THE PRECIPITOUS DECLINE OF RESIDENT HUNTERS IN THE OKANAGAN

Presented to the:

British Columbia Wildlife Federation

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ABSTRACT

Declining resident hunter numbers is an issue most wildlife jurisdictions in North America are currently facing. In British Columbia and the Okanagan Valley this decline is much more dramatic than other jurisdictions and has been spurred on in part by regulations and a lack of foresight and communication between the Province and its hunters.

The author has found an aging resident hunter population with high turnover and low recruitment. In 1981, hunter numbers reached an all time high of 174,088 followed by four consecutive years of precipitous decline resulting in an overall decline of 25%. Hunters are sensitive to price and costs related to hunting - demand is elastic. During these five years there were several significant, compounding factors including a major recession, a significant increase in the costs of species and basic hunting licenses and privatization of the mandatory hunter education program.

The author found moving to quality-based wildlife management has had an extremely negative effect on participation and as a result has recommended better hunter education to improve success or more liberal hunting seasons. The author also found changing open seasons to limited entry and gun control to be major deterrents to current hunters.

To ensure the future of hunting, youth hunters must become the priority of the British Columbia Ministry of Environment and the British Columbia Wildlife Federation. Barriers to entry are several. New recruits can expect to pay an average of $300 and commit to 30 hours of class time prior to purchasing hunting licenses, related supplies and heading afield. The author has recommended streamlining and amalgamating both required hunting training courses and offering discounted incentives, particularly for youth.

The author has also recommended a mentoring program. The author found most current hunters began hunting before 19 and were mentored by their parents. Unfortunately, upcoming youths’ parents may have dropped out or may not have been recruited during the decline from 1981-1985. This may have a compounding effect on recruitment and must be addressed.
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Hunters per unit: Number of hunters who participated in a management unit.

Limited entry hunting system (LEH): a system by which hunting opportunities are awarded to resident hunters based on a lottery, or random draw.

Management unit (MU): Sub region within the Okanagan hunting region. The Okanagan is divided into 21 management units.

Resident hunter: Someone who purchased a basic resident hunting license in a given hunt year.

Resident hunter number card (RHNC): A British Columbia Resident Hunter Number Card is first required in order to purchase hunting and species’ licenses in British Columbia. Completion of a hunter safety training course is the primary requirement in advance of obtaining a hunter number.
Abbreviations

BC MOE, British Columbia Ministry of Environment

BCWF, British Columbia Wildlife Federation

CORE, Conservation Outdoor Recreation Education

GARMS, Government Agent Revenue Management System

GDP, gross domestic product

GOABC, Guide-Outfitters Association of British Columbia

IHEA, International Hunter Education Association

PAL, firearms possession and acquisition license

PETA, People for the Ethical Treatment of Animals

POL, firearms possession only license

RHNC, resident hunter number card
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Chapter 1 Introduction

Resident hunting in British Columbia (BC) is dying; hunter numbers have fallen more than 51% from 1981 to 2004 and show no signs of slowing (BC Ministry of Environment [BC MOE], 2005a, November, p.1). This is a major problem for the British Columbia Wildlife Federation (BCWF) and the future of hunting in British Columbia. The goal of this study is to provide a framework for other similar studies in the province and identify key issues relating to the decline of resident hunters.

1.1 Background

Hunting in BC is and always has been a significant contributor to the provincial economy, the well-being of its residents and the development of its history. In the past, hunting was a driving force not only for the economy but human existence itself. Times are changing: while BC’s population has grown significantly resident hunters have reached all-time lows.

Since 1981 the number of resident hunters in BC has fallen from 174,088 to 84,003 in 2004, a decline of over 51% (BC MOE, 2005a, November, p.1). During the same period BC’s total population has increased by 50%, from 2.8 million in 1981 to 4.2 million in 2004 (BC Stats, October, 2005, ¶ 2). Presently resident hunting is still a significant contributor to provincial gross domestic product (GDP) accounting for an estimated $29 million in 2003 (BC Stats, April, 2005, p.10).

The British Columbia Wildlife Federation (BCWF) is the collective voice of resident hunters and fishers in British Columbia. The BCWF’s strength and success as a conservation group and in the political arena comes from its members.

During the past 23 years other wildlife user groups have gained momentum either through their ability to effectively lobby the government, increase their contribution to GDP, or both. Major competitors include:
Guide Outfitters Association of British Columbia (GOABC) - commercial hunting service for non-residents, primarily from the United States (US)
People for the Ethical Treatment of Animals (PETA) - animal rights activists
Wildlife Viewing Activities - eco-tourism

While resident hunter numbers have declined over the past 23 years, non-resident hunter numbers have increased (BC Stats, April, 2005, p.8). Furthermore, resident demand has been shown to:
- Contribute significantly less per hunter day
- Employ fewer people
- Demonstrate an elastic demand with regard to license fees

In comparison, non-resident demand has been shown to:
- Be inelastic
- Contribute significantly more per hunter day
- Employ 25% more people
(Source: BC Stats, April, 2005, p.8; Sun, Cornelis van Kooten & Voss, 2005)

For the GOABC these data translate into a significantly higher contribution per hunter to real GDP; for the BCWF the decline of resident hunter numbers has resulted in a much lower contribution to real GDP, diminishing its ability to effectively represent resident hunters.

Increased competition has also resulted in a fragmented industry consisting of several user groups with unrelated goals and a differing conception of resource management. These user groups constantly push and pull government interests in an effort to shape resource management policy to suit their members.

There are theories as to why resident hunter numbers have declined in British Columbia; however, there is no conclusive evidence that identifies the cause(s) of the decline. As a result there is little knowledge and much speculation to attributing factors, on both macro and micro levels in BC. The BCWF must determine the cause of the rapid decline in hunter numbers.
1.2 Problem & objectives

Declining hunter numbers have been documented in many parts of North America and Canada; while there is some primary research to identify the leading causes of weakened demand in some parts of the United States none has been conducted in Canada or British Columbia. Potential factors include:

- Cost of Fuel
- Cost of Licensing
- CORE
- Restrictive Regulations
- Complexity of Regulations
- Gun Control
- Demographics
- Opportunities
- Hunter Education
- Changing Lifestyles
- Social Perception
- Spare Time

(Source: BC MOE, 2005a; Boxall, McFarlane & Watson, 2001; Brown, Decker & Enck, 2000; New Hampshire Fish and Game Department, 2004; Raedeke & Raedeke, 1998; Sun, Cornelis van Kooten & Voss, 2005)

Because several localized issues can have a significant effect on the above potential causes and regional divisions occur throughout province, the researcher will study the following research problem within the Okanagan Region.

What are the most significant factors resulting in the decline of resident hunters in the Okanagan?

To determine the most significant factors contributing to the decline, the researcher will investigate the following research objectives:

Demographic analysis of resident hunters from 1982-2004
Average age of recruitment of current resident hunters
Key factors that deter current hunters
Key factors which have contributed to the turnover of past hunters
Perception of hunting by non-hunters in hunting households
Factors relating to recruitment of new hunters
Chapter 2 Secondary research

This chapter will examine all literature available and identify key factors which may be contributing to the precipitous decline of resident hunting in British Columbia. Declining resident hunter numbers is pandemic across most of North America and as a result an abundance of secondary research is available. Possible factors which have been identified and discussed include: licensing, demographics, recruitment, hunter education, social factors, and retention. First, current resident hunter motivations must be addressed.

2.1 Hunter motivations

In 2003 and 2004 a short satisfaction questionnaire was distributed by the MOE to survey hunter and fisher satisfaction. In 2003 there were 713 respondents accounting for 0.9% of the hunting population and in 2004 there were 3,943 accounting for 4.7% (BC MOE, 2005b, p.1). By a significant margin, the leading motivation was to obtain game meat, followed by being close to nature, getting away from day to day activity and the company of partners and family (BC MOE, 2005b, p.6). Bagging a trophy was identified as the most insignificant motivation to hunt, with only 3% of respondents indicating that as their leading motivation (BC MOE, 2005b, p.7).

This is significantly different from results in the United States where hunting motivations have changed significantly from obtaining meat to being much more of a recreation and social based activity (Responsive Management, 2005; Heberlein & Willebrand, 1998). During 2003, hunting motivations in Pennsylvania were as follows: for the sport of recreation 37%, to be with friends or family 27%, to be close to nature 15%, for relaxation 12% and the most insignificant was for meat, at 11% (Responsive Management, 2004, p.8). This shows a marked difference in motivations and resulting potential management strategies between BC and the US.

2.2 Basic resident license sales

According to the British Columbia Ministry of Environment (BC MOE), resident hunting licenses sales have declined somewhat sporadically, by 52%, from a high of 174,088 in 1981 to 84,003 in 2004 (BC MOE, 2005b, ¶.1).
2.3 Licensing requirements

British Columbia has a complex hunting license system with many requirements and exceptions. For the ease of this study, the following is a brief introduction to the pre-requisites to become a licensed resident hunter in British Columbia.

