LIVING IN BEAR COUNTRY: INCREASING MUNICIPAL COMPLIANCE WITH THE BEAR SMART PROGRAM IN BRTISH COLUMBIA

by

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Bachelor of Arts (History and Political Science), University of British Columbia, 2008

PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF PUBLIC POLICY

In the Public Policy Program
of the
Faculty
of
Arts and Social Sciences

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Spring 2011

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Abstract

Many communities in British Columbia are grappling with the presence of bears in their communities. The Ministry of Environment (MOE) created the Bear Smart Program in 2002 to assist these communities to prevent human-bear conflict. However, at the end of 2010 only two communities have completed the program. This study draws upon informant interviews and local documentation to develop a better understanding of why communities are participating but not completing the Bear Smart Program. This study puts forth a set of recommendations that the MOE can use to increase the completion rates of the Bear Smart Program. It recommends that in the short-term the MOE should focus on building a social consensus around human-bear conflict and in the medium- to long-term that it utilizes a responsive framework to build compliance with the Bear Smart Program and maintain Bear Smart standards in communities.

Executive Summary

Between 1992 and 1999, the Conservation Officer Service (COS) destroyed an average of 1,045 bears a year in communities. Since 2000, the total number of bears destroyed in communities by the COS has dropped to an average of 701 bears a year. Despite the decrease in the number of bear destructions throughout the province, there are still many municipalities grappling with human-bear conflict. From 2000 until 2008, the Ministry of Environment (MOE) has spent more than $9.1 million managing bears, an annual average of just over one million dollars a year. However, the MOE considers much of this conflict preventable through the improved management of bear attractants in communities and recognition of the habitat needs of local bear populations.

In 2002, the Ministry of Environment introduced the Bear Smart Community Program, a voluntary program that assists municipalities to reduce the frequency of human-bear conflict in their jurisdictions. While many municipalities have participated in the program, only two communities have completed all the steps needed to become Bear Smart. This study looks at ways that the Ministry of Environment can increase the number of Bear Smart Communities in the province and thus increase prevention of human-bear conflict, with an emphasis on motivating municipal governments to enact changes to their own practices and institutions. However, improving compliance with the Bear Smart Program is about more than just preventing human-bear conflict. As a community-based stewardship program, it is an important test of the MOE's ability to promote shared stewardship amongst potential partners, particularly municipal governments.

To develop a better understanding of why and how municipal governments enter and progress through the Bear Smart Program, this study examines three communities (Squamish, Coquitlam, and the District of North Vancouver) to determine the similarities and differences in their progress through the program. The research identified that the presence of conflict is not a sufficient condition alone for entry into or completion of the Bear Smart Program. The case

studies also identified that the deliberative environment in which decisions are made about the Bear Smart Program are fluid and tend to mirror the level of conflict in communities. In addition, it identified that only those municipalities that enact changes to their own practices and institutions have internalized the concept of shared stewardship.

The study looks at three options that the Ministry of Environment could implement to increase the number of municipalities that are fully compliant with the Bear Smart Program. The options are:

1. Bear Management Fees: the introduction of a strict liability amendment to the Wildlife Act that allows the Conservation Officer Service to fine communities that are not Bear Smart for any bear management responses undertaken within their jurisdiction.
2. Bear Habitat Stewardship Program: the recruitment of municipal governments by the MOE to offset losses in bear habitat due to land development by enhancing habitat elsewhere within their jurisdiction.
3. Bear Smart Month and Competition: the creation of a month long communications strategy that disseminates the key messages of the Bear Smart Program and calls on communities to compete for the title of Bear Steward of the Year and a grant to be put towards a local bear stewardship project or initiative.

After evaluating these options using the criteria that include ability to promote rule compliance and diffuse stewardship norms, who the option targets, administrative costs, and municipal acceptability, two recommendations are made.

1. The MOE create a Bear Smart Month campaign and competition because of the importance of developing a strong social consensus around human-bear conflict to increase the completion rates of the existing Bear Smart Program.
2. The MOE create a regulatory framework that focuses on building compliance in the short and medium term by closing municipalities' motivation and opportunity gaps to become bear stewards and ultimately Bear Smart Communities. Then in the long term the MOE implement policies that promote sustained adherence to Bear Smart behaviour into the future.

Acknowledgements

I would like to thank Professor Olewiler for providing me with the opportunity to research human-bear conflict and for being supportive throughout the process of writing this capstone.

I would also like to acknowledge the work of Drake Stephens, Christine Miller, Meg Toom, and the other Bear Aware Coordinators throughout the province who shared their experiences with me.

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1: Introduction: Challenges with BC's Bear Smart Program

During the 1990s, British Columbia's Conservation Officer Service (COS) found itself dedicating increasing amounts of resources to the destruction of bears in communities. From 1992 through 1999, the COS destroyed 8,362 bears or an average of 1,045 bears a year (Ministry of Environment 2010). The increase in the level of bear destructions was the result of municipal decision-makers' indifference towards the ecological impacts of community practices and institutions and residents not taking responsibility for the creation of human-bear conflict through the poor management of bear attractants such as garbage. In essence, the problem was a lack of stewardship for the wellbeing of local bear populations at the community and individual levels. In order to build a stewardship ethic and to assist those municipalities that were attempting to reduce the frequency of human-bear conflict in their communities, the Ministry of Environment (MOE) created the Bear Smart Community Program (BSP) in 2002.

The BSP is a voluntary program that aims to increase public safety and improve the conservation of bears. The program recognizes the role that community and individual practices play in "creating" human-bear conflict; it outlines six criteria that communities can undertake to reduce the risk of conflict. The MOE rewards communities that complete all the criteria with provincial designation as a Bear Smart Community and a commitment to use non-lethal bear management techniques, when possible, when responding to bear complaints in that municipality (Ministry of Water, Land and Air Protection 2001).

Since the 1990s, human-bear conflict in communities has declined. From 2000 through 2008, the COS destroyed 6,317 bears or an average of 701 bears a year (Ministry of Environment 2010). However, human-bear conflict persists in several communities throughout BC, which prompted the Minister of Environment to make the following statement in 2008:

> Each year, approximately 700 bears have to be destroyed in BC because they pose a danger to the public while doing what comes naturally – looking for food. What is unnatural about the situation is that too many people are carelessly leaving food and garbage around for bears to sniff out, causing bears to be in places where they shouldn't be. Sadly, a fed bear often becomes a dead bear (Ministry of Environment 2008)

Despite the continued presence of conflict, only two communities have received Bear Smart designation out of over thirty that the MOE has identified as participants in the program (Ministry of Environment 2008). In this study, I address the question of "*how the Ministry of Environment can facilitate municipal governments' completion of the Bear Smart Program.*" A review of the individual criteria completion rates demonstrates that many municipalities are failing to enact the community level changes for which the Bear Smart Program calls. Thus, within this policy problem I focus on how the Ministry of Environment can motivate municipal governments to internalize a stewardship ethic towards bears and complete the community level criteria. I take this focus because I assume that a municipal government that is willing to alter its own behaviours to co-exist with bears will be more likely to pursue Bear Smart status than those that will not.

After reviewing the performance of the Bear Smart Program to date and the strengths and weaknesses of the three policy options in building compliance with the Bear Smart Program, I find that the MOE should build a social consensus around human-bear conflict by implementing a Bear Smart Month Campaign and Competition. Doing so will improve the effectiveness and thus the completion rate of the Bear Smart Program because voluntary instruments, such as the BSP, are less effective when used alone than when they are paired with another regulatory instrument (Gunningham and Grabosky 1998; Bronwen and Yeung 2007). I also recommend that in order to normalize Bear Smart Behaviour, the MOE must commit itself to build compliance not just in the short-term but also in the medium-term and the long-term to maintain the Bear Smart standard in communities. To do this, I recommend the sequencing of the options that I discuss later in this study.

1.1 Study Outline

This study has eight sections. Section 1 introduced the policy problem. In Section 2, I provide a background to human-bear conflict in the province. In Section 3, I examine three communities that are participants in the Bear Smart Program to conduct a cross-case analysis to gain greater insight into communities' participation with the program. In Sections 4 and 5, I introduce the policy options and assessment criteria. In Section 6, I examine how the policy options perform against the criteria. Then, in Sections 7 and 8, I make recommendations and conclude the study with a discussion of the importance of the Bear Smart Program over the next 25 years.

2: Background: Human-Bear Conflict in BC and the Bear Smart Program

2.1.1 Human-Bear Conflict

Human-bear conflict occurs "where wild bears (undesirably) use or damage human property; where wild bears harm people; or where people perceive bears to be a direct threat to their property or safety" (World Society for the Protection of Animals 2010). In British Columbia, it is frequently a consequence of poor bear attractant management, in particular garbage, and land development policies that neglect the habitat needs of local bear populations. Thus, the concept of human-bear conflict suppresses the fact that people often create the conditions that bring humans and bears into conflict. In addition to poor attractant management and land development policies that do not consider the needs of local bear populations, food supply and poor weather conditions can play a role in increasing the incidence of human-bear interactions by increasing bears' willingness to seek out food in communities.

Even though human-bear conflict in BC does not pose a risk to the survival of black bears or grizzly bears (bear destructions represent less than one percent of BC's total bear population), they are significant because bears are a keystone species, a species that has a significant impact on the functioning of the ecosystems in which they live. Bears perform essential tasks that help maintain the health of ecosystems that they occupy. For example, they transfer nutrient rich salmon from rivers to forests and they aerate soils when digging for food. Thus, the continued presence of bears on the margins of communities is an indicator of good ecological health and an intact ecosystem, which residents and tourists to BC value because of the recreational opportunities, educational opportunities, and aesthetic benefits that a healthy ecosystem offers (Ministry of Environment n.d.; Peek, et al. 2003; Schoen 1990). Thus, municipalities' inability to

co-exist with local bear populations will have a negative long-term impact on the ecological health of surrounding areas and the benefits that residents and tourists extract from the community

British Columbia is home to an estimated 16,000 grizzly bears and between 120,000 and 140,000 black bears. The province's 16,000 grizzlies are naturally occurring in 80% of the province and its 120,000 to 160,000 black bears can currently be found in all the province's major ecosystems (Ministry of Environment, Lands and Parks 2001; Ministry of Water, Land and Air Protection 2002). As Figures 1 and 2 demonstrate, bears live throughout the entire province, indicating this is not a regional issue, but an issue that is province wide. Figure 1 shows that BC's black bear population is plentiful on Vancouver Island and moderate in the Lower Mainland. These regions are also the areas where a significant proportion of British Columbians live. Therefore, in BC human-bear conflict does not just afflict rural communities but urban ones as well.

The foundation of human-bear conflict in BC is the presence of communities in productive bear habitat, like valley bottoms and forests, and being in close vicinity to streams and other bodies of water (Davis, Wellwood and Ciarniello 2002). Historically, humans settled in these areas because they offered land that was conducive to travel, food security, and work (particularly in the forestry industry). Bears preferred these areas because their inefficient digestive systems require a home range that maximizes the availability, distribution, and abundance of food and safety (Schoen 1990).

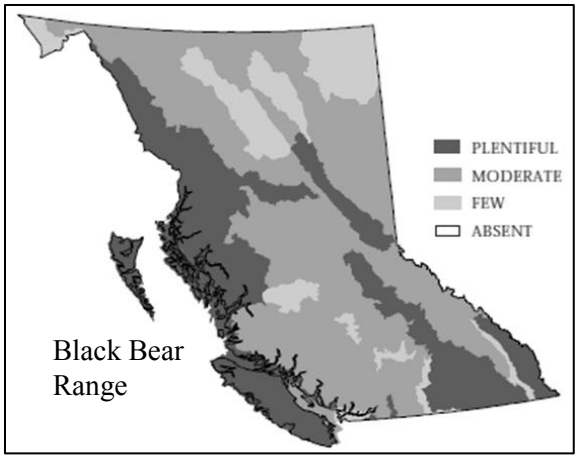

Figure 1Black Bear Range in BC, reprinted with the permission of the Habitat Conservation Trust Fund (Ministry of Environment, Lands and Parks 2001)

Figure 2 Grizzly Bear Range in BC, reprinted with the permission of the Habitat Conservation Trust Fund (Ministry of Water, Land and Air Protection 2002)

2.1.2 Human-Bear Conflict Levels in British Columbia

Because of the number of communities and residents that exist in bear country, human-bear interactions are a normal occurrence throughout much of the province. Between 2000 and 2008, the Ministry of Environment received 116,882 complaints involving bears, an annual average of approximately 13,000. Over that same period, the Conservation Officer Service

attended to 18,742 of those complaints, an annual average of 2,082 responses (Ministry of Environment 2010).

Incidents of serious human-bear conflict that require the Conservation Officer Service to relocate or destroy bears are also common. Figure 3 demonstrates that in BC the most likely outcome for a bear caught in a conflict with a human is destruction. Over the period shown in the table, the dominant response to human-bear conflict was the destruction of the offending bear. There are a few reasons why the COS has reduced its willingness to relocate bears. It is resource intensive; it is more expensive than destroying a bear and it requires a great deal of equipment and personnel to be done safely. In addition, relocation has proven unsuccessful at preventing bears from returning to the areas and activities that got them in trouble initially. Despite all these factors, in many parts of BC the conservation officers are viewed as "bear killers."

As Figure 3 demonstrates, the COS destroyed increasing amounts of bears during the 1990s and in 1998, the number of bear destructions peaked at 1,655. Since 1998, the frequency of bear destructions has declined to 701 bears a year for the period from 2000 through 2008.

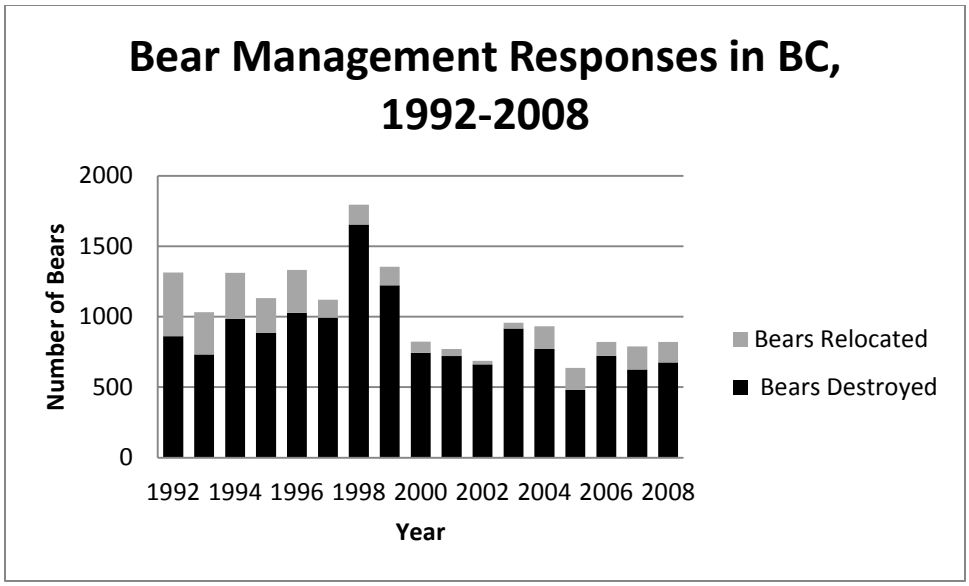

Figure 3 Number of Black Bears and Grizzly Bears Relocated and Destroyed in BC, 1992-2008 (Ministry of Environment 2010).

