BRITISH COLUMBIA

Ministry of Transportation

WARS 2000

Wildlife Accident Reporting System

2000 Annual Report

(1991 to 2000 Synopsis)

Ministry of Transportation
Engineering Branch
Environmental Management Section

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1604-24-7

WARS Wildlife Accident Reporting System

2000 Annual Report

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WILDLIFE VEHICLE ACCIDENT MITIGATION METHODS

Overview

Methods utilized by the Ministry of Transportation to reduce wildlife vehicle accidents are pursued with multi-faceted objectives. The Ministry strives to reduce, and ultimately eliminate human and wildlife deaths and injuries, and motor vehicle and property damage; as well as increase public awareness and ensure mitigation techniques are cost effective. The mitigation methods currently employed by this Ministry include:

- habitat modification,
- exclusion fencing,
- wildlife warning signs, and
- wildlife warning reflectors.

Habitat Modification

Highways and right-of-ways are intrinsically attractive to wildlife. Highways are often located in areas where wildlife naturally congregate, especially during winter, such as valley bottoms and riversides. Also many ungulates prefer to travel along open areas close to cover, which represents the typical highway and right-of-way situation.

Historically, the Ministry used a variety of agricultural type seed blends to reseed right-of-way areas after road construction to prevent soil erosion. Although effective for their intended purpose, some seed blends, particularly those containing legumes such as clovers and alfalfa, appear to attract animals to the roadside.

In order to deter this, the Ministry has adjusted its seed mixes in problem areas to remove the plant types which are known to attract animals. The Ministry is also examining the potential of non-toxic, biodegradable systemic fertilizers and repellents which make roadside plants taste and smell less desirable to ungulates.

Exclusion Fencing

Exclusion fencing is the most effective means of keeping wildlife off highway right-of-ways. The Ministry's experience with 2.4 m high fencing on both sides of right-of-ways show it is 97-99% effective in preventing wildlife-vehicle accidents.

Fencing can be installed as a primary deterrent or in conjunction with other structures such as wildlife overpasses, underpasses and one way gates. This type of mitigation is expensive. It costs between $40,000 to $80,000 per km to fence both sides of a highway. Construction costs vary greatly due to differences in terrain and locations. Currently over 320 kilometres of fencing have been installed in Region Two on the Coquihalla Highway (Highway 5), the Okanagan Connector Freeway, and Highway 97 (Table 13).

Table 13. Locations of Wildlife Exclusion Fencing

Total Fencing Length on British Columbia Highways = 467.44 km

(This figure includes fencing located on both sides of highways)

LOCATION: COQUIHALLA HIGHWAY (NO. 5)	DISTANCE (KM)	COMPLETION DATE
Dry Gulch – Henning Bridge	5.99	July 1994
Henning Bridge – Juliet Creek	9.23	May 1993
Juliet Creek Bridge – Brodie Bridge	9.35	Oct 1993
Brodie Bridge – Kingsvale Bridge	8.72	March 1997
Upper Clapperton Creek – Desmond Lake	8.3	April 1990
Desmond Lake – Meadow Creek Road	8.6	July 1988
Meadow Creek Road – Chuwhels Mountain Road	8.2	Sept 1987
Chuwhels Mountain Overpass – Connolly Lake Overpass	5.2	June 1993
Connolly Lake Overpass – Inks Lake Interchange	7.6	May 1994
Total Fencing (includes both sides of highway)	**140.44 km**	

LOCATION: OKANAGAN CONNECTOR FREEWAY (NO. 97C)	DISTANCE (KM)	COMPLETION DATE
Aspen Grove to Drought Hill Interchange	82	Fall 1990
Total Fencing (includes both sides of highway)	**164 km**	

LOCATION: HIGHWAY 97*	DISTANCE (KM)	COMPLETION DATE
Bentley Road to Deep Creek	15	March 1999
Total Fencing (one side of highway)	**15 km**	

LOCATION: INLAND ISLAND HIGHWAY (NO. 19)	DISTANCE (KM)	COMPLETION DATE
Mud Bay to Trent River (one side of highway)	20	March 1999
Millar Creek to Oyster River (both sides of highway)	23	April 2001
Maple Lake Pit to Headquarters Creek (both sides of highway)	26	August 2001
Oyster River to Willow Creek (both sides of highway)	15	May 2001
Total Fencing (includes both sides of highway)	**148 km**	

* Fencing materials provided by MoT; ICBC contributed $128,000, construction labour and on-going maintenance provided by members of the Summerland Sportsmens' Association and the Peachland Sportmens' Association, affiliated associations of the British Columbia Wildlife Federation.

