

# **REVIEW OF COMMITMENTS AND REPORTING PRACTICES FOR ENVIRONMENTAL IMPACTS OF HIGHWAYS**

**March 2004**

**Performance, Audit and Review  
Strategy and Plan**

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## **EXECUTIVE SUMMARY**

There are 21 numbered highways that pass through 16 national parks and one national historic site, extending a distance of about 820 kilometers. The Agency's planned result with regards to the numbered highways is: "highways are safe and open to through traffic and minimize ecological impact".

Parks Canada has not formally defined what it means to minimize the ecological or environmental impacts of highways or how it will measure the achievement of this result. However, the Agency has committed to developing a monitoring and reporting framework for minimizing the environmental impacts of the highways. To this end, this paper provides the background and context for building a reporting framework. It presents an overview of national and field unit commitments with respect to sustainable highways and how these are reported on, as well as practices and performance indicators of environmental management of roads and highways used in other jurisdictions with a view of identifying elements of a framework for national reporting on the environmental impacts of highways.

The paper recommends that a complete results/reporting framework for the environmental impacts of highways would:

1. Specify what highways and roads were subject to the framework (i.e., just the numbered highways in service line 6 or other roads as well).
2. As a minimum, measure reduction in wildlife mortality, increase in habitat connectivity, and application of environmentally sensitive practices in highway construction and maintenance.
3. Identify additional environmental aspects, if any, that should be monitored and reported on nationally.
4. Set out a plan and timetable for developing a cost effective system for monitoring and reporting on the relevant environmental aspects of highway operations in the relevant heritage places.

## REVIEW OF COMMITMENTS AND REPORTING PRACTICES FOR ENVIRONMENTAL IMPACTS OF HIGHWAYS

### Background

Parks Canada defines through highways as those that are part of the provincial network of numbered highways, and have a posted speed of 80 km/hr or more for most of their length. There are 21 numbered highways that pass through 16 national parks and one national historic site, extending a distance of about 820 kilometers (Annex 1). Of the 21 highways, two of these, the Trans-Canada and Yellowhead pass through six national parks.

The Agency planned result with regards to the numbered highways is: "highways are safe and open to through traffic and minimize ecological impact". Parks Canada has not formally defined what it means to minimize the ecological or environmental impacts of highways or how it will measure the achievement of this result. In addition to the commitment in its Corporate Plan, there have been a number of commitments in Protected Heritage Area Management Plans to manage roads in such a way that minimizes their impact on the natural environment of the parks. The purpose of this paper is to provide an overview of national and field unit commitments with respect to sustainable highways and how these are reported on as well as practices and performance indicators of environmental management of roads and highways used in other jurisdictions with a view of identifying elements of a framework for national reporting on the environmental impacts of highways.

The Panel on Ecological Integrity on Canada's National Parks observed in its report:

*"Many southern parks are bisected by highways and some by rail. Highways and railways have huge impacts upon wildlife and can also affect water quality and a number of other park aspects...including direct loss of habitat, habitat fragmentation, wildlife mortality and the risk of hazardous material spills."*

The Panel acknowledged that pilot projects are underway to mitigate the effects of roads in national parks and gave examples of actions taken in Parks Canada to aid wildlife movement across highways in different national parks. The Panel contends, however, that long-term monitoring of the success of these structures is essential prior to further construction or twinning of through highways, in keeping with the practice of adaptive management."

The Auditor General of Canada has suggested that Parks Canada's highway sustainability information could be strengthened with more comparative information from other jurisdictions. This paper provides a summary of some the measures and practices used in other jurisdictions to measure the impact of highways on the natural environment.

## Parks Canada Commitments Environmental Impacts of Highways

There are a number of specific initiatives underway at the sites to reduce the impact of highways on the landscape and species within them. Some of these measures are specific to a national park or a national historic site, and some are corporate initiatives implemented locally at the site level. These initiatives, which can be mostly grouped into four categories of highway planning, design, construction, and maintenance, are activities undertaken to produce the desired outcome of minimized highway ecological impact in the short and long term. This distinction between activities/outputs and outcomes will help to decide where performance should be monitored and what indicators are needed.

