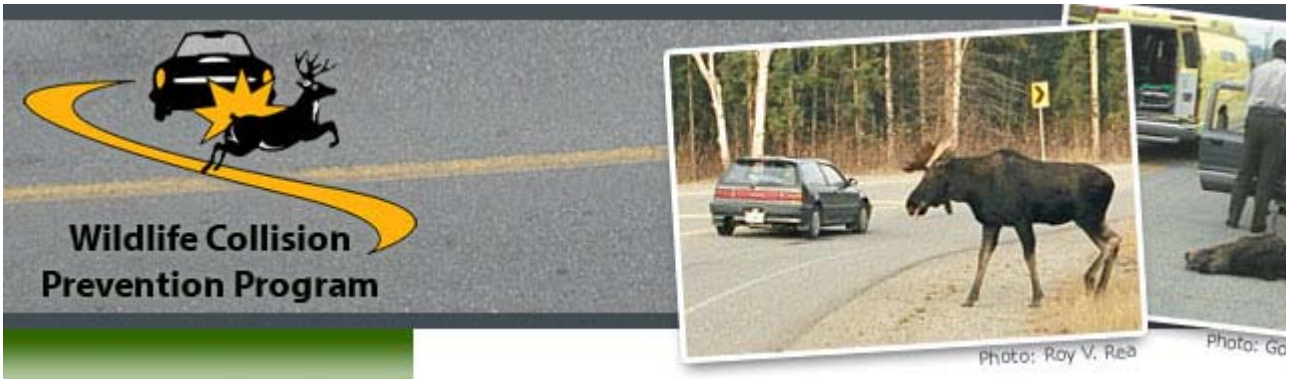

What Can Highway Managers Do?

Highway Managers can employ a wide variety of wildlife vehicle collision mitigation techniques to reduce the risk of encountering wildlife on the road.

Vegetation Management

The time of brush cutting in road rights of way can affect vegetation palatability for moose (mid season cutting increases palatability). The composition of revegetation seed mixes can be altered to be less attractive to ungulates.

Exclusion Fencing

If erected and maintained properly, 2.4 m fencing can virtually eliminate collisions (97-99%) when both sides of the road are fenced. However, there are strong biological and ecological factors that contraindicate fencing as a blanket solution for all problem areas. Fencing impacts normal animal travel patterns, fragments habitats, and separates herds. Additionally, there is some evidence that predators use fences to increase their hunting success. The cost to fence both sides of a highway is between $40,000 and $80,000 per kilometre. Maintenance costs can also be significant.

Wildlife Warning Signs

Traditional wildlife warning signs, although frequently used and inexpensive, tend to be ignored by drivers. Studies conducted by Swedish researchers show that 60% of drivers do not even notice traditional wildlife warning signs.

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Intelligent Warning Systems

These systems detect the presence of approaching vehicles or animals, and send signals to activate sounds, lights or scents. They are often activated by infra red (heat sensing) cameras. Recent Canadian projects include:

Wildlife Warning System (WWS)

- International Road Dynamics Inc., has developed a Wildlife Warning System. This system incorporates a variety of technologies to create a system that frightens deer away from the roadside by means of sound and lights. The WWS was implemented in Saskatchewan in 2002. View the full Report [PDF - 113 KB] on the initial development of the WWS.

Wildlife Protection System (WPS)

- This technology is designed to alert approaching drivers with "real time" information of the presence of wildlife on the road. The WPS uses infra red cameras to detect the presence of wildlife on or near the roadway. When the cameras detect wildlife, flashing lights at both ends of the road segment are triggered. This "real time" warning cues drivers to reduce speed and anticipate wildlife on the road. The WPS was tested on Highway 93, in Kootenay National Park British Columbia, in 2002 and 2003. Click here for more information on the WPS and view the report on Collision-Risk Behaviour in Deer based on data from the WPS cameras.

Reflectors

Reflectors are prisms mounted on posts along the sides of the road. As vehicle head lights strike the reflectors, beams of light are reflected at 90 degree angles to the road. This reflected light catches the animal's eye and distracts the animal from crossing the road. Installations can cost $10,000 per kilometre. Continuing maintenance to ensure proper cleaning and alignment can cost $500 to $1000 per kilometre. The efficacy of reflector installations is not fully established, and there are conflicting research results. Questions requiring further study include:

- Do animals become habituated to the light?
- Do animals simply walk to the end of the installation and then cross?
- Is red the most effective colour, or would green, amber or white be better?
- What is the most effective shape? Predator eye shaped reflectors have been suggested.