The general locations of wildlife exclusion fence installations are shown on the Maintenance Contract Area maps (Appendix B). Wildlife exclusion fencing has proven very effective in reducing wildlife accidents on the Coquihalla Freeway (Highway 5) located between Hope and Merritt. On the 35 km portion of the Coquihalla Freeway, between Dry Gulch Bridge and Kingsvale Bridge, wildlife exclusion fencing reduced wildlife accidents by 100%. The number of wildlife accidents declined from 74, in the 1989 to 1993 period, to 0, in the 1994 to 1998 period.

Since the wildlife exclusion fencing was installed on the Coquihalla Connector Freeway (Highway 97C) in 1990 to 1998, no wildlife accidents have been recorded in either the westbound or eastbound lanes of the highway where the fence is located.

On Highway 97, between Peachland and Summerland, after a 21 kilometre wildlife exclusion fence was constructed on the west side of the highway, the rate of wild animal accidents/km/year dropped by over 93%. From 1979 to 1998 the annual accident rate was 1.93 accidents/km/year. In 1999, after the fence was completed, the accident rate dropped to 0.13 accidents/km/year.

The Mud Bay to Trent River section of wildlife exclusion fencing on the Inland Island Highway was constructed on the west side of the highway alignment. The single-sided fencing configuration was in accordance with the Vancouver Island Highway Project's wildlife consultants recommendation for dealing with Roosevelt Elk resident in the area.

Wildlife exclusion fencing has just been constructed between Oyster River and Willow Creek and between Millar Creek and Oyster River on both sides of the Inland Island Highway. Additional fencing is currently under construction on both sides of the Inland Island Highway between Maple Lake Pit and Headquarters Creek.

As part of its growing commitment to increase protection for other species of wildlife, MoT is currently installing amphibian exclusion fencing being attached to the wildlife exclusion fencing located adjacent to Millar Creek on the Inland Island Highway. The fence extends for 1.8 km on both sides of the highway from the north side of Millar Creek to Keddy Swamp tributary No. 3 for a combined length of 3.6 km.

Wildlife Warning Signs

Wildlife warning signs are the Ministry's most commonly used wildlife-vehicle accident mitigation measure because they are the least expensive and easiest to install and maintain (Figure 19). Standard sized signs (75 cm x 75 cm) cost approximately $150 while oversized signs (244 cm x 122 cm) cost approximately $550. The Ministry understands wildlife warning signs lose their effectiveness over time if motorists do not perceive a hazard. Swedish research has found 60% of motorists do not notice wildlife signs. To ensure its signage is as effective as possible, the Ministry's Traffic Engineering Section continually evaluates warning sign designs developed by transportation agencies in other jurisdictions. To increase the long-term effectiveness of its wildlife warning signs and motorist awareness

DESCRIPTION

Figure 19. Wildlife Warning Signs

Z-041_

A B C D E F

Example: (Using a "C" sign)

Substitute one of the above signs associated with the ungulate type to suite desired sign.

Approval Required for all Oversize Signs.

Z-041C

Z-041C X

Z-041C XX

SPECIFICATIONS

Type: Z Record

Size:
Z-041_ 75.0cm x 75.0cm
Z-041_X 120.0cm x 120.0cm
Z-041_XX 244.0cm x 122.0cm

Substrate:
Z-041_ Aluminum
Z-041_X Aluminum
Z-041_XX MD Plywood

Colours: Black on Yellow
Shield: N/A
Font: To be determined

HISTORY

Jan 2001 LM

Done for HQ to encompass and cleanup related Z-041 signs.

