

Communicating Across Species Boundaries: how community knowledge and public attitude affect human and bear interspecies relations in Alberta's Bow Valley

Abstract

This paper addresses what appears to be a gap in communication studies by exploring human-bear communication in Alberta's Bow Valley. Images of bears are pervasive in the history of human cultures (Kellert, Black, Reid-Rush, & Bath, 1996, p.983) and are often associated with a healthy ecosystem, yet humans are the leading cause of bear deaths (Grizzly Bear Alliance, 2006). This study explores the attitudes and knowledge of part- and full-time residents about bears in the Bow Valley, measured by way of survey. Data are reported in context of a greater discussion about interspecies communication and the meanings of the terms "community" and "communication." Outcomes of this study show that by extending the definition of communication to include interspecies, we engage in discourse without the contentious debate about what qualifies a species as worthy of inclusion into human predominant communities. Findings have implications on future human-bear relations, especially bear management strategies.

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Introduction

The definition of communication may include cultures and contexts other than language, but communication scholars have yet to extend the boundaries of the term to include interspecies communication. This paper will address what appears to be a major gap in communication studies by exploring human-bear communication – one small aspect of interspecies communication. I will examine how attitudes and knowledge about bears, as measured by way of survey, may influence human-bear interspecies relations in the Canadian Rocky Mountain communities known as the “Bow Valley.” Outcomes of this study could have practical application for multi-stakeholder groups concerned with human-bear relations and consequently the implementation of bear management strategies in communities where humans and bears co-exist, as does the potential for human-bear conflict with life-threatening consequences.

By analyzing data collected in March of 2006, I will answer the questions: what are the existing attitudes and knowledge of part-time and full-time residents of the Bow Valley about grizzly bears (*ursus arctos horribilis*) and black bears (*ursus americanus*). Findings will be reported in the context of a greater discussion about interspecies communication and I will explore how the answers to these questions may affect human and bear interspecies relations in Alberta’s Bow Valley. The analytic reference used for this study is etho-ethnology which “seeks to describe and understand how humans and animals live together in hybrid communities sharing meaning, interests and affects, articulated around jointly negotiated significations” (Lestel, Brunois & Gaunet, 2006. pp.157-158). The etho-ethnology analytical frame of reference seems most applicable to this project as it clearly provides a basis for discussing the data-set obtained about attitudes and knowledge of bears in a more general context of human-animal

communication as occurring in shared spaces, or “communities.” In the case of this study, the “community” is the Bow Valley.

Two of the premises of this study are that attitudes toward carnivores are not static, but rather capable of changing, and that there is a relationship between attitudes and management practice. An analysis of communication about cougars (Wolch, 1997) in part supports the premise that attitudes about carnivores can change. In Wolch’s study it was shown how people’s attitudes about cougars in California were influenced by print media and how changes in attitudes positively correlated with changes in management practices of the large cats. Accepting also the premise that humans and animals live together in shared communities in part will depend on how the terms “community” and “communication” are defined. The discussion, therefore, will include a brief but critical analysis of the terms “community” as well as “communication.” What is commonly included in these terms? What is excluded? In exploring the meanings of “communication” and “community” it is apparent that common definitions of both these terms are void of human-animal consideration. Some clarification about the term carnivore is also in order: though bears are omnivores (eat a wide range of foods, including plants and animals), they belong to a class of predators, the order “Carnivora” and thus are correctly referred to as carnivores (Herrero, 1985, p. 156).

The literature review which follows will outline the significance to humans and other species of aiming for peaceful co-existence with bears from an ecological perspective, which necessarily will include a discussion about the relationship between values and actions. A brief overview of current bear management practices will be presented in the context of goals for peaceful co-existence between bears and humans and the development and implementation of future bear management strategies. Concluding the literature review I will discuss the analytic

framework used for this paper as a segue into outlining the methodology and data analysis sections. The data findings will be compared and contrasted with a similar study conducted for the Whistler Bear Working Group whose mandate is to minimize human-bear conflicts in the resort of Whistler, British Columbia, a similar mandate to that of Wild Smart's which is to "reduce negative human-wildlife interactions" (Bow Valley Wild Smart, 2007). A short summary and recommendations will follow the methodology section; however, the majority of the discussion will be presented within the context of the literature review and data analysis.

Literature Review

Images of bears are pervasive in the history of human “language, literature, religion, economics, psychology, athletics, and childhood stories and toys” and the bear is a symbol of “harmony between nature and society” in the ancient rituals of many cultures (Kellert, Black, Reid-Rush, & Bath, 1996, p. 983). Yet, humans are the leading cause of bear deaths - due to human-bear conflict, hunting, or as a result of motor vehicle impact (Grizzly Bear Alliance, 2006). Does it really matter if there are bears in the world? For reasons that will be explained later, besides the argument that bears ought to have a basic right to life, the presence of bears also connotes a healthy ecosystem which benefits many other species including humans.

Examining and comparing attitudes about bears among other carnivores, Kellert et al note a disconnect in the “myth of coexistence with wildlife,” especially concerning bears; there is a difference between the romantic attraction to living in bear country and the reality of one in the back yard which equates to “fear” and “complaints to local wildlife officials” (1996, p. 985). Charlie Russell, who lived in close proximity with grizzly bears in Kamchatka, Russia is of the opinion that the reputations of bears, and the fear-dominated, love-hate relationship people have with them, is based on the belief that living with them in harmony, as he did, is not possible. He maintains that people’s perceptions could change and that people could “learn to live with bears in a way that would not lead to collision, violence, and the ongoing destruction of a threatened species” (Russell & Enns, 2003, p. 2).