The following section summarizes commitments from a review of 16 protected heritage area management plans to provide an overview of field unit commitments to reduce the environmental impact of the highways (see Annex 2 for details). Some of the management plans reviewed are quite recent while some date back to early 1990s. As a result, these older management plans may not be indicative of all the initiatives that field units are implementing with regard to through highways. It is also important to note that the management plans commitments apply to a variety of roads not just through highways. Broadly viewed, field unit commitments to reduce the environmental highways impacts focus on the following activities and outcomes:

Activities / Outputs Related Commitments	Outcomes Related Commitments
<ul style="list-style-type: none"> <li>• Undertaking studies to address strategic issues with regard to highways impact</li> <li>• Working with partners in adjacent lands to reduce the impact of surrounding roads on the PHA ecosystem</li> <li>• Building baseline data for assessing impact in certain areas</li> <li>• Reducing road salt use for winter maintenance</li> <li>• Limiting vehicle traffic as necessary</li> <li>• Reducing vehicle emission</li> <li>• Applying environmental measures to highway maintenance and construction activities</li> <li>• Closing some roads during certain hours and periods of the year</li> </ul>	<ul style="list-style-type: none"> <li>• Restoring road-side native vegetation, and reducing exotic plant species</li> <li>• Increasing habitat connectivity</li> <li>• Reducing wildlife mortality</li> <li>• Reducing highway run-off</li> </ul>

The commitments range from specific goals and related activities to more generic commitments relating to corporate goals; some sites have not defined any specific objectives in their management plans with regard to their highways. For example, a national park may have a

specific target of reducing the death rate of large mammals as a result of highway accidents by a certain percentage in a certain time-frame, while another site's objective would be to reduce road kill, without specifying a target a target or a time-frame. Similarly, there are sites with extensive monitoring programs enabling them to report on their progress, and to measure the effectiveness of their management actions. Some management plan commitments indicate close collaboration among sites and with the service centres on highway management initiative.

Parks Canada current national reporting on the environmental impacts of highways has focused on:

1. the assertion that Parks Canada incorporates highway construction and design standards that mitigate environmental impacts of highways
2. the impact of fencing on reducing animal mortality along the TransCanada highway in Banff and Yoho national parks
3. the use of animal passages (under or overpasses) to track the extent the fragmenting effects of highways are mitigated along the TransCanada highway in Banff and Yoho
4. the development of Parks Canada's draft Salt Management Policy and salt management plans in a few field units.

### **Road Salt Management in Protected Heritage Areas**

Under the *Canadian Environmental Protection Act*, the Government of Canada has adopted a *Code of Practice for the Environmental Management of Road Salt*. The Code applies to: (a) organizations, such as Parks Canada, that use more than 500 tonnes of road salts per year (five-year rolling average); and (b) organizations that have vulnerable areas in their territory. The Code will be reviewed in five years to see if there has been voluntary cooperation.

Road salt is used on national parks and national historic sites roads as de-icing and anti-icing chemicals for winter road maintenance. In light of the Environment Canada assessment of the impact of road salt on the environment, and the Code of Practice, Parks Canada has developed a draft Salt Management Policy which states that the Agency will:

1. comply with all applicable federal and provincial legislation regarding the storage and use of snow and ice control products;
2. use road salt in an environmentally responsible manner, and minimize the negative environmental effects of handling, storage and application of salt on the environment; and,
3. in providing the stated level of service, Parks Canada will conserve the use of salt by utilizing the most cost-effective technologies and practices.

A Road Salt Management Plan Template has been developed and implemented in three pilot sites: Lake Louise/Yoho, Riding Mountain and Cape Breton Highlands. The template includes winter road maintenance standards, operational practices and procedures, and monitoring.

The monitoring of salt management plans will help the sites to track their use of salt for highway maintenance, and identify operational areas where improvements are needed. The Sites will measure and report on progress towards established operational goals and standards some of which are not relevant to environmental impacts of highway operations and maintenance.

Specific aspects relevant to the environmental impacts of highways include:

1. Upgrading fleet with more effective salt spreading technology,
2. Salt usage,
3. Reduction of salt loss to the environment at storage facilities,
4. Training staff in better salt management practices, and
5. Minimizing environmental impact of snow removal and disposal (guidelines to be developed).

Currently, there is no commitment beyond the pilot sites, to implement the proposed draft Salt Management Policy.