BRITISH COLUMBIA
Ministry of Transportation and Highways
Engineering Branch

SIGNSHOP DESIGN

Senior Traffic Engineer Date

of wildlife hazards, the Ministry recently developed a high level warning sign to indicate when a wildlife hazard is imminent or when the historic wildlife collision rate is extreme. These signs are particularly useful for addressing short-term and seasonal use for migration events, and other unique wildlife activities, such as salt-licking on roads by mountain sheep.

The Ministry is currently investigating the potential for using WARS data to develop a Changeable Message Sign (CMS) protocol to provide motorists with species-specific, seasonal wildlife warning messages on existing CMS's to more accurately reflect local wildlife conditions.

Wildlife Warning Reflectors

The Ministry has been installing wildlife warning reflectors since the late 1980's as part of its continued effort to reduce wildlife-related accidents. The reflectors are prisms mounted on posts and installed along the sides of the highway as a means of deterring animals from entering the highway when vehicles are present. At night, as the headlights of an approaching vehicle strike the reflectors they reflect beams of light at ninety-degree angles to the roadway. The reflected light apparently catches the attention of animals and distracts them long enough to delay their movement onto the road until the vehicle has passed.

To date, reflectors have been installed at over 95 locations throughout the Province (Appendix C). Reflectors cost approximately $10,000/km to install along both sides of a highway. The reflectors have been installed on either one side or both sides on over 160 kilometres of highway. The general locations of the reflector installations are shown on the Maintenance Contract Area maps (Appendix B). Reflectors have been extensively used in Region 3 along highways prone to high numbers of deer-related accidents.

The success of wildlife warning reflectors for reducing wildlife accidents has been the object of much discussion and speculation. Research by MoT and other transportation agencies continues to provide inconsistent evaluations of the devices.

Based upon the WARS data collected, it is apparent not all wildlife reflector installations have been successful. Most installations are less than 2 kilometres long, with 17% being 0.5 kilometres or less in length. Short installations make evaluation difficult because it is easier for animals to travel to the ends of the reflector installations and cross the highway. Given the relatively short distances of the majority of the reflector installations, the relatively low number of wildlife accidents recorded before and after the reflectors were installed, and the lack of measurable controls, determining if the reflectors produce statistically significant reductions in the numbers of deer-related motor vehicle accidents is very difficult.

The "before and after" method typically used to evaluate reflectors does not give a true picture of effectiveness because there is no control of those factors which can change during the course of the evaluation period, such as weather, traffic flow, and deer population densities (Damas and Smith, 1983). However, even if accidents are reduced following the implementation of a safety project, it does not necessarily follow that the decrease was caused by the project (Griffin, 1997).

Wildlife Warning Reflector Installation Case Studies

Highway 3, located near the Canada/US border in British Columbia, north of the U.S. states of Washington, Idaho, and Montana, has one of the worst records for ungulate related motor vehicle accidents in British Columbia. In an attempt to reduce the number of deer related motor vehicle accidents, MoT installed wildlife warning reflectors on a 9.37 km section of Highway 3 (LKI Segment 1325), east of Grand Forks, and on a 7.45 km section of Highway 3 (LKI Segment 1375), east of Creston. The installations were completed in March 1995. These are the longest continuous reflector installations in British Columbia.

a) Highway 3 (Segment 1325)

When comparing the deer accident rates before and after the reflector installation, it appears the number of deer accidents recorded increased after the installation (Figure 21). When comparing the deer accident rate for the 9.37 km reflectorized section of the highway with the deer accident rate for an immediately adjacent 9.37 km non-reflectorized section of the highway, it appears the installation of reflectors did not alter the overall local accident trends.

b) Highway 3 (Segment 1375)

When comparing the deer accident rates before and after the reflector installation, it appears the number of deer accidents recorded increased after the installation (Figure 21). When comparing the deer accident rate for the 7.45 km reflectorized section of the highway with the deer accident rate for immediately adjacent 7.45 km non-reflectorized sections of the highway, it appears the installation of reflectors did not alter the overall local accident trends.