2.1.3 The Cost of Human-Bear Conflict

The Ministry of Environment has estimated the costs of managing destroying 1,000 bears at approximately one million dollars, which suggests an average management cost of $1,000 per bear (Davis, Wellwood and Ciarniello 2002). The MOE has estimated that the cost of translocating a bear, removing a bear from its home range, is approximately $1,800 (Ministry of Environment, Lands and Parks 1995). The MOE considers the costs of relocation, moving a bear to a different area within its home range, to be similar to that of translocation because of equal equipment and personnel costs. The only difference is the distance travelled to complete the bear management action. In the Ministry of Environment records, there is no distinction between translocation and relocation. Thus, for the purposes of this study the cost of relocation will be assumed to be the same as the cost of translocation. Table 2 shows the costs of human-bear conflict from 1992 to 2008.

Table 1 The Cost of Human-Bear Conflict in BC, 1992-2008

Year	Costs of Bear Destructions (2011 dollars)	Cost of Bear Relocations (2011 dollars)	Total Cost of Bear Management (2011 dollars)
1992	$1,219,011	$1,153,495	$2,372,506
1993	$1,144,657	$747,644	$1,892,301
1994	$1,346,286	$816,467	$2,162,753
1995	$1,205,206	$601,088	$1,806,294
1996	$1,374,780	$738,360	$2,113,140
1997	$1,302,483	$229,641	$1,532,124
1998	$2,144,763	$324,710	$2,469,473
1999	$1,573,242	$306,338	$1,879,580
2000	$936,101	$180,727	$1,116,828
2001	$883,194	$109,804	$992,998
2002	$799,012	$51,954	$850,966
2003	$1,057,890	$86,852	$1,144,742
2004	$879,224	$332,734	$1,211,958
2005	$536,980	$315,753	$852,733
2006	$787,148	$194,865	$982,013
2007	$672,989	$318,291	$991,280
2008	$711,225	$276,619	$987,844
Total	$18,574,189	$6,785,341	$25,359,530

As shown, between 1992 and 2008, the Ministry of Environment spent $25.3 million dollars to manage human-bear conflict in communities. Between 2000 and 2008, the MOE spent $9.1 million, just over $1 million dollars a year, destroying and relocating bears. This is, as the Ministry of Environment recognizes, an inefficient use of tax dollars because it represents money spent on problem management and not on problem solving. In this situation, the shortcoming of managing the problem is that by destroying or relocating "problem" bears peoples' and communities' roles in creating human-bear conflict is not addressed, which means the likelihood of human-bear conflict is not being reduced in the long term. In addition to the costs of managing bears that is borne by the Ministry of Environment, there are private costs. The MOE does not keep records on the extent of private property damage caused by human-bear conflicts, but it estimates that it is several hundred thousand dollars a year.

The act of managing bears is an obstacle to the development of a community stewardship ethic towards bears. In addition, it is important to note that despite the fact that human-bear conflict occurs in communities, the cost to government of human-bear conflict is borne exclusively by the Conservation Officer Service and ultimately the Ministry of Environment.

2.1.4 The Bear Smart Community Program

In 2002, the Ministry of Environment introduced the Bear Smart Program (BSP) to rectify the shortcomings of their previous approach, address the root, or human, causes of human-bear conflict – access to food, and land development.

The Bear Smart Program provided communities dealing with human-bear conflict with a framework with which they could reduce conflict. In essence, it provided communities with the ability to prevent human-bear conflict by illustrating how municipal governments could use the tools and resources at their disposal to prevent human-bear conflict. The BSP contains six criteria that must be completed in order to be designated a Bear Smart Community and receive a commitment from the Conservation Officer Service to use non-lethal management options on bears when possible. This is the essence of shared stewardship. The COS has many options available to it to manage bears, but because of poor waste management and land development policies that neglect the needs of bears, those options are constrained so they have to rely on relocation and destruction of bears. Thus, residents and municipal governments have a significant role to play in the management of bears in the province. Table 1 explains the criteria:

Table 2 Bear Smart Criteria

Criteria	Definition
1. Bear Hazard Assessment	Communities must identify high-use bear habitat in and around the community. Map non-natural attractants within the community and surrounding area that attract and/or are accessible to bears.
2. Conflict Management Plan	Develop the strategies required for the community to reduce bear hazards and the potential for human-bear conflict.
3. Revise planning and decision-making (to be consistent with the conflict management plan	Include consideration of bear habitat and use areas in land-use decision documents. Revise Official Community Plan to reflect the conflict management plan.
4. Continuing education program	Educate residents about living in bear habitat and what to do when encountering a bear.
5. Bear-proof community solid waste management system	Alter municipal practices (collection, disposal, recycling, etc.) to make them bear proof.
6. Bear Smart Bylaw	Introduce bylaws that make it an offence to feed bears intentionally or unintentionally.

The Bear Smart Program requires municipal governments to be advocates for Bear Smart behaviour at the individual or household level through the implementation of a continuing education program and the introduction of Bear Smart bylaws. The BSP also requires municipalities to be enactors of Bear Smart principles and norms through the revision of planning and decision-making protocols and the implementation of a bear resistant solid waste system. At a conceptual level, the Bear Smart Program aims to instil a sense of personal and community responsibility for the welfare of bears. Thus, with the creation of the Bear Smart Program, the Ministry of Environment identified municipal governments as the ideal stakeholder to direct and coordinate communities' efforts to prevent human-bear conflict. The Bear Smart Program enjoys a high degree of acceptability from communities because it helps them to address an on-going problem for which they have responsibility – community safety – and because its voluntary nature allows municipal governments to establish their own pace through the program. This

means that local context and not provincial interests drive progress through the Bear Smart program.

The Bear Smart Program places little additional operational commitments on the Ministry of Environment, as there is no formal links between it and participating municipal governments until they are ready to apply for Bear Smart status. At that point, the MOE reviews the actions that communities have taken to satisfy the six criteria. It is the responsibility of participating governments to oversee the process of becoming Bear Smart themselves.

Since 2000, the Ministry of Environment has provided financial assistance to communities that were interested in reducing human-bear conflict. Between 2000 and 2008, the MOE provided more than $2 million to the BC Conservation Fund to subsidize municipalities' efforts to implement a continuing education (Bear Aware) program in their jurisdictions. In 2009, the ministry provided an additional $90,000 for the BCCF's Bear Aware Program. In recent years, other organizations have started providing funding for Bear Aware Programs within their catchments such as the Columbia Basin Trust. Between 2002 and 2008, the Ministry of Environment provided $635,000 and since then an additional $357,000 to the Habitat Conservation Trust Fund in the form of grants to municipalities to help them implement some of the Bear Smart criteria (Badry 2011) (Ministry of Environment 2008). Therefore, the Ministry has provided almost $3 million dollars in the past decade to prevent human-bear conflict and help residents and communities accept personal and community responsibility for human-bear conflict.

2.1.5 The Bear Smart Program's Results

Between 2002 and 2010, more than thirty communities have participated in the Bear Smart Program (Ministry of Environment 2008). In that time, however, the Ministry of

Environment has only recognized Kamloops and Squamish as Bear Smart Communities. That means that the completion rate for the program is approximately seven per cent.

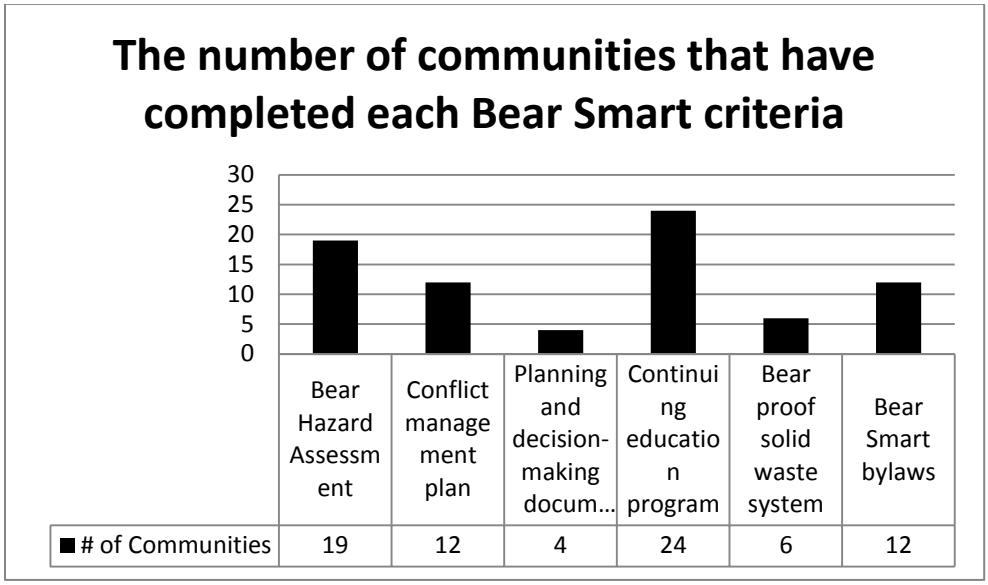

Figure 4 Criteria Completion Data

Figure 4 illustrates the completion rates of each individual criterion. It is evident that the criteria completion rates are uneven. The completion rates appear to fall into high, medium, and low completion rate categories. The criteria with the highest completion rates are the implementation of the continuing education (Bear Aware) program and the completion of a Bear Hazard Assessment. The criteria with moderate completion levels are the completion of a Conflict Management Plan and the implementation of Bear Smart bylaws. The criteria with the lowest completion rates are the revision of planning and decision-making documents and bear proofing the communities' solid waste management system.

From this, one can assume that the Bear Smart Program has had greater success turning municipalities into advocates for preventing human-bear conflict at the individual level. However, the BSP has had limited success in fulfilling its second goal of convincing municipal governments to enact the community level changes for which the program calls. Therefore,

stewardship norms are reaching residents but municipal governments are not internalizing them. The problem with this uneven completion of the Bear Smart criteria is that in many communities engaged in the Bear Smart Program, there is insufficient focus on community level practices, which can either permit or create human-bear conflict, despite the role they play in creating human-bear conflict. Therefore, not only are municipalities not completing the Bear Smart Program, they are also not enacting the changes to their own practices that are necessary to maximize the prevention of human-bear conflict within their jurisdictions.

3: Case Studies: How Have Communities Become Bear Smart?

In this study, I use a case study methodology to examine communities' implementation of the Bear Smart Program. I selected a case study approach because of its ability preserve the relationship between events and the context within which they occurred (Yin 2009). Using a case study, limits the risk of separating communities' Bear Smart efforts from the conditions that lead municipalities to enter and proceed through the program. The use of multiple cases rather than a single case introduces greater nuance to the understanding of the local dynamics that catalyse or impede implementation of the Bear Smart Program and avoids the risk of basing any analysis on the findings of unique cases.

I initially planned to conduct four case studies (Kamloops, Squamish, Prince George, and Coquitlam). These four communities would represent communities that had completed the program (Kamloops and Squamish) and communities that had not (Coquitlam and Prince George). However, I had to abandon the cases for Kamloops and Prince George due to insufficient information. I replaced those cases with a case study of the District of North Vancouver (DNV). The three cases discussed below represent a cross section of communities involved in the Bear Smart Program. The District of Squamish completed the program in 2010, the City of Coquitlam is currently working towards becoming Bear Smart, and the District of North Vancouver has started the Bear Smart Program.

In addition to reviewing available community documentation, such as Bear Aware annual reports and Bear Hazard Assessments, I interviewed several people regarding their communities' efforts to reduce human-bear conflict. The interviewees were:

Table 3 Interview Participants

Community	Name	Title/Position
Coquitlam	Drake Stephens	Bear Aware Coordinator
Coquitlam	Margaret Birch	Environmental Services Coordinator
Coquitlam	Bridget Mitchell	Recycling and Waste Reduction Officer
North Vancouver	Christine Miller	Bear Aware Coordinator
Squamish	Meg Toom	Bear Aware Coordinator
Squamish	Patricia Heintzman	District Councillor

I was able to speak with multiple people in Squamish and Coquitlam and shown in Table 3. However, I was only able to speak with a single person regarding the District of North Vancouver's participation in the Bear Smart Program. While this person was knowledgeable about the DNV's Bear Smart efforts, I was unable to secure the local governments' perspective on human-bear conflict or the Bear Smart Program and I was unable to access certain documents like the DNV's Conflict Management Plan.

In the cross case analysis that follows the case studies, I borrow several concepts and ideas from the literature on Social Marketing and Social Learning Theory. Social Marketing is the use of commercial marketing techniques and ideas to promote a desired, or pro-social, behavioural change. Organizations throughout Canada have used social marketing ideas to promote environmental protection and healthy living (Cheng, Kotler and Lee 2009). The Ministry of Environment's Environmental Stewardship Division has also recognized it as a viable outreach strategy to promote shared stewardship and wildlife conservation (Ministry of Environment n.d.). Social Learning Theory is concerned with how knowledge or information spreads throughout society (Blackmore 2010; Woodhill 2010).The concepts and ideas borrowed from these literatures are defined and explored as they are deployed in the cross case analysis.

3.1.1 The District of Squamish

Located on the Southwest Coast of BC, the District of Squamish is approximately half way between Vancouver and Whistler. Squamish has a population of approximately 15,000 people and has seen considerable growth over the past decade, largely because of its location between the two 2010 Winter Olympics Host Cities.

Squamish is situated on a flood plain created by several rivers. As a result, several parts of the community are in close proximity to riparian habitat, which is highly desirable for bears. The community also possesses several salmon-bearing streams, extensive forested areas, a large trail network, and an abundance of parks. Together these geographical features provide an extensive human-bear interface in the community. Squamish has completed all six Bear Smart criteria and is one of the two communities (the other is Kamloops) that the Ministry of Environment has recognized as Bear Smart.

As Figure 4 illustrates, human-bear conflict levels increased throughout the 1990s and peaked in 1999. During the 1990s, the COS destroyed 153 bears in Squamish. On average, from 1990 to 1995, 10 bears were destroyed per year and from 1996-1999, 23 bears were destroyed annually. After bear destructions rose to 30 in 1999, bear fatalities dropped for several years to an average of two per year from 2000 to 2004. This drop in conflict levels is attributed to improved weather conditions and the reduction of the bear population due to prior bear management kills.

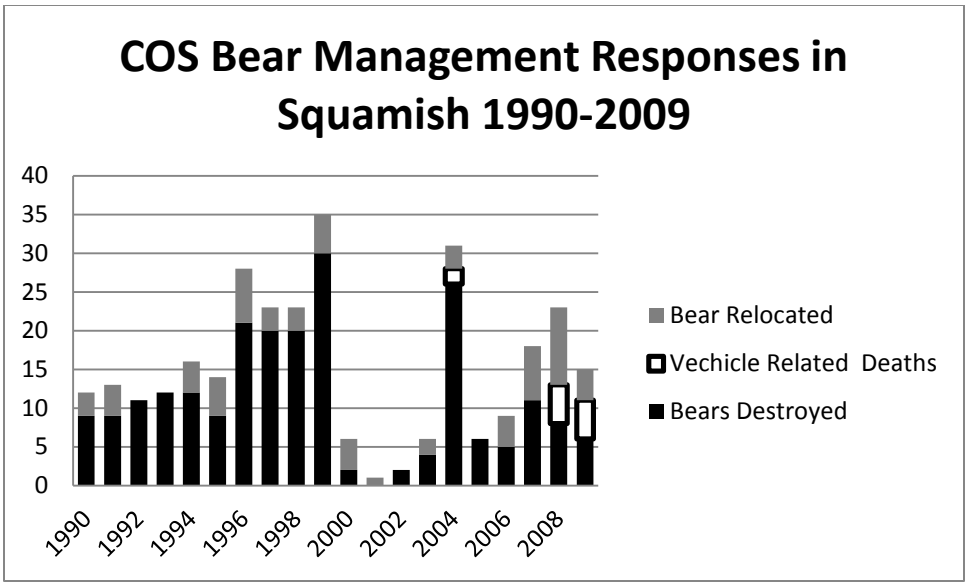

Figure 5 Bear Management Responses in the DOS (McCrory and Paquet 2006; District of Squamish 2010)

In Squamish, 2004 was a significant year for human-bear conflict. The COS destroyed 36 bears in the community, relocated three, and vehicles killed two. The sharp increase was attributed to poor weather conditions, which limited the availability of food, and the recovery of the bear population after a significant number of bears were killed in 1999. Out of concern for the increased incidence of human-bear conflict in the community, several residents formed the Squamish Bear Network (SBN). The SBN attended public events and provided education throughout the community during 2004. Towards the end of the year, two representatives of the SBN approached the Director of Protective Services for Squamish, Chris Doherty, and explained to him what other communities, Whistler in particular, were doing to reduce human-bear conflict and expressed a desire to see their community do the same. Squamish's Department of Protective Services is responsible the municipal department responsible for the community's public safety portfolio including emergency management planning, RCMP, and Fire Rescue.