### **Sustainable Highway Management Indicators in Other Jurisdictions**

A review of literature on ecosystem approaches to road management was carried out to provide an overview of indicators and practices used in other jurisdictions for the ecological management of highways.

The European Union report, the Transport and Environment Reporting Mechanism (European Environmental Agency, 2003) proposes a high level dual indicator for measuring the impact of road on important ecosystems and habitats, and issues pertaining to sustainable biodiversity. The indicator consists of “infrastructure influence on ecosystems and habitats (fragmentation), and proximity to nature conservation sites.”

The Swedish National Road Administration uses a nationally approach to define locally areas where highways should be managed environmentally; what indicators and targets are needed; what management interventions to achieve targets; and how to measure and report on performance.

In the United States, a recent study of ecological management of roads, (Road Ecology, Science and Solutions, R. Forman, 2003) proposes a number of goals and measures for assessing success in reducing barrier effects of roads, and reducing road-kill. These goals and related indicators are outcome-based, and more long term in nature. The table on the following page provides a summary of these goals and measures.

### Goals and Measures for Reducing Barrier Effects of Roads and Road-Kill

Ecosystem Goal	Measured By:
<ul style="list-style-type: none"> <li>• Reduce road-kill rates post-mitigation</li> <li>• Maintain habitat connectivity: Minimum passage of animals detected; species present on both sides of passage</li> <li>• Maintain genetic interchange: passage by adults, primarily males during breeding season</li> <li>• Ensure biological requirement are being met: sufficient passage to maintain fitness. (Negative impacts of road or passage avoidance could lead to reduced breeding opportunities, skewed sex ratios, inhabiting suboptimal habitat, and increased vulnerability to predation - all leading to decreased individual fitness.)</li> <li>• Allow for dispersal and recolonization: juveniles are able to disperse out of their natal ranges, and areas formerly inhabited are able to be recolonized.</li> <li>• Maintain meta-population processes and ecosystem processes: herbivores are able to access foraging areas; predators can access prey species.</li> </ul>	<ul style="list-style-type: none"> <li>• Comparing road-kill frequencies pre- and post-mitigation</li> <li>• Passage monitoring</li> <li>• Passage monitoring</li> <li>• Reproductive rates (short term and long term), sex ratios, decreased survivorship and physical condition.</li> <li>• Evidence of juvenile passage at structure; collateral study radio-monitoring movements of dispersing animals; detection of species returning to area after long absence.</li> <li>• Distribution of herbivores and predators with respect to habitat quality; foraging intensities; and predation rates</li> </ul>

The U.S. Environmental Protection Agency (EPA) has identified a number of outcome-based indicators for assessing the environmental impact of highway transportation.<sup>1</sup> These indicators are focused on measuring the negative impact of road maintenance and construction leading to habitat disruption, pollution of lakes and rivers and other environmental consequences. They would help create a baseline for measuring the effectiveness of mitigation strategies. The following are a few examples of the EPA highway indicators:

- Acres of various types of land disrupted, or divided by roads, by type of land including changes in habitat fragmentation caused by transportation (e.g. number and size of parcels of forest or other ecosystem)
- Acres of various types of land destroyed, accounting for mitigation/restoration (e.g. classified by summarized wetland functions and values)

<sup>1</sup> Indicators of the Environmental Impacts of Transportation. Highways, Rail, Aviation., and Maritime Transport. United States Environmental Protection Agency; October 1996



- Number of threatened / endangered species in affected areas
- Changes in abundance of various species caused by transportation
- Changes in species diversity caused by transportation
- Changes in wetland integrity due to salinity,
- Contamination of ground water as a result of road salting.

Individual states also report efforts to monitor and mitigate the environmental impacts of highways. The Florida Department of Transport uses wildlife crossings, bridge extensions, and right-of-way fencing to protect and provide passage for the Florida panther and black bear, both of which are endangered species in that area. Wildlife underpasses were designed in consultation with the U.S. Fish and Wildlife Service, and monitored photographically after construction.

In, California, Wyoming, and Colorado deer underpasses were constructed to allow major deer migrations to move between critical summer and winter ranges along several State routes and Interstate highways. Deer-proof fencing and one-way gates were installed on rights-of-way adjacent to major deer movement corridors to keep deer off the highway and to channel them to crossing structures. In California, a fencing application in areas with kit fox and coyotes provides a gap under the fence just large enough for the kit fox to negotiate at full run so that they can escape predators such as the coyote. Passage monitoring and road kill data are used in the above jurisdictions as indicators of crossing structures effectiveness, and their impact on habitat connectivity and reducing road kill.