2.3.1 Requirements to obtain a resident hunting license

To obtain a resident hunting license one must be 10 years of age or older and possess a resident hunter number card (RHNC). To obtain a hunter number card one must complete the Conservation Outdoor Recreation Education (CORE) course, successfully complete both practical and written tests and pay the associated fees (BCWF, 2005a). To use a firearm one must possess a possession only license (POL) or a possession and acquisition license (PAL) unless under direct and immediate supervision of someone who possesses a PAL or POL (BCWF, 2005b). To acquire a firearm one must complete the PAL course and/or test and pay the associated fees.

2.4 Licensing fees

There have been two studies which have examined the decline of hunters in Canada regarding costs. *Demand for Wildlife Hunting in British Columbia*, an economic study conducted by Sun, van Kooten and Voss in 2005, stated resident hunting demand is elastic. As a result increasing
license prices could negatively affect long-term license demand. The study also stated that resident demand is cyclical; in essence, disposable income does affect resident hunter participation. Boxall, McFarlane and Watson’s study, *Some Aspects of the Anatomy of Alberta’s Hunting Decline: 1990-1997*, implies that a strong correlation exists between the decline of resident license sales and the increase in costs. Sun et. al state that hunting license fees are determined by the provincial government and are adjusted according to political and budget considerations without any consideration to the impact on demand (Sun et al, 2005). Clearly, the costs and required time associated with hunting licensing require further research.

**RQ1 What is the effect of changes in costs related to licensing on resident hunting demand?**

### 2.5 Demographics

Analysis of population dynamics is required to analyze both potential hunter recruitment and turnover. Analyses of population trends have occurred in several studies but none in the Province of British Columbia. Data analysis of demographics which relate to recruitment, retention and turnover must be completed to understand whether changing demographics are contributing to the decline of resident licenses.

**RQ 2 What is the effect of changing demographics on the demand for resident hunting licenses?**

### 2.6 Hunter recruitment

Recruitment into hunting often occurs before hunters appear in licensing databases. Individuals become hunters well before they become licensed, generally through exposure to the activity from parents, relatives or friends (International Hunter Education Association [IHEA], 2005). Individuals often consider themselves to be hunters whether they purchase a hunting license or not. For the purpose of this study only those who enter the licensing databases will be considered. Whether hunters are not in the system is of no consequence as the goal of this study is to understand why there has been such a sharp decline in license sales.
2.6.1 Recruiting opportunities

Several studies have concluded that to recruit long-term hunters, exposure must occur during or before teenage years (Boxall, McFarlane & Boxall, 2001; Responsive Management, 2003; Brown, Decker, & Enck, 2000). This argument has been proven through both statistical analysis and psychological theory. Furthermore, these long-term hunters come from hunting households and must be brought up participating in hunting.

*RQ 3 When were current hunters in the Okanagan recruited into hunting and by whom?*

2.6.2 Hunter education

Almost all states and provinces in North America have some form of mandatory hunter education. These programs vary greatly regarding requirements, length and minimum age (IHEA, 2005). There have been no studies in British Columbia to compare its hunter education program to other programs in North America. Also, there has been no study to understand the impact of the Firearms Registry on hunting participation.

2.6.3 Recruitment and hunter education

A study conducted by Wentz and Seng in June of 2000 found there are two factors that affect recruitment into hunter education: interest and social support. For those who have a high interest in hunting and social support, hunter education is not a deterrent and can even be used as a recruitment tool. However, for those who have little social support or interest, hunter education is a barrier to entry. Available studies suggest 30-40% of teenagers interested in hunting are actually trying it and as a result, this population represents the greatest potential for recruitment (Seng & Wentz, June, 2000, p.11). Overall, this and other studies infer that hunter education must be relevant, interesting, promoted and easily accessible, particularly for those who may not have social support or a full understanding of hunting.

2.6.4 CORE

Conservation Outdoor Recreation Education (CORE) is the hunter education program in British Columbia. CORE is considered an entry-level course that is designed “to ensure that prospective
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hunters meet acceptable standards of knowledge and skill for safe and ethical participation in hunting recreation” (BCWF, 2005a, ¶.6). To successfully complete CORE students must pass two tests, a practical and a written exam. Once completed students will be issued a Resident Hunter Number Card (RHNC), which allows them to obtain a resident hunting license.

CORE is a prerequisite to hunting for anyone over the age of 13 who wishes to hunt. Anyone between the ages of 10-13 can hunt by purchasing a youth license and hunt on their guardian’s bag limit or complete CORE to purchase their own license. Once the age of 14 has been reached, youth must complete the CORE program to hunt (BCWF, 2005a).

The following is a depiction of the historical CORE Graduates in British Columbia since its inception. The graph demonstrates significant growth from the program’s inception in 1976 to a peak in 1983. In 1984 there is a dramatic decline in excess of 84%; graduate numbers have never recovered.

(Source: BC MOE, 2005c)

Figure 2.2: CORE graduates from 1976-2004

(RQ 4) Which factors have contributed to the decline of CORE graduates?
2.6.5 Graduate Recruitment

Several studies have identified a portion of graduates who may successfully complete a hunter education program without the intention of hunting (Seng & Wentz, 2005; Boxall, McFarlane & Watson, 2001). However, this is the best way to effectively measure recruitment.

Different studies yield different results regarding recruitment into the hunting fraternity from hunter education. Boxall et. al. found that only 45.7% of those recruited in 1990 remained active hunters in 1997 (p.103). However, this study was merely a snapshot and did not account for factors affecting participation including: university, marriage, moving away for careers or other factors which may affect annual but not long-term participation. Seng and Wentz state that past studies have found greater than 85% of graduates participate in hunting (p.4). Regardless of the drop-out rate, hunter education graduates are the most effective form of measuring new recruitment.

One common element of all studies is that those recruited under the age of 19 will be more likely to be retained as hunters.

2.7 Firearms registry

Bill C-68, known as the firearms registry, or gun control, was implemented in 1996. The goal of Bill C-68 is to decrease violence relating to firearms. The registry has been highly controversial and has not been completely adopted by all gun owners (Mauser, 2003). There has been no research into the ramifications of Bill C-68; research must be conducted into the availability, cost, relevance, and most importantly, the perception of hunters. This may also give insight to the perception of potential recruits and non-hunters.

RQ 5 What is the cost and perception of Bill C-68?

2.8 Hunting opportunities and effects on participation

Hunting opportunities have been identified as one of the driving forces behind the decline of resident hunting in the United States. Most current and past hunters in the United States state that more hunting opportunities or more game would encourage greater participation. In Pennsylvania, the factors relating to hunting opportunities that influenced ex-hunters’ decision to
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stop hunting included: lack of game 27%, lack of places to hunt 23% and lack of access 19% (Responsive Management, 2004, p.14). British Columbia has an entirely different resource plan and management system: In the United States the majority of huntable land is private and in BC it is public.

Also, British Columbia manages several regions, populations and species, such as Mule Deer, White-tailed Deer and Moose with regulations conducive to trophy animals (MOE, 2005c). Conversely, several other jurisdictions and regions in BC manage for success rates (Alberta Outdoorsmen, 2005; Saskatchewan Environment, 2005). There are regional dynamics and considerations that affect management of animals but it must be understood from the perception of hunters. Research must be conducted to understand the perception of hunting opportunities in the Okanagan.

With regards to big game hunting, BC has many more opportunities, but they have been declining due to urbanization, range fragmentation, resource management and the creation of trophy seasons (MOE, 2005c; Dyer, 1998). Access to hunt-able land has been identified as a significant deterrent in other jurisdictions (Responsive Management, 2004). This is largely attributed to the fact that the majority of land is privately held and obtaining access is often costly or prohibitive. In British Columbia, 95% of all land is owned by the Crown and as a result access to huntable land is, for the most part, unrestricted (Land and Water British Columbia INC., [LWBC] ¶.3). The majority of British Columbia’s population (particularly the northern half) is relatively sparse, save major centers (BC Stats, 2001). In the southern half of the province, particularly the lower mainland, access to huntable land may be limited due to a lack of Crown land (BC Stats, 2001). This may indicate extremely localized issues that may affect participation in some areas within regions, but not all.

RQ 6 What is the perception of hunting opportunities and trophy seasons in the Okanagan?

2.8.1 Small game & waterfowl

In the United States and several parts of Canada small game and waterfowl hunting are considered an instigator to hunting and a staple of hunters’ participation (Responsive
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Management, 2004; South Dakota Game, Fish & Parks, 2005; Prince Edward Island Fisheries, Aquaculture & Environment, 2001). While small game participation has declined it is still considered extremely popular and is often the second most popular sport (Responsive Management 2004). Furthermore, in Pennsylvania a strong correlation was found between being an ex-hunter and never having hunted small game (Responsive Management, 2004, P.7).