Subsequently, the two SBN representatives and Mr Doherty approached council. Within a single meeting, they gained a commitment from the district council to co-fund, with the BC Conservation Fund, a Bear Aware coordinator to educate the public about how to prevent human-bear conflict, to fund a Bear Hazard Assessment & Conflict Management Plan, and to establish the Squamish District Bear Working Group (BWG). The district council also declared a desire to become Bear Smart. Council named Mr Doherty the chair of the BWG. The council gave the BWG a mandate to advise the government on human-bear conflict matters. Membership in the BWG was comprised of several municipal departments, including Protective Services, Bylaw Enforcement, Animal Control Services, Solid Waste Management, the Planning Department, and the Recreation, Parks, and Tourism Department. Membership in the BWG was comprised of representatives from the RCMP, the Conservation Officer Service, the SBN, the Bear Aware Coordinator, Carney's Waste Management, and the Squamish First Nations.

During 2005, the BWG conducted a residents' survey to determine local support for changes that would reduce the incidence of human-bear conflict and it commissioned the Bear Hazard Assessment & Conflict Management Plan. During 2005, Squamish had its first full year of full-time public outreach. In May of that year, the municipal government introduced its Wildlife Attractant Bylaw, which prohibited residents and businesses from placing their garbage at the curb before 5 AM on the day of pick-up. Then, in July, Carney's Waste Management purchased $300,000 worth of new garbage totes to work with Carney's new automated waste removal trucks. Despite the fact that council could have retrofitted the bins to be bear resistant, the local government lacked the funds necessary to make the purchase. Bear management responses in the community for 2005 declined to six bear destructions.

In 2006, the author of the Bear Hazard Assessment and Conflict Management Plan presented his work to council. At this point, the district government saw the extensive nature of the program and its potential impact on municipal practices. Squamish received a new Bear Aware Coordinator for the year. Also during 2006, the district restructured its operations and

merged its Protective & Support Services into a single department. Because of this restructuring, Chris Doherty left the Squamish government. While the BWG continued to function, it ceased to be the driver of change in the local government. In 2006, the COS destroyed five bears in the community.

In 2007, the Bear Aware Coordinator applied for and received a $10,000 MOE grant. She used the money to retrofit garbage bins in high-risk areas and developed an Adopt-a-Can program that allowed local businesses to fund partially the replacement of public garbage bins in the community. In 2007, the District began to publish its efforts at becoming Bear Smart in its annual review. Residents in the University Heights subdivision began implementing Bear Smart initiatives such as landscaping their community to reduce the number of bear attractants in the area and installing bear resistant bins in their parks. Throughout 2007, the Bear Aware Coordinator conducted audits to determine compliance with the 2005 Wildlife Attractant Bylaw. These audits identified improved compliance rates. During this year, Squamish required 18 bear management responses from the COS: 11 bear destructions and seven bear relocations.

In 2008, Squamish qualified for a second MOE grant that permitted the Bear Aware Coordinator to purchase bear resistant bins for local schools and public places. A community harvest program was implemented by the Bear Aware Coordinator and resulted in volunteers picking 500 plus pounds of fruit that would have served as a bear attractant had it been allowed to stay on trees. The volunteers then re-distributed the harvest throughout the community. The Bear Aware Coordinator organized a community event entitled "Connecting People with Nature." During 2008, council decided to retrofit the community's household garbage bins. To do this, residents were required to pay, through their property taxes, a one-time fee of $80 or $100 over 5 years. There was some resistance to this decision because many residents had already retrofitted their bins, either through the grants or on their own. These residents were still required to pay for the new garbage totes. During 2008, the COS provided eight bear management responses and five bears were killed in vehicular accidents.

The partnerships developed through the BWG became particularly important in 2008 as the Bear Aware Coordinator worked to implement the changes called for in the community's Conflict Management Plan from outside of local government. During 2008, the Bear Aware Coordinator liaised with Squamish's Planning Department to ensure Bear Smart principles were included in the district's land development applications. The Bear Aware Coordinator, in conjunction with Carney's Waste and the Conservation Officer Service, conducted a bear attractant audit in Squamish's commercial areas to determine compliance with the community's Wildlife Attractant Bylaw.

In 2009, council implemented several changes to its practices in order to reduce the potential for human-bear conflict in the community. Council amended its Wildlife Attractant Bylaw to extend Bear Smart waste management practices to special events and film productions in the community and made non-compliance a ticketable offence. Council also revised the building code to make it mandatory that all new developments possess bear resistant enclosures for garbage. Squamish required six bear management responses in 2009 (all for bear destructions) and vehicles killed five bears. Much of the work conducted by the Bear Aware Coordinator during 2008 and 2009 was made possible by a contact in the Department of Corporate Services who assisted the Bear Aware Coordinator in preparing amendment proposals for bylaws and in teaching the coordinator about the municipal processes relevant to her work.

After the community had made these changes, the Bear Aware Coordinator felt the community had satisfied the Bear Smart Criteria and applied for Bear Smart Status. In October 2010, the community received its status from the MOE. This has not been the end of the community's stewardship efforts, as it is now working towards expanding its stewardship practices to other wildlife in the area. For example, the Bear Aware Coordinator is involved in the revising of municipal bylaws addressing the keeping of chicken coops in residential areas.

3.1.2 The District of North Vancouver:

The District of North Vancouver (DNV) is located on the northern side of the Burrard Inlet, directly north of Vancouver. It is one of three communities, along with the District of West Vancouver and the City of North Vancouver, which comprise the North Shore. Together these three communities contain approximately 175,000 people with approximately 83,000 residing in the District of North Vancouver.

The district is located at the base of the North Shore Mountains and extends part way up its side. It hosts an extensive network of wilderness parks and a large local watershed that provides the ideal conditions for a large population of black bears.

Figure 7 shows the level of human-bear conflict in the North Shore Communities from 1999 to 2010. It shows that conflict levels were high in 1999 then very low until 2005. Since 2005, the community has required an average of 15 bear management responses a year.

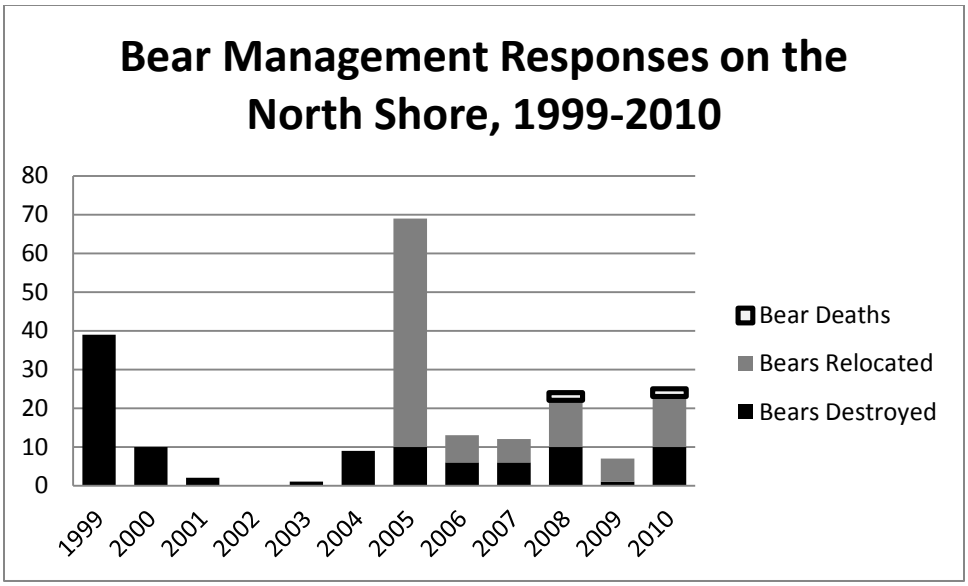

Figure 6 Bear Management Responses on the North Shore (McCrory and Paquet 2006; Miller 2010

The North Shore communities began their efforts to reduce human-bear conflict in 1999. Over the course of 1999, the COS destroyed 39 bears on the North Shore. In response to the high level of bear fatalities, local residents created the North Shore Black Bear Network, which provided outreach to fellow residents about how they could prevent human-bear conflict. From the outset, the NSBBN had representation from many different organizations, including the North Shore municipalities, local conservation officers, and the RCMP. However, volunteers do most of the NSBBN's work. This group meets on a monthly basis to share information and helps residents to address the public safety and environmental considerations that bears pose in the community. Since its inception, it has functioned with limited financial assistance relying heavily on volunteers to conduct presentations and other activities to help reduce the attraction of bears into the community.

In 2001, the DNV introduced a 3-year temporary fee to property taxes to provide revenue for bear awareness education. In 2001, the district started installing signage throughout the community to alert residents to the presence of bears in the area and the NSBBN convinced the DNV council to declare 2001 the Year of the Bear within the municipality. In 2003, the District of North Vancouver and the NSBBN began a municipal Bear Line to allow residents that required assistance with bear related issues to contact a person in the area who could provide information and, if necessary, attend the call immediately. In general, 2000 to 2005 saw reduced levels of bear fatalities throughout the North Shore. The COS destroyed 10 bears in 2000, two in 2001, zero in 2002, one in 2003, and nine in 2004 to total 23 bears killed over five years.

In 2004, the number of human-bear conflict complaints to the MOE Report all Poachers and Polluters line rose to over 2,500. In addition, the COS identified approximately 20 orphaned bear cubs on the North Shore. These orphan cubs were malnourished and many residents, upon seeing these cubs, chose not to contact the COS out of a fear that they would kill them. As a result, the bears spent considerable time in close proximity to humans. The MOE considered these cubs to have a low likelihood of survival without their mothers because they deemed the

cubs to be food conditioned and human habituated. Thus, the COS's standard operating procedure required the conservation officers to euthanize the cubs. This resulted in their destroying six cubs and a negative community response, including a campaign run by local youth to save the remaining orphan bears. This community reaction motivated the MOE to reverse its decision and decide that they would attempt to rehabilitate the remaining cubs.

In 2005, the North Shore communities were home to an estimated 100 bears, which would give the area a bear population density equal to some of the best natural bear habitat in the province. The high numbers also meant that human-bear conflict remained a prominent issue in the DNV during 2005. During this year, there were several incidents of bears breaking into homes and cars, breeding in urban areas, and raising their cubs exclusively on garbage. The community discovered that some bears were not hibernating, but continuing to enter residential areas throughout the winter to access foods. Because of these factors, the COS destroyed 10 bears and relocated 59 bears from the North Shore.

During 2005, the North Shore communities also took the step of co-funding two Bear Response Officers (BROs), conservation officers who focus exclusively on bear management. While the neighbouring community (the District of West Vancouver) implemented bylaws to reduce the availability of bear attractants in the community. The DNV government elected to rely on the conservation officers to ticket households that were managing their waste poorly. The DNV also co-funded and hosted two Bear Aware Coordinators (along with the DWV). In response to the high amounts of human-bear conflict, the North Shore Bear Working Group was established. The working group was comprised of members from the DNV, DWV, the City of North Vancouver, Bear Aware, and the Conservation Officer Service. The Districts of West and North Vancouver jointly commissioned a Bear Hazard Assessment for their municipalities. Additionally, the NSBBN volunteers formed the North Shore Black Bear Society. The creation of the NSBBS allows the volunteers to have representation within the NSBBN and to qualify for liability insurance for any advice given to residents.

In 2006, The North Shore's Bear Hazard Assessment was completed and submitted to the North Shore Bear Working Group. The DNV commissioned a human-bear conflict management plan. The DNV government elected to rely on Bear Response Officers' enforcement of the Wildlife Act instead of amending and enforcing its own waste management bylaw to improve residents' management garbage. During this bear season, the BROs issued approximately 50 Dangerous Wildlife Protection Orders. In 2006, the COS conducted 13 bear management operations on the North Shore (six bear destructions and seven relocations).

In July 2007, the DNV introduced a bylaw that prevented residents from putting their garbage at the curb prior to 5:30 AM on the morning of pickup. The penalty for contravention of this bylaw is $100. The DWV established a more expansive bylaw that prohibits leaving any wildlife attractants outdoors unless they are in a wildlife resistant enclosure. The DNV bylaw does not address the storage of garbage during the remainder of the week and thus does little to prevent residents from storing their garbage in areas that are accessible to bears.

In 2008, a local resident and former volunteer from the NSBBS took over the Bear Aware position. The switch to a local Bear Aware Coordinator from a non-resident was significant because it allowed for the development of long-term partnerships with other organizations and people. An example of this is the partnership with the North Shore Recycling Program and efforts to ensure people are recycling in a manner that does not attract bears. In 2008, the NSBBS started providing additional funding to the Bear Aware Coordinator that allows her to continue her work beyond the Bear Aware contract. During 2008, the community had 24 bear management responses (10 destroyed, 12 relocated, and two died in the community).

In 2009, the North Shore Black Bear Society began working in partnership with the DNV's bylaw enforcement department to conduct audits to determine residents' compliance with the district's waste management bylaws. The North Shore had only seven bear management incidents (one bear destroyed and six relocated).

In 2010, the MOE cancelled the Bear Response Officer position on the North Shore. During 2010, the DNV purchased and sold bear resistant bins to residents that were interested in obtaining one and provided an additional $15,000 to continue the work of the Bear Aware Coordinator beyond her original contract. During 2010, the Bear Working Group became defunct when the CO responsible for its creation was transferred to a different position within the COS. Enforcement of the Wildlife Act has been difficult because of equity concerns on the behalf of the COS. It is difficult to issue a Dangerous Wildlife Protection Order to one household when the infraction is a common one in the neighbourhood. In 2010, the North Shore had 23 bear management responses (10 bears destroyed, 13 relocated, and 2 bear deaths within the community). To date, the DNV has completed four out of six criteria: It has conducted both a Bear Hazard Assessment and a Conflict Management Plan; it has implemented a Bear Aware educational program, and introduced bylaws to limit the availability of bear attractants within the community.

3.1.3 The City of Coquitlam:

The City of Coquitlam is located east of Vancouver between the Pitt River, the Fraser River, and the North Shore Mountains. The municipality possesses wetlands, the salmon-bearing Coquitlam River and its tributaries, and a large number of wildlife corridors that provide bears access to considerable portions of the community. Coquitlam has approximately 115, 000 residents and has grown by approximately 20% between 1996 and 2010 (BC Stats 2011; BC Stats 2011). The community's growth has created an expanded human-bear interface as high quality bear habitat was converted into residential, commercial, and industrial lands.