## Conclusion

This paper has provided a brief overview of Parks Canada's existing commitments for mitigating the impact of highways on the natural environment and summarized examples of commitments and measures in other jurisdictions.

In general, the focus on environmental impacts of highways both within Parks Canada and in other jurisdictions has been fairly consistent. These can be summarized in the table below.

	Environmental Commitment	Potential Measures and Examples
<b>A C T I V I T I E S</b>	<ul style="list-style-type: none"> <li>• Applying environmentally sensitive practices in highway construction and maintenance activities including reducing use of road salt for winter maintenance</li> <li>• Limiting vehicle traffic, reducing vehicle emissions,</li> <li>• Closing some roads during certain hours and periods of the year</li> </ul>	<ul style="list-style-type: none"> <li>• Compliance with mitigation strategies set out in environmental impact assessments.</li> <li>• Amount of salt used over time</li> </ul>

<b>O U T C O M E S</b>	<ul style="list-style-type: none"> <li>• Restoring road-side native vegetation, and reducing exotic plant species</li> <li>• Reducing wildlife mortality</li> <li>• Reducing highway run-off</li> <li>• Increasing habitat connectivity</li> <li>• Viable populations of species on each side of the highway and normal ecosystem processes operating</li> </ul>	<ul style="list-style-type: none"> <li>• Kilometers of highway with native vegetation restored, or kilometers with exotic plant species removed.</li> <li>• Fencing per kilometer of highway</li> <li>• Number of road kill by type of animal</li> <li>• Salinity of water in highway run-off area</li> <li>• Number of animal passages sites per kilometer of highway (over, underpasses etc.)</li> <li>• Number of animals using passages by age, gender,</li> <li>• Reproductive rates (short term and long term), sex ratios, decreased survivorship and physical condition.</li> <li>• Distribution of herbivores and predators with respect to habitat quality; foraging intensities; and predation rates</li> </ul>
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As noted Parks Canada currently has limited national information related to applying environmentally sensitive practices in highway construction and maintenance activities including reducing use of road salt for winter maintenance. It also has limited information from a few Parks concerning reductions in wildlife mortality associated with a few highways and use of structures designed to increase habitat connectivity.

It is recommended that a complete results/reporting framework for the environmental impacts of highways:

1. Specify what highways and roads where subject to the framework (i.e., just the numbered highways in service line 6 or other roads as well)
2. As a minimum, measure reduction in wildlife mortality, increase in habitat connectivity, and application of environmentally sensitive practices in highway construction and maintenance.
3. Identify additional environmental aspects, if any, that the should be monitored and reported on nationally
4. Set out a plan and timetable for developing a cost effective system for monitoring and reporting on the relevant environmental aspects of highway operations in the relevant heritage places.

The proposed framework should build on existing initiatives within field units, and adopt those elements that could be used for national reporting. The National Parks Directorate has taken the lead to develop a basic performance framework for minimizing the environmental impacts of the highways. The commitment is to have a draft framework by April 2004, and to validate the framework with the relevant field units, by April 2005.

**Annex 1: Parks Canada Through Highways**

Protected Heritage Area	Highway/Road	Length (KM)
1. Pacific Rim National Park	Highway 4	21.8
2. Mt. Revelstoke National Park Glacier National Park	Trans Canada Highway	13
	Trans Canada Highway	44
3. Banff National Park	Trans Canada Highway Divided	50.2
	Trans Canada Highway Undivided	31.9
	Hwy 11	6.2
	Highway 93S	10.2
4. Jasper National Park	Highway 16	77.9
5. Kootenay National Park	Highway 93S	94.4
6. Yoho National Park	Trans Canada Highway	46
7. Waterton National Park	Highways 5	6
	Highway 6	22
8. Riding Mountain National Park	Highway 19	29.3
	Highway 10	54.3
9. Prince Albert National Park	Highway 264	4.9
	Highway 240	16.8
10. Forillon National Park	Route 132	10.7
11. Cape Breton Highlands National Park	Cabot Trail	82.6
12. Kouchibouguac	Highway 117	24.1
13. Fundy National Park	Highway 114	19
14. Gros Morne National Park	Highway 430	71.2
	Highway 431	26.9
15. Terra Nova National Park	Trans Canada Highway	42.1
	Highway 310	8.2
	Highway 301	3.6
16. L'Anse aux Meadows NHS	Highway 436	2.4

**Annex 2: Management Plan Commitments Regarding Highways And Roads**Terra Nova National Park

1. Completion of three natural vegetation demonstration areas along TCH in Terra Nova National Park.
2. Completion of Phase 8 TCH improvements including management of roadside vegetation and culverts/passageways.

