

ROADS & WILDLIFE

COLLISIONS WITH WILDLIFE: AN OVERVIEW OF MAJOR WILDLIFE VEHICLE COLLISION DATA COLLECTION SYSTEMS IN BRITISH COLUMBIA AND RECOMMENDATIONS FOR THE FUTURE

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Introduction

British Columbia is a province with diverse and abundant wildlife. Although the human population is concentrated in only a few areas, human transportation routes are widespread and have considerable overlap with animal travel corridors, leading to a high probability of encountering wildlife on BC's roads with the subsequent risk of wildlife vehicle collisions (Figure 1).

Records of wildlife vehicle collisions in BC are documented by a variety of agencies. The Insurance Corporation of British Columbia (ICBC) keeps records of vehicle insurance claims and human injury claims caused by wildlife vehicle collisions as well as "swerve to miss" claims; the RCMP keep records of human injuries and fatalities caused by all vehicle collisions; and the BC Ministry of Transportation (MoT), through highways maintenance contractors, records information on dead wildlife found along numbered highways. The provincial Conservation Officer Service, the BC Vital Statistics Agency, the federal government, local municipalities and Regional Districts throughout the province also maintain some records of wildlife vehicle collisions within their jurisdictions. There are both advantages and gaps in the data collection systems among these agencies.

Insurance Corporation of British Columbia

The Insurance Corporation of British Columbia records from 2001 to 2005 indicate that there is an average of 9,280 wildlife related incidents annually

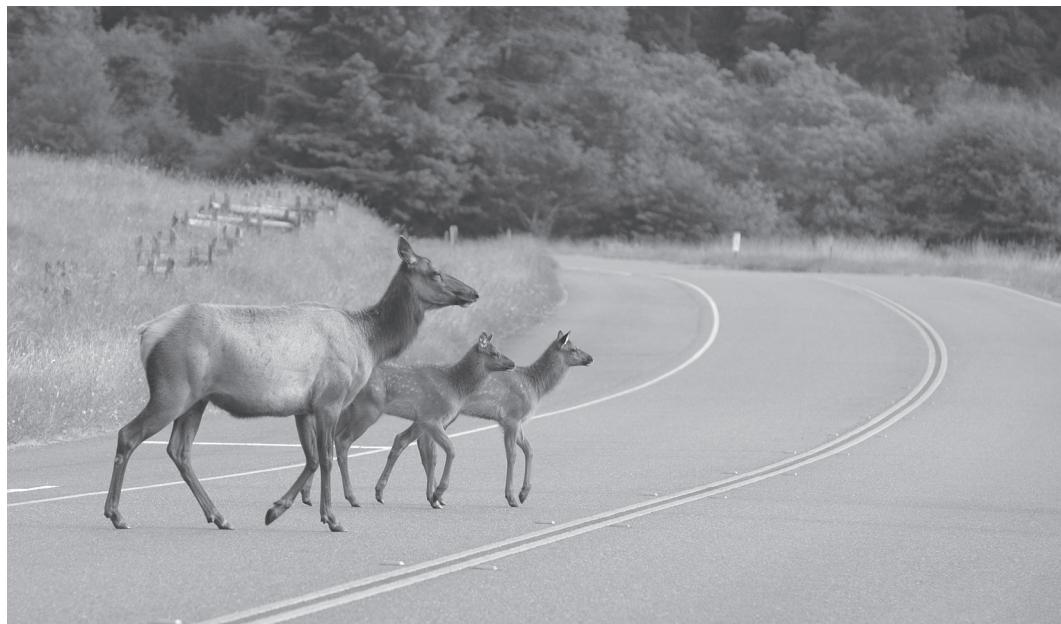


Figure 1. Vehicle collisions with wildlife are a major threat to animal and human welfare, and each crossing is associated with some level of risk. Elk (*Cervus canadensis*) cow with twin calves. July 2006 (Jim Robertson).

(ICBC 2006a pers. comm.). One incident may result in a varying number of claims depending upon the number of vehicles involved and the number of people injured or killed (a property damage claim for each vehicle involved, a personal injury claim for each driver, etc.). There is an average of 316 injured victims annually (ICBC 2006a pers. comm.).

For 2004, ICBC figures indicate that over \$23 million dollars was paid out on animal related incidents (ICBC 2006b). Time of the collision is captured quite accurately from ICBC records, but descriptions of the location and species may be inaccurate. ICBC estimates that its collision claims represent only 75% of wildlife vehicle collisions in BC. The remaining 25% of collisions involve out-of-province vehicles (10%), vehicles with less than \$100 damage (10%), and vehicles insured with other carriers (5%) (Sielecki 2004).

