes through traditional use of the land.

Above (top to bottom):
Kluane First Nation Member harvesting soapberries in Kluane National Park and Reserve
C. Mckinnon

Young Canada Works participants, Gros Morne National Park
M. Burynski

5.0

5.0 Looking Ahead

On behalf of Canadians, the Agency has enjoyed significant success in recent years in developing and delivering action on the ground initiatives that are effective, efficient, and truly engage Canadians. However, the context for Parks Canada's work will continue to evolve in the decades to come. To have continued success, the Agency will need to respond to a number of new and evolving challenges.

The stories highlighted in this report set precedence for the Agency for achieving success in maintaining or improving EI in national parks. In future years such initiatives will be designed to fully contribute to the public education and visitor experience objectives of the organization.

Above:
Pacific Rim National Park Reserve
©Parks Canada

Previous page:
Mi'kmaw canoe ceremony, Gros Morne National Park
©Parks Canada, S. Stone

Parks Canada as a Global Leader

Increasingly, other Canadian jurisdictions have adopted EI as a common foundation for protected area management (for example, Ontario – Ontario Parks Legislation and British Columbia – BC Parks – Preserving Our Legacy). Canada is leading a number of efforts to maintain and enhance ecological integrity globally. For example, as state member for the World Conservation Union (IUCN) (http://www.iucn.org/) Parks Canada assists in defining its program of work, thus contributing to effective management of protected areas worldwide. In addition, other jurisdictions internationally are recognizing the leadership of Parks Canada in helping Canadians to establish a sense of connection with their national parks thus enhancing the relevance of these places and their on-going use and protection.

The Agency will also continue to demonstrate environmental leadership throughout its operations. For example, Parks Canada is greening its fleet of cars and trucks by accelerating purchases of light-fleet vehicles and exceeding Government of Canada guidelines on the acquisition of hybrid vehicles. These and other measures will ensure that Parks Canada continues to be a leader in environmental stewardship across the country.

There are a number of common factors influencing the success of these initiatives that can be applied to all future activities by Parks Canada to ensure that the state of ecological integrity in Canada's national parks is maintained or restored through the integrated delivery of Agency's mandate.

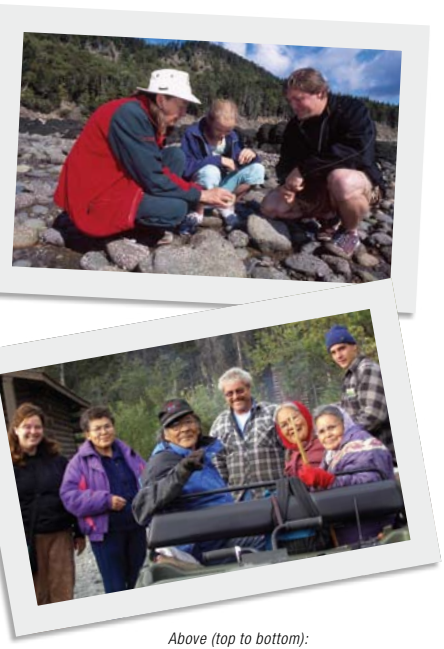
First of all, they are strongly grounded in all knowledge systems, including western ecological knowledge, social science, and Aboriginal Traditional Knowledge. This helps ensure that they produce relevant, meaningful outcomes that can be used to inform park management decisions.

This growing knowledge base will be critical to the ability of the Agency to understand our changing environment and identify solutions to the new environmental challenges we will face in the future. These challenges include accelerating rates of biodiversity loss, climate change (and its attendant impacts on weather patterns, wildlife populations and the habitats they depend on), the decline of marine systems, and changing freshwater availability across the country.

Secondly, they are partnership-driven, which ensures that Parks Canada's efforts are complementary and truly integrated with efforts by other governments, academia, Aboriginal peoples, and local communities.

Finally, these projects are finding innovative ways to engage new audiences in ways that foster enjoyment, connection and learning because they take into consideration the interests of Canadians in terms of learning, visitor experience and involvement opportunities.

MacIntosh Brook, Cape Breton Highlands National Park
©Parks Canada, D. Wilson



Above (top to bottom):
Fundy National Park
©Parks Canada, B. Townsend

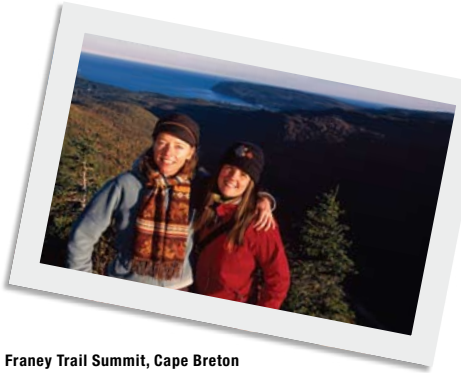
Champagne and Aishihik First Nations Elders, Kluane National Park and Reserve
C. McKinnon

Continuing this trend is crucial to the future of the Agency, given the major demographic shifts underway within Canadian society. As the face of Canada changes and becomes more ethnically diverse, and as our population becomes increasingly urbanized, these strategies will help ensure that the Agency remains relevant to all Canadians.