Further Study

Although these trends were not observed as part of a controlled scientific experiment, they raise questions about the effectiveness of wildlife warning reflectors. When comparing the deer accident rates before and after a reflector installation, there appears, at least in these two cases, to be no consistent accident rate drop after the reflector installation that can be specifically attributed to the reflectors.

A more thorough analysis of WARS data is required to determine the long-term effectiveness of wildlife warning reflectors on provincial highways. There may be many reasons why dramatic fluctuations in the number of accidents occur, including climate, traffic speed and volume, time of day, and wildlife movement. ICBC has found approximately 45% of the animal collisions which occur in the Southern Interior of British Columbia occur between 7:00 p.m. and 12:00 p.m. (Table 14) (Gilfillan, 2001).

In 1999, ICBC provided MoT worth $19,000 to initiate a controlled study to determine the effectiveness of wildlife warning reflectors on a 3.4 km stretch of Highway 5 between Clearwater and Vavenby, in central British Columbia. It is anticipated data will be collected for at least 2 to 3 years before any conclusive results can be expected.

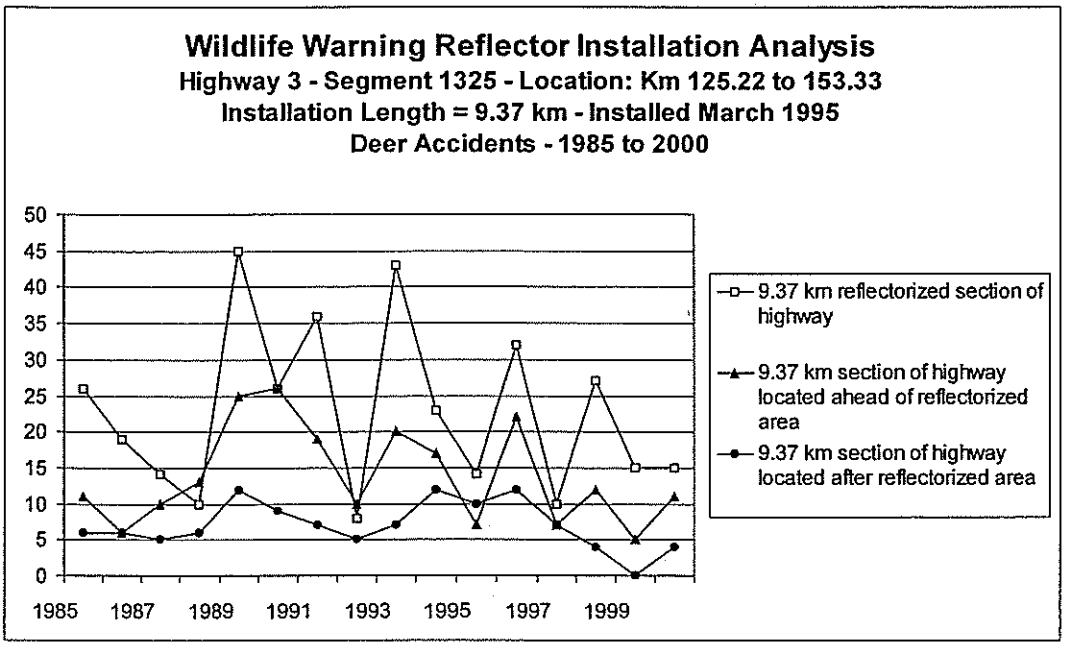

Figure 20. Wildlife Warning Reflector Installation Analysis (Highway 3, Segment 1325)