Royal Canadian Mounted Police

The Royal Canadian Mounted Police (RCMP) records from 2000 to 2004 indicate that there are between 3 and 4 human fatalities per year (ICBC 2006 pers. comm.). In 2004, a particularly bad year, 9 people were killed due to wildlife vehicle collisions (ICBC 2006a pers. comm.). Constraints on RCMP data include privacy issues which prevent access to RCMP files, and the lack of species information recorded in the RCMP's Traffic Services Management Information Tool (TSMIT).

British Columbia Ministry of Transportation

Highways maintenance contractors in BC collect wildlife vehicle collision information and report this data monthly to MoT. Using the MoT Wildlife Accident Reporting System (WARS), contractors collect the following information for each animal found dead along the road: date, estimated time of kill, location, presence/absence of wildlife warning signs and/or reflectors, number of animals killed in the incident, species, and sex. MoT analyses this data and publishes WARS summary reports periodically. The most recent WARS report covers the years 1983 to 2002 and was published in 2004 (Sielecki 2004).

The WARS system is widely acknowledged as one of the most complete systems in the world for recording wildlife vehicle collision data, but there are gaps in its coverage areas, which must

be remembered when discussing the issue from a provincial perspective. WARS data is collected only from the numbered highways in BC that are maintained by highways maintenance contractors. WARS data is not collected on wildlife killed on urban roads, secondary roads, Forest Service or other resource roads, the Alaska Highway, or highways located within National Parks (Glacier, Mt. Revelstoke, Yoho, Pacific Rim, and Kootenay). Municipalities may collect data as their maintenance workers remove carcasses, and Public Works Canada and Parks Canada staff maintain records on the stretches of road that are their responsibility.

Under WARS, highways maintenance contractors collect data only on wildlife that they judge to be a hazard to motorists on the highway or shoulder, which must be removed as part of their contractual obligations. This generally means that only large mammals are recorded (Figure 2). Animals which are killed but whose carcasses lie far off into the highway right-of-way may or may not be recorded. Smaller mammals (squirrels, rabbits, mice, voles, etc.), reptiles, amphibians, birds (with the possible exception of large raptors or swans), and insects are likely never recorded. The WARS system offers a representation of primarily mammal species killed



Figure 2. One of the most serious vehicle-wildlife collisions is when a car or small truck hits a Moose (*Alces alces*). Typically the legs are knocked out from under the body and the bulk of the animal lands on the hood or goes through the windshield, resulting in extensive damage and injury. Highway 39 south of Mackenzie, BC. September 2003 (Jim Hesse).

by wildlife vehicle collisions. For discussions of reptile, amphibian or bird mortality associated with roads, please refer to other articles in this issue.

Another major factor which must be considered when reviewing the WARS data is the issue of under-reporting. MoT “estimates that the number of wild animals recorded by the WARS system represents only about 25 - 35% of the actual number of wild animals killed.” (Sielecki 2004). This under-reporting is due to several factors: animal remains may be obscured by subsequent vehicles; large mammals, primarily deer (*Odocoileus spp.*) or Moose (*Alces alces*), may be removed by passing motorists; animals that are hit but move away from the road surface to die are not observed (Figure 3); animal remains are removed by animal predators and scavengers; as well as errors or omissions in data collection and processing.



Figure 3. This road-killed White-tailed Deer (*Odocoileus virginianus*) was detected lying in the forest after first inspecting another White-tailed Deer lying on the roadside. September 2003 (Michael I. Preston).

Under-reporting is present in all jurisdictions that maintain wildlife vehicle collisions records. In some jurisdictions across Canada, under-reporting may be as high as 40 - 50% (Tardif 2003).

The 1983 – 2002 WARS Special Annual Report (Sielecki 2004) lists the total number of animals recorded as killed each year in BC (Table 1). Sielecki (2004) suggests using a ratio of one animal recorded as killed to three animals killed but unrecorded as a method of quantifying the under-reporting of wildlife vehicle collisions. Using this 1:3 ratio indicates that it is probable that over 20,000 wild animals are killed each year due to wildlife vehicle collisions in BC, excluding small mammals, birds, reptiles, amphibians, and insects (Table 1). The report also lists the species break down of animals recorded as killed each year in BC (Table 2).

Wildlife Collision Prevention Program

In response to the severity of the wildlife vehicle collision issue, in 2001 the British Columbia Conservation Foundation partnered with ICBC to form the Wildlife Collision Prevention Program (WCPP). The first program initiatives in 2001/2002 supported the research and development of the Wildlife Protection System (WPS), an infrared camera used to detect the presence of wildlife on the road, and then activate flashing lights that warn drivers to slow down and anticipate wildlife. Valuable information on both deer and driver behaviour was obtained.