The documented history of human-bear interactions in Coquitlam goes back to 2003. Figure 7 shows the annual level of bear complaints from Coquitlam's residents to the Ministry of Environment from 2003 through 2009. The general increase in the number of bear complaints to

the MOE's Report All Poachers and Polluters (RAPP) phone line shows that human-bear interactions in the community were on the rise during the early to mid-2000s. However, it was not until 2005 when weather conditions resulted in a shortage of natural food that complaints started to result in the destruction of bears. In 2005, the COS provided 12 bear management responses in the community (seven bears were destroyed and five were relocated).

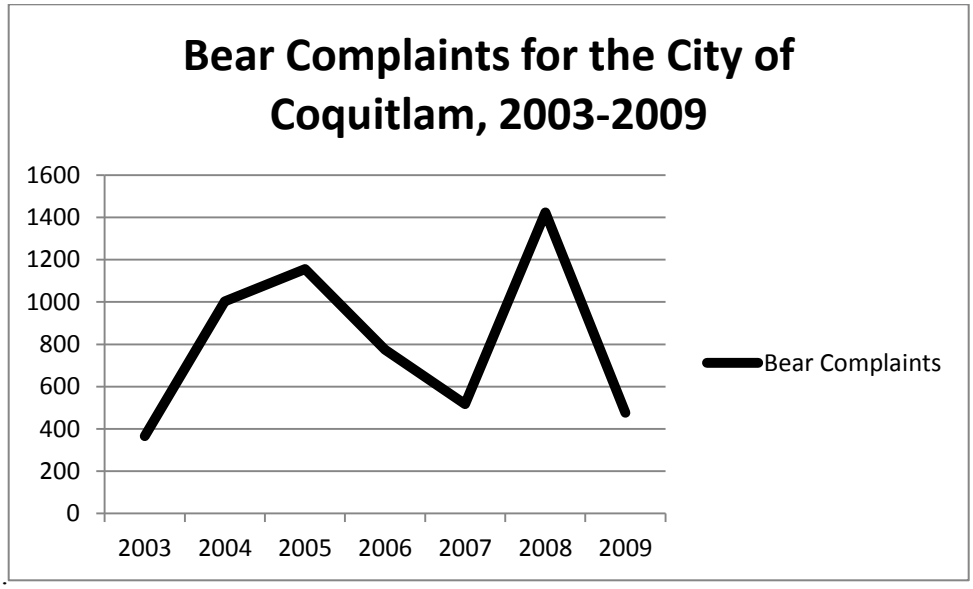

Figure 7 Bear Complaints for the City of Coquitlam, 2003-2009 (Stephens 2010)

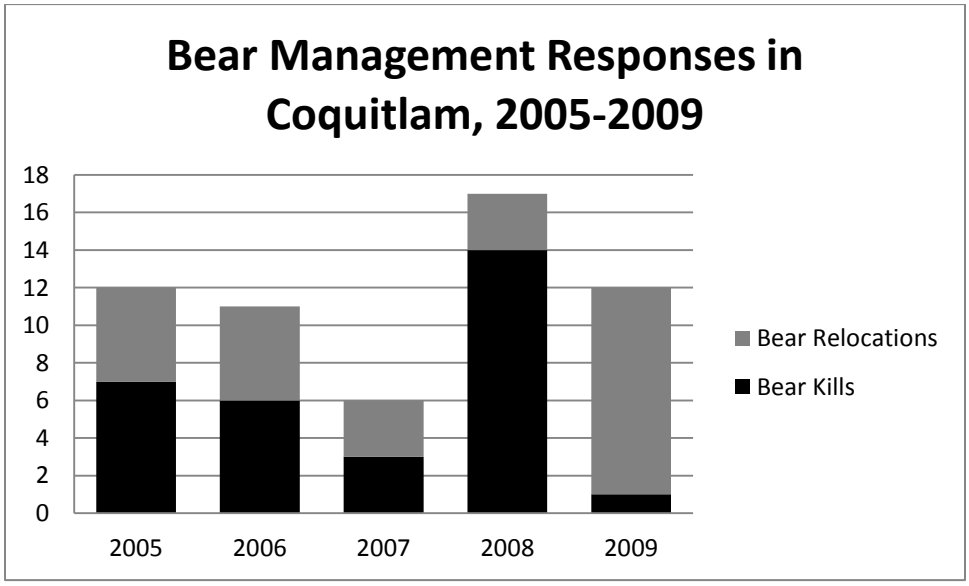

Figure 8 Bear Management Responses in Coquitlam, 2003-2009 (Stephens 2010)

In 2006, the MOE's Wildlife Conflicts Coordinator made a presentation to Coquitlam's council because of community plans to develop up the base of Burke Mountain and transform what had previously been forested green space into housing for approximately 24,000 new residents. In this presentation, the MOE representative advocated to council that they implement the Bear Smart Program in this new area. In response to this presentation, Coquitlam co-funded a Bear Aware Coordinator (with the BC Conservation Fund) and commissioned a Bear Hazard Assessment, which the Department of Engineering and Public Works funded out of its budget.

In 2006, human-bear conflict in Coquitlam was generally limited to a small portion of the community referred to as the North East Sector. Because of this, a few councillors argued that human-bear conflict was not a community problem but a neighbourhood one and did not want to see implementation of the Bear Smart Program disrupt residents who did not have any human-bear conflict issues. In an effort to address the areas that did see human-bear conflict and recognize the geographical nature of the problem, city council declared the NE Sector an Identified Bear Activity Area and the rest of the community was excluded. In 2006, council amended its garbage management bylaws to introduce a time constraint on when residents could place their garbage curbside for pickup. However, due to a negative reaction from some residents and council members, council amended the bylaw but still permitted the overnight curbside storage of garbage. The topic of limiting the placement of garbage on the curb the day of pickup was a controversial subject and, as a result, the new Bear Aware Coordinator received directions from municipal staff to focus exclusively on public outreach and building local awareness, rather than advocate for bylaws or any other government response to human-bear conflict.

After amending the waste management bylaw, the local government issued notices to residents of the identified bear activity area of the need to begin using bear resistant bins. However, residents were unsure of what this entailed and began contacting the government for

clarification on this point. The city government did not have a response for this inquiry and so it decided to conduct a pilot project the following year. In 2006, 11 bear management responses occurred (five bear relocations and six bears were destroyed).

In 2007, Coquitlam received a $15,000 MOE grant applied for by the community's Recycling and Waste Reduction Officer to conduct a Bear Resistant Pilot Project. Through this project, the local government provided 300 plus households with one of three types of bear resistant bins. A year later, the city surveyed the participants to determine which bin was the most effective at limiting access to bears and the easiest to use. Coquitlam received its completed Bear Hazard Assessment from its author in December of 2007. In 2007, complaints regarding bears declined to 517 calls and only six bear management responses were conducted in the community (three bears were destroyed and three relocated).

Rather than immediately presenting council with the results of the study in early 2008, the GM of Engineering and Public Works had staff review the hazard assessment and draft a list of concrete recommendations. This work took place over the course of 2008 and required consulting with staff from other departments to determine how the city could alter its operations to reduce interactions with bears. Together the group drew up 53 recommendations to present to council, half of which did not require council approval to implement and staff had already changed. The staff members who led this process were the community's Environmental Services Coordinator and the Recycling and Waste Reduction Officer. There were no formal structures created to help manage this process.

The work became increasingly important as 2008 progressed because human-bear conflict became a significant community issue. Partly due to the success of the Bear Bin Pilot Project in deterring bears from accessing garbage in the identified bear activity area, bears started appearing in different parts of the community where they had rarely been before. A bear mauled a woman in her front yard, which raised awareness of the severity of the issue. The number of bear complaints to the RAPP line rose from 517 in 2007 to 1424 in 2008 with an additional 2000

plus calls made to Coquitlam's RCMP detachment. When the year was complete, the COS had managed 17 bears in the community (12 were destroyed and five relocated).

Coquitlam's council responded to the increase in human-bear conflict and the recognition that it was a public safety issue by declaring its intention to become Bear Smart. Council extended the identified bear activity area to encompass the new distribution of the problem and following the example of other Lower Mainland governments (Port Moody, Port Coquitlam, the District of North Vancouver, and the District of West Vancouver) amended its bylaws to prevent residents from leaving their garbage at the curb overnight prior to the day of pickup. Council spent $130,000 to replace garbage receptacles in public places with bear resistant bins.

In 2009, the city government started making the micro level changes that city staff had drawn up for council. One such decision was the founding of the Tri-City Advisory Group by Coquitlam to help synchronize efforts across the region (Port Moody and Port Coquitlam). Another was the inclusion of Bear Smart language and norms into the development plans of the neighbourhoods that comprise the identified bear activity area. In 2009, the number of bear complaints declined to 476 and the number of bear management responses decreased to 12 (one bear destroyed and 11 relocated).

Coquitlam linked the Bear Smart Program to its substantive goals in 2009 when it released its 2009-2011 Strategic Plan. Staff linked the Bear Smart Program to two of the community's long-term goals as encompassed in its Official Community Plan, enhancing the sustainability of city services and infrastructure by improving community safety and strengthening neighbourhoods by minimizing impacts to the environment.

In 2010, the Coquitlam government did not qualify for the co-funding of a Bear Aware position. As a result, the community decided to finance the position alone, although a debate did occur about the merits of continuing with the program without any assistance from the MOE. Due to declining financial assistance from the MOE, the Mayor of Coquitlam and other members of the Mayors' Council issued a letter to the MOE requesting a reinstatement of funding. During

the summer of 2010, Coquitlam had a sharp increase in the number of bears destroyed in the community. In the course of approximately ten days, the COS destroyed four bears because of poor waste management in a new development. The Mayor publically spoke about increasing the fine for feeding dangerous wildlife from $500 to $5,000. Coquitlam's response to the increase in bear fatalities was to enforce its waste management bylaws. Since 2006, when the community first amended its waste management bylaw, no tickets had been written. An audit of the identified bear activity area identified at least 700 residences were in non-compliance with the bylaw. The city sent 3,000 letters to residents and the Bear Aware Coordinator conducted follow up visits to gain compliance. The other communities in the Tri-City area adopted a similar strategy to address non-compliance with waste management bylaws in their jurisdictions.

Coquitlam still has several criteria to complete before it can apply for Bear Smart Status, such as amending the Official Community Plan, but it is working towards that goal. The City of Coquitlam has completed four of the six Bear Smart criteria. It has conducted a Bear Hazard Assessment and is working on its Conflict Management Plan; it has implemented a continuing education program, Bear Smart bylaws, and has bear proofed the waste management system in the majority of the community.

3.2 Cross-Case Analysis

The analytic framework for the cross case analysis is borrowed from the Social Marketing literature. The framework, the Trans-theoretical Model of Behaviour Change or Stages of Change Theory, proceeds from the assumption that behavioural change is not a dichotomous choice but a five-stage process (Hastings 2007). The premise of this assumption is that behavioural change requires "high involvement" decision-making in which actors think deeply about the desired behaviour and study relevant information before deciding if and how to proceed (Andreasen 2006). Table 6 shows the five stages of change (pre-contemplation,

contemplation, preparation, action, and maintenance), their definitions, and the corresponding phase of the Bear Smart Program.

Table 4 Stages of Change (Andreasen 2006; Hastings 2007)

Stage of Change	Definition	Corresponding Period in BSP
1. Pre-contemplation	Target audience is not thinking about the promoted behaviour.	This is the period after the creation of the Bear Smart Program by the MOE and prior to human-bear conflict becoming a municipal problem.
2. Contemplation	Target audience is thinking about the promoted behaviour and related benefits and costs.	This is the period after human-bear conflict becomes a municipal problem and before municipalities elect to participate in the BSP.
3. Preparation	Target audience prepares itself for change behaviour.	This is the period prior to the receipt of the findings of the Bear Hazard Assessment and/or Conflict Management Plan.
4. Action	The target audience is in the process of changing behaviour.	Municipalities alter their own practices.
5. Maintenance	The target audience acts to preserve the behavioural change.	This is an on-going stage within the Bear Smart Program that can commence once communities enter the preparation stage.

Because of the dual responsibilities of municipalities in the Bear Smart Program, to advocate for individual level changes while enacting community level changes, there is an overlap between the stages. The municipalities examined in the study appear to merge the preparation, action, and maintenance stages because they are advocating personal responsibility while learning about how their own practices and institutions promote or allow human-bear conflict. Additionally, the maintenance stage, which appears as a terminal stage for behavioural

change is, in the context of the Bear Smart Program, an on-going process as municipal governments are conducting audits of households while still implementing changes to their own practices or in the case of the District of North Vancouver despite not enacting changes to their own practices.

One limitation of the application of this theory to the context of the Bear Smart Program is that it does not identify what prompts an actor to move from one stage to the next. Despite this shortcoming, I consider this an appropriate analytical framework to convey communities' progression through the Bear Smart Program because it allows me to disaggregate the Bear Smart process into management sections while preserving the link between the context in which decisions were made and decisions themselves.

3.2.1 Precontemplation Stage

The pre-contemplation stage varies in length in the cases. In Squamish, it is two years in length (2003-2004). In Coquitlam and the District of North Vancouver, it is three years in length (2003-2005). Squamish and the District of North Vancouver are communities of chronic human-bear conflict. Accordingly, during their precontemplation periods they experienced some human-bear conflict. Coquitlam, during this stage, was not a site of chronic conflict because the COS was not required to manage bears within the jurisdiction. However, during this period the community experienced an increase in human-bear interactions (as measured in complaints to the MOE) of 250% from 336 in 2003 to 1,155 in 2005 (Stephens 2009).

During this period, Squamish and the DNV experienced relatively low levels of human-bear conflict. The Conservation Officer Service only destroyed two bears in Squamish during this period, which is considerably lower than its average from 1996 through 1999. The DNV averaged four bears during this period, which is substantially lower than in 1999 when the COS

destroyed 39 bears in the community. Prior to 2005, Coquitlam had not had an incident of human-bear conflict that required the destruction of bears. In 2005, it had seven.

I make three inferences about the pre-contemplative stage from this information. In areas of chronic conflict, such as Squamish and the DNV, some levels of conflict are socially acceptable, which is why grassroots organizations developed in years of unusually high conflict (1999 in the DNV and 2004 in Squamish) and why communities that are experiencing human-bear conflict are not immediately adopting the Bear Smart Program. Closing the ability gap is insufficient to promote behavioural change in communities. If this were not the case, then municipalities would have immediately adopted the Bear Smart Program rather than allowing several years to pass before considering the program. The presence of conflict is not what prompts communities to think about human-bear conflict. Rather, the evolution from relatively low to relatively high levels prompts consideration of a community's human-bear conflict problems.

3.2.2 Contemplation Stage

Squamish, Coquitlam, and the District of North Vancouver entered this stage in 2004, 2005, and 2005, respectively. All of these communities entered this stage because of disruptive events. Social learning theorists use the concepts of a disruptive event to refer to an occurrence that provokes official recognition of a problem and makes decision-makers more receptive towards new ideas and solutions (Schon 2010).

In Squamish, the disruptive event was the increased frequency of human-bear conflict in the community throughout 2004. In Coquitlam, it was the sudden presence of conflict in 2005. In the DNV, the disruptive event was the increase in the number of bear management responses, in particular the number of relocations that the COS was required to perform. While these disruptive events are slightly different, they all had the impact of rendering municipal decision-

makers more receptive to solutions to their communities' human-bear conflict issues. Thus, the disruptive events close the motivation gaps that prevented adoption of the Bear Smart Program. This is because the disruptive events drew attention to the community safety risks that accompany the increased presence of bears in communities and it made communities willing to entertain the notion that they should act to prevent conflict.