**RQ 7 What is the participation and demand for resident hunters and youth regarding small game and waterfowl in the Okanagan?**

### 2.9 Social factors

Social factors affecting hunter recruitment and retention have been identified as major contributors to the decline of hunters across North America. Seng and Wentz identified social support as one of the driving forces behind hunter recruitment and retention. Seng and Wentz suggest that social support is necessary to groom a hunter and that a hunter is not created by going afield but by a social network system whereby experience, mentoring and community programs encourage new hunters. Further research in British Columbia is needed to address this concept.

**RQ 8 What is the perception of support among current and potential hunters?**

### 2.10 Hunting partners

Hunters tend to be social creatures and a lack of hunting partners may affect participation. Several studies indicate most hunters hunt with family members or friends and that it is a family activity (BC MOE, 2005b, Responsive Management 2004). Furthermore, in Pennsylvania the greatest response (61%) that would strongly encourage hunters to hunt more was if his/her child or neighbor’s child asked them to be taken hunting (Responsive Management, 2004, P.10). Clearly there is a relationship between hunting participation and companions: this infers when a hunter does not have a hunting companion participation will decline. The number of hunting partners may also affect the adaptability of hunters and dispersion of knowledge.

**RQ 9 How many hunting companions does the average hunter have?**
2.11 Conclusion

The literature review has revealed decreasing hunter participation is not restricted to British Columbia, but is in fact a pandemic which, save a few states and provinces, has spread across North America. Several factors which may be contributing to the precipitous decline of resident hunting license sales in British Columbia have been identified and will require further research. These include: effects of costs of licensing, changing demographics, social support, hunting companions, hunting opportunities, waterfowl and small game and unrelated factors affecting participation. The need for this research is further encouraged by British Columbia’s geographical layout, population densities and resource management strategies. The reasons for the decrease of resident hunting license sales may not be the same as other parts of North America.
Chapter 3 Methodology

While the literature search has revealed several factors which may affect participation, recruitment and turnover, it has also revealed conflicting results and theories between studies. This further encourages the need for localized secondary and primary data collection, analysis to compare factors identified in the literature search and identify the other factors which may be affecting resident hunter numbers in the Okanagan.

3.1 Type of design

Ex Post Facto will be employed to identify the most significant factors affecting the decline in resident hunter numbers (Davis, 2004). Ex Post Facto is required because the researcher has no ability to control or manipulate the independent variables or the setting where the problem occurs (Davis, 2004). The preceding literature search has identified several potential factors which may contribute to the decline of resident hunters; the researcher must identify other potential factors and their significance (Davis, 2004). Using both exploratory and descriptive sub-types the researcher will be able to better understand the problem and independent variables and then compare the results of other jurisdictions (Davis, 2004). Before conducting any primary research the author was required to complete a research proposal for the Okanagan College Research Ethics Board and a research agreement for the BC Ministry of Environment (Appendix 1 and Appendix 1).

Exploratory research through focus groups will allow the research student to better understand the problem, identify any factors that have not been discovered through the literature search and also identify the significance of these factors (Davis, 2004). These focus groups are essential to identify all possible causes for the decline before proceeding with descriptive research.

Once other potential issues have been identified the research student will employ descriptive research through surveys. Surveys will allow the researcher to understand the significance of the factors identified through exploratory research and add statistical importance to these factors.
3.2 Target population

The target populations will include: hunters, non-hunters who live in a hunting household, youth who live in a hunting household and past hunters. A random sample, mail-out survey will be sent to 1,600 households with an individual who purchased a basic resident license in 2004; the mail-out will include a survey for non-hunters and youth. In addition, the researcher also has a goal of identifying 100 past hunters who will complete a mail-out survey through snowballing (Davis, 2004). See Appendix 1 through Appendix 7 for all surveys and cover letters.

In 2004, the number of basic resident licenses sold to those who resided in the Okanagan was 10,004 (BC MOE, 2006, p.1). Those who purchased basic resident licenses will be defined as resident hunters in the Okanagan. Hunters will be selected using a systematic simple random sample whereby each hunter is assigned a unique number and the hunters are chosen based on the number of surveys divided by the population size, ensuring accurate and lucid results (Davis, 2004). The response rate is expected to be close to 50% because of hunters’ interest in the study and results demonstrated through satisfaction surveys distributed by the Ministry of Environment (BC MOE, 2004). To ensure a confidence interval of 95% and an allowable error of 5%, 370 completed surveys will be required (Davis, 2004, p.244-246). See Appendix 8 and Appendix 9 for a detailed calculation of sample size and required mail-out.

While current hunters may not identify all reasons why hunters have dropped out or recruitment is low, they will identify frustrations and factors which affect participation. By targeting this population the researcher will be able to attain a large sample size and identify the most significant factors which affect participation in the Okanagan.

The number of non-hunters who live in a hunting household and youth is estimated at 14,010 based on the average number per household of 2.4 in the Okanagan Health Service Delivery Area (BC Stats, 2006, ¶1). To ensure a confidence interval of 95% and an allowable error of 5%, 374 completed surveys will be required (Davis, 2004, p.244-246). The response is expected to be 20% due to a lack of interest which is mediated by sending the survey to the hunter in the household. See Appendix 8 and Appendix 9 for a detailed calculation of sample size and actual samples required.
Non-hunters who live in hunting households will allow the research student to identify and understand knowledge and perception of hunting. This target group may also be a potential pool for recruitment once knowledge and perception are determined.

Youth is an extremely valuable target population. Youth surveys will identify perceptions and motivations regarding hunting. This is the future of the sport and must be represented to identify barriers to entry and potential solutions.

There is no accurate method to identify the population of past hunters and the population may also be extremely difficult to contact. There is no means to track past hunters who may have moved, passed away or simply fallen out of hunting. The author will attempt to contact past hunters through snowballing and convenience. Because of a lack of interest and accurate database a mass mail-out would not be practical. Past hunters will be contacted through snowballing or searched using name and phone number tracking and then contacted by phone. The student researcher’s goal is to receive 100 completed surveys.

3.3 Data collection methods
Secondary sources of data collection include statistics from: British Columbia Statistics, Land and Water British Columbia INC. and the British Columbia Ministry of Environment. Primary sources will include BCWF members, hunters, past hunters, non-hunters and youth who live in hunting households. Primary instruments used include focus groups of hunters to identify other possible factors affecting participation, recruitment and turnover and significance of factors identified through secondary research. These focus groups will be followed by surveys which will further aid in identifying factors that affect participation and their significance.

3.4 Analysis
Analysis of secondary and primary data will be through SPSS (statistical package for the social sciences), Microsoft Excel and Microsoft Access. SPSS will be used for statistical analysis of all surveys which are returned. Microsoft Access will be used to mine data and identify demographic trends and success rates relating to resident hunters. Microsoft Excel will be used
to evaluate mined data and identify possible relationships of success rates, recruitment, retention and basic license sales.

### 3.5 Limitations

Limitations of the study will include: possible errors in data supplied by the Ministry of Environment, Statistics British Columbia and input errors by the research student during analysis. There will also be a degree of uncertainty when comparing statistics between the Ministry of Environment and Statistics British Columbia. There is no demographic profiling region which overlaps the Okanagan hunting region; as a result the Okanagan Health Service Delivery Area, which incorporates approximately 90% of the Okanagan hunting region, will be used for demographic trending (BC Stats, 2006, p.1).

Hunter demographic data prior to 1982 is unavailable, which does not allow the researcher to understand the historical turnover and age of recruitment. There are discrepancies, as large as 8%, between the Provincial GARMS database, which provides total hunter numbers, and the hunter number file, which provides regional data. However, this is the best data that can be obtained.

### 3.6 Fieldwork

All fieldwork will be supervised by the research student. To ensure anonymity and accurate results the student researcher will be performing all duties save the survey mail-outs. This will be handled by a private company; all employees will be required to sign a disclaimer and the database given to the private company will be destroyed after use.
Chapter 4 Findings

4.1 Focus groups

Two focus groups, with widely varying results, were conducted by the student researcher. The first was on an online focus group with 31 respondents (all hunters who live in British Columbia) with 177 responses covering nine topics of discussion. Generally, the respondents indicated factors such as cost of fuel and lack of time as major deterrents; costs of licenses were generally considered inconsequential. They see limited entry hunting draws as a bonus and were relatively impartial or supportive of trophy style management seasons. There was a mix of hunters who would rather be able to harvest more animals versus better quality animals and vice versa.

The second focus group was conducted at a BCWF fish and game club. There were 17 participants who generally appeared to be over 50 years of age. They viewed trophy style management seasons, costs of licenses, complex regulations, limited entry hunting and a lack of hunting partners as either a deterrent or a major source of frustration. The cost of gas and a lack of spare time were not significant deterrents.

Both focus groups indicated that gun control was a major source of frustration. Comments also indicated that Gun Control was likely a major deterrent to potential recruits. Both groups also indicated support in managing seasons through antler restrictions if it was in the best interests of the given wildlife population.