If it is true that there is disconnect between what people feel about bears and how they manage sharing space with them and that eliminating or lessening the disconnect is a goal, then a logical place to start is to achieve better understanding of the attitudes and knowledge that people currently have about bears. This knowledge could also help researchers and community leaders

to make informed decisions about bear and human management issues, which will be especially beneficial for those hoping to establish a peaceful co-existence between the two species.

Peaceful co-existence between humans, with all our cultural differences, seems difficult enough; peaceful interspecies co-existence has multiple challenges including communication barriers beyond spoken language. Bear-human conflicts are even more complicated given they are “interwoven with issues of land use, water allocation, and invasive species” (Fascione, Delach, & Smith, 2004, p. 204), plus other features of the landscape and human community that increase the likelihood of carnivore-human conflict. These features, known as “distal factors,” are characterized by “road densities, human densities, wealth, overlap in concentration, and values and perspectives” (Mattson, 2004, p.157). Even in what is supposed to be protected land, the grizzly bear in particular faces challenges as its “habitat is threatened because it is subject to multiple use of one kind or another. In national parks, grizzly country is also used for recreational activities, roads, and facility development” (Herrero, 1985, p. 257). Adding yet another layer to the complication of peaceful coexistence between humans and bears is that “large carnivores such as lions, tigers, leopards, and bears are also more likely to view humans as potential prey, or to kill humans while defending themselves or their offspring” (Mattson, 2004, p. 162). Grizzly bears in particular are among the largest carnivores in the West and considered to be at the top of the food chain (Clark & Rutherford, 2005, p. 11).

While current bear management strategies may be successful in reducing human-bear conflict on some level, Fascione et al point out that “for people and predators to coexist in the future we must look not only at how to manage predators but at how to manage our own attitudes and behaviors” (2004, p. 207). Echoing this opinion, Clark and Rutherford (2005) write “the difficulty of coexisting with large carnivores is less about the carnivores than it is about us and

our views. The basic problem is how we go about interacting with one another over troubling public issues and collectively deciding how we want to live” (p. 4).

It is reasonable to think that there will be ongoing critique of bear management strategies in years to come. Studies in the United States have found that “many people on all sides of large carnivore management are not happy with the way the institutional system currently operates” (Clark & Rutherford, 2005, p. 247). Moreover, the necessity of critiquing bear management techniques is becoming prevalent as humans migrate to and populate areas otherwise known as wild places. Considering the trends in population growth and habitat loss, the survival of species and ecosystems worldwide rely heavily on the ability of humans to learn to live with wildlife (p. 255). Humans living in wild areas pose unique risks for large carnivores because they are more likely than smaller animals to “encounter humans because of their large individual ranges; are more often killed during an encounter because they are viewed as a threat or an unacceptable cost; and less often replace themselves because of low birthrate” (Mattson, 2004, p.162).

The Bow Valley presents a superb case example for why interspecies communication with large carnivores such as bears is an important concept to explore, for the sake of humans, bears, and the ecosystem in general. The Rocky Mountain grizzly bear is one of four geographically separated genetic lineages (Primm & Murray, 2005, p. 101) and the amount of home range grizzlies require can exceed 2000 km² (Gibeau, Herrero, Kansas, & Benn, 1996, p.1). In their 1996 assessment of grizzly bear population and habitat states in key areas in the Bow Valley, wildlife biologists deemed the situation “urgent” as the ecosystem was being seriously affected by “human development and activities” (Gibeau et al p.1). The survival of the grizzly bear, in particular, is dependant on the “behavior of individual people as they participate in recreational activities or go about earning their livelihoods. This behavior cannot be monitored

continuously or controlled by force, so a thorough understanding of the perspectives and motivations of these individuals is essential to good decision-making about bear management. "To this end, the authors recommend studies such as this that derive more data about "people's perspectives and the mechanisms through which decisions are made" (Clark & Rutherford, 2005, p.265).

Protecting large carnivores "and their habitats will, by default, preserve other, generally smaller, species that rely on the same ecosystem. Grizzly bears in particular are considered an umbrella species. Because they are large and wide ranging, conservation measures for grizzlies help protect a host of other species" (Fascione et al, 2004, p. 4). Carnivores in general play a "unique role in our ecosystems, serving as keystone species that help regulate the environment around them in beneficial ways" (p. xi-4). To compromise ecosystems that grizzly bears rely on is also to compromise the well-being and survival of many other species including humans. There is also much material wealth associated with biodiversity. Wild species in particular "are an untapped source of new pharmaceuticals, crops, fibers, pulp, petroleum, substitutes, and agents for the restoration of soil and water" (Wilson, 1993, p.37). Serpell and Paul believe that the "value which we place on animals, and the extent to which we regard them in either positive or negative ways, ultimately determines their welfare and survival in the modern world. As economic and environmental pressures intensify, the future for nonhuman animals looks increasingly bleak, and there is therefore an urgent need to identify the factors which initiate and promote the development of more positive attitudes towards them" (1994, p. 128). However, Wilson also points out that when species are "judged by their potential arterial value, they can be prices, traded off against other sources of wealth, and –when the price is right – discarded. Yet who can judge the ultimate value of any particular species to humanity?" (1993, p. 37).