Gros Morne National Park

Parks Canada will continue to apply environmental protection measures to all highway-related activities, including maintenance and construction activities. Measures will be taken to protect wildlife, rivers, plant communities, geological formations and cultural resource features adjacent to highway corridors.

Cape Breton Highlands National Park

No specific Management Plan commitments. However, Cape Breton National Park is one of the pilot sites for the implementation of the new salt management plan.

Fundy National Park

Highway 114 will be managed as an ecological highway, in such a way as to minimize negative road effects on adjacent ecosystems. Management measures will include the development and implementation of roadside vegetation management protocols using indigenous species such as ericaceous shrubs or low growing conifers such as creeping juniper.

No new roads will be developed.

Riding Mountain National Park

There should be no road built near Lake Audy to the north (Strathclair Trail)

Banff National Park*Objectives:*

- To reduce the environmental impact of the road, rail and utility corridors.
- To provide a secondary road system which is consistent with the goals of maintaining and enhancing ecological integrity and the quality of visitor experience.
- To apply state-of-the-art mitigation measures which have been demonstrated to be effective
- To minimize the risk to the environment of spills along the railway and roads.

- To identify areas where roads and the railway have resulted in direct or indirect loss of riparian and aquatic habitat, and implement measures to restore these habitats.

*Key Actions:*

1. A transportation study will be initiated within two years to address ground transportation issues to the year 2010. The study objectives will be to:
  - minimize the impact of vehicles and movement systems on the ecological integrity of the park and ecosystem while providing adequate access to facilities.
  - use transportation systems and the limiting of particular types and/or quantities of vehicles to an area as a tool for managing human use. The capacity of an area should be determined by ecological considerations and the limitations of infrastructure to support vehicles. Limiting the amount and quality of infrastructure (e.g., parking spaces, road conditions, speed limits) will be used as a human management tool.
  - promote use of transit systems, where it makes sense, in order to minimize the impact of the private vehicle.
2. Close Highway 1A from Lake Louise to the Great Divide picnic area. Design consideration will be made to accommodate emergency vehicles.
3. Introduce a voluntary seasonal closure of the Bow Valley Parkway during the most critical period and at the most critical location for wildlife. Motor vehicle use will be discouraged from March 1st to June 21st from 6 pm to 9 am from Five Mile Bridge to Johnston Canyon. Use will be discouraged through public education and signage. The two picnic areas along this section of road will remain closed until June 21st. Options to close the parkway through the use of gates will be considered if voluntary non-use proves ineffective.
4. Close Vermilion Lakes Road to motorized vehicle use past First Lake.
5. To enhance wildlife habitat and wildlife movement, a portion of the Minnewanka Loop road will be closed to vehicles in the winter. Initially, on an experimental basis starting after fall 1997, the west portion of the Minnewanka Loop Road will be closed in the winter from the intersection to the road to Johnson Lake and the Cascade overflow campground, to the Lake Minnewanka concession. On an experimental basis, promote the use of the right-of-way for cross-country skiing and monitor the effects on wildlife.
6. Initiate a study with CP Rail to identify how the impact of the railway can be reduced. Priority will be given to reducing wildlife mortality, addressing grain spillage, and minimizing the impact on water flow.
7. Pursue with managers of adjacent lands, options for reducing wildlife mortality on highways.