4.2 Mail-out survey

The mail-out survey went out to 1800 households with hunters in the Okanagan, 1600 in February and 200 at the beginning of March. Each mail-out had a survey for current hunters, non-hunters and youth. In total there were 386 mail-outs considered undeliverable; according to Canada Post 147 of the mail-outs had no such address or incomplete address and the remaining were labeled MOVED//UNKOWN.
There were a total of 456 responses from hunters yielding a confidence interval of 95%, z-score of 1.96 and an allowable error of 4.48%. There were 163 responses from non-hunters and 92 youth respondents (Appendix 10 and Appendix 11). There were also 52 non-hunter surveys which appeared to be completed by hunters and were discarded.

Past hunters were extremely difficult to locate. The author used snowballing and telephone calls through the hunter number database to contact past hunters. Both methods proved extremely unsuccessful, with only 23 past-hunter respondents.

4.3 RQ1 What is the effect of changes in costs related to licensing on resident hunting demand?

With a provincial decline of 14.2%, 1982 is the year of the most significant decline in resident hunter numbers (See Figure 2.1). This decline occurred in all nine regions of the province and a precipitous decline continued until 1985. From 1981-1985 total hunter numbers declined by 25% (BC MOE, 2005b). This 5 year period corresponds to a massive recession, much more significant than the rest of Canada (BC Stats, 1998). The year of the greatest decline, 1982, corresponds with three provincial wide events: an 8% decline in the economy during the midst of a recession, a 70% increase in costs of basic resident licenses and a doubling of all species licenses except for deer (Thornton, 2006, p.1). In 1982 there was no significant emigration by the working population or the retired population (BC Stats, 1998, p.2).

According to Appendix 13, 54% of respondents in the hunter survey indicated the cost of hunting licenses and tags are somewhat or extremely discouraging.

This suggests that resident hunting may be sensitive to increases in costs relating to licensing and declines of disposable income.

4.4 RQ2 What is the effect of changing demographics on resident hunting license demand in the Okanagan?

Demographic analysis shows the mean age of hunters has increased significantly since 1982, from 40 to 48 years, and as a function of the male population, most age categories have declined.
significantly. The proportion of female hunters has been relatively steady, between 4-6% of the Okanagan hunting population.

Figure 4.1 demonstrates the demographic makeup of Okanagan resident hunters since 1982. It shows a dramatic decline between 20 and 49 years of age. The greatest decline occurs in the 30-39 age group, with a major decline beginning in 1993. There is also a lack of transference between age groups, which may suggest significant turnover.

Figure 4.1: Region 8 resident hunter demographic makeup

A comparison between the proportion of hunters and the male population demonstrates a significant decline in participation from all ages over 14. Proportional participation of ages 10-14 has actually increased since 1986 (0.80% to 1.21% in 2004) but the total number of this age group is insignificant, accounting for anywhere between 100 and 150 hunters.

Figure 4.2 demonstrates the proportional participation of hunters based on the number of males residing in the Okanagan Health Service Delivery area during the same period of time.
Comparing the averaged 1998-2004 hunter population to the past also demonstrates significant changes in recruitment. As illustrated in Figure 4.3, comparing the 5 year average vs. the 22 year average the most significant changes in hunter numbers occur in ages between 20 and 39. Beginning with 35-39 year olds, an average change of 486 hunters occurs. The decline is even more significant during the ages from 30-34, a decline of 659 per group. The decline in these age groups corresponds with those who would have been of age of recruitment during the decline of CORE, which began in 1984.
4.5 RQ 3 When were current hunters in the Okanagan recruited into hunting and by whom?

Most hunters were recruited by their fathers and before the age of 19. According to Appendix 14, 89% of hunters first started hunting before the age of 19. From ages 19-24 only 10.4% of current hunters were recruited, followed by minimal representation of all ascending age groups. Proportionately, most hunters who first went hunting after the age of 24 were female.

The majority of hunters are recruited by their fathers (55%) followed by friends (24%) and others (14.5%). Those recruited by others are most often recruited by brothers and in the case of female hunters, spouses (Appendix 15).

4.6 RQ4 Which factors have contributed to the decline of CORE graduates?

The number of provincial CORE graduates declined from a high of 12,000 in 1983 to 1,932 in 1984, a decline of 84%. CORE graduates have never recovered and have averaged 3,670 per year from 1995 to 2004.
Prior to 1984 CORE was offered in the public school system and was often administered by MOE staff. In 1984, CORE was privatized and administered by the Open Learning Institute. As a result, there was no maximum fee and access was often limited to large urban centers. In 1998 the BCWF took over administration and testing of the CORE program. (J. Thornton, BC MOE, personal communication January 19, 2006).

Currently, CORE is available as a self-study course or as a class study course. Students are required to purchase a manual and pass a written and practical exam depending on PAL certification (BCWF, 2005). The cost of the self-study course can vary from $50-$70 and the cost of the class ranges from $80-$300, with an average of $120 (Adams, 2006, P1). Time to complete varies greatly; the CORE class can take anywhere from 10-40 hrs (Adams, 2006, P1).

**4.7 RQ5 What is the cost and perception of Bill C-68 by hunters?**

Identified as gun control in the survey, Bill C-68 is the most significant factor in the study; 88% of hunters indicated gun control is somewhat or extremely discouraging (Appendix 16). There were 31 hunter comments, 5 non-hunter living in a hunting household comments and 4 letters to the author regarding gun control. The most predominant issue that arose is the feeling of social misperception; a negative sociological association between gun owners and criminals. There were also several respondents who commented that they believe Bill C-68 was a, if not the most, significant deterrent to potential recruits. This sentiment was also echoed among most respondents in both focus groups.

Currently a PAL license is available as a self-study course with a written and practical test or as a course followed by both tests. Students are required to purchase a manual, pass a written and practical exam and submit and pay for an application (BCWF, 2005). The cost of the self-study course can vary from $95-$105 and the cost of the class varies from $170-180; instruction time for firearms safety course generally takes anywhere from 8-20 hours (Adams, 2006, P2).
4.8 RQ6 What is the perception of hunting opportunities and trophy seasons in the Okanagan?

In the hunter survey, “[o]pen seasons changing to limited entry” was considered the most discouraging factor relating to hunting seasons and opportunities; 71% of respondents indicated it was somewhat or extremely discouraging (Appendix 17). In the focus groups participants discussed the “annual trip,” years vested in hunting locales and the resulting break up of hunting parties due to the LEH regulations. Hunters seem to be high fidelity creatures: some of the respondents indicated they had hunted in the same area since they were youth only to have it shutdown due to LEH. This affects both the opportunity to obtain game meat and the social aspects of hunting.

Four distinct types of hunters, with different expectations and goals, were identified in the focus group; these types were examined in the hunter surveys. According to Appendix 18, the four different types of hunters are: Meat hunters (37%), meat, then selective (41%), selective (18%) and trophy hunters (3%).

Meat and meat, then selective hunters often expressed difficulty in finding legal game and indicated that 4 point Mule Deer, 6 point Bull Elk and sometimes 2 point Bull Moose seasons, were extremely frustrating and decreased their participation.

These trophy seasons were likened to a cost/benefit analysis much as in business. When asked: What deters you from hunting? One respondent indicated: “Mostly the odds. Would likely hunt more but basically have a ‘realistic’ attitude about my chances of finding a ‘qualified’ specimen.” These sentiments were echoed in several surveys. Conversely, selective and trophy hunters expressed little to no difficulty in finding legal game. It should be noted that comments supported changing seasons if it was in the best interests of animal populations. See Appendix 19 for a comparison between types of hunters and difficulty in finding game.

The hunter harvest surveys are another source of data regarding participation; the surveys are mailed out at the end of each hunting season to determine participation and harvest success. A mailed questionnaire is sent to approximately 60,000 hunters each year; after a second mail-out the return rate is usually between 70%-80% (BC MOE, 2003, P.2). These surveys are sent to hunters throughout the Province.
4.8.1 Elk
Participation between 1990 and 1998 averaged 1,252 participants and 10,059 hunter days (MOE, 2006). In 1999 the number of participants declined from 1,136 in 1998 to 435 participants, a change of 62%. Hunter days and success rates also fell by 64% in 1998; however days per kill and hunters per kill actually decreased (BC MOE, 2006).

In 1999 there was a significant change in Elk regulations from 3 point to 6 point (BC MOE, 1998; BC MOE, 1999). Since 1999, hunter numbers or days of participation have not recovered to historic levels; however, days per kill have actually improved.

This may suggest hunter participation is affected by trophy style management seasons. This also suggests that those who were successful prior to the change in regulations continued to hunt after the changes in regulations and that they continued to be successful. The hunter surveys and comments also indicated difficulty in harvesting a 6 pt. bull, particularly among meat hunters.