Common to all three cases was the beginnings of the Bear Smart Program in the communities. Despite the fact that at this stage the municipal governments considered human-bear conflict to be a community problem, none of the municipal governments raised the subject of participating in the Bear Smart Program. Instead, communities had their preference for reduced human-bear conflict supplied by public entrepreneurs. In this case, the public entrepreneurs were people who aided municipal governments in the process of learning about new problems and solutions because they connected decision-makers with solutions to their problems – the Bear Smart Program (Schon 2010). Public entrepreneurs close the opportunity gap that exists within the community by facilitating the transition between thinking about the problem of human-bear conflict and actually solving it. In Squamish and Coquitlam, the municipal governments accepted the recommendation of the public entrepreneur.

In Squamish, the public entrepreneurs were two representatives from the Squamish Bear Network and the Director of Protective Services in the municipal government. In Coquitlam, the public entrepreneur was a MOE employee, the Wildlife Conflict Coordinator. In the DNV, the entrepreneur was the manager of the Bear Aware program. Despite the diversity of the public entrepreneurs, the all performed the same fundamental task: they linked the municipal government's desire to reduce human-bear conflict with an approach that could satisfy that need.

Another related observation is that the public entrepreneurs did their work during or immediately after the disruptive event. In Squamish, it was after bear season when the two Squamish Bear Network representatives and the Protective Services Director promoted the Bear Smart Program to council. In Coquitlam, it was in the aftermath of its first year of human-bear

conflicts resulting in bear destructions. In the DNV, the creation of a Bear Aware Coordinator position occurred during the elevated incidence of bear relocations in 2005. Thus, the public entrepreneurs gain initial buy-in and commitment to the program before the deliberative environment changes, which allows decision-makers to see the benefits of the program from the outset.

I draw three conclusions about communities' contemplation stage. Disruptive events provide the motivation for communities to seek solutions to their human-bear conflict issues. Contemplation on human-bear conflict alone is insufficient to warrant entry into the Bear Smart Program because municipal councillors appear to be unaware of the program's existence. Public entrepreneurs expose municipal councillors to the Bear Smart Program and thereby provide communities the opportunity to participate in the program.

3.2.3 Preparation Stage

Squamish entered this stage in early 2005 and Coquitlam and the DNV entered the stage in early 2006 when they commissioned their Bear Hazard Assessments to determine the local causes of human-bear conflict. Therefore, these communities entered this stage prior to the beginning of the first bear season following the year of elevated human-bear conflict. Communities' length of time in this stage varies. Its author delivered the findings of the Squamish Bear Hazard Assessment and Conflict Management Plan to Squamish council in early 2007. In Coquitlam, city staff worked through their Bear Hazard Assessment, which resulted in an extended preparation that culminated in late 2008. Like Coquitlam, the DNV entered this stage in 2005 with the commissioning of the North Shore Bear Hazard Assessment. I was unable, however, to locate the DNV's Conflict Management Plan and thus am unsure when it completed this stage, although I expect that it was in 2007 or 2008.

The length of time that communities were in this stage affects how the communities proceeded upon learning what was required to reduce human-bear conflict in their communities. It means that communities view the results of this learning process in a different deliberative environment than the one in which the documents were commissioned. In Squamish, after having 29 bear management incidents and three vehicle related bear fatalities in 2004, the community had five incidents in 2005. Coquitlam experienced a second disruptive event in 2008 when a resident was mauled by a bear in her front yard, which increased residents' risk assessment of bears as evidenced by the increase in bear complaints to over 3,400 (>1,400 complaints to the MOE and approximately 2,000 to the local RCMP detachment). In the DNV, if I am correct about the district government receiving its conflict management plan, the community had two years of relatively low conflict that required only 13 and 12 bear management responses in 2006 and 2007, respectively.

While waiting for these results, all of the communities made the same generic responses to the presence of conflict in their community. The responses are generic because they do not require the knowledge contained in the Bear Hazard Assessments of the Conflict Management Plans. They all introduced Bear Smart bylaws and they implemented a continuing education (Bear Aware) program in Coquitlam and Squamish. Therefore, before entering the action phase, the municipal governments had already completed two-thirds of the Bear Smart Program. The introduction of a continuing education program and the amendment of community waste management bylaws share a common downstream orientation. A downstream intervention is an effort to alter behaviour in the public exclusively, or to advocate for individual level behavioural change amongst residents (Hastings 2007). The criteria completed by communities in this phase focus exclusively on building an attitude of personal responsibility for human-bear conflict through the provision of information to residents and changing behaviour through the amendment of bylaws.

As shown in figure 2, the completion rates after this point in the Bear Smart Program drop significantly between the criteria completed in this stage of the BSP and in the action phase of the program. There are two possible reasons for this sudden drop in completion rates suggested by this information. One is that when human-bear conflict declines to acceptable levels, municipal leaders become conservative in their deliberations and no longer consider the issue a significant one in the community. Additionally, it could be the result of municipalities associating the drop in conflict with the actions taken, which reduces the need to pursue the other Bear Smart criteria. Regardless of the reason, the result is a strategic implementation of the Bear Smart criteria.

Municipalities' actions throughout this stage demonstrate that the deliberations on human-bear conflict are changing annually. This is because of the length of time it takes municipalities to receive the findings of their investigations into the community-specific causes of human-bear conflict and that human-bear conflict usually declines immediately after a disruptive event because the local bear population needs time to replenish itself. The character of conflict between humans and bears does not lend itself to constantly heightened risk perceptions.

Municipalities' implementation of a continuing education program and amendment of bylaws to improve waste management should not be considered evidence of substantive compliance with the Bear Smart Program but rather a reaction to the disruptive events, which is why they occur immediately following the disruptive events and before municipalities receive their hazard assessments and conflict management plans.

3.2.4 Action Stage

This is a crucial stage in the Bear Smart Program because it is at this point that municipalities take on their second responsibility within the program, specifically they enact the community level changes required to minimize human-bear conflict. Thus, it is only at this stage

that municipalities can be said to have internalized the substantive goal of the Bear Smart program which is to get communities "to accept personal *and community* responsibility for reducing human-bear conflict in and around communities" (Davis, Wellwood and Ciarniello 2002). Only Squamish and Coquitlam arrived at this point in the Bear Smart process. Squamish reached it in 2007 and completed it in 2010 when it received Bear Smart status. Coquitlam entered this stage in 2009. The DNV has not entered this stage of the Bear Smart process because the municipal government decided not to enact the recommendations included in the community's Conflict Management Plan. Squamish and Coquitlam arrived at this stage in different ways.

Squamish had committed to completing the Bear Smart Program in 2004 with the introduction of the program to council. This early commitment is the result of a pre-existing stewardship ethic embedded in the community's Official Community Plan. Thus, Squamish's council recognized immediately that the program was in their community's self-interest because the community had already stated its preference for stewardship activities. Coquitlam committed to the completion of the Bear Smart program at the end of 2008, motivated by its second disruptive event, which brought increased awareness to community efforts to prevent human-bear conflict.

Social marketers argue that communities can have several identities within a behavioural change initiative. The two identities applicable to the Bear Smart Program are that of advocate and enactor. As an advocate, the municipal government provides resources that allow a behavioural change campaign to reach the public. This is what occurs when municipalities agree to co-fund a continuing education program. Municipal governments fulfil the enactor role when they allow a campaign to alter community level practices (Andreasen 2006). Communities' commitment to completing the Bear Smart Program is significant because it renders municipal governments targets of the program and not just intermediaries.

It is at this point when communities allow themselves to be targets that they can be considered to be in substantive compliance with the Bear Smart Program. Substantive compliance occurs when actors and organizations possess a commitment to the collective goals of a program and not just a commitment to its rules (Yeung 2004). This general commitment to completion of the Bear Smart program demonstrates substantive compliance because it reflects recognition of the disruption Bear Smart norms and principles will have on municipal practices and it signals an acceptance of that disruption because municipal leaders want their communities to co-exist with bears.

A feature of this stage, which both Squamish and Coquitlam share, is the emergence of an agent of change. An agent of change is a person who is willing and able to manage the recommendations of their respective communities' investigations into human-bear conflict and work with relevant city staff to implement necessary changes. In Squamish and Coquitlam, the Bear Aware Coordinator and the Environmental Services Coordinator, respectively, fulfilled this role. It was only through the work of these actors that the Bear Smart Program could achieve its upstream objectives of changing municipal practices and institutions (Hastings 2007). An upstream orientation is important because it allows the Bear Smart Program to change the social environment that can create or permit the behaviours that cause human-bear conflict.

3.2.5 Maintenance Stage

All three communities have acted to prevent a relapse into the behaviours after the introduction of waste management bylaws. In Squamish and the DNV, this has been an on-going process involving the Bear Aware Coordinators, bylaw enforcement, and in Squamish the local waste management company. Coquitlam only began conducting maintenance operation in the aftermath of its third disruptive event. Prior to that, the Coquitlam government was reluctant to issue fines until people had been thoroughly educated about the need to properly store and

dispose of their garbage. In 2010, conservation officers had to destroy several bears over the course of a few days, which returned attention to the importance of managing bear attractants. In response to these bear fatalities, the city conducted an audit and found that over 700 households were in non-compliance with the community's waste management bylaw. As a result, the city started to enforce its waste management bylaw and improved compliance rates. In 2010, in the DNV the COS was reluctant to issue dangerous wildlife protection orders for poor waste management because the problem was not a few households but whole neighbourhoods.

This demonstrates that the municipal government rather than the Conservation Officer Service is the organization in the best position to ensure the proper management of bear attractants. This is because they possess the personnel, resources, and time to address poor bear attractant management community-wide, whereas the COS can only do it on a household-by-household basis. However, this is only if the political will is present at the local level to hold people accountable for creating human-bear conflict and that residents understand the drivers of conflict so they do not believe that municipal bylaw enforcement staff are just blaming the victim.

3.2.6 Summary of Key Points

Table 5 Summary of Key Findings from Cross Case Analysis

Stage of Change	Key Points
1. Precontemplation	1. Communities that have a history of conflict are accepting of certain levels of conflict. 2. The existence of the BSP, which provides communities with the ability to reduce human-bear conflict, is insufficient to prompt communities to participate in the program. 3. The transition from low levels to high levels of conflict is responsible for moving communities from a pre-contemplation to contemplation stage.
2. Contemplation	1. Disruptive events (changes in the quantity or quality of human-bear conflict) motivate communities to search for solutions to their human-bear conflict problems. 2. Public entrepreneurs connect municipal governments with the Bear Smart Program and thereby provide municipalities with an opportunity to address their human-bear conflict issues. 3. Initiation of the Bear Smart Program is a reaction to the sudden increase in human-bear conflict levels in the community.
3. Preparation	1. The deliberative environment in which communities receive information about local causes of conflict is different from the environment in which it was ordered. 2. Communities implement Bear Smart criteria at this stage but it is not a reflection of substantive compliance. It is a reaction to a disruptive event. 3. Communities fulfill their role as advocates for individual level changes to reduce conflict. 4. Communities do not move beyond this stage unless they have accepted collective responsibility for human-bear conflict.
4. Action	1. Substantive compliance can be assumed at this stage because municipalities are changing their own behavior instead of just facilitating individual level change. 2. Agent of change emerges to manage Bear Smart Program and enact the community level changes required to reduce human-bear conflict.
5. Maintenance	1. Non-compliance with bylaws is common. Municipalities are the best situated actor to gain and maintain compliance if the political will is present. 2. Compliance with bear attractant bylaws requires enforcement the threat of compliance.

4: Policy Options: How Can the MOE Increase Compliance?

The case studies demonstrate that municipal governments require the motivation, opportunity, and ability to begin and complete the Bear Smart Program. This means that to address the policy problem of *"how the MOE can facilitate municipal governments' completion of the Bear Smart Program,"* specifically how to make local governments alter their own practices to reduce human-bear conflict, the MOE needs to address the motivation, opportunity, and ability gaps that are preventing municipalities from becoming Bear Smart.

The literature identifies five categories of instruments designed that can promote behavioural change. The categories are command, competition, consensus, communication, and code. Command instruments are laws that specifically forbid behaviour or establish an acceptable level of behaviour for persons or organizations. An example of a command instrument would be the Wildlife Act, which forbids the intentional or unintentional feeding of dangerous wildlife. Competitive instruments use economic devices (for example, user charges, subsidies, or tradable property rights) to create a market that rewards desirable behaviour or penalizes undesirable behaviour. Consensus instruments rely on the consent of the actors whose behaviour public organizations seek to change (for example, self-regulation). Communication instruments provide information to people and organizations that will aid them in making choices that will lead to the desired behavioural changes. Code instruments remove the potential for undesirable behaviour by designing the physical environment to prevent its occurrence (Bronwen and Yeung 2007; Daintith 1994). An example of code is the installation of turnstiles to prevent fare evaders or speed bumps to prevent speeding.

These instruments each have their inherent strengths and weaknesses. However, I assess them based on how well they complement the Bear Smart Program by increasing completion

rates and spreading bear stewardship norms. Therefore, the objective of the options discussed below is not to replace the Bear Smart Program but to supplement it by drawing on the strengths of different approaches to make it a more attractive program to municipal leaders by closing existing motivation, opportunity, and ability gaps.

Not all of the instrument categories are applicable to the promotion of the Bear Smart Program by the MOE. For example, a code approach is beyond the responsibilities of the MOE; only municipal governments can accomplish enact code because they are responsible for regulating and designing community level practices and institutions. Additionally, a command approach is unsuitable because of the MOE's commitment to a social regulatory approach, which focuses on gaining voluntary compliance, not coercion, to motivate desirable behaviour (Ministry of Environment 2007). Additionally, municipal governments would likely interpret the use of a command instrument as an effort by the MOE to download costs. The incompatibility of code and command approaches with the MOE's powers and regulatory culture limits this analysis to a consideration of competition, consensus, and communication-based instruments.

Option	Instrument Type
A: Status Quo with Bear Management Fees	Competition
B: Bear Habitat Stewardship Program	Consensus
C: Bear Smart Week and Competition	Communication and Competition

Social marketers tend to conceptualize the promotion of behavioural change as an exchange between environmental agencies interested in selling an environmental product or practice to consumers who are interested in improving their quality of life (Maibach 1993). In this instance, the MOE is trying to "sell" the Bear Smart Program, which improves communities' ability to co-existence with local bear populations. In exchange for providing this program, the MOE gains a new partner, through shared stewardship, in the preservation of the province's

wildlife heritage. However, new environmental products and practices provide benefits and costs. Therefore, environmental agencies need to identify ways that it can lower costs or absent the ability to lower costs ways that they can increase the benefits and attractiveness of environmental services so that actors believe the costs are justified (Altman and Petkus JR 1994). The three instrument types explored in this study all attempt to increase the value that residents place on the benefits of Bear Smart Behaviour.

The literature on regulation considers consensus instruments ideal for the cultivation of a stewardship ethic (Gunningham and Grabosky 1998). This is because consensus instrument empower stakeholders to take responsibility for environmental outcomes. If communities begin to feel responsible for local bear populations and in particular human-bear conflict, they will place greater value on the benefits of the Bear Smart Program.

A communication instrument is included in this study because it is an ideal mechanism through which to overcome resistance to behavioural change, because it allows environmental agencies to communicate why new behaviours are desirable. Additionally, it is an excellent way to facilitate best practices amongst a community of actors because it allows environmental agencies to increase the social acceptability of new behaviours (Gunningham and Sinclair 1999). If Bear Smart principle and behaviours become the norm then it follows that communities will see greater value in the Bear Smart Program.