Strategies used to minimize human-bear conflict (Fascione, et al 2004, p. 20) largely have involved attempts to manage the behaviors of bears by using aversive conditioning. Aversive conditioning techniques for managing carnivores include exclusionary items (e.g., scare devices, dogs, and fences); devices to capture carnivores (e.g., snares and leghold traps); drugs to inhibit reproduction (e.g., porcine zona pellucida (PZP), mifepristone, and cabergoline); supplemental feed (e.g., high-protein sweat feed); and devices to lethally control individual problem animals (e.g., livestock protection collars). Aversive conditioning techniques that are used by park wardens and conservation officers in the Bow Valley are used prior to more invasive measures in the name of reducing human-bear conflict that, as a last resort, mean killing bears. Other strategies to mitigate conflict between humans and bears may operate in conjunction with aversive conditioning, such as incorporated into the Alberta Southern Rockies Area program. The Southern Rockies Bear-Human Management Plan includes three programs that do not involve aversive conditioning: Attractant Vegetation Management where food attractants such as berry bushes (shepherdia) are removed from areas populated or highly used by humans; Intercept Feeding that by way of helicopter supplies road-kill carcasses to high elevation areas for bears in early spring to deter them from moving down into human populated areas; and the Bear Smart Community programs that aim to educate people about living with wildlife.

In their definition of “bear management,” Taylor and Clark describe wildlife management as something that “controls, mandates, directs, or guides the behavior and actions of humans, which in turn have consequences for animals.” They conclude that “wildlife management is about managing ourselves and choosing what we will do to or for wildlife” (2005, p. 41). After all, the carnivore that influences the ecosystem the most is humans (Fascione et al, 2004, p.4) and integral to the process of successful conservation of bears is understanding “values and

beliefs” of the people affected by carnivore management, as put forth by Carter, in her research project, Perspectives on Grizzly Bear Management in Banff National Park and the Bow River Watershed, Alberta. Though bears have proven to be adaptable to habitats and to be intelligent creatures “the nature of contemporary conflicts and resultant bear mortalities indicates that North American grizzlies, in their two centuries of experience with technologically advanced people, have not evolved many behaviors that would foster coexistence” (Primm & Murray, 2005, p. 103). Again, from a purely biological standpoint it seems that the onus is on humans to change their behavior with regard to bears which is why an increased understanding about the attitudes people have about bears is an important undertaking.

Clark and Rutherford, who have studied bear management issues extensively throughout North America, remark that the management of “large carnivores is a complex, dynamic, ongoing, social process. It directly reflects the feelings, beliefs, and values of many people who participate in one way or another. Understanding this complex social process is a vital first step to envisioning how we can change things for the better” (2005, p. 7). In his study about bears and people, Mattson, a leading authority on grizzly bears, concludes that “it seems self-evident that human perspectives about carnivores would have major effects on the rates at which we kill them.... Culturally inculcated values and related myths systems largely determine perspectives on nature and wildlife” (2004, p. 161). Mattson also concludes that understanding “what human perspectives and behaviors allow us to live with carnivores” is an important part of “gaining the insight we need to live with carnivores” (2004, p.15). Clark and Rutherford further support this point in their conviction that “looking at people’s beliefs is a logical place to start to understand the ongoing management process and how to make it more realistic and consistent with the actual characteristics and behavior of the animals. The different beliefs that people hold about

large carnivores are tied closely to their basic beliefs about themselves, about appropriate relationships with nature, about the value and rights of individuals, and about how decisions should be made within their communities and that nation” (2005, p. 12).

Kellert, whose work has contributed immensely toward understanding attitudes about wildlife in general, found that “considerable variation emerged in values of nature and its conservation in the United States, Japan, and Germany. This variability appears to be more a matter of degree, however, than any fundamental difference in each nation’s basic perspectives of the living world” (1996, p.145). Research shows that even in the Middle Ages, animals meant different things to different groups of people: clerical culture, for example, “attempted to distance the human from the animal as far as possible” while “lay culture, whether courtly or popular, consistently attributed to animals not symbolic values, but rather human traits, actions, modes of thought and feeling” (Cohen, 1994, p. 68). Pre-literate peoples in antiquity were also thought to have had a closeness or “interrelatedness” to some animals (Schwabe, 1994, p. 36).

According to Ingold, Western culture has created a “metaphysical dualism...the separation of two mutually exclusive domains of beings to which we attach the labels ‘humanity’ and ‘nature.’” This principal holds that all animals belong to “nature” except for humans whose “humanity transcends nature... thus human beings, uniquely among animals, live a split-level existence, half in nature and half out” (1994, p.4). Kellert also refers to the concept of human separation from nature in Western culture where it is believed that “people alone possess the capabilities for reason, moral choice, and spiritual transcendence of the physical world. This perspective then emphasizes a fundamental duality separating people from nature.” Eastern cultures, in contrast, hold views that emphasize a oneness that connects humans with all of creation (Kellert, 1996, p.133). Such polarization is indeed a generalization and not necessarily

all Western socio-groups view themselves as separated from nature. Hunters, for example, do not regard animals as “strange alien beings from another world, but as participants in the same world to which the people also belong.” Hunting “is a highly successful attempt to draw the animal in the hunters’ environment into the familiar ambit of social being, and to establish a working basis for mutuality and coexistence” (Ingold, 1994, p. 12).