The current focus for WCPP is public awareness, education and extension. WCPP implements projects that increase public awareness of this important issue and helps motorists to anticipate and avoid wildlife hazards on the road. A main WCPP initiative is to facilitate more noticeable signage in high-risk collision locations. High visibility billboards have been variously located along high risk stretches of road near Dawson Creek, Fernie, Chase, Grand Forks, Radium Hot Springs, and Castlegar. Billboards are erected at high-risk times of the year, and taken down when the risk is lessened. WCPP also conducts print advertising, places brochures in Visitor Information Centres and other businesses, places signs at highway rest stops, maintains the only website in Canada dedicated to wildlife vehicle collisions (www.wildlifecollisions.ca), and will begin

Table 1. Total animals recorded killed by WARS (1998 – 2002) compared with probable numbers of animals killed using a ratio of one recorded kill to three unrecorded kills.

Mortality Category	1998	1999	2000	2001	2002
Total animals recorded killed*	4,611	4,889	4,785	5,171	5,031
Probable number of animals killed**	18,444	19,556	19,140	20,684	20,124

* Figures taken directly from Sielecki (2004), Table 5.1, page 5-2.

** Figures calculated using a ratio of 1 animal recorded as killed to 3 animals killed but unrecorded, as suggested by Sielecki (2004)

a radio advertising campaign in the fall of 2006.

Partnerships with other organizations concerned with both human and animal welfare is a key goal for WCPP. Some organizations seek advice on how to reduce wildlife hazards on high risk stretches of road near their communities and then implement their own solutions; other organizations directly contribute funding to WCPP to support initiatives in their areas; and some organizations volunteer their members' time to help locate and build sign structures (Figure 4). Organizations can assist WCPP by providing images of wildlife vehicle collisions or the resulting dead or injured animals for use on the website, as well as providing space to distribute and locate brochures and signs.

Future Needs in British Columbia

Although BC is well respected for its WARS system and successful implementation of fencing and overpasses on the Coquihalla Highway and Okanagan Connector, there are key action areas where improvement is required in order to

successfully reduce the number of wildlife vehicle collisions in BC. Provincial wildlife collision reduction strategies involving all concerned agencies need to be developed and implemented.

Education and Awareness

Agencies with responsibilities for both human and wildlife safety need to fully recognize and address this serious issue with increased staff time and resources necessary to develop and implement strategies for wildlife vehicle collision reduction.

Data Collection and Storage

The WARS system of data collection is well established and highly respected. Data on wildlife vehicle collisions collected by other agencies need to be incorporated into a provincial data base. A central and accessible repository for data needs to be established. A clearinghouse for information on wildlife vehicle collisions, research, and mitigation needs to be established so that information can be easily accessed and shared.

Table 2. Percentage of species recorded killed by WARS (1998 - 2002).

Species killed in wildlife vehicle collisions*	1998	1999	2000	2001	2002
Bear	3.1	3.4	2.1	2.6	3.4
Deer	80.5	79.8	80.3	77.9	76.7
Elk	2.2	2.6	3.5	3.1	3.6
Moose	7.9	8.4	6.8	7.6	7.0
Other Species	6.3	5.8	7.4	8.8	9.4
Total of All Species	100	100	100	100	100

* Figures taken directly from Sielecki (2004), Table 5.2, page 5-2.



Figure 4. Wildlife Collision Prevention Program rest stop sign kiosk, funded and built by the Clinton and District Outdoor Sportsmen Association. Highway 97 at 6 Mile Lake. August 2006 (Jim Hesse).

Research

Research into wildlife vehicle collision mitigation methods and site specific appropriateness of their use in BC needs to be continued, expanded and well funded.

Mitigation Methods

Appropriate mitigation methods need to be considered and implemented in new highway construction or upgrading projects.

Policy, Regulation and Decision Making

Government ministries, crown corporations, private businesses, and non-profit organizations all make decisions that have implications for wildlife vehicle collision frequencies. Agency policies and decision making processes need to be considered and coordinated to minimize conflict and to ensure that the best management decisions are made and implemented.

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About the Author

Gayle has coordinated the Wildlife Collision Prevention Program (WCPP) of the British Columbia Conservation Foundation since 2002. WCPP facilitates and supports research into wildlife vehicle collisions, and conducts public awareness projects enabling motorists to anticipate and avoid wildlife hazards on the road.

"In the end, we conserve only what we love. We will love only what we understand. We will understand only what we are taught."

Baba Dioum, Senegalese poet