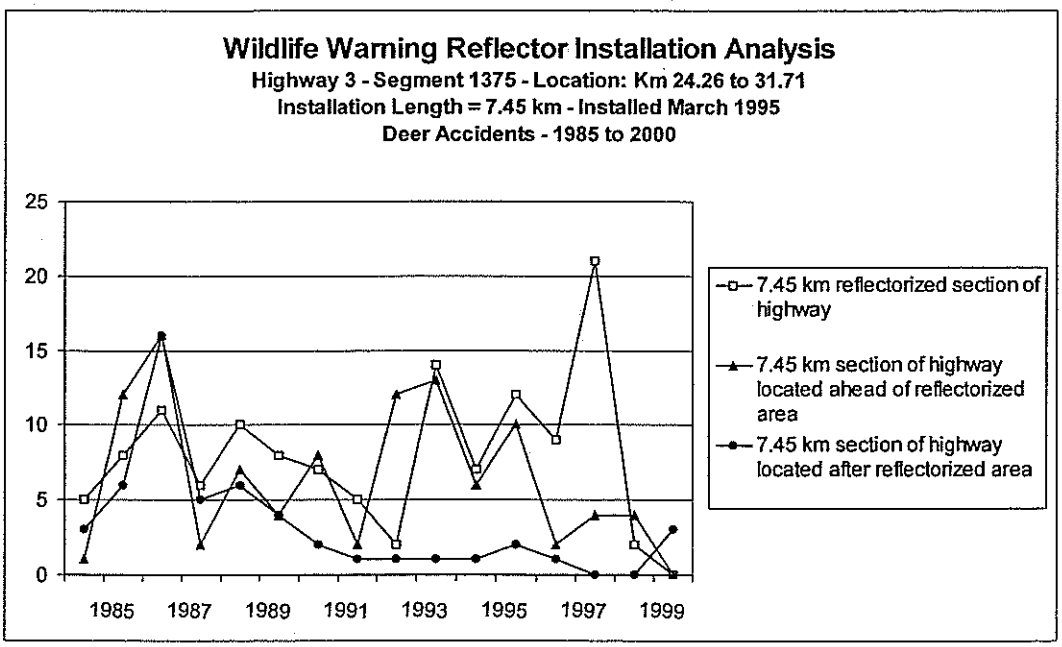

Figure 21. Wildlife Warning Reflector Installation Analysis (Highway 3, Segment 1375)

Table 14. Hourly Distribution of Animal Collisions in Southern Interior of B.C.

Time	Animal Collisions (%)	Time	Animal Collisions (%)
12:00 a.m.	2	12:00 p.m.	2
1:00 a.m.	6	1:00 p.m.	2
2:00 a.m.	2	2:00 p.m.	4
3:00 a.m.	2	3:00 p.m.	2
4:00 a.m.	4	4:00 p.m.	0
5:00 a.m.	2	5:00 p.m.	1
6:00 a.m.	3	6:00 p.m.	3
7:00 a.m.	7	7:00 p.m.	7
8:00 a.m.	2	8:00 p.m.	8
9:00 a.m.	3	9:00 p.m.	12
10:00 a.m.	6	10:00 p.m.	9
11:00 a.m.	2	11:00 p.m.	9

Spectrometric Evaluation of Wildlife Warning Reflectors

In addition to field tests, MoT began examining how wildlife warning reflectors may influence the roadside behavior of deer. As a first step toward understanding how wildlife warning reflectors operate, MoT conducted tests on different coloured Swarflex and Strieter-Lite reflectors to determine their fundamental spectrometric and photometric properties (Sivic and Sielecki, 2001). The tests were designed to measure the reflected light spectrum, luminous intensity and light distribution in a horizontal and vertical plane. MoT has traditionally used red coloured Swarflex and Strieter-Lite reflectors. Questions have been raised regarding the effectiveness of red coloured reflectors for deer (Zacks, 1986). In light of deer vision research (Jacob et al., 1994), MoT is investigating if other colours (green, amber and white) of reflectors may be more effective than red ones. Installation of white reflectors has begun on selected sections of Highway 19 as part of the Vancouver Island Highway Project.