From a purely biological stance, there is good reason to consider the interconnectedness of all living species, “all higher eukaryotic organisms, from flowering plants to insects and humanity itself, are thought to have descended from a single ancestral population that lived about 1.8 billion years ago,” stamped by a common genetic code (Wilson, 1993, p.39). From a health, wellness and even spiritual perspective Kellert writes, “one of the major traumas of the modern era, East or West, has been the emergence of an illusion that people no longer require intimate relationships with the living world to achieve lives replete in meaning and value” (1996, p. 145). It is his belief that wildlife gives people “an avenue for expressing and developing the emotional capacities for attachment, bonding, intimacy and companionship.” Moreover, he believes that it is important that humans remain connected to the natural world for the development and expression of these attributes which will “increase the likelihood of cooperation, altruistic, and helping behavior so important to the survival of any social creature” (1996, pp. 21-25). A sobering example of Kellert’s argument emerges from Russell’s story of living with the bears in Russia that he claims improved his “experience of being human.” Russell writes of the bears, “by tolerating my limitations and the baggage of humanness, they helped me expand that humanness” (Russell & Enns, 2003, p. 208).

People in Alberta’s Bow Valley are communicating across species boundaries with bears and many of the messages they are conveying are through aversive conditioning techniques. But

are they conveying the messages they hope to? Take, for example, shouting - one of the techniques used by wardens and officers in an attempt to haze a bear out of a human community. As explained by Zahavi (1977), “it is commonplace that shouting is correlated with a high level of arousal” (p.155). So a bear, eating by the side of the road, seemingly unbothered by vehicle-clad human voyeurs, suddenly experiences a human in a high state of arousal making loud sounds. If this arousal is perceived as a threat by the bear then it holds that – in the eyes of the bear - withdrawing the threat may result in the human actually losing “prestige” from giving a false threat. The example of shouting, one form of communication, exemplifies how risk can actually be increased to humans when the intent was to decrease potential harm.

Used in a species sensitive manner, however, verbal language may be an effective communication tool between humans and animals, even if in different forms. As Lestel (2002) suggests, language may be considered a form of cross-species communication that rather than being a “divider” of humans and animals, is a communication tool that connects them closer together (p. 208). Russell learned, for example, that he could use his voice to effectively communicate with bears and witnessed a similar communication that took place with a Russian co-worker and a bear, being a “matter of tone rather than content” (Russell & Enns, 2003, p. 66). Russell shares with his readers a specific example about communicating a non-threatening message when confronted with a mother bear and her cub, in what could have been a potentially dangerous situation: “thanks to remaining calm and to using our voices well, and to maintaining non-threatening postures and not succumbing to the desire to flee – and thanks to the good sense of the mother bear – we passed the test with no harm” (p. 78).

Is learning how bears communicate possible, or even helpful? Herrero believes that “many of the grizzly bear’s aggressive and submissive behaviors can be recognized by humans”

(1985, p. 220). Adult bears communicate with each other in a “language of aggression and submission. Threat and appeasement signals have evolved because they reduce the incident of actual combat and the danger of injury to both parties” (p. 217). “Signals between bears are fundamentally important – a mother bear may become a carcass to be scavenged if she stops signaling ‘I am functioning as your mother’” (p. 218). Learning the language bears speak, says Herrero, can help people avoid confrontation with them (p. 207). Running, for example, means “chase” to a grizzly and eye contact denotes a dominant signal (p. 221). People who are “prudent,” says Herrero, can avoid unexpected confrontations with bears by using “the known information about bear’s senses” therein conveying information to them – such as noting the wind direction and staying down-wind from where a bear may be, making noise or even “slowly waving a hand” to “help a bear that has seen you sense what you are” (p.153). Learning the different communication tools used by bears is to begin considering communities as hybrids which means viewing the agents, regardless of how functional they are by “the nature of the processes that occur there, the representations the agents may have of their relationships with others, the material means mobilized, and the spatial and temporal organization in which these processes are set” (Lestel, 2006, p. 172).

As mentioned, some discussion about the terms “community and “communication” are warranted. Defining “community” is not an easy task; Hillery’s study, for example, identified 94 definitions of the term in 1955 with the most common being that “community consists of persons in social interaction within a geographic area and having one or more additional common ties” (1955, p.111). This study will explore the notion that animals are part of human communities and “well adapted in human cultures,” as proposed by Lestel (2002, p. 203). Lestel invites us to

think about the ways different living organisms “come together to form societies” and recognizes the lack of studies that consider the shared lives between animals and humans (p.156).

Not just humans can be said to have culture, according to communication scholar Ruth Finnegan who writes, “other animals too develop particular practices and innovations and pass them on to others” (2002, p. 47). The same can be said for language and communication.

Accepting that community is a place where humans and animals live together with “shared meaning, shared interest and shared affects” and that in those communities communication is occurring despite agents having different skills and ways of communicating is the basic idea behind an ethnographic approach to ethology (Lestel, 2006, p. 171). As Lestel outlines, “what we routinely call ‘human societies’ are always made up of agents of many natures: humans, animals, plants, viruses, etc., each of which has its own logic – which can in addition sometimes turn out to clash or even to be mutually antagonistic” (2006, p. 164).