4.8.2 Moose
Moose hunting was traditionally on a lottery system and a few areas had immature bull seasons. In 1998 an immature bull moose season began region wide (BC MOE, 1998). Between 1997 and 1998 hunters who participated in moose hunting increased by over 300% and hunter days rose by close to 400%. This trend has continued along with increased success rates.

4.8.3 Mule & White-tailed Deer
These two species are considered somewhat complimentary, depending on the part of the region, as they can both be hunted at the same time and hunting seasons usually coincide. As shown in Figure 4.4 from 1987 to 1997 the hunters per management unit averaged 35.5% more Mule Deer hunters than White-tailed deer hunters annually. This is despite longer White-tailed Deer seasons and a limit of two White-tailed bucks (in some MUs) as opposed to one Mule buck throughout the region. In 1998, there is a significant decrease in Mule Deer hunters and a slight increase in White-tailed Deer hunters; this coincides with an implementation of 4 point Mule Deer during the majority of the hunting season. From 1998 to 2004 the number of Mule Deer
hunters averaged 5.2% more hunters annually than White-tailed Deer hunters. This suggests that point or antler restrictions may have an effect on participation.

![Sum of hunters per MU in Region 8: Mule Deer vs. White-tailed Deer](image)

Figure 4.4: Provincial results of hunter surveys: White-tailed and Mule Deer total resident hunters per management unit in the Okanagan

Results of the hunter survey also demonstrate 50% of respondents find antler restrictions, and 40% found the number of legal animals somewhat or extremely discouraging. Furthermore, Mule Deer are 48% of hunters’ number 1 choice to hunt, whereas only 36% of hunters indicated White-tailed Deer were their number 1 choice (Appendix 20 and Appendix 21).

4.9 RQ7 What is the perception of resident hunters regarding small game and waterfowl hunting?

Only 24% of hunters listed waterfowl, small game or grouse as species they hunted. Throughout the survey only 2 hunters solely pursued game birds. This is significantly lower than participation in the US (Responsive Management, 2004; Responsive Management, 2005). Youth echoed the sentiments of adult hunters with very few listing waterfowl or small game as favorite animals to pursue (Appendix 20 and Appendix 21).
4.10 RQ8 *What is the perception of social support among current and potential hunters?*

Social support by non-hunters living in a hunting household was immense. The respondents were predominantly female and the overwhelming majority indicated they supported and/or approved of hunting (Appendix 22 through Appendix 34). There were also several comments regarding ethics which indicates support for hunting providing it is performed in an ethical manner.

One question of note was the reply to Appendix 26 “not enough Grizzlies to hunt”: 11% strongly agreed, 13% agreed, 23% disagreed, 19% strongly disagreed and 34% had no opinion. This shows a great variance in popular belief among the non-hunters who lived in hunting households; 79% of non-hunters living in a hunting household believe there are enough animals to hunt, but only 42% believe there are enough Grizzly bears to hunt (See Appendix 25 and Appendix 26). Grizzly bear hunting has been a contentious issue in British Columbia with several conflicting scientific opinions and popularization in the media (Bears in BC, 2002).

The reasons why non-hunters do not hunt are: no time, cost, regulations, fear of guns and no desire to hunt.

Even though the hunting population in the Okanagan is 94%-96% male in the Okanagan, most non-hunters living in a hunting household did not perceive hunting as a male sport (Appendix 34).

4.11 RQ9 *How many hunting companions does the average hunter have?*

The number of hunting partners each hunter has breaks down as follows: 19% 1, 15% 2, 20% 3, 15% 4, 11% 5, 20% >5 (Appendix 35). Comments indicated that hunters did not always hunt with all hunting partners and that hunting partners hunted with often varied depending on species, time or area hunted. This is significant as social factors including the destruction of hunting groups has been cited as a cause of the decline of hunters identified by past hunters in the US (Responsive Management, 2005). In the focus groups there was discussion regarding a lack of hunting partners and the break up of hunting parties due to limited entry draws.
4.12 Conclusion

The author has found that costs and changing of management strategies may be contributing to
the decline of resident hunters. The author has also found immense support for hunting amongst
non-hunters living in a hunting household. The next chapter will examine only the factors which
can be changed or affected by either the Province or the BCWF.
Chapter 5 Conclusions and recommendations

Chapter four has identified several factors which may affect hunter recruitment, retention and participation. The following chapter will infer possible conclusions regarding the findings in chapter 4 and make recommendations to mediate the problem.

5.1 Historical turnover of resident hunters for the past twenty-two years

Due to an insufficient timeline traditional turnover is difficult to assess. However, analysis indicates traditional hunter turnover appears to occur systematically from around mid 50s to 70, with a dramatic decline after the age of 70, and most hunters having dropped out by age 80. This is likely caused by a lack of physical capacity which is supported by several comments regarding mobility of the hunter, non-hunter and past hunter surveys.

Analysis also indicates that more hunters in the Okanagan are dropping out of hunting in all age groups. Turnover of all age groups is significantly different from the US where the decline of resident hunting is most commonly associated with an aging hunting population and a lack of recruitment. In effect, the decline of hunters in the Okanagan has been expedited by unusually high turnover of all age groups, particularly from 1981-1984.

Analysis also revealed a significant decline in the number of hunters proportionate to the number of males residing in the Okanagan in all age groups. With a mean age of 48 years and low recruitment a greater decline lies ahead. Current demographic trends indicate a much greater decline beginning in the next 10 years.

5.2 Average age of recruitment of current hunters

Over 75% of current hunters in the study were recruited before the age of 18 (Appendix 14). Of the respondents, 33% were actually recruited before the age of 10 and over 89% of current hunters were recruited before the age of 24. This does not necessarily indicate that they purchased a hunting license, but that they had gone hunting. These results are concurrent with
results from studies in the US. This further reinforces the need to focus on youth encouragement and participation.

**5.3 Key factors that deter current hunters**

Key factors which deter current hunters and can be controlled or mitigated by the MOE or the BCWF include: cost of hunting license and tags, lack of spare time, antler restrictions, open seasons changing to limited entry, limited hunting opportunities, restrictive regulations and difficulty in finding legal game.

**5.3.1 Costs**

The results of the author’s survey combined with analysis of past trends and the results of both Canadian studies in chapter 2 suggest disposable income, license costs and costs of supplies related to hunting have had a negative effect on participation and hunter numbers.

**5.3.2 Management**

While it was very apparent that hunters support wildlife managements’ decisions to ensure the future of animal populations there is conflicting direction between hunting seasons and hunters’ desires. Deterrents relating to seasons must be addressed; very distinct user groups have been identified with very different needs. As demonstrated in chapter 2 a lack of game and restrictions are significant deterrents for past hunting in the US. This appears even more prevalent in the Okanagan than in the US.

As indicated in the BC MOE’s hunter satisfaction survey the greatest motivation for hunters is meat; this is however, significantly different from results in the US. Meat hunters often find it extremely difficult to find 4 point Mule Deer Bucks, immature Bull Moose and 6 point Bull Elk. Another point of interest is hunter participation with Whitetail Deer. This species is relatively new to the Okanagan and requires significantly different hunting methods to ensure harvest (BC MOE, 2005d). The lack of participation may be due in part to the high fidelity of hunters methods and areas and requires further study.
5.4 Perception of hunting by non-hunters in hunting households

Perception of hunting by non-hunters in hunting households was extremely supportive. An overwhelming majority of non-hunters supported hunting believed it contributed to the economy, and that wild game is healthy and tastes good. The misperception behind the quantity of Grizzly bears available demonstrates the impact of media and advertising on perception. If 24% of those who live in hunting households and support hunting believe there aren’t enough grizzly bears to hunt, one might assume this sentiment would be even more prevalent in non-hunting households.

Another interesting note was the respondents’ perception of hunting as a male sport; 89% of respondents disagreed and 6% strongly disagreed that hunting was a male sport. This presents an immense opportunity for increased representation from female youth living in a hunting household.

5.5 Factors relating to recruitment of new hunters

The researcher has discovered significant barriers to entry for those who wish to enter hunting. The privatization of CORE and implementation of Bill C-68 has resulted in a significant decline in new recruits. For new recruits the costs for these two courses average a total of close to $300 and peak at close to $500. They also consume approximately 20 hours of instruction time on average and can consume as much as 60 hours. Once potential recruits have completed both courses they must purchase hunting supplies including: firearm(s), accessories, clothing and a suitable vehicle before even having any comprehension of or education regarding hunting.

Furthermore, most hunters come from a hunting household. Realizing the age of the current hunting population the difficulty in recruiting will be exponential as most hunters’ children may be beyond the ideal age of recruiting and don’t live with their parents anymore.

5.6 Conclusions about the research problem

Currently resident hunters in the Okanagan have declined but do not demonstrate the true significance of the decline. The true significance of this problem has not been realized due to the high number of older participants who are still hunting. Recruitment is virtually non-existent
and turnover is extremely high with many hunters who are between the ages of 36 and 50 dropping out of hunting.