COST OF WILDLIFE-RELATED MOTOR VEHICLE ACCIDENTS

Wildlife-related Motor Vehicle Accidents

The cost of wildlife-related motor vehicle accidents to the residents of British Columbia is substantial. The financial impact on the province can be broken down into the following:

- Reported Accidents
- Unreported Accidents
- Accident Clean-up
- Lost Provincial Hunting License Revenues
- Lost Value of Wildlife

Reported Accidents

In addition to killing wildlife, wildlife-related motor vehicle accidents represent a serious threat to the motoring public. These accidents can result in human fatalities, injuries, and damage to motor vehicles (Table 15). Any accident may also result in multiple human fatalities.

Table 15. Wildlife-Related Fatal, Injury and Property Damage Only Accidents (1987 to 1995)

Year	Fatal Accidents	Total Number of Deaths	Injury Accidents	Property Damage Only Accidents
1987	1	1	198	2,226
1988	0	0	256	2,596
1989	1	3	199	2,590
1990	1	1	237	2,821
1991*	1	2	241	1,925
1992	2	6	238	1,975
1993	0	0	248	1,954
1994	3	9	256	2,072
1995	3	5	221	1,678

*Note: In 1991, the minimum reportable aggregate property damage accident value increased from $400 to $1000.
Source: Highway Accident System, Highway Safety Section, Engineering Branch, MoT

In British Columbia, the majority of motor vehicles are insured by the Insurance Corporation of British Columbia (ICBC). On average, ICBC processes approximately 6600 wildlife-related accident claims a year[4]. The average cost of these claims was about $2200. Between 1997 and

[4] Gilfillan, G., 2001, Personal Communication, Project Manager, Winter Road Research & Development, Kamloops, B.C.

2000, ICBC paid out over $67 million in wildlife-related motor vehicle accident claims (Table 16). In 2000, ICBC had over 8,800 wildlife-related accident claims.

Table 16. ICBC Wildlife-related Motor Vehicle Accident Claims (1997 to 1999)

	1997	1998	1999	2000	Total
Claims	$15.1 million	$15.8 million	$17.7 million	$18.9 million	$67.5 million

Source: Insurance Corporation of British Columbia, 2001

ICBC estimates its accident claims capture 75% of the number of wildlife-related accidents that occur in British Columbia. Few people in British Columbia do not carry comprehensive insurance. With ICBC insurance policies, there is no penalty for a comprehensive claim so such claims do not affect policy premiums. Of the 25% of the number of British Columbia wildlife-related motor vehicle accidents ICBC estimates go unreported to it, ICBC estimates 10% involve out-of-province vehicles, 10% involve vehicles with less than $100 in damage, and 5% of the accidents are reported to other insurance companies in British Columbia.

The societal costs of motor vehicle-related accidents have also been estimated by the British Columbia Transportation Financing Authority and the impact to the Province is considerable (Table 17)[5].

Table 17. Societal Costs of Motor Vehicle Accidents (BCTFA)

Accident Severity Class	Societal Cost
Fatality	$4.17 million
Injury	$97,000
Property Damage	$6,000

Source: Highway Safety Improvement Program Manual, MoT

Unreported Accidents

Except for fatal accidents, not all wildlife-related motor vehicle accidents which occur in British Columbia are reported in the province. Some accidents involve tourists or visitors from outside British Columbia. In such cases, many wildlife-related accidents are reported in other jurisdictions. Other accidents involve minor damage vehicle owners either ignore or pay for the repairs privately.

If one assumes the 6600 accidents reported to ICBC represent 75% of the actual number of vehicle damaging, wildlife-related accidents that occurred on Provincial highways, one can estimate an additional 1650 vehicles were damaged in wildlife-related accidents.

If one assumes these motor vehicles accidents incurred an average of $2300 in damages, the total unreported damage incurred by motor vehicles in British Columbia in 1999 totaled $3.8 million.

[5] Perkins, M., 1999, Highway Safety Improvement Programs Manual, British Columbia Ministry of Transportation

Accident Clean-up

Ministry Maintenance Contractors incur costs due to staff and equipment time required for the clean-up of wildlife-related accidents and the disposal of animal remains. Depending on the size of the animal involved and the location of the accident, the cost of clean-ups can vary dramatically. While smaller animals, such as porcupine and skunks, may be handled by a single person in one vehicle, larger animals, such as moose, elk, and caribou, often require two or three people with two vehicles and a hydraulic boom.