In 1970 Chatterjee and Koleski correctly noted that the “word communication is charged with ambiguity, carrying different connotations in different situations” (p. 82). The ambiguity of the term community is also acknowledged by Pamela Jakes - “social science disciplines define community quite differently. For example, geographers emphasize spatial aspects, economists emphasize markets, and sociologists emphasize social interactions and networks” (2000, p. 395). Finnegan as well highlights the issues that there are a “myriad” of communication definitions (2002, p.12). As for popular definitions of communication, Finnegan acknowledges the attractiveness of the Shannon and Weaver model of communication - sender-message-receiver - for certain types of human communication such as the transmission of messages through electronic media over distance (p.15), but states clearly that this model insufficiently addresses the complexity of what communication “is.” She offers instead that communication be viewed in

“terms of its effect on the behaviour of others” that turns “attention to action and to people’s interconnecting in the world rather than inwards of the mind” which “encourages us to look to the actions and mutual influences of all those taking part” (p. 23).

It is also apparent that the meaning of the term “communication” is somewhat dependent on views and theoretical frameworks. In 2000 Korn, Sherwyn and Boileau assessed the definition for “the field of communication” that was established in 1995 by members of the Association for Communication Administration (ACA). The researchers concluded that the “definition captures the domain of communication in all its depth, breadth, and diversity” and recommended that it be further promoted to “communication administrators and teachers” (p.51). The ACA’s definition of communication (p.40) reads: “the field of communication focuses on how people use messages to generate meanings within and across various contexts, cultures, channels, and media. The field promotes the effective and ethical practice of human communication.” Obviously interspecies communication is absent from the ACA’s definition, which suggests limits to its depth. Some communication scholars acknowledge that the definition of communication needs to be “broadened,” but they don’t take it further than how it pertains to people in organizational settings (Cheney, Christensen, Zoren Jr, & Shiv, 2004, p. 7). Even the “difference-based” definition of “intercultural communication” (Bennett, 1998, pp. 2-3) being much broader than “similarity-based” definitions is still not broad enough to include non-humans.

The “assumption that communication has to be conceived as centred on the written word or intellectual meanings” is addressed by Finnegan, who focuses on the interconnectedness of humans and takes a “broad view of communication which includes all the channels open to human interaction, whether auditory, visual, kinesic, proxemic, tactile or olfactory” (2002, pp. 7-

8). Similarly, the analytic framework used in this study's discussion extends the definition of communication more broadly to include interspecies. Etho-ethnology can be described as "a discipline that studies the dynamics of agents which combine actions and interpretations in an ecological, historical and individual perspective" (Lestel, 2006, p.168). It "seeks to describe and understand how humans and animals live together in hybrid communities sharing meaning, interests, and affects, articulated around jointly negotiated significations" (p. 173).

Methodology

Raw data was analyzed from a survey conducted in March 2006 by students from Mount Royal College (MRC), Calgary, Alberta, Canada. An ethical review was not relevant to this study because the data had been previously collected by the MRC students. The data was collected but not analyzed prior to it being received by the Bow Valley Wild Smart initiative, a coalition of people and organizations with the common goal of decreasing human-wildlife conflict in the Bow Valley. Wild Smart provided the data for this project and will receive a copy of the final paper with permission to disseminate the findings at their discretion. The advantages of being able to analyze secondary data were that it was more economical and much less time consuming than creating a new survey, which was an important consideration given the short time parameters of this project (6 months).

An effective tool in measuring attitudes and knowledge (Baxter & Babbie, 2004, pp.167-200), the survey method has been applied to matters concerning conservation of carnivores in past studies. It is also the “most frequently used form of measurement throughout the social sciences, including communication” (p.167). Examples of such studies include a mail-back survey that measured rural citizens’ attitudes about wolves, which yielded useful information about the characteristics of respondents, their experiences with wolves, their tolerance for them and their preferred wolf management strategies (Naughton-Treves, Grossberg, & Treves, 2003, pp. 1500-1506). In another study, a questionnaire developed by the University of Colorado at Denver, attitudes about 33 species of animals were measured showing that much can be learned by using this method about how education and experience affect perceptions about animals (Driscoll, p.1.,1992). Stephen Kellert, a professor at Yale University whose work has contributed immensely toward understanding attitudes about wildlife, also used the survey

method to look at “how the effective management of wildlife often seemed less a problem of manipulating animals and their habitats than managing our own species” (1996, p.3). Kellert’s study measured the values of living diversity “by scales consisting of statistically clustered questions” (pp. 38-40).

The MRC students modeled their survey design after the Bear Awareness, Attitudes and Intentions Among Residents and Seasonal Workers: Whistler, B.C, Canada survey prepared for the Whistler Bear Working Group in 2004 by a communications firm. The Whistler study’s objectives were to determine the present level of awareness and knowledge about bears, “their intentions to obtain more information, their attitudes towards bears, and their beliefs regarding bear management options” (2004).

Data for this study were collected from surveys distributed to a sub-population of full-and part-time residents in the Bow Valley at 45 public locations in Canmore (the main town),¹ using convenience sampling (any person willing and able to take the survey who met the criteria could. Fink, 2006, p. 50). Surveys were dropped off at each location and then picked up at various times by the MRC researchers.