The Agency will continue to apply these success factors in future active management and restoration activities in accordance with the guiding principles of effective, efficient and engaging. The key to maintaining or improving ecological integrity in the future will require that the Agency work with others and continue to monitor EI condition, report to Canadians on the state of EI in their national parks, and use this knowledge to identify priorities for action and to design and implement relevant action-on-the-ground activities.

5.1 AN INVITATION TO CANADIANS

The lessons learned through these projects position Parks Canada to effectively embrace the challenges and opportunities of the future. Ultimately, they will help the Agency ensure that the national park system continues to be relevant, and is maintained as a source of ecological health, cultural identity and enjoyment for Canadians for many generations to come.



Franey Trail Summit, Cape Breton Highlands National Park
©Parks Canada, D. Wilson

However, Parks Canada cannot achieve this vision alone. Meaningful relationships with a diverse range of groups, partners and stakeholders are essential to achieving the Agency's goals. All Canadians – individuals, local communities, Aboriginal peoples, non-governmental organizations, institutions and others – need to be connected with their national parks, and to be actively engaged in order for the Agency to succeed in maintaining and restoring ecological integrity across the national park system.

EI Poster Contest for Grade 9 Students in Ontario

The year 2007-08 was the eighth year for Ontario's EI Poster Contest, which was developed to support Grade 9 geography curriculum in the province. Over 1000 posters reflecting EI issues in an existing national park were received, including a portrayal of the key natural features and processes that each park represents. The Ontario EI poster contest, and others like it in other jurisdictions, plays a vital role in building understanding and interest through a creative outlet among students and teachers (http://www.pc.gc.ca/apprendre-learn/prof/itm1-con/on/eco/index_E.asp).

Academic, First Place
Alice Liao, "Fundy National Park"
Mr. Persaud's Grade 9 Geography Class,
Marc Garneau Collegiate Institute, Toronto ON

Applied, First Place
Shu Qing Chen and Chen Qiong She, "Kluane National Park Reserve"
Ms.Layne's Grade 9 Geography Class,
Central Technical School, Toronto, ON

Based on the outreach successes achieved to date, as highlighted in these action-on-the ground initiatives, the Agency will continue to reach out to Canadians, whoever and wherever they are – in urban centres, in rural areas, in the north – to work with them to create opportunities that are meaningful to them to get involved. It will engage park visitors, Canadians living immediately adjacent to national parks, and those living thousands of kilometers away. The Agency must continue to find new ways to help Canadians connect to nature in ways that are relevant to them and contribute to fostering understanding and a personal connection to our national parks.

Whether it is volunteering with a citizen science program, participating in recovery planning for a local species at risk, joining a "friends of the park" group, living a wonderful visitor experience, or getting involved in Parks Canada's public education programs, there are many ways to connect with our national parks in deep and meaningful ways.

Above (top to bottom):
Volunteer recording data, Banff National Park
©Parks Canada, W. Karhoffer

Black-footed ferret (*Mustela nigripes*), scheduled for possible reintroduction into Grasslands National Park
M. Lockhart

The Agency invites all Canadians to join with us to help address the challenges of today and tomorrow. In so doing, we can all explore, deepen and celebrate our connection to some of the most beautiful and vibrant landscapes in the world and the species that depend on them.

Terra Nova National Park
©Parks Canada, D. Wilson

Participant Voices

"If you want support for Parks — get out there with the kids!"

Participating Teacher
Gros Morne National Park
Citizen science program

"It was wicked!"

Participating student
Gros Morne National Park
Citizen science program

"It is a great experience (EI poster contest) for our students and we are looking forward to next years posters! The students who won are extremely excited and were delightfully surprised!"

Christina Layne
Teacher, Central Technical School
Toronto, Ontario.

"My primary motivation was my son, but in the end I loved it as much as he did. It isn't until you start meeting the Parks staff and research students that you become much more aware of how fragile our environment is and that they need help to get all this data."

Nellie Neish
Kejimkujik National Park and Historic Site
Species at Risk volunteer

Kejimkujik National Park, ©Parks Canada, J. Sheppard