Overpasses and Underpasses

This is the safest method to facilitate wildlife movement across roads, and can dramatically improve the collision rate. There is some evidence that predators can use these as “lunch locations”. They are expensive to build and require detailed engineering. Parks Canada has been very proactive in using these structures, especially with the twinning of the Trans Canada Highway through Banff National Park. Two 50 metre wide overpasses, and 22 underpasses have been built in Banff National Park.

Elk on Wildlife Overpass, Banff National Park, AB

Photo courtesy of Reno Sommerhalder

As part of the ongoing research and monitoring of the crossing structures on the Trans Canada Highway in Banff National Park, remote cameras and other techniques have recorded the passage of over 70,000 wildlife crossings.

Video footage of some of these crossings is available on the Western Transportation Institute website. Deer, grizzly bear, elk and mosse crossings are shown.

Lighting

Overhead lighting of extended sections of highway may not be practical, but it can be very helpful within city limits, where significant numbers of wildlife -vehicle collisions occur. A study in Alaska showed a reduction of collisions by 70% when lighting was improved.

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Scents

The application of scents along the roadside can be used to deter animal crossings. Two types of scents exist; odours associated with predators (wolf urine) and odours associated with bad smells (rotten eggs). This method has had limited success in the United States, but there is not much scientific research completed as yet. It is thought that animals can become habituated to the scents, and it is expensive.

Highway Design

This can be very effective when habitat and population data are incorporated into the planning. Factors that be modified include road width; number of lanes; right of way, shoulder, and ditch width and depth; plus the addition of structural mitigation methods such as lighting, road surface, fencing, tunnels, over/under passes, and reflectors.

Wolverine Overpass along the Trans-Canada Highway,

Banff National Park, AB

Photo courtesy of Reno Sommerhalder

Road Salt Use

Judicious and careful application of road salt only when necessary can help to control the number of animals attracted to the road to lick the salt residue.

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Mitigation Methods in British Columbia

The most common mitigation methods used in BC are:

- Habitat and right-of way modification
- Wildlife warning signs

- Wildlife warning reflectors
- Wildlife passage structures
- Exclusion fencing
- Integrated wildlife management
- Wildlife transfers and relocations

For further information on the mitigation methods most commonly used in British Columbia by the Ministry of Transportation, refer to Section 4.0 of WARS 1983-2002, Wildlife Accident Reporting and Mitigation in British Columbia, Special Annual Report, and the Environmental Management Section, Engineering Branch, BC Ministry of Transportation website.

For more information and a complete copy of the WARS report contact:

Environmental Management Section

Engineering Branch

BC Ministry of Transportation

4B - 940 Blanshard Street

PO Box 9850 STN PROV GOVT

Victoria BC Canada

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Mitigation Methods for Drivers

Noisemakers/Deer Whistles

Many people are convinced that the deer whistles installed in their vehicles are effective at scaring wildlife off the road, however, there is not much independent scientific research to support this.

There are two types of deer whistles.

- **Wind driven** – As air is forced through the whistle, a noise is emitted. The whistles typically produce a signal either at a frequency of 3 kilohertz (kHz) or 12 kHz. Both frequencies are problematic. For example, the hearing range of deer is between 2 and 6 kHz, so the animal is not capable of hearing the 12 kHz signal. Although deer may be capable of hearing the 3 kHz signal, it is only 3 decibels louder than the road noise created by the car, so the signal is buried. The condition would worsen with additional traffic in the area or if the wind was blowing.

- **Battery operated -** An audible and ultrasonic sound is emitted from the whistle. Concerns include human hearing discomfort and noise pollution. Click here to see the manufactures's FAQs. There is no independent scientific research to establish efficacy.

In-Vehicle Wildlife Detection Devices

The Cadillac DeVille has an infrared detector called "Night Vision" that the manufacturer says can detect wildlife on the roadway ahead of the vehicle. The driver's "range of sight" increases from 200 yards to 500 yards. The driver is alerted to the presence of wildlife ahead by means of a virtual image in the driver's peripheral vision near the front edge of the hood. Click here to view the press release [PDF - 14 kb] information from the manufacturer.

There is no independent research to support the manufacturer's information.

Driver Education

Ensuring that drivers are aware of the risks and hazards that are specific to wildlife will help to make drivers safer on the road. Go to the Hints for the Highway page and the Wildlife Factor page for extensive information on ways that drivers can improve their ability to anticipate and avoid wildlife-vehicle collisions.

Click here to view and/or print an FAQ list about wildlife vehicle collision prevention [PDF - 45 kb]

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