The geographic parameters of the study were the “Bow Valley,” but the definition of “Bow Valley” is sometimes unclear; in some cases, such as with the local media, reference to the Bow Valley is inclusive of the towns of Banff, Canmore, Exshaw and parts of the provincial park, Kananaskis Country. The boundaries referred to in the Wild Smart survey, however, were East of Banff National Park gates, to Seebe (just east of Exshaw). Within these areas are the town of Canmore, and Municipal District Number Eight (MD No. 8) which includes Harvey Heights, Seebe, Exshaw, and portions of Kananaskis Country. At the time the survey was conducted, Canmore’s population was 16,417 of full and part-time residents (Town of Canmore,

2007). The last census available for the MD No. 8 was in 2003 and showed a population of 1,210 people. 81 people from Seebe were relocated in 2004 as the area was closed to residents (MD No. 8, personal communication, June 20, 2007). With human population growth and possible relocation of Seebe residents it is probable that the 2003 reported figure was similar in 2006.

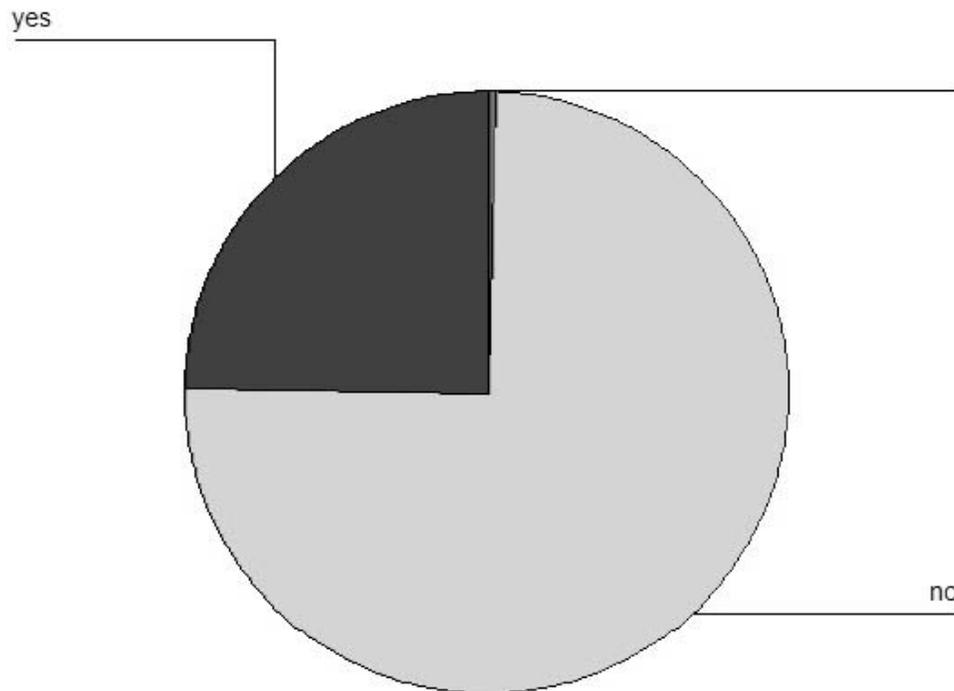
Data were entered into the SPSS system and then analyzed using descriptive statistics (frequencies, mean, median and mode) in the program's data editor. Descriptive statistics allowed for the examination of what a specific group of people, in a certain area, knew and felt about bears at the time of the study; it is only those people we are interested in knowing about; data, therefore, will be reported and discussed using frequencies as the units of measure. Data summaries will be included in the appendixes and reported in the context of the written discussion using, when appropriate, supporting graphs and tables.

Data Analysis and Discussion

Of 317 surveys distributed, 178 surveys were returned completed for a response rate of 56 percent. It should be noted that the survey design was not error free. Some questions were vague which may have contributed to some people checking more than one box for a single answer or leaving some questions unanswered. Despite the survey's weaknesses, the findings from the data do meet the requirements of this study, which sought to expose the attitudes and knowledge of a particular population, at a particular time. Inferences to the general population, therefore, are not relevant nor would be an in-depth analysis to determine external and internal validity. The focus was not to assess whether or not the original survey was valid, but rather, to take what can be learned by means of descriptive statistics about the current situation.

At the time the survey was conducted, more than 74 percent of people surveyed hadn't heard about the Wild Smart program (figure 1: respondents who have heard about the Bow Valley Wild Smart initiative). Since that time the Wild Smart initiative has taken quite a few measures to educate people in the Bow Valley about wildlife issues, but it is safe to say that the respondents' knowledge of and attitudes about bears in the Bow Valley, as stated in the survey, were not influenced by the Wild Smart initiative. This case study, therefore, provides a reasonable baseline about prevailing knowledge and attitudes about bears from the full-and part-time residents of the Bow Valley.

Figure 1

**Figure 1: Respondents who have heard about the Bow Valley Wild Smart Initiative**

All of the survey respondents reported that they knew bears existed in the Bow Valley (appendix A), 85.4 percent reported having seen evidence of bears within the boundaries of the Bow Valley (table 1), and a majority of them (67.4 percent) said they experienced a personal encounter with a bear (table 2). The research findings in the Whistler study, which was similar to the Wild Smart study, echo these findings in that nearly all of the full- and part-time residents were aware that bears existed in that study area and a high percentage of people had also seen bears (2004, Custom Fit Communications). The Whistler study conducted 182 interviews over the telephone with full-and part-time residents in the Whistler resort area and used, as did this study, the SPSS statistical software for analysis. The objectives of the Whistler study were in part to determine the present level of knowledge and awareness of residents and part-time residents about bears.