I included a competition instrument because of its ability to introduce costs to stakeholders who are the best position to reduce negative environmental impacts (Ogus 1994). By introducing costs to undesirable behavioural, communities are presented with a choice between paying to improve their quality of life by enacting the changes called for in the Bear Smart Program or paying to continue having a negative environmental impact and a reduced quality of life. If there are costs for inaction than the Bear Smart Program will be become a more desirable program to municipal governments seeking to avoid such costs.

4.1 Option A: Bear Management Fees

How it Works

The MOE would be required to introduce a strict liability amendment to the Wildlife Act. The Wildlife Act prohibits the provision of food to dangerous wildlife. The act also makes it an offense to disobey an order from the COS to improve the management of bear attractants. This would allow the COS to hold municipal governments responsible for human-bear conflict in the absence of preventative human-bear conflict measures in the community. The COS would not have to prove that the municipal government or individual residents intended to feed dangerous wildlife. Municipal governments would be given a grace period of between 24 and 36 months to become Bear Smart or have to begin paying a user fee for bear management services that take place within their communities. The Dangerous Wildlife Protection Orders would still exist for situations in which communities were Bear Smart and an incident could be attributed to a single household or individual and thus not to lax community enforcement of Bear Smart behaviour or a general indifference towards creating human-bear conflict.

The MOE would then consult with municipal leaders to inform them of how and why bear management services are increasing and how they can avoid paying them. The MOE would use the money collected from the user fees either to fund grants through the Habitat Conservation Trust Fund for efforts to reduce human-bear conflict or to subsidize the BC Conservation Fund's Bear Aware Coordinators.

If the MOE implemented this option today, both Coquitlam and the District of North Vancouver would be required to pay of bear management responses and Squamish would be exempted because it has received its Bear Smart Status. This option would allow the MOE to

collect an annual average of approximately $22,440 from the North Shore Communities (which include the District of North Vancouver) and $14,840 from Coquitlam.[1]

Rationale

The Environmental (Species and Public Protection) Amendment Act passed in 2008 amended the Wildlife Act to allow the MOE to create new regulations to prevent the attraction and feeding of wildlife in specific areas. This option would require that the MOE held municipal governments responsible for not providing the necessary equipment and/or enforcement to ensure that bears are not attracted to and feeding in communities.

Public safety is an important and central responsibility of municipal governments. When the COS responds to bear management complaints it is doing so not for conservation purposes but for public safety. The lack of a charge for the provision of public safety services by the COS provides municipalities an economic incentive to avoid the costs associated with the Bear Smart Program, resulting in an over dependence on the COS for bear management. Introducing user fees will get communities to internalize some of the costs of human-bear conflict by disrupting the social environment that permits inaction with no financial repercussions (Sparrow 2009). Therefore, the introduction of user fees will close the motivation gap that the current distribution of bear management costs permits. A possible consequence of user fees will be the increased killing of bears by residents. This consequence becomes increasingly likely if the user fees impede the municipalities' provision of other services or if the local governments attempt to recover their costs with fines of individual households.

In order to convey the notion of shared stewardship, the user fee would ideally be 50% of the average applicable bear management cost. However, to have the maximum impact on

[1] I arrived at these numbers by taking averages from both communities for the frequency of bear relocations and destructions (from 2005 to 2009 for Coquitlam, and from 2006 to 2009 for the North Shore Communities). I then multiplied those numbers by the costs of bear management discussed in section 2.1.3.

municipalities' behaviour, the option would have to reflect the marginal cost to the COS of destroying a bear. Municipalities' past willingness to co-fund Bear Response Officers for their communities demonstrates that some communities are willing to pay directly for bear management services in their communities. The North Shore communities paid $30,000 for bear management services for several years (McCrory and Paquet 2006). If the bear management fee is too low it will not motivate change and if the price is too high it could hinder the ability of communities to provide other services to their residents.

An example of establishing too low of a price on a service occurred in the United States when a day care introduced fines as an attempt to motivate parents to pick up their children on time. However, because the day care did not consider the value of extra day care services to parents, the fines were too low: parents interpreted them as payment for extra day care services rather than as a penalty for picking up their children late. As a result, parents' behaviour did not change and some parents adjusted their behaviour to take advantage of the extra day care services (Levitt and Dubner 2005).

4.2 Option B: Bear Habitat Stewardship Program

How it Works

The Bear Habitat Stewardship Society would be a collection of municipalities that have consented to minimize the impact of land development and population growth on the availability and quality of bear habitat within their jurisdictions. Municipal governments would become members in this society by committing to prevent the deterioration of or to enhance existing bear habitat within their jurisdictions. Municipalities would do this using landscape and green space management practices. For example, municipalities could plant more berry crops in non-human use areas, removing natural bear attractants from human-use areas and protecting salmon bearing streams.

The funds for this initiative would come from the community itself. The municipal government would commit to a funding ratio (for example, $100: lost acre of bear habitat) and the fund would accept donations from community members or from development companies through development cost charges. Volunteers, municipal staff, or private companies could do the habitat stewardship work. Representatives of the Habitat Conservation Trust Fund, which undertakes habitat protection and restoration projects across the province, could assist municipalities that lack the technical capacity to design or plan a habitat management strategy.

Rationale

In the case studies, I identified that communities that had internalized the substantive goals of the Bear smart Program were more likely to enact the community level changes for which it calls. This option reverses that relationship under the assumption that if the MOE can get municipal governments to alter their practices through this program then they will be more accepting of their role in reducing human-bear conflict within their community and enact the other changes called for by the Bear Smart Program.

This option closes the opportunity and ability gap of communities to be bear stewards by providing a program through which they are able to directly recognize and address the environmental impacts of population growth and land development, a significant and growing driver of human-bear conflict. Participation in this program will ensure communities understand that they can play a role in ensuring human-bear co-existence and thus embed norms of bear stewardship into its planning processes and government efforts in general.

However, this option does not address any existing motivational gaps in municipal leadership for providing bear stewardship activities. This will limit the MOE's ability to recruit communities to participate in this option. Essentially, the MOE will be marketing a product where there is not yet a demand. In some communities, like Squamish that had a pre-existing

preference for stewardship, this will not be an issue. However, in others it will impede municipalities' willingness to participate.

4.3 Option C: Bear Smart Month and Community Competition

How it Works

The MOE would conduct a public awareness campaign that focuses on the benefits of the Bear Smart Program in reducing human-bear conflict. The campaign would culminate with an invitation to communities to compete for the title of Bear Steward of the Year and a one-time grant to be put towards an action that will improve the ability of humans and bears to co-exist.

Communities would compete to demonstrate how and why they are the province's leading Bear Steward. The MOE would use several criteria to assess submissions including: the level of local government participation (elected and non-elected), the level of public participation, the extent to which their actions raised awareness of human-bear conflict issues within the community, and the results of their various bear stewardship initiatives during the bear season. After bear season, the MOE would judge the submissions and determine the winner. The following year that community would receive the grant for their proposed bear stewardship activities.

Rationale

In the case studies, I identified that the deliberative environment around human-bear conflict and thus the Bear Smart Program is constantly changing and that it is high awareness that motivates communities to progress through the program. This option attempts to address that by raising the awareness of, and sensitivity to, human-bear conflict rather than relying on conflict levels to propel communities through the program.

The province wide nature of the media campaign will change the character of the Bear Smart Program from a *community-based initiative* into a *community implemented province wide*

environmental and social movement. This change will empower residents and municipal decision-makers to make changes to their practices and institutions because people and organizations are more open to change when they believe themselves to be part of a larger social movement than when they feel they are acting alone (Maibach 1993). In addition, it could help to bolster the political will necessary to enforce bylaws to ensure that people are responsibly managing their garbage Therefore, this intervention will close the motivation and opportunity gaps of communities.

Various organizations have used competitions to generate community level behavioural change. A notable local example of this approach is BC Hydro's Power Smart Communities Challenge. In an effort to make the province energy self-sufficient, BC Hydro introduced this program to demonstrate to British Columbians how they could reduce their energy consumption and then invited them to participate in a community challenge to determine which community could reduce its energy needs the most.

5: Assessment Criteria:

In assessing the policy options, I use the following criteria to determine how they will perform if implemented.

Table 6 Assessment Criteria Matrix

Criteria	Definition	Metric
Effectiveness 1. Rule Compliance 2. Norm Diffusion	1. The ability of an option to increase completion rates in the Bear Smart Program. 2. The ability of an option to transfer norms of shared bear stewardship.	1. Low = 1 / Moderate = 2 / High = 3 2. Low = 1 / Moderate = 2 / High =3
Intervention Targets	The actors targeted by the policy option to create change.	Only the Public = 1 / Only municipal decision-makers = 2 / Decision-makers and the public = 3
Administrative Cost	The level of MOE resources required to create and sustain the policy option.	Low (<$9,999) = 3 / Moderate($10,000-$49,999) = 2 / High(>$50,000) = 1
Municipal Acceptability	The level of municipal government support expected for a policy option.	Low = 1 / Moderate = 2 / High = 3

5.1 Effectiveness

5.1.1 Rule Compliance (with Bear Smart Criteria)

The Ministry of Environment's operational goal is to reduce the human causes of human-bear conflict. Implementing the changes outlined by the Bear Smart Program allows communities to prevent conflict between humans and bears. Therefore, the ability of a policy

option to promote rule compliance, the implementation of the Bear Smart criteria, reflects the ability to achieve the MOE's operational goals.

The Bear Smart Criteria are:

1. Conduct a bear hazard assessment for the community.
2. Prepare a human-bear conflict management plan to address bear hazards and land-use conflict.
3. Revise planning and decision-making documents to incorporate changes called for in the conflict management plan.
4. Operate a continuing education program.
5. Develop a bear-proof municipal solid waste management system.
6. Introduce bylaws to ban the provision of food to bears.

There are three possible outcomes options: The policy has no impact on rule compliance and receives a low ranking. The policy option promotes completion of one criterion and receives a medium ranking. The policy option promotes completion of multiple criteria and receives a high ranking.

5.1.2 Norm Diffusion (of shared stewardship norms)

One of the MOE's conservation objectives is the promotion of shared stewardship: the idea that "caring for the environment is the responsibility of all sectors of society" and not the exclusive responsibility of the MOE (Ministry of Environment n.d.). The ability of a policy option to spread norms of bear stewardship will aid the ministry in its efforts to get key partners, like municipalities, to recognize their role in the management of wildlife.

There are three potential outcomes for norm diffusion. The option does not expose municipalities to norms of shared bear stewardship and receives a low ranking. The option temporarily exposes municipalities to norms of shared bear stewardship (i.e. through information sharing or consultation) and receives a medium raking. The option establishes a sustained partnership that exposes municipalities to norms of shared stewardship and receives a high ranking.

In recognition of the MOE's objective to promote shared stewardship, it would be counterproductive to focus exclusively on rule compliance to the detriment of norm diffusion. This is because shared stewardship brings benefits and costs: if communities believe they have a responsibility to the environment, they will see stewardship activities as a way to improve their lives and focus on the benefits. If they do not, they will focus on the costs of stewardship activities and view it as an attempt by the province to download its responsibilities. Therefore, the desired outcome is one that ensures the coupling of rule compliance with norm diffusion so that communities are recognizing the benefits as well as the costs of action.

5.2 Intervention Target

Individual and collective attitudes and behaviours are both responsible for producing human-bear conflict in communities. Any intervention needs to target the attitudes and behaviours that produce conflict in order to reduce it. Therefore, it is important to recognize what level of attitudes and behaviours a policy option targets. There are three potential outcomes for this option. The option targets the public (a downstream intervention) with the intention of creating and/or mobilizing grassroots support for individual change. The option targets municipal decision-makers (an upstream intervention) an in effort to motivate them champion or lead community level changes. Lastly, the option could target both the public and municipal decision-makers (a midstream intervention). This means that that the option targets the community with the intention of creating public support for individual and collective level changes while simultaneously targeting government leaders to create an openness to change in municipal practices.

The most desirable outcome is a midstream intervention because it targets both individual and community attitudes and behaviour, rather than trading one for the other. Additionally, a midstream intervention would prompt a community level dialogue on human-bear conflict in which the community could determine what type of relationship it wishes to have with wildlife

and the type of changes they will accept. At this point, a purely downstream intervention is undesirable because municipal governments had done an adequate job of ensuring that their residents know the causes of human-bear conflict and strategies to mitigate its occurrence.

5.3 Administrative Cost

The MOE has limited resources and personnel to dedicate to its various programs and responsibilities. This criterion recognizes the administrative implications of the policy options by examining what financial responsibilities will accompany their implementation and maintenance. There are three potential outcomes for administrative cost. An option can have a limited cost, which means that it is estimated to cost the MOE less than $10,000 to implement. An option can be of moderate cost, which means that it will cost between $10,000 and $50,000 to implement. Lastly, an option can be a high cost option, which means that it costs more than $50,000 to implement.

Balancing the desire to limit the impact of a policy option on other MOE responsibilities, the desire to construct a sense of shared stewardship, and avoid accusations of downloading, the desired outcome is a moderate commitment. This is the optimal outcome because it allows the MOE to signal to municipalities that it is still interested in reducing human-bear conflict and is not attempting to download additional responsibilities to the community, but still allows it to avoid significant costs.

5.4 Municipal Acceptability

The Bear Smart Program and all of the other policy options share one thing: They all aim to move communities beyond compliance, their legal responsibilities to wildlife as outlined in the Wildlife Act. Because the goal is to move communities beyond their minimum legal responsibilities to wildlife, it is important that the options enjoy support amongst the communities it affects.

The potential outcomes for municipal acceptability are low, medium, and high. Low acceptability means that municipal governments will not welcome the implementation the option. Moderate acceptability means municipal governments will welcome the implementation of the option. High acceptability means that municipal governments actively support the implementation of the option.

6: Performance against Criteria

In this section, I examine the performance of the three policy options discussed in Section 4 against the criteria introduced in the previous section. To reiterate, these options are not replacements for the existing Bear Smart Program. Rather, they are choices that the Ministry of Environment can make to improve the completion rates of the Bear Smart Program and to promote shared bear stewardship.

Table 7 is a summary of the options' performance. Omitted are references to the status quo. In this section, I want to focus exclusively on the policy options. Table 8 shows how the Bear Smart Program performs against the criteria in order to demonstrate how the policy options can complement or undermined the program. A full description of the Bear Smart Program's performance against the criteria can be located in Appendix A or the reader can review the background section to review the characteristics of the program.

Table 7 Summary of Policy Options' Performance against Criteria

Criteria	Option A: Bear Smart Program + Bear Management Fees	Option B: Bear Habitat Stewardship Society	Option C: Bear Smart Week and Competition
Effectiveness – Rule Compliance	High The introduction of Bear Management Fees creates a financial incentive for rule compliance.	Moderate Increase completion rates of 1 of the 6 BSP criteria. Participation could constrain spending on other aspects of the BSP.	Low Impact on rule compliance will be indirect and difficult to causally link to this option.
Effectiveness – Norm Diffusion	Low Communities will make changes quickly to avoid fees and as a result not have the time to internalize Bear Smart norms. Communities will view stewardship as a cost.	High This option draws communities' attention directly to stewardship activities. This option also creates a 2nd department in local governments through which stewardship norms can percolate.	High The media campaign will promote Bear Smart norms and the competition allows those norms to be disseminated throughout the community
Intervention Target	Upstream Option targets municipal leadership by holding them financially liable for human-bear conflict.	Upstream Option targets municipal leadership by presenting them an environmental product that can be used to reduce future conflict.	Midstream This option targets municipal leaders and the public to create a deliberative environment conducive to participation in or continuation of the BSP.
Administrative Cost	High MOE conducts consultations with communities, determines payment protocol, and introduces appropriate regulations.	Moderate The MOE prepares necessary documentation on how the program works and how habitat deteriorates and can be improved. The MOE recruits members and annually publishes results.	High The MOE creates campaign materials, purchases space in local and provincial media, renews website, and reviews competition submissions.
Municipal Acceptability	Low This option will be interpreted as provincial downloading as it imposes new costs on municipal governments.	Moderate Municipalities' acceptance of this option is limited by the fact that the program addresses a future driver of conflict instead of more present causes of conflict.	High Municipalities' acceptance of this option will high the option is un-intrusive and because of the potential to win a grant for the community.