The attrition of resident hunters is pandemic across North America; however, the decline in the Okanagan and British Columbia has exceeded most states and provinces in North America. It has been further accelerated by four complex, yet predominant reasons:

1) Barriers to entry
2) Overall cost of hunting
3) Management strategies
4) Social Factors

5.7 Limitations
Limitations in the study included: difficulty in finding past hunters, demographic analysis, MOE hunter number database, harvest numbers and addresses. Past hunters were extremely difficult to locate; through snowball sampling over 150 hunters were contacted by the research student to identify past hunters and fewer than 25 were found. Of these, the majority had dropped out of hunting due to physical mobility. This may suggest that when hunters drop out of hunting they also drop out of the social hunting network. This is an extremely difficult target population to locate and the possibility of turnover may be best measured by current hunter satisfaction.

The databases and statistical information obtained from the Provincial Government was somewhat inaccurate. Differences between the Government Agent Revenue Management System (GARMS) database and hunter number file on hunter numbers were as much as 8%. Also, the percentage of undeliverable mail was high; with close to 100 returned due to an incomplete address.

5.8 Recommendations
The following is a compilation of suggestions to mediate the decline of resident hunter and focus on the future of hunting.
5.9 Key factors that deter current hunters

The potential and perceived potential of success has demonstrated that trophy seasons have negatively affected participation for meat and meat, then selective hunters. There are two possible solutions which may be used separately or combined: 1) a management strategy more conducive to meat hunters or 2) hunter education to increase the chances of success for meat hunters.

This study shows a need for education and information on characteristics of the species and hunting methods. With 80% of hunters having 5 or fewer hunting partners and most often being introduced to hunting by their fathers, most hunters have an extremely limited learning environment. Hunter education is a key factor because of the high fidelity demonstrated and a lack of participation with relatively new species such as White-tailed Deer.

Wildlife managers and the BCWF must find a way to mitigate the needs and wants of meat and meat, then selective hunters, who make up the majority of the hunting population. They must also be aware of the breakup of hunting parties, particularly through open seasons turning to limited entry.

To mediate the cost of gas and factors relating to spare time and hunting opportunities the creation of seasons close to urban centers may be beneficial to hunter numbers. To increase these opportunities a program to encourage positive relationships with private land owners should be created and implemented. The costs of hunting and species licenses should be reviewed, with discounts for family units and youth. Future budget changes should be given consideration regarding the effects on demand.

5.10 Perception of hunting by non-hunters in hunting households

The study has demonstrated that non-hunters living in a hunting household are supporters of hunting, however they are susceptible to the media perception. The BCWF must continue to promote the awareness and advocacy of hunting to ensure continued popularity.
5.11 Youth

As demonstrated, the best opportunity to recruit long-term hunters is under the age of 18. In BC, no one under the age of 19 can hunt without the direct supervision of another hunter. Currently, regulations force young hunters to complete the CORE program before the age of 14 to hunt. The under 18 age group also corresponds with a number of competing interests, particularly sports, where youth are not required to obtain certification to participate.

The concept of supervision under the age of 19 also conflicts with net migration, whereby many youth age 18 to 24 often move to large urban centers for education, socialization and employment (BC Stats, 2003, p.3.). This virtually eliminates the possibility for someone who moves from the household at 18 the opportunity to hunt.

5.11.1 Barriers to entry

The privatization and costs associated with CORE and the implementation of Bill C-68 and the ensuing Canadian Firearms Course has created significant barriers to entry. The combined cost of these two courses average $300 and averages approximately 30 hours of time.

These two courses should be amalgamated and streamlined to focus on firearms safety and ethics. Cost incentives should also be initiated, particularly for those under 18.

Furthermore, those over the age of 19 have no incentive or possibility of experiencing hunting unless, at the minimum, they invest significant time and money into both courses and purchase of hunting equipment. This assumes they have an acquaintance willing to take them afield and teach them how to hunt. This is a prerequisite before potential recruits even have the possibility of trying hunting.

A new hunter license, similar to the current junior license for those under 14, should be initiated for anyone who has never experienced hunting and wishes to try it. These individuals should be under direct supervision from a current hunter and the license limited to one or two seasons.
5.11.2 Mentoring

Melding the frustrations expressed by current hunters regarding the potential of harvesting game, the barriers to entry, turnover of all age groups of hunters and the results from Seng and Wentz’s study which suggests only 30-40% of teenagers interested in hunting are actually trying hunting there is an immense opportunity for the BCWF to institute a hunter mentoring program (Seng & Wentz, June, 2005, p.11).

This mentoring would include all facets of hunting, and must be administered by highly skilled participants who are willing to commit to one or two students over the course of a few years. Several possible benefits from the program may include: more skilled, safer, ethical, better educated hunters, positive publicity, public education and increased membership.

Firstly, access to hunting must be given to those who wish to it. The barriers to entry are high and potential recruits both under and over 19 must be given the opportunity to try hunting without having to invest a large amount of capital. Clearly firearms safety and ethics must be addressed but this can be eliminated by encouraging direct supervision.

5.12 Conclusion

There are several factors which have been identified in this study which have contributed to the decline of resident hunters in the Okanagan. Interestingly, the Okanagan has had the smallest decline of all hunter populations in the province; other regions should be analyzed and understood immediately (BC MOE, 2005a). On a macro level, the collision between wilderness and the free market are serious threats to all outdoor enthusiasts, including hunters. The author has not tackled increasing urbanization, but this may be a significant factor in the lower mainland and, in the future, will be an extremely significant factor for all outdoor user groups. The BCWF and province of British Columbia must tackle the issues relating to hunter recruitment and turnover discussed in this study. There are several other factors which have not been covered in this paper but are intuitive through the survey results found throughout the appendix. The future of hunting is uncertain and recruitment must be met head on if hunting is to survive the next century.
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Retrieved October 15, 2005 from


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http://www.bcstats.gov.bc.ca/pubs/mig/mig052fa.pdf


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Appendix 1: Research Ethics Board Approval
Appendix 2: BC Ministry of Environment Research Agreement
Appendix 3: Hunting Household Cover Letter

Study of the Decline of Resident Hunters in the Okanagan

You are someone who bought a hunting license in 2004 and lives in the Okanagan. If you are not please discard this form.

Please have all members of your household who may wish to complete a form read the following.

The following form is part of a study to figure out why less people are hunting in the Okanagan and British Columbia. The decline is important to you because fewer hunters means less influence at the political level.

The study is under the direction of Sherry Price, Okanagan College faculty supervisor. The student researcher is Jesse Zeman, a University of British Columbia (UBC)/Okanagan College (OC), Honours Bachelor of Business Degree candidate. The study has been funded by: the British Columbia Wildlife Federation, OCEOLA Fish & Game Club and the Okanagan Wildlife Heritage Society. Information from this study will be presented to the public and sponsors on April 7, 2006.

There are 3 (three) forms. One is for a hunter, one for an adult who doesn’t hunt and one for a youth. A youth is someone under the age of 19 (nineteen). You must also print and sign your name on the youth’s consent form.

Please note you do not have to fill out this form. You have the right to stop completing this form anytime. Your responses are not tracked and youth forms will be kept private. Only the research student and his supervisor, Sherry Price, will be able to see your form. There will be no future contact/consequence from this form. Once the form(s) has(have) been finished, please put them in the postage-paid envelope and deposit at the nearest mailbox.

If you have any questions about the form or study, or would like more forms, please contact the research student Jesse Zeman at jessezeman@shaw.ca. You can call Professor Sherry Price at (250) 762-5445 Ext 4344. If you have any questions about your rights as a participant in this study contact the Chair of the Research Ethics Board through the OC Office of Research Services at (250) 762-5445 (local 4491).

The form will take about 5 minutes to complete. When returned, the research student will assume that consent has been given.

Thank you for your participation, Jesse Zeman
Appendix 4: Hunter Survey

Study of the Decline of Resident Hunters in the Okanagan

Hunter

You have been randomly selected and identified as someone who is a resident of the Okanagan and possessed a hunting license during 2004. By completing and submitting this survey it is assumed that you have read the cover letter enclosed and consent to this survey.

1. How many days do you hunt per season (check box)?

| 0-4 | 5-9 | 10-14 | 15-19 | >20 |

2. Select the category which best represents your thoughts for each ‘Aspect of Hunting’. These are factors which may affect the number of days you hunt or the distance you travel.

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<tr>
<td>Limited hunting opportunities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hunting grounds are too far</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of legal animals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antler restrictions</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Other factors which discourage you from hunting:

_________________________________________________________________________________

_________________________________________________________________________________

_________________________________________________________________________________
3. In order of importance please rank the animals you like to hunt. Put a 1 (one) beside the animal you like to hunt the most, a two (2) beside the animal you like to hunt the second most. If you don’t hunt the animal do not insert a number.