8. With respect to the Trans Canada Highway, Parks Canada's operations and funding will focus on making existing wildlife movement structures more effective. The following work will be undertaken:

- Parks Canada's first priority is to complete a study of wildlife movement in the highway corridor. This study will provide more information on the effectiveness of underpass structures in Phases I and II, will monitor the effectiveness of the new overpass structures in Phase IIIA, and identify major crossing points for Phase IIIB.
- The opportunity to improve or retrofit the existing wildlife underpass structures in Phases I and II will be examined. Wildlife movement east of the Town of Banff will be monitored to determine actions necessary in this area. Parks Canada will not build any new wildlife overpasses in Phases I and II until the effectiveness of the structures on Phase IIIA has been determined.
- To increase the effectiveness of the wildlife overpasses, trails in the area will be rerouted away from the overpass to discourage human presence. The wildlife overpasses will be closed to human use to enhance their success.
- The TCH between Castle Interchange and the Icefields Parkway interchange will soon need to be twinned. Funds have not been confirmed for this work including design and environmental assessment. Environmental mitigations of fencing and wildlife movement structures will be important components of this project

### Jasper National Park

#### *Strategic Goal:*

National transportation corridors and secondary roads are managed in a way that supports PC's commitment to EI and enables visitors to experience the park.

#### *Objectives:*

- To reduce the environmental impact of roads and the railway, including wildlife mortality;
- To maintain a secondary road network that allows visitors to see and experience the park;
- To identify areas where roads, the railway and related transportation development has caused loss of terrestrial, riparian and aquatic habitat; to restore these habitats where feasible

#### *Key Actions*

- Develop and implement codes of practice to reduce vehicle, locomotive and other fossil fuel emissions in the park
- Work with transportation corridor (railroad, highway, pipeline) managers to restore natural features and minimize the impact of these corridors on the volume and seasonal changes in water flows, levels and sources; minimize the effect of road salt and other local contaminants
- Investigate and implement techniques such as the reduction of speed limits, to reduce wildlife mortality along park roads, the Canadian National Railway, and the Yellowhead-

Trans Canada highway; Assess the effect of more road and rail traffic, as well as potential twinning, on wildlife mortality and connectivity

### Yoho National Park

#### *Strategic goal:*

National transportation corridors and secondary roads are managed in a way that supports Parks Canada's commitment to EI and enables visitors to experience the park

#### *Objectives:*

- To reduce the environmental impact of roads and the railway, including wildlife mortality;
- To maintain a secondary road network that allows visitors to see and experience the park;
- To identify areas where roads, the railway and related transportation development have caused loss of terrestrial, riparian and aquatic habitat, to restore these habitats where feasible.

#### *Key Actions*

- Participate with Kootenay and Banff in an examination of ground transportation to the year 2010 including consideration of transportation systems as a tool for managing use, ecological constraints to infrastructure development and vehicle use, public transit, improved access, opportunities to learn about the park, parking, traffic flow, and regional transportation needs and issues
- Continue to monitor traffic on primary and secondary roads, in parking lots, and at viewpoints
- Gather baseline data and additional information required to identify sensitive areas, critical wildlife habitat and wildlife movement areas to assist the development of mitigating measures associated with future upgrades to the TCH
- Collaborate with the Transportation and Utilities Advisory Group in Banff NP to address the environmental implications of highways, railways and utilities in the park
- Close Highway 1A from the Lake O'Hara parking lot to the Continental Divide to motorized vehicles in order to reduce habitat fragmentation. Examine options for use of the 1A after it is closed to vehicles.
- Allow cars to use the back road out of Field only in an emergency
- Continue to reduce the extent of non-native plants along the highway and railway corridor
- Identify sensitive areas, critical wildlife habitat, and wildlife corridors along transportation routes
- Establish long term goals with transportation corridor managers for restoration and mitigation of past, present and future effects on terrestrial and aquatic systems in Kootenay
- Reduce vehicle, locomotive and other fossil fuel emissions in the park
- Minimize the effect of transportation corridors and other structures on seasonal changes in water flow and water levels
- To reduce wildlife mortality - work towards reducing the death rate of large mammals as a result of highway and railway accidents by at least 25% over the next five years. Key areas

include Trans Canada Highway west gate area (summer and fall); Trans Canada Highway Ottertail Flats area (summer and fall);

- Continue interagency discussions to reduce mortality on other highways in the greater ecosystem
- Reduce mortality at high kill areas along the CPR and Trans-Canada Highway
- Prepare an integrated plan for the Kicking Horse corridor that addresses human use, transportation, wildlife mortality, and the location and use of infrastructure

### Kootenay National Park

#### *Strategic goals:*

Park roads are managed in a way that supports parks Canada= commitment to ecological integrity and enables visitors to experience the park