6.1 Option A: Cost Sharing Bear Management Program

Rule Compliance (Effectiveness): High

In the current social environment, implementing the changes called for by the Bear Smart Program will result in costs for the municipality and inaction will result in costs for the MOE and the COS. Therefore, the existing distribution of wildlife management responsibilities provides incentives for communities not to invest in preventing human-bear conflict. Removing those incentives through the introduction of a bear management fee will disrupt this equilibrium and increase overall rule compliance with the Bear Smart Program by closing the motivational gap that persists within the status quo. This option will prevent free riding and a continuing lack of preventative actions at the community level.

The introduction of bear management fees will have the same impact as the disruptive events identified in the case studies. The fees will create a financial incentive for continuing with the program and a decreased dependence on the COS' bear management services. This option will result in one of two outcomes: municipalities will consider the benefits of rule compliance ("sustainability of lifestyle, contribution to the public good, personal and community satisfaction, community empowerment", and avoided user fee payment) to be greater than the costs of non-compliance ("time, money, effort, lifestyle changes," and user fees) (Maibach 1993). Alternatively, they could consider the costs still to be greater than the benefits and pay the user fees.

Norm Diffusion: Low

This option does little to embed norms of shared bear stewardship in local government. Instead, the introduction of a user fee signals to municipalities a shared financial responsibility for managing wildlife in communities when they do not take reasonable preventative measures. Considering the existing relationship between the province and municipalities, it is likely that municipalities will interpret the introduction of user fees as an attempt to download costs. Those

communities that are motivated to complete the Bear Smart Program due to the fees will do so to avoid bear management costs and reputational risks (being publically recognized as environmental laggards), not specifically out of concern for the environment.

Because user fees will transform the BSP from a program that helps communities co-exist with bears to a program that helps communities avoid paying for conflict, it is likely that the normative diffusion that occurs in the later stages of the Bear Smart Program will be hindered by the speed of change and the financial motivation behind it. Therefore, this option will diminish the ability of the BSP to transmit Bear Smart norms to local governments and weaken the reputational benefits of the Bear Smart Program by increasing membership through the inclusion of communities that lack a custodial ethic towards bears.

Intervention Target: Upstream

Option A is an upstream intervention. This option targets local governments because they are the community actor best able to investigate community-based human-bear conflict, determine the costs and benefits of action can induce residents to change their behaviour, and decide how it will cover the costs of bear management (Ogus 1994). The introduction of user fees will reverse the trend seen in the status quo by making local governments the target of behavioural change and not just facilitators of downstream change.

Administrative Cost: High

Option A+ would require the MOE to:

- Establish a date (24-36 months in the future) by which communities that have not taken reasonable actions to prevent human bear conflict (completed the Bear Smart Program) will have to pay for bear management services.
- Consult with communities to determine a user fee as a proportion of the cost to the MOE and explain how the system will work and why they are putting it into place.

- Establish a payment collection system to facilitate the COS issuing and collecting on bills from local governments.
- Annually develop grants from the user fee payments and provide them to communities undertaking projects that promote bear stewardship.

This is a high cost option because of the need to consult with communities to explain the program, the payment collecting process, and how they can be exempted from having to pay the user fees. Consultation with communities throughout the province will require a significant amount of time and money to cover travel costs and the hosting of community representatives. Thus, I estimate the cost of implementation of this option to be greater than $50,000.

Municipal Acceptability: Low

This option receives a low political acceptability score because municipal governments will not like the introduction of fees to a previously free service and communities.

6.2 Option B: Bear Habitat Stewardship Society

Rule Compliance (Effectiveness): Moderate

This option increases rule compliance. The Bear Smart Program calls upon communities to alter their land use and decision-making policies to consider the impact of those practices on bears and bear habitat. This option does so by getting communities to identify the negative impacts of population growth and land development and to offset those impacts by providing resources to conduct activities that will mitigate the impact of lost habitat by increasing the productivity of remaining habitat. However, because of the voluntary nature of this option, only communities that develop their own local bear habitat societies will feel this impact.

Norm Diffusion: High

The Bear Habitat Stewardship Society expands the social consensus surrounding human-bear conflict at the municipal level to include development and growth. Poor waste management has traditionally overshadowed an increasingly significant driver of human-bear conflict: land development. This option reverses that bias by drawing municipalities' attention to this dimension of conflict and providing an opportunity for communities to act as stewards to local bear populations by providing high quality habitat for future human-bear coexistence. This option provides an opportunity for participating communities to be bear stewards by linking development with lost habitat and providing a means through which to develop the community in a manner that improves the ability of current or future residents to co-exist with bears.

This option would also create a second intervention point through which Bear Smart norms could enter municipal practices. People involved in public safety and waste management have run the BSP historically and, as a result, that is where Bear Smart norms first appear in government before percolating through other departments and the municipal leadership. This option would improve upon the successes of the BSP at diffusing Bear Smart norms by getting planning departments to participate in the dissemination of norms as well, which will improve on the ability of Bear Smart norms to permeate local governments.

Intervention Trajectory: Upstream

Option B targets municipal councillors and senior municipal staff by educating them about the impact of land development on bears and bear habitat and providing them a means of mitigating that impact. The logic of this intervention is that communities that self-identify as bear stewards and are conducting stewardship activities are more likely to continue to progress through the Bear Smart Program because they have internalized a sense of collective responsibility towards local bear populations.

The downside of this intervention is that it is product driven rather than consumer driven; the MOE is trying to market the BHSS. This orientation could work against the recruitment of municipalities. As was shown in the Squamish case, the local government was able to connect the BSP to the priorities of Squamish's residents as stated in their Official Community Plan. In Coquitlam, it was 3 years after the community started the Bear Smart process that it linked the BSP with the communities' strategic goals. The drawback of this approach is that unless residents have already stated a preference for becoming Bear Smart or municipal leaders feel comfortable making that decision on behalf of their residents, residents could interpret this intervention as not being in their interests and elect not to participate in the program. This option's success will be heavily dependent on the MOE convincing municipalities that this activity is in their interests, similar to the work done by the public entrepreneurs in Squamish and Coquitlam.

Vertical Equity (Budget Size): Equitable

This option requires communities to establish a dollar to acre of bear habitat lost ratio ($$$: Negative Change in Bear Habitat). Economic theory suggests that communities that have larger budgets will, all other things being equal, have a higher willingness to pay than communities with less money. For this reason, communities with larger budgets will be able to protect or enhance more habitat than smaller communities because of their heightened willingness to pay for bear stewardship activities.

However, because this option allows communities to establish their own funding ratio, communities with varying budget constraints will be able to participate in this initiative at a funding level at which they are comfortable. Because this option does not preclude communities from participating and treats all communities equally, it is equitable.

Administrative Cost: Moderate

Option B would require:

- The MOE actively promotes the Bear Habitat Stewardship Program to municipal leaders (senior officials and councilors) and solicits their membership in this initiative.
- Communities pledge in writing to minimize the impact of land development on bear habitat in their jurisdictions and establish their dollars to acres lost ratio.
- The MOE and local government establish a reporting mechanism to gauge levels of habitat lost, preserved, or enhanced as part of the program.

I rank this as a moderate cost option because it only requires the MOE to recruit communities into the program. Once the program is in place, the municipalities would self-report on their habitat conservation and enhancement projects on an annual basis. The Habitat Conservation Trust Fund would offer technical assistance and this would likely require some sort of payment from the MOE to the HCTF. Estimated costs to the MOE between $10,000 and $49,999.

Municipal Acceptability: Moderate

This option receives the rank of moderately acceptable to communities. However, acceptability will be variable across communities and depend greatly on how much of a stewardship ethic already exists in respective municipalities. Communities at earlier parts of the program are likely to not support the program and think that the province should continue to focus its efforts on the immediate causes of human-bear conflict – waste management. Communities that have completed the program may consider it redundant or they may support it as another mechanism to improve human-bear co-existence. The remaining (the mid-range) communities will appreciate the reputational benefits that accompany it (see vertical equity – stages of change). However, the costs that communities incur due to participation in the program will prevent high levels of political acceptability from forming.

6.3 Option C: Bear Smart Public Education and Competition

Rule Compliance (Effectiveness): Low

This option will not have an impact on rule compliance because the MOE will assess communities on the results they achieve during the bear season. This will restrict communities' ability to use their work in becoming Bear Smart to win the Bear Stewardship title. This is because many of the Bear Smart criteria take significant time and resources to accomplish. Therefore, the municipality would have to have planned the Bear Smart work, as opposed to the public campaign or competition acting as the motivator. This could change if the MOE runs the competition more than once and municipalities are able to plan their implementation of Bear Smart practices to coincide with the competition.

Norm Diffusion: High

This option will close communities' ability gap by demonstrating to British Columbians that there are solutions to human-bear conflict and that some communities have already implemented and found results with them. Additionally, this public awareness campaign will make residents more receptive to local efforts that address human-bear conflict because it will reframe the issue from a *community-based initiative* to a *community implemented, province wide environmental campaign*. This change is beneficial because people and organizations are more receptive to change when they believe that it is part of a larger social movement (Maibach 1993).

Those communities that participate in the competition will be accepting that there is a role for communities to play in the protection of local bear populations. Generating this type of community attitude towards bears will make residents more open to the Bear Smart Program because it provides the social consensus (that communities have a responsibility towards local bear populations) needed to ensure action. The difference between the social consensus created with this option, and the one created in option B, is that this option promotes the whole Bear Smart Program and not a specific aspect of it. The potential risk of such an approach is that

communities will not find ways to translate the bear stewardship ethic that the competition engenders into completion of the Bear Smart criteria.

The case studies have demonstrated that municipal councils are generally unaware that the Bear Smart Program exists until it is brought to their attention by a public entrepreneur and what participation in the program entails until they have received a Bear Hazard Assessment and/or Conflict Management Plan. For example, in Squamish despite living in bear country it was only when two residents approached a senior city official, who in turn approached council that the municipal government begun its efforts to prevent further conflict. It is likely that many residents are unaware of the program's existence as well. This option will rectify this situation by increasing the visibility of the Bear Smart brand and program amongst all segments of society so that residents know that they can request Bear Smart practices and institutions for their community and local governments will know how to supply them without reliance on a public entrepreneur to market the BSP to municipal government.

Intervention Trajectory: Midstream

This option targets residents and municipal leaders to generate the community support and leadership needed to create opportunities for bear stewardship and the implementation of the Bear Smart Program. This is because this option empowers residents to demand Bear Smart practices and a bear stewardship ethic from their local government while also showing governments how they can.

Vertical Equity (Budget Size): Equitable

The program achieves vertical equity by granting the title and grant to communities based on criteria that minimizes the impact of budget size by looking at the achievements relative to the costs of the action. This will allow communities with smaller budgets to compete on an even

footing with those with larger budgets. The MOE will inform communities how they will assess them in advance in order to ensure a fair judging process. Some of the criteria for assessment are:

- community participation (the number of residents involved in the stewardship activity)
- level of outreach (the number of people reached and exposed to bear stewardship norms)
- the level of local government support (elected officials or government staff)
- efficiency (Level of outreach/$$$ spent on stewardship activity)

Administrative Cost: High

Under this option, the MOE would be required to:

- Fund the Bear Smart Media Campaign, design the advertisements for the campaign, and issue a public call for communities to compete for the title of Bear Steward of the Year.
- Publicize the criteria upon which they will assess submissions.
- Create a grant for winning communities.
- Renew website and program literature to focus draws on the experiences of communities over the past 8 years.

I rank this option high cost. The implementation of this option requires considerable time and resources invested by the MOE. After the implementation, the MOE will be required to assess and judge the submissions in order to determine the winner of the title and grant. In subsequent years, the MOE would have to fund the campaign, provide new funds to create new ads showing past winners, perform the judging, and maintain the Bear Smart Program website. Therefore, this option is considered to cost upwards of $50,000.

Municipal Acceptability: High

This option receives the rank of a high degree of political acceptability because it provides communities with the chance to compete for a title and funds from the MOE without having to necessarily spend much money to do so.

7: Synthesis of Findings: How the Options Complement the Bear Smart Program

Table 8 shows the scores that the options received for their performance against the criteria. The higher the number, the better the option performed. In this section, I synthesize the findings of the previous section and examine how the options improve or undermine the Bear Smart Program. To aid in this process, I have included the performance of the Bear Smart Program (the status quo) to render more explicit the trade-offs that come with each of the options.

	Criteria				
Options	Effectiveness – Norm Diffusion	Effectiveness – Rule Compliance	Intervention Target	Administrative Cost	Municipal Acceptability
The Status Quo: Bear Smart Program	2	1	2	3	3
Option A: Bear Management Fee	1	3	2	1	1
Option B: Bear Habitat Stewardship Program	3	2	2	2	2
Option C: Bear Smart Month and Competition	3	1	3	1	3

Table 8 Policy Options and Status Quo with Scores

7.1 Option A: Status Quo with Bear Management Fees

Option A draws attention to the friction between the pursuit of the two dimensions of effectiveness: rule compliance and norm diffusion. This option performs well in generating rule compliance but it performs poorly at norm diffusion. The implementation of this option would undo some of the norm diffusing aspects of the Bear Smart Program because communities would not be building a stewardship ethic but responding to the introduction of bear management fees. This option promotes general rule compliance rather than targeting specific criteria by presenting municipalities with the choice of spending money to prevent human-bear conflict or to spend money to pay for the management of conflict. This choice will change the relationship between the MOE and the municipalities by rendering it adversarial instead of cooperative; thus, a sense of shared stewardship is not likely to develop in communities. An adversarial relationship would negate the development of a custodial ethic because it would narrow deliberations around human-bear conflict to a discussion of costs instead of benefits and costs.

The large gains made in rule compliance with the bear management fees come at the expense of municipal acceptability and high administrative costs. While the Bear Smart Program enjoys high political acceptability and low costs, the bear management fees would reduce municipal acceptability and drastically increase administrative costs.

Option A will require a considerable amount of MOE expenditures to establish. The MOE will have to spend money consulting with communities in order to establish this program. The MOE could reduce the costs of this option by foregoing the consultation process. This would save money but further reduce the municipalities' acceptance of this option because they would not feel included in the process.

7.2 Option B: Bear Habitat Stewardship Program

Option B is the most balanced of the four options discussed and in terms of effectiveness, as it generates rule compliance and norm diffusion. Option B will directly increase completion

rates because it speaks to one of the deficiencies of the Bear Smart Program: the lack of revision of planning and decision-making documents that consider the impacts of growth and land development on bears and their habitat. While other options trade off gains in one dimension of effectiveness with losses in the other dimension, this option also increases norm diffusion because it, unlike the Bear Smart Program, directly promotes stewardship actions rather than coupling them with community safety issues in an attempt to get municipalities to move beyond compliance. Thus, while both Option B and the Status Quo received the score of 2 in terms of norm diffusion, the fact that Option B makes municipalities immediately consider the impact of land development on bear populations at the onset of the program rather than in the later stages of the Bear Smart Program.