______ Ducks  
______ Geese  
______ Rabbit  
______ Grouse  
______ Mule Deer  
______ Caribou  
______ Whitetail Deer  
______ Moose  
______ Elk  
______ Sheep  
______ Bear

4. Do you find it difficult to find legal game (E.g. 4 pt. Mule deer)? yes / no

Comments:

5. What kind of a hunter do you consider yourself? (circle one)

Meat Hunter  
Meat, then selective  
Selective  
Trophy

Demographics
The following information is collected for statistical analysis. No individual information will be distributed.

Gender

☐ Male  
☐ Female

Age Group

☐ Under 18  
☐ 19-24  
☐ 25-35  
☐ 36-50  
☐ 51-64  
☐ > 65

What age did you first go hunting?

☐ Under 10  
☐ Under 18  
☐ 19-24  
☐ 25-35  
☐ 36-50  
☐ 51-64

Who got you started in hunting?

☐ Father  
☐ Friend  
☐ Uncle  
☐ Grandfather  
☐ Other

How many different individuals do you hunt with?

☐ 1  
☐ 2  
☐ 3  
☐ 4  
☐ 5  
☐ > 5
Appendix 5: Non-hunter Survey

Study of the Decline of Resident Hunters in the Okanagan
Adult non-hunter living in a Hunting Household

You are someone who does not currently hunt but lives in a hunting household. If you are not please discard this survey.

1. Have you ever been hunting? yes / no

2. Why don’t you hunt?

3. What is your perception of hunting?

Please check the criteria that best represents your views for each category under ‘Aspect of Hunting’.

<table>
<thead>
<tr>
<th>Aspect of Hunting</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>No Opinion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hunting is cruel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wild game is healthy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wild game tastes good</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hunting is an effective management tool</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There aren’t enough animals to hunt</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>There aren’t enough grizzly bears to hunt</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hunters are the greatest contributors to wildlife</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>conservation efforts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hunting is safe</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hunting is for sport</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bow Hunting is cruel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rifle Hunting is cruel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hunting contributes to the economy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hunting is a male sport</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Demographics
The information collected here is grouped for statistical analysis. No individual information will be distributed.

Gender  □ Male  □ Female
Age Group □ 19-24 □ 25-35 □ 36-50 □ 51-64 □ > 65
Appendix 6: Youth Survey

Study of the Decline of Resident Hunters in the Okanagan
Youth Survey

You are someone who is between the ages of 8-18 and lives in a household with at least one hunter; if you are not please throw this survey out.

Please have your Parent/Guardian read the cover letter to you and help with completion.

Parental Consent

Printed Name of Youth: ________________________________
Printed Name of Youth’s Parent/Guardian: ________________________________
Relationship to Youth: ________________________________
Signature of Parent/Guardian: ________________________________ Date: ______________
Signature of Youth: ________________________________ Date: ______________

Survey Questions

1. How old are you?
   8-9 □  10-12 □  13-15 □  16-18 □

2. Do you have a hunting license (circle one): yes / no

3. Have you gone hunting with your Parent/Guardian: yes / no
   (If you circled no go to question 9)

4. How many times do you go hunting per season?
   0-4 □  5-9 □  10-14 □  15-19 □  >20 □

5. In order of importance please rank the reasons why you hunt (from 1-8). Put a one (1) beside the most important reason you hunt, a two (2) beside the second most important reason you hunt and so on.

   _____ Being with my parent(s)
   _____ Being in the outdoors
   _____ Shooting guns
   _____ To have fun
   _____ Harvesting animals
   _____ Harvesting a trophy
   _____ Camping
   _____ To help manage populations

6. In order of importance please rank the animals you like to hunt/would like to hunt from 1-9. Put a one (1) beside the animal you like/would like to hunt the most, a two (2) beside the animal you like to hunt second most.
7. Have you ever participated in a junior hunting season?  yes / no  

If you circled NO, you have completed the survey  

8. In order of importance select the reason why you like hunting in Junior Season  

_____ See lots of animals  
_____ See lots of bucks  
_____ Get to miss school  
_____ Spend more time with Parent/Guardian  

You have completed the survey  

9. Would you like to go hunting? yes / no  

If you circled NO, go to question 12  

10. In order of importance please rate the reasons why you would like to go hunting. Put a 1 (one) beside the most important reason and a 2 (two) beside the second most important reason.  

_____ Being with my parent(s)  
_____ Being in the outdoors  
_____ Shooting guns  
_____ Harvesting animals  
_____ Harvesting a trophy  
_____ Camping  

11. In order of importance please rate the reasons why you think you don’t hunt. Put a 1 (one) beside the most important reason and a 2 (two) beside the second most important reason.  

_____ Don’t have my CORE  
_____ CORE take too much time  
_____ Not enough time  
_____ Hunting costs too much  
_____ CORE costs too much  
_____ No one to take me  

Thank you, you’ve completed the survey.  

12. In order of importance please rank the reasons why you don’t like hunting. Put a 1 (one) beside the most important reason and a 2 (two) beside the second most important reason.  

_____ Hunting is mean  
_____ Eating meat is wrong  
_____ There aren’t enough animals left
Appendix 7: Past Hunter Survey

Study of the Decline of Resident Hunters in the Okanagan
Past Hunter

You have been identified as someone who bought a hunting license in the past 22 years but did not buy a license in 2004; if you are not please discard this survey.

The following form is a part of a study to figure out why less people are hunting in the Okanagan and British Columbia. The study has been funded by: the British Columbia Wildlife Federation, OCEOLA Fish & Game Club and the Okanagan Wildlife Heritage Society. The study is being conducted under the direction of Sherry Price, Okanagan College (OC) faculty advisor. The student researcher is Jesse Zeman, a University of British Columbia (UBC)/Okanagan College (OC), Honours Bachelor of Business Administration Degree candidate. Information from this study will be presented to the public on April 7, 2006.

Please note you do not have to fill out this form. You have the right to stop completing this form anytime. Your responses are not tracked and will be kept private. Only the research student and his research supervisor, Professor Sherry Price, will be able to see your form. There will be no future contact/consequence from this form. Once you have finished the form, please put it in the envelope provided and deposit at the nearest mailbox.

If you have any questions about the form or study, please contact the research student Jesse Zeman at jessezeman@shaw.ca. You can also call Professor Sherry Price at (250) 762-5445 Ext 4344. If you have any questions about your rights as a participant in this questionnaire, please contact the Chair of the Research Ethics Board through the OUC Office of Research Services at (250) 762-5445 (local 4491).

The form will take about 5 minutes to complete. When returned, the research student will assume that consent has been given.

The following survey’s goal is to understand why you stopped hunting. Please check the criteria that best represents your views for each category under ‘Reason for no Longer Hunting.’

<table>
<thead>
<tr>
<th>Reason for no Longer Hunting</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complex Hunting Regulations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of hunting partner</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gun Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open seasons changing to Limited Entry</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of legal game</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost of hunting supplies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost of fuel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spare time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Restrictive regulations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antler restrictions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Too many hunters
Pressure from society
Pressure from spouse
Limited Entry Hunting system
Limited hunting opportunities
Hunting grounds are too far
Cost of hunting license & tags

Other reason(s) why you stopped hunting:

________________________________________________________________________________________
________________________________________________________________________________________

Would you ever go hunting again? If so, what would inspire you to start hunting again?

________________________________________________________________________________________
________________________________________________________________________________________

What kind of hunter would you have described yourself as? (circle one)

Meat Hunter
Meat, then selective
Selective
Trophy

Demographics
The information collected here is grouped for statistical analysis. No individual information will be distributed.

Gender
☐ Male ☐ Female

Age Group
☐ 19-24 ☐ 25-35 ☐ 36-50 ☐ 51-64 ☐ > 65

When age did you first go hunting?
☐ Under 10 ☐ Under 18 ☐ 19-24 ☐ 25-35 ☐ 36-50 ☐ 51-64

Who got you started in hunting?
☐ Father ☐ Friend ☐ Uncle ☐ Grandfather ☐ Other ________________
Appendix 8: Required Sample Size

Sampling Size Guide

N= population size
B= allowable error
P= estimated population proportion
z= z-score
C.I.= confidence interval
n= sample size

Resident hunter sample size

N= 10,004
B= 0.05
P= 0.5
z= 1.96
C.I.= 95%

\[ n = \frac{NPQ}{(N - 1)B^2/z^2 + PQ} \]

\[ = \frac{10004(0.5)(1-0.5)}{(10004 - 1)(0.05)^2 + (0.5)(1-0.5)} \]

n = 370

Non-hunters and youth sample size

N=14,010
B=0.05
P=0.5
z=1.96
C.I.=95%

\[ n = \frac{NPQ}{(N - 1)B^2/z^2 + PQ} \]

\[ = \frac{14010(0.5)(1-0.5)}{(14010 - 1)(0.05)^2 + (0.5)(1-0.5)} \]

n = 374
Appendix 9: Required Mail-out

Actual Sample Guide

X = required sample  
P = incidence x response rate  
Q = 1 - P  
Z = z value  
C.I. = confidence interval