Table 1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		1	.6	.6	.6
	no	25	14.0	14.0	14.6
	yes	152	85.4	85.4	100.0
	Total	178	100.0	100.0	

Table 1 Respondents who have seen evidence of bears in the Bow Valley

Table 2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	58	32.6	32.6	32.6
	yes	120	67.4	67.4	100.0
	Total	178	100.0	100.0	

Table 2 Respondents who have had a personal encounter with a grizzly or black bear

It is uncertain from the data exactly how respondents knew that bears existed in the Bow Valley. The knowledge that bears exist in the Bow Valley might be attributed to having had encounters with and/or seeing evidence of bears, as some respondents reported. For those that did not report having direct or indirect encounters with bears, it can be speculated that their

knowledge of bears being in the area was obtained by shared stories of the others or reports in local media (print or radio). There are two weekly newspapers circulated throughout the Bow Valley, *The Canmore Leader* and *The Rocky Mountain Outlook*. There were two feature stories about bears in the May 30th 2007 edition of the *Leader* and one photograph; in the *Outlook*, the same week, there were three articles, including a large photograph of a grizzly on the front page.

It is reasonable to conclude that it is common knowledge, at least amongst the study group, that bears live in the Bow Valley - humans and bears are sharing that living space - but knowing that bears live in the area does not necessarily equate to accepting them as part of the “community.” A high majority of those surveyed believed there would be negative consequences if bears were removed from the Bow Valley (appendix A), but answers were not so affirmative when it came to the questions concerning where bears and humans could share space in healthy co-existence or in what areas bears belonged; about 30 percent agreed it was acceptable for bears to be in the backcountry, but not in the community or where there were concentrations of people (figure 2:). “Community” in this context seems to be interpreted as the place in which humans reside which is not for bears. “Backcountry,” on the other hand, is a place for bears to live, where humans can visit. The definition of backcountry is anywhere that is not accessible in and out the same day. Jevon, a GIS specialist with Alberta Tourism, Parks, Recreation and Culture. Parks and Protected Areas elaborated that the backcountry is actually “shrinking with new technologies;” for example, paved roads and paths, and better technical equipment such as bikes and skis now allow for quicker easier routes into areas that previously would not have been day trips (S. Jevon, personal communication, June 15, 2007).

Figure 2

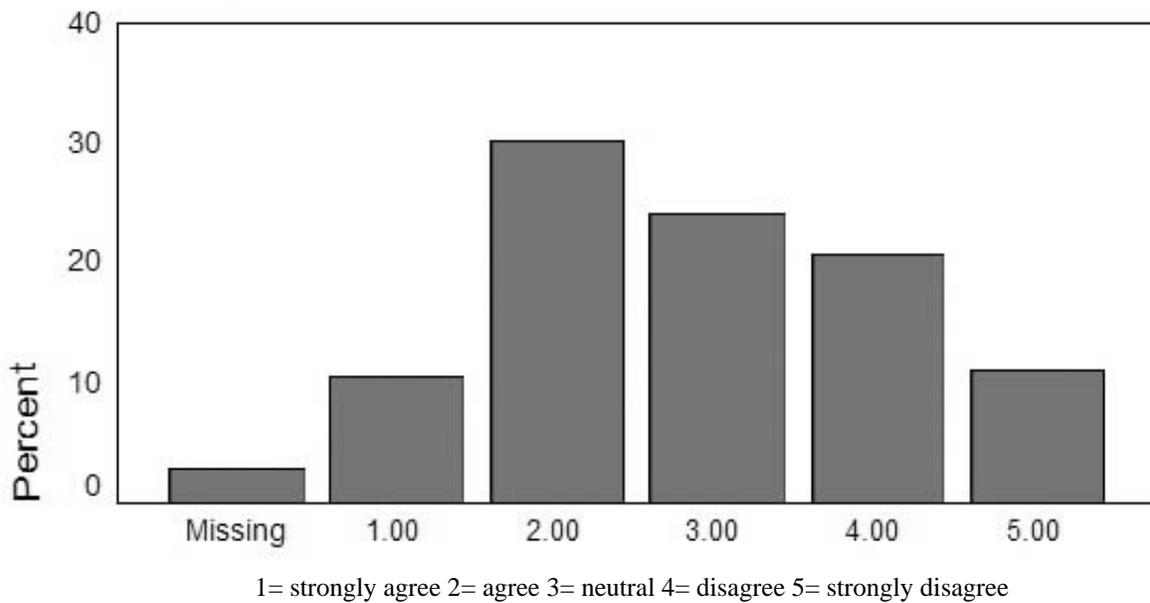


Figure 2: Attitude that it is acceptable for bears to be in the backcountry, but not in the community or where there were concentrations of people.