If one assumes the following staff and equipment time costs:

- $25 for small-sized animals (fox, porcupine, skunks, etc),
- $100 for medium-sized animals (bear, cougar, deer, mountain sheep, etc), and
- $350 for large-sized animals (caribou, elk, moose, etc);

Ministry Maintenance Contractors spent over $580,000 dealing with wildlife-related accident clean-up and disposal in 2000. Between 1991 and 2000, it is estimated Ministry Maintenance Contractors spent over $5.2 million on wildlife-related accident clean-up and disposal. These expenditures do not include the costs incurred by the Maintenance Contractors for insurance premiums and lost employee productivity or the Workers' Compensation Board for compensation payments when workers get injured dealing with wildlife-related accidents.

Lost Provincial Hunting License Revenues

In British Columbia, hunting license sales generate millions of dollars for the Provincial Government each year. The value of hunting licenses varies greatly between species and whether or not the hunter is a British Columbia resident (Table 18).

If every wild game animal reported killed on provincial highways represented an opportunity to sell a hunting license, the Province of British Columbia lost between $80,000 and $400,000 in hunting license revenues in 2000. If a 3 to 1 factor of unreported to reported animals killed is used, the Province of British Columbia could have lost between $300,000 and $1.5 million in hunting license revenues in 2000.

Table 18. Provincial Hunting License Fees for Residents and Non-residents

Species	Resident fees ($)	Non-resident fees ($)
bear	20	130
caribou	20	150
cougar	30	150
deer	15	75
elk	25	150
grizzly bear	80	530
moose	25	150
mountain goat	30	200
mountain sheep	590	400

Source: British Columbia Ministry of Water, Land and Air Protection (MWLAP)

Lost Value of Wildlife

The Wildlife Branch of the British Columbia Ministry of Water, Land and Air Protection (MWLAP) has done extensive analysis of the economic value of wildlife resources in the province[6]. In British Columbia, participants in hunting and viewing make estimated current expenditures of about $466 million each year that are directly associated with their wildlife-related recreation.

The expenditures by participants in wildlife-related activities and their impacts on income and employment are spread throughout the Province and make important contributions to many rural economies. In 1996, MWLAP estimated expenditures on resident hunting and wildlife activities supported about $205 million of Provincial Gross Domestic Product and $136 million of household income[7].

Lost Value of Wildlife for Resident and Non-resident Hunters

Approximately 100,000 British Columbia residents purchase hunting licenses annually and spend an estimated 1.5 million days hunting in the province each year[8]. Approximately 4,500 non-residents spend about 46,000 days hunting in British Columbia each year[9].

One measure of the value of wildlife lost due to motor vehicle-related accidents can be estimated by determining how much hunters are willing to pay to hunt.

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[6] Reid, R., 2001, Personal Communication, Economist, British Columbia Ministry of Water, Land and Air Protection (MWLAP), Wildlife Program, Victoria, B.C.
[7] Ibid
[8] Ibid
[9] Ibid

MWLAP surveyed thousands of resident hunters in 1996 to determine their "willingness to pay" in order to obtain an animal from a certain species (Table 19). According to MWLAP, the "willingness to pay" by British Columbia hunters to obtain a certain species of animal can be considered the equivalent of the "true net market value" of that species. For non-resident hunters, the "net return" to the Province is determined to be the value of their expenditures less the cost to the Province for supplying the services they need[10].

Table 19. Resident and Non-resident Hunters Net Value to British Columbia

	Net Value to British Columbia	
Species	Resident Hunters ($)	Non-resident Hunters ($)
bear	950	2,340
caribou	2,960	2,930
cougar	2,050	3,400
deer	1,270	7,450
elk	3,250	3,290
moose	1,250	1,680
mountain sheep	4,700	4,170

Source: British Columbia Ministry of Water, Land and Air Protection (MWLAP), Wildlife Program

For every wild game animal reported killed on provincial highways in 2000, the Province of British Columbia would have earned over $6 million in the market value of the animals to resident hunters. If a 3 to 1 factor of unreported to reported animals killed is used, the Province of British Columbia would have lost over $23 million from resident hunters in 2000.