#### *Objectives:*

- To maintain the Kootenay Parkway, allowing visitors to see and experience the park;
- To reduce the environmental impact of roads, including wildlife mortality, to identify areas where roads and related transportation development have caused loss of terrestrial and aquatic and aquatic habitat, to restore these habitats where feasible

#### *Key Actions:*

- Participate with Yoho and Banff in an examination of ground transportation to the year 2010 including consideration of ecological constraints to infrastructure development and vehicle use, public transit, improved access, opportunities to learn about the park, parking, traffic flow, and regional transportation needs and issues
- Continue to collect traffic data to document changing road use
- Monitor private and commercial traffic volume on Settler=s Road to identify user conflicts and environmental impacts.
- Allow commercial vehicles to use Settler=s Road on weekdays only, work with all users to identify ways to protect wildlife and avoid conflicts between recreational and commercial traffic
- Prohibit any upgrade to Settler=s Road, except those identified as major public safety concerns
- Continue to reduce the extent of non-native plants along the highway
- Identify sensitive areas, critical wildlife habitat, and wildlife corridors along transportation routes
- Establish long term goals with transportation corridor managers for restoration and mitigation of past, present and future effects on terrestrial and aquatic systems in Kootenay
- Reduce the impact of routine winter road maintenance Be.g. crushed gravel, sand and salt
- Work with other land management agencies to reduce the number of roads adjacent to park wilderness areas and in key areas throughout regional ecosystems, particularly in the Beaverfoot Valley and the Kootenay Valley north and south of the park and the Columbia Valley adjacent to the park



- Reduce vehicle and other fossil fuel emissions in the park
- Minimize the effects of transportation corridors and other structures on seasonal changes in water flow and water levels
- Work towards reducing the death rate of large mammals as a result of highway accidents by at least 25% over the next 5 years. Key areas include: Sinclair Canyon (west gate to Sinclair Pass) bighorn; year round; Kootenay Parkway (Kootenay Crossing to Sinclair Pass)- black bears: spring green-up; and Kootenay River (picnic area to Hector Gorge)-elk, bear, wolf
- Continue interagency discussions to reduce mortality on other highways in the greater ecosystem, restore important movement corridors at major pinch points (Sinclair Canyon, Mount Wardle, Vermilion Crossing, Vermilion Pass, Wolverine Pass)

### Waterton National Park

#### *Strategic Goal:*

Park roads and scenic parkways support will be managed in a way that supports Parks Canada's commitment to ecological integrity and enables visitors to experience the park.

#### *Objectives:*

To reduce the environmental impact of roads; to maintain a secondary road network that allows visitors to see and experience the park

#### *Key Actions*

- Restoration of aquatic ecosystem; keep the impact of transportation corridors (culverts, stream channelization, maintenance practices, etc.) on aquatic ecosystems to a minimum; wherever possible, modify the transportation infrastructure, not the ecosystem
- To protect wintering ungulates from disturbance, allow non-motorized access only (bicycles, skiing, hiking) on the Red Rock Parkway between late October and mid-May
- Implement seasonal closures of gravel roads on the Blakiston fan if monitoring indicates motorized access displaces elk during the winter and shoulder seasons.

### Mount Revelstoke National Park, Glacier National Park and Rogers Pass National Historic Site

- Reduce wildlife mortality on railway and highway
- Reduce use of road salt.
- Establish an inter-agency Transportation Advisory Committee to identify planning, operation and maintenance opportunities to decrease the environmental impact of the transportation corridor.
- Identify a set of best practices to deal with concerns about mortality, wildlife connectivity, salt and abrasive use, toxic spills, run-off, railway tunnel noise, air pollution, cultural resource management and improvements to visitor services.

- Undertake long-term transportation corridor planning and design to allow for appropriate environmental assessment and mitigation of any improvement or expansion of the highway and promote ongoing dialogue on practices, problems and opportunities.
- Control, and where possible, eliminate invasive weed sites and disturbances to native plant communities.

#### Other PHAs with Through Highways

No specific commitments were identified in the management plans of the following Protected Heritage Areas with regard to management of the ecological effects of the highways:

- L'Anse aux Meadows National Historic Site
- Forillon National Park
- Kouchibouguac National Park
- Pacific Rim National Park Reserve
- Prince Albert National Park