This option does require an increased level of administrative costs over and above that of the Bear Smart Program. This is because implementation of this option will require the MOE to provide the information that municipal governments will need to pursue this option and send representatives to communities to recruit participants. Lastly, Option B will result in a slight decrease in municipal acceptability because the MOE will be asking communities to enact changes to their own practices, which communities have to this point been reluctant to do. However, this decrease in acceptability is not enough to undermine municipal governments' attitude towards the Bear Smart Program as in Option A.

7.3 Option C: Bear Smart Month and Competition

Option C provides the opposite tradeoff of Option A because it has a large impact on norm diffusion but a limited impact on rule compliance. This option distinguishes itself from the others because of its ability to spread norms of shared stewardship throughout communities over an extended period (the duration of bear season for those communities that participate in the competition). While this option does improve upon the norm diffusion aspects of the Bear Smart Program, it does nothing for rule compliance. In addition to its norm diffusion capacity, a second

strength of this option is that it targets both the public and municipal leaders and is thus a midstream intervention. This differentiates it from the other options and the status quo. This is significant because this option can help to create the social conditions, or opportunity, for a proactive community dialogue on human-bear conflict, and ultimately the deliberative environment that is conducive to continuation and completion of the Bear Smart Program. The Bear Smart Program does not bring together citizens and decision-makers to address human-bear conflict.

A significant tradeoff of Option C's ability to spread shared stewardship norms throughout the province are the administrative costs to the MOE. This is an expensive option, and, unlike the others, the costs do not stop with the establishment of the program. This program requires annual expenditures by the MOE. This option will cost much more than adhering to the status quo. This option, like the status quo, is expected to be highly acceptable to municipal governments. This is because it provides an opportunity for communities to win money for a stewardship project and it provides free outreach and education on the causes of human-bear conflict, which will potentially create the political will to enforce Bear Smart bylaws in communities.

8: Recommendations

The policy problem is, *"how can the Ministry of Environment facilitate municipal governments' completion of the Bear Smart Program?"* More specifically, the problem is that communities appear to be faltering in the program at the point where they are to enact changes to their own practices and internalize a sense of community responsibility for local bear populations.

In this section, I make two recommendations for the Ministry of Environment. With my first recommendation, I suggest which option will be the most effective supplement to the Bear Smart Program if the MOE had to choose only one of the three options examined in this study. In my second recommendation, I go a step further and look at a more dynamic or adaptive approach to normalizing Bear Smart behaviour in communities. Ultimately, this second approach is the superior option in the long-term because it recognizes the fact that when it comes to lifestyle choices it often requires multiple influences, or interventions, to change behaviour. Thus, the second recommendation moves beyond the analysis conducted in the previous section and looks at the dynamic between the options to suggest medium and long-term approaches to increasing and maintaining compliance with the Bear Smart Program.

8.1 Recommendation 1

Implement Option C (Bear Smart Month and Competition)

Recognizing the Ministry of Environment's strategic goal of promoting shared stewardship in communities and the most significant deficiency of the Bear Smart Program (the lack of a social consensus), Option C (the Bear Smart Month and Competition) is the ideal response to further the gains of the Bear Smart Program. Table 8, the table showing the scores of the policy options and the status quo, shows that Options B and C both received the score of 11;

however, Option C is the better response at this time because of its superior performance in terms of norm diffusion. The ability of Option C to generate a social consensus that will increase the effectiveness of the Bear Smart Program makes it the better policy response to the current shortcomings of the Bear Smart Program.

Option B (the Bear Habitat Stewardship Program) relies on the pre-existence of a community stewardship ethic. The Bear Smart Program has only been partially successful at creating a stewardship ethic. Thus, it would be premature to implement Option B at this time because it fails to address the lack of a social census, which is necessary to have in order to motivate municipal governments to accept the values and practices embedded within the Bear Smart Program.

The fundamental assumption of the Bear Smart Program, and all consensus based instruments, is that behavioural change depends on closing the gap between public and private interests. Communications instruments, by expanding notions of self-interest to include the public interest, are the best means with which to promote behavioural change and overcome resistance to new behaviours amongst individuals and organizations (Gunningham and Sinclair 1999). The Bear Smart Program does not address the gap between the MOE's goal of avoiding human-bear conflict and municipalities' acceptance of human-bear conflict levels. Thus, a communications program such as this, which closes the gap between the provincial and municipal interests, will increase communities' demand for Bear Smart practices.

Option C is not without its drawbacks. In particular, the administrative costs of this option could be too high for the MOE to absorb in the short-term. However, this should not impede consideration of this option. There are ways that the MOE could reduce the costs of this option. One possible way to reduce the costs of Option C would be to abandon the provincial orientation of the Bear Smart media campaign and focus on a few select communities or a specific region of the province that has particularly high levels of chronic human-bear conflict. Because a considerable amount of the expenditures would have gone into advertising province

wide, the MOE would realize considerable cost savings by targeting specific communities or regions within the province. The MOE could achieve additional cost savings by seeking out co-sponsors in the public sector, like the Ministry of Community, Sports, and Cultural Development, and the private sector.

The high costs of this option do provide the MOE with the optimal mechanism for keeping communalities committed to reducing human-bear conflict on an on-going basis, which is a factor identified as important for the completion of the Bear Smart Program in the cross case analysis. Option C raises awareness of human-bear conflict and communities' efforts to reduce it on an annual basis. Because the public outreach and competition occur during bear season, residents' sensitivity towards human-bear conflict will increase. This will make it difficult for communities to avoid enacting preventive measures just because conflict levels have declined. By clearly attributing blame for conflict to poor waste management and land development policies in the media campaign and providing an incentive, through the competition, to communities to develop a bear stewardship identity, acceptance of human-bear conflict will decline. Bear fatalities will clash with the custodial ethic that communities will be developing during the competition period.

8.2 Recommendation 2

Implement a responsive regulatory framework

It is unlikely that a single, or dual, instrument approach will generate the compliance levels necessary to make Bear Smart behaviour the norm throughout the province. In addition, the Ministry of Environment does not have to choose only a single method to increase compliance with the Bear Smart Program. Therefore, I recommend that the MOE implement a regulatory framework that allows it to build upon gains in compliance from previous options and incrementally establish a new standard of behaviour amongst communities living in bear country. The MOE can do this by sequencing the options discussed in this study as shown in Figure 9.

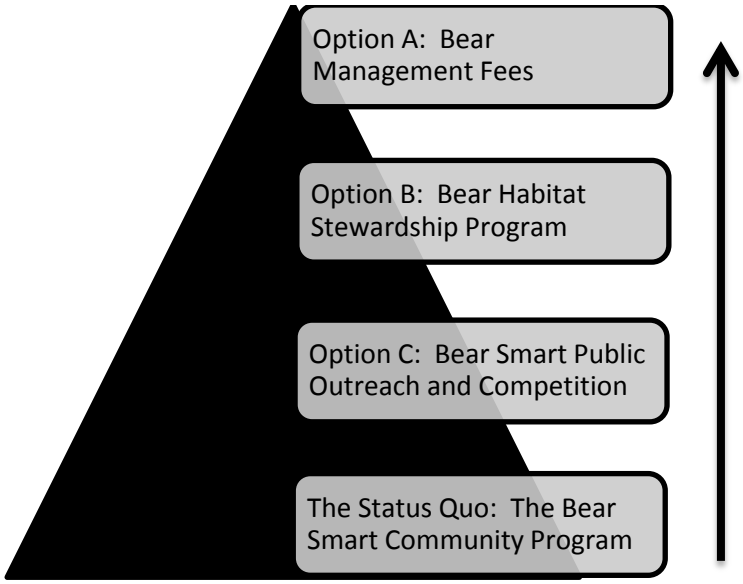

Figure 9 Bear Smart Compliance Pyramid

Figure 9 is a compliance pyramid that shows how the MOE can increase efforts to mitigate the human drivers of human-bear conflict by building on the gains made by previous policy interventions. Operationally, the Bear Smart Program would remain the foundation of the MOE's efforts to reduce human-bear conflict. However, over time the MOE would adjust the conditions within which municipal governments deliberate about human-bear conflict through the implementation of the remaining options. This will increase the number of Bear Smart communities over the same period. Ultimately, the MOE's efforts to promote Bear Smart behaviour would culminate with the implementation of the final option, which facilitates on-going compliance.

Such an approach can help make Bear Smart practices the norm throughout the province because it addresses several of the issues that combine to create the conditions that permit high levels of chronic human-bear conflict. The issues it address are the ability to prevent human-bear conflict (the status quo), the social consensus that action needs to be taken to prevent conflict (Option C), the opportunity to be community stewards (Option B), and the economic conditions

that surround conflict (Option A). By sequencing the options, and when necessary discontinuing them, the MOE can bring different influences and pressures to bear on municipal governments and entice communities towards becoming Bear Smart.

The status quo is the first stage in the process. It represents the MOE's first attempt to convince communities to accept personal and collective responsibility for human-bear conflict and the welfare of local bear populations. While not many communities have become Bear Smart, the program has been successful at capturing the low hanging fruit: Municipal governments have investigated the causes of human-bear conflict in their jurisdictions and are educating their residents to accept personal responsibility for conflict. The second step is Option C (The Bear Smart Public Outreach Campaign and Competition) for the reasons mentioned in Recommendation 1. Following up on Option C with Option B (the Bear Habitat Stewardship Program), would allow this option to benefit from the social consensus formed by the public outreach campaign and competition and direct it towards a concrete goal that will help to increase rule compliance levels. Even Option A (the introduction of bear management fees) has a positive role to play in normalizing Bear Smart behaviour. In the absence of legislation that specifically requires communities to make the changes called for under the Bear Smart Program, Option A would provide a mechanism through which the MOE can maintain the gains made up to that point in changing the behaviours of communities.

The goal displacement (the BSP becoming a means to avoiding bear management fees instead of a means to greater human-bear co-existence) that is expected to accompany the implementation of Option A will only occur amongst those communities that have shown themselves to be, up until that time, resistant to the building of social consensus. If implemented after communities have internalized their personal and community responsibilities towards local bear populations, goal displacement becomes less likely. Thus, if the options are sequenced, when the MOE arrives at a time when it can consider introducing bear management fees, this

option should be more palpable to municipalities and residents because it will simply be a tool to preserve the new status quo.

9: Conclusions: Bear Smart Growth

The Bear Smart Program has been in existence since 2002, and in the program's eight-year history, only two communities have become Bear Smart. Therefore, most of the 30 communities that are participants in the BSP have not accepted and internalized their personal *and community* responsibility for the creation of human-bear conflict. They have not enacted the changes to municipal practices and institutions for which the Bear Smart Program calls. If the Ministry of Environment is to get communities to recognize their shared responsibility for the health and welfare of bears, it is pivotal that it identify and implement mechanisms through which it can entice communities to complete the Bear Smart Program. Otherwise, the MOE will have to continue destroying and relocating "problem" bears when the root cause of conflict is "problem" people and "problem" local governments.

The issue of human-bear conflict is made even more pressing by the fact that British Columbia's population is projected to grow by approximately 28% by 2036, from 4.5 million to 5.8 million residents (BC Stats 2010). Much of this growth will be in regions where communities are already grappling with human-bear conflict. For example, the Squamish-Lillooet Region and the Greater Vancouver Area (which includes the District of North Vancouver and Coquitlam) will grow by approximately 65% and 42% over their current population levels. This growth will be accompanied by land development and will result in communities' having an increased ecological impact on bears through habitat loss, deterioration, and fragmentation as communities draw upon increasing amounts of land to meet their needs. As habitat quality declines, bears living adjacent to communities will increasingly seek food and shelter in developed areas to replace what they cannot easily locate or access in their natural habitats.

Rather than waiting for communities to expand into bear habitat and then having municipalities deploy Bear Smart principles as a reaction to human-bear conflict, it is more beneficial to anticipate conflict and expand communities in a Bear Smart fashion. This means, for example, ensuring that developers build new sub-developments to be consistent with Bear Smart Principles. This is especially important because many of the people who come to BC and settle in communities that are addressing human-bear conflict will not have experience in co-existing with bears and this inexperience will pose a risk to themselves and their neighbours. Further, many new residents will come from cultures that have different attitudes towards bears. Thus, it is important to establish as soon as possible that Bear Smart behaviour is expected from all residents who live in close proximity to bears and their local governments.

At a conceptual level, becoming Bear Smart entails teaching municipal governments that their decisions have social and ecological impacts, instead of functioning as though they are managing a social system disconnected from the surrounding ecosystem. Admittedly, learning to balance social and ecological concerns is not a simple task and one that most communities living near bears have yet to address. While this learning has to occur at the local government level for shared stewardship to occur, the Ministry of Environment can play a role in facilitating that learning process.

10: Appendix

The Status Quo

Rule Compliance (Effectiveness): Low

When used alone consensus, or voluntary, instruments have a limited capacity to generate behavioural change because they do not create the local attitudes necessary to make actors want to comply with new standards of behaviour (Gunningham and Grabosky, Smart Regulations: Designing Environmental Policy 1998) (Bronwen and Yeung 2007).This holds true for the Bear Smart Program. The cases demonstrate that it has been disruptive events, a change in the quantity and/or quality of human-bear conflict in the community, which have motivated rule compliance.

Norm Diffusion (Effectiveness): Moderate

Because of the presence of disruptive events in the communities studied, and the threat to community safety that accompanied it, it is unlikely that notions of shared stewardship were the primary motivating factor for participation in the program.

However, the fact that some communities have moved to include bear smart norms in their municipal government documents (OCPs, Strategic Plans, etc.) suggests that at some level bear stewardship norms are permeating government processes. From this, it is reasonable to conclude that as communities enter the later stages of the program, if they do, than the Bear Smart Program becomes increasingly about environmental stewardship and less about community safety concerns, which the community have already addressed.

Intervention Target: Upstream

The MOE designed the Bear Smart Program as an upstream intervention because municipalities are the only actor that can institute the changes for which the program calls. The MOE designed the program to turn municipal governments into the targets of collective behavioural change and the facilitators of behavioural change on an individual level. However, the cases and conversations with municipal staff and Bear Aware Coordinators throughout the province have demonstrated that the MOE does not possess a communications strategy with which to connect municipal leaders with the Bear Smart Program. The cases also demonstrate that municipal governments are not actively seeking out the program. Instead, public entrepreneurs have linked the communities' interest for increased community safety (and reduced bear fatalities) with the BSP.

The criteria completion rates demonstrate that the BSP has had more success as a downstream intervention, encouraging individuals to change their behaviours, than as an upstream intervention, motivating local governments to change their behaviour. While this does address one dimension of the problem, the failure of the BSP to generate community level changes is concerning. The current bias means that in situations where community level practices inhibit or promote undesirable behaviour the permissive structures remain unaddressed.

Administrative Cost: Low

Option A requires no additional operational commitments or actions. The MOE's only obligation, under the status quo, is to conduct an audit of communities' conflict reduction tactics to ensure that they have accomplished the six Bear Smart criteria. The information needed on how to fulfil the obligations of the Bear Smart Program are located on the MOE website, as is a backgrounder that explains the Bear Smart process in greater depth. It is the responsibility of the municipal governments to implement the Bear Smart criteria and to oversee the process.

Municipal Acceptability: High

The Bear Smart Program enjoys a high degree of political acceptability from municipal governments because it helps them to address the community safety implications of living in bear country. Also adding to the high amount of political acceptability is that this program is a consensus-based instrument, which means that local context and needs are the drivers of program implementation not provincial priorities.

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