The value of non-resident hunting in British Columbia is significant. Non-resident hunters contribute to the provincial economy by purchasing hunting licenses and supplies, and hiring hunting guides. If every wild game animal reported killed on provincial highways represented an opportunity for non-resident hunters to hunt in the Province, the Province of British Columbia would have lost over $30 million in net returns in 2000. If a 3 to 1 factor of unreported to reported animals killed is used, the Province of British Columbia would have lost over $113 million in net returns from non-resident hunters in 2000.

The true market value of wildlife may be more accurately determined by public auction, but only if all hunting opportunities were auctioned. As a fund raising initiative supported by the Alberta Provincial Government, the Rocky Mountain Elk Foundation auctioned one non-resident elk hunting permit ("tag") and one non-resident bighorn sheep tag in 1998, 1999 and 2000. The successful bids on the tags are shown in Table 20.

[10] Reid, R., 2001, Personal Communication, Economist, British Columbia Ministry of Water, Land and Air Protection (MWLAP), Wildlife Program, Victoria, British Columbia

Table 20. Rocky Mountain Elk Foundation Elk and Bighorn Sheep Tag Auction Results

Auction Item	1998	1999	2000
Elk tag (non-resident)	$20,874	$26,265	$32,340
Bighorn Sheep tag (non-resident)	$607,500	$495,000	$308,000

Source: Nicholson, J., 2001, Personal Communication, Rocky Mountain Elk Foundation, Edmonton, Alberta

In January, 2000, MWLAP auctioned off a mountain sheep hunting license in Reno, Nevada for $260,000 (Canadian dollars) as a fund raising initiative for the British Columbia Habitat Conservation Trust Fund to help support mountain sheep management[11]. In 2001, MWLAP auctioned off another mountain sheep hunting license for $170,000 (Canadian dollars)[12]. Although the successful bids in the auctions for British Columbia and Alberta wild game animals continue to be considerably higher than the value MWLAP has generally determined for these types of animals, the auction results show certain species wildlife are considered very valuable by some hunters. One should note these auction results are extreme values and they are not representative of typical hunter values.

Lost Value of Wildlife for Non-hunting Residents

No species-specific figures are available for the value of wildlife to non-hunting residents[13]. Regardless, the presence of wildlife generates considerable economic activity in British Columbia. MWLAP estimates 863,000 provincial residents spent 18 million days in direct wildlife activities with the main purpose of watching, photographing, feeding and studying wildlife in the field in 1996[14].

The impact of motor vehicle-related accidents on wildlife species with critically low populations can have serious implications on wildlife viewing activities. Species, such as mountain goats and mountain sheep, which attract viewing attention, have low reproduction rates and limited areas of habitat. Consequently, the loss of even a few members of a small herd in motor vehicle-related accidents can threaten the survival of the herd and reduce the long-term provincial economic benefits generated by residents viewing the herd.

MWLAP estimates British Columbia residents participating in direct wildlife activities, where the main purpose of a trip was to see wildlife in the field, spent almost $392 million in 1996, contributing over $174 million to the Provincial Gross Domestic Product.

[11] Reid, R., 2001, Personal Communication, Economist, British Columbia Ministry of Water, Land and Air Protection (MWLAP), Wildlife Program, Victoria, British Columbia
[12] Ibid
[13] Ibid
[14] Ibid

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FEEDBACK

WARS is only made possible by the collective efforts of the Ministry's Maintenance Contractors who complete the monthly accident report forms, the District Highways Staff who assemble and proof them, and the Headquarters Staff who support the WARS database system. We would like to extend our thanks to everyone who contributes to the WARS system and helps keep the WARS as current as possible.

If you have any questions or comments regarding this publication, please let us know as we would appreciate your feedback.

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