**Actual Hunter Survey Sample Required**

\[ Z = 1.645 \text{ (one-tailed)} \]
\[ \text{C.I.} = 95\% \]
\[ X = 370, \]
\[ P = (0.95)(0.50) = 0.475 \]
\[ Q = 1 - P = 1 - (0.95)(0.50) = 0.525 \]

Actual sample

\[
\frac{2X + Z \left[ ZQ + \sqrt{(ZQ)^2 + 4XQ} \right]}{2P}
\]

\[
\frac{2(370) + (1.645)(1.645)(0.525) + \sqrt{(1.645)(0.525)^2 + 4(370)(0.525)}}{2(0.475)}
\]

Surveys required = 829

Surveys being sent = 1,600
Actual non-hunter & youth survey sample required

\[ Z = 1.645 \text{ (one-tailed)} \]
\[ 
C.I. = 95\% 
\]
\[ X = 374 \]
\[ P = (0.95)(0.20) = 0.19 \]
\[ Q = 1 - P = 1 - (0.95)(0.20) = 0.81 \]

Actual sample

\[
\frac{2X + Z \sqrt{ZQ} + 4XQ}}{2P} \]

\[
\frac{2(374) + (1.645)(1.645)(0.81) + \sqrt{((1.645)(0.81))^2 + 4(374)(0.81)}}{2(0.19)}
\]

Surveys required = 2,125

Surveys Being Sent = 3,200*

*1,600 Non-hunter & 1,600 Youth
Appendix 10: Actual Sample Size

Sampling Size Guide
N= population size
B= allowable error
P= estimated population proportion
z= z-score
C.I.= confidence interval
n= sample size

**Resident hunter**

n= 456
N= 10,004
B= ?
P= 0.5
z= 1.96
C.I.= 95%

\[
B = \sqrt{\frac{z^2}{N-1} \left[ \frac{NPQ}{n} - PQ \right]}
\]

\[
B = \sqrt{\frac{1.96^2}{10,004-1} \left[ \frac{10,004(0.5)(1-0.5)}{456} - (0.5)(1-0.5) \right]}
\]

B= 4.48%
Non-hunters and Youth Actual Sample Size

N=14010
B=7?
P=0.5
z=1.96
C.I.=95%

\[
B = \sqrt{\frac{z^2}{N-1} \left[ \frac{NPQ}{n} - PQ \right]}
\]

\[
B = \sqrt{\frac{1.96^2}{14,010-1} \left[ \frac{14,010(0.5)(1-0.5)}{255} - 0.5(1-0.5) \right]}
\]

B= 6.08%
Appendix 11: Actual mail-out response rate

**Maximum Incidence**

mail-out – undeliverable mail

1800 - 386 = 1414

**Incidence Rate**

1414 / 1800 = 78.56%

**Actual Hunter Survey Response Rate**

Hunter respondents = 456

Response / Incidence

456 / 1414 = 32.25%

**Actual Non-hunter & Youth Survey Response Rate**

Non-hunters living in a hunting household respondents = 163
Youth respondents = 92

(Non-hunter living in a hunting household + youth) / Maximum incidence

(163 + 92) / 1414 = 18.03%
Appendix 12: Hunter - survey demographics

Survey demographics

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>19-24</td>
<td>10</td>
</tr>
<tr>
<td>25-35</td>
<td>20</td>
</tr>
<tr>
<td>36-50</td>
<td>30</td>
</tr>
<tr>
<td>51-64</td>
<td>40</td>
</tr>
<tr>
<td>&gt;65</td>
<td>50</td>
</tr>
</tbody>
</table>

Appendix 13: Hunter - monetary expenses

Monetary expenses which affect participation

- Fuel
- Hunting supplies
- Hunting license & tags

Somewhat Discouraging
Extremely Discouraging
Appendix 14: Hunter - age of recruitment

When did you first start hunting?

- 51-64
- 36-50
- 25-35
- 19-24
- <18
- <10

Percent

Appendix 15: Hunter - mentor

Who got you started in hunting?

- Other
- Grandfather
- Uncle
- Friend
- Father

Percent
Appendix 16: Hunter - social factors which affect participation

Social factors which affect participation

- Pressure from spouse
  - Somewhat Discouraging: 5%
  - Extremely Discouraging: 35%

- Pressure from society
  - Somewhat Discouraging: 30%
  - Extremely Discouraging: 25%

- Too many hunters
  - Somewhat Discouraging: 20%
  - Extremely Discouraging: 50%

- Gun Control
  - Somewhat Discouraging: 5%
  - Extremely Discouraging: 90%

- Lack of spare time
  - Somewhat Discouraging: 25%
  - Extremely Discouraging: 5%

- Lack of hunting partner(s)
  - Somewhat Discouraging: 20%
  - Extremely Discouraging: 15%
Appendix 17: Hunter - opportunities and seasons

Opportunities and seasons

- Antler restrictions
- Number of legal animals
- Hunting grounds are too far
- Limited hunting opportunities
- Limited entry hunting system
- Restrictive regulations
- Too much access
- Not enough access
- Open Seasons changing to Limited Entry

Percent

Somewhat discouraging
Extremely discouraging
Appendix 18: Hunter - types of hunters

What kind of a hunter do you consider yourself?

- Trophy
- Selective
- Meat, then selective
- Meat hunter

Number of Hunters

Appendix 19: Hunter - types of hunters vs. difficulty finding game

Do you find it difficult to find legal game?

- Trophy
- Selective
- Meat, then selective
- Meat hunter

Percent

Yes ☐ No ☐
Appendix 20: Hunter - number of responses per animal

Number of responses, animals you like to hunt

- Bear
- Sheep
- Elk
- Moose
- Whitetail Deer
- Caribou
- Mule Deer
- Grouse
- Rabbit
- Geese
- Ducks

Number of responses per animal
Appendix 21: Hunter - favorite animal to hunt

In order of importance, rank the animals you like to hunt

- Bear
- Sheep
- Elk
- Moose
- Whitetail Deer
- Caribou
- Mule Deer
- Grouse
- Rabbit
- Geese
- Ducks

Percent of respondents

<table>
<thead>
<tr>
<th>Bear</th>
<th>Sheep</th>
<th>Elk</th>
<th>Moose</th>
<th>Whitetail Deer</th>
<th>Caribou</th>
<th>Mule Deer</th>
<th>Grouse</th>
<th>Rabbit</th>
<th>Geese</th>
<th>Ducks</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>15</td>
<td>20</td>
<td>30</td>
<td>35</td>
<td>25</td>
<td>40</td>
<td>20</td>
<td>15</td>
<td>20</td>
<td>15</td>
</tr>
</tbody>
</table>

1st choice 2nd choice 3rd choice 4th choice 5th choice
Appendix 22: Non-hunter - hunting is cruel

Hunting is cruel

- No Opinion
- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

Percent

Appendix 23: Non-hunter - wild game tastes good

Wild game tastes good

- No Opinion
- Strongly Disagree
- Disagree
- Agree
- Strongly Agree

Percent
Appendix 24: Non-hunter - hunting is an effective management tool

Hunting is an effective management tool

No Opinion
Strongly Disagree
Disagree
Agree
Strongly Agree

Percent

Appendix 25: Non-hunter - not enough animals to hunt

Not enough animals to hunt

No Opinion
Strongly Disagree
Disagree
Agree
Strongly Agree

Percent
Appendix 26: Non-hunter—not enough Grizzlies to hunt

Appendix 27: Non-hunter - hunting is an effective management tool
Appendix 28: Non-hunter - hunters are the greatest contributors to wildlife conservation

Hunters are the greatest contributors to wildlife conservation

Appendix 29: Non-hunter - hunting is safe

Hunting is safe
Appendix 30: Non-hunter - hunting is for sport

Hunting is for sport

- Strongly Agree: 55%
- Agree: 42%
- Disagree: 3%
- Strongly Disagree: 0%
- No Opinion: 0%

Appendix 31: Non-hunter - bow hunting is cruel

Bow hunting is cruel

- Strongly Agree: 30%
- Agree: 38%
- Disagree: 23%
- Strongly Disagree: 0%
- No Opinion: 9%
Appendix 32: Non-hunter - rifle hunting is cruel

![Bar chart showing opinions on rifle hunting being cruel]

Appendix 33: Non-hunter - hunting contributes to the economy

![Bar chart showing opinions on hunting contributing to the economy]
Appendix 34: Non-hunter - hunting is a male sport

![Bar chart showing the percentage of non-hunters' agreement with the statement 'hunting is a male sport.' The categories are: No Opinion, Strongly Disagree, Disagree, Agree, and Strongly Agree.]

Appendix 35: Hunter - hunting partners

![Bar chart showing the number of hunting partners per hunter. The categories are: No partners, 1 partner, 2 partners, 3 partners, 4 partners, and more than 5 partners. The sample size is N=446.]