Despite being fully aware that bears live in the Bow Valley, most of the respondents believed they had poor to neutral understanding of bear behavior (figure 3: respondents understanding of bear behavior). A little over half of those surveyed felt they had good to excellent ability to discern between black and grizzly bear (appendix B). Though it is unknown if the survey sample is representative of the population in the Bow Valley, it nevertheless seems safe to conclude that even if half of the respondents were unsure of what type of bear they saw, then it is likely that some of the bear sightings reported to authorities are wrong. The term “black bear,” for example, is common place; along with being black, *ursus americanus* can be blond, cinnamon, dark brown, and even white (Herrero, 1985, p.145) which means bear types can be easily confused by someone who does not know the physical attributes differentiating a black

bear from a grizzly. Increased knowledge about bears through education therefore would probably have a positive impact on accurate reporting about bears.

Figure 3

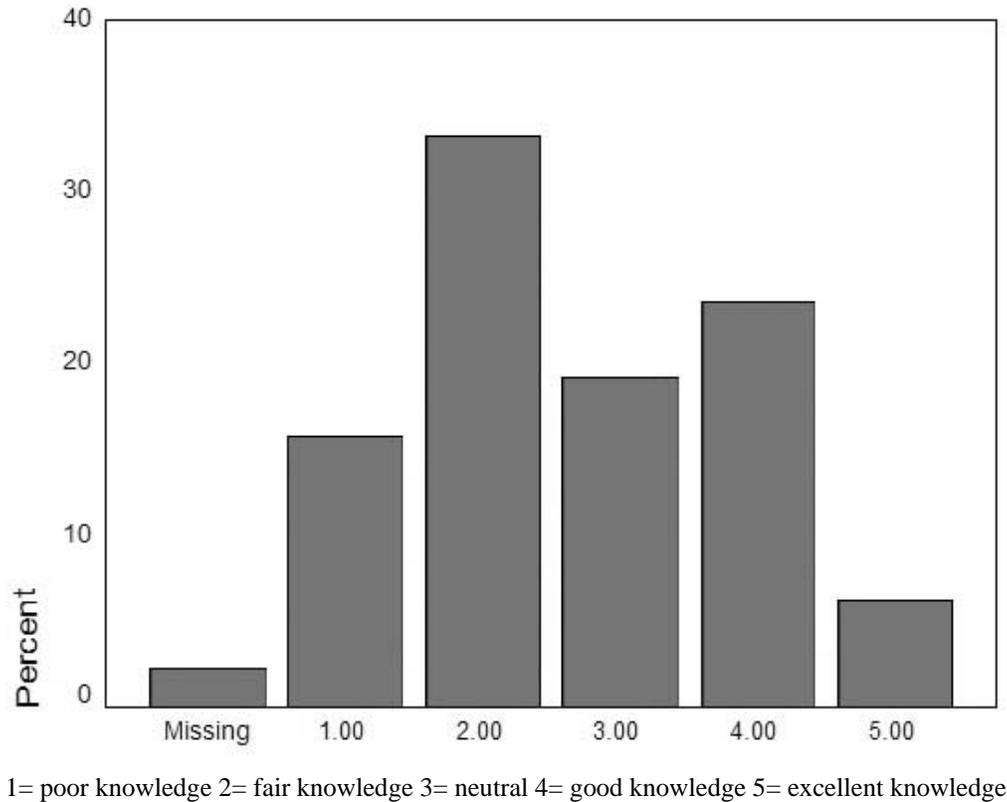


Figure 3: Respondents understanding of bear behavior

More people felt they knew what to do when camping to avoid attracting bears than knowing what to do on their own property (appendix B). Perhaps this is because people who camp may be more educated about bear issues, or have a willingness to behave differently and be more tolerant in an environment that is perceived as “different” from home. At home, with all the amenities that humans have, sharing space with bears poses different challenges, especially with regard to food. More than just being attracted to human garbage because of the odor, bears learn that human garbage is a great food source because, according to Herrero, a leading bear

biologist, “people’s food and garbage are so easily converted into calories by bears” and they “readily learn where cooks throw away easily digested leftovers” (1985, p. 158). What is one carnivore’s garbage is another’s cuisine. A high percentage of those surveyed in the Bow Valley had good to excellent knowledge about how to handle garbage in a bear-proof manner (appendix B) which isn’t surprising considering that the community has taken great effort to deter bears from being attracted to human garbage by eliminating door-to-door garbage pick-up and placing bear-proof bins throughout town.

Most people seemed to think they knew what to do when they saw a bear in the distance, but less knew what to do when encountering a bear at close range in the backcountry (appendix B). These findings are logical given that most respondents didn’t feel they had a good understanding of bear behavior. Knowledge about how a bear might behave would surely help a person in knowing how to react to an encounter with one. It is precisely this known ignorance that exemplifies the disconnect between understanding another species and translating that knowledge into appropriate actions that may, in this case, increase peaceful coexistence between humans and bears. These findings are also similar to those in the Whistler study that showed people had excellent knowledge about safe garbage disposal, but didn’t feel they knew much about the behaviors of bears or how themselves to behave when encountering one (2004, Custom Fit Communications).

Survey questions about wildlife in general were based on the categories in the Whistler, B.C study (2004) which divided questions about attitude into: “instrumental values” (a utilitarian view of value as being either economic or human life-sustaining), or “non-instrumental values” (belief that something has inherent value – aesthetically, morally, and or spiritually). Subjects in the Bow Valley study held both instrumental and non-instrumental values about wildlife. Nearly

88 percent of the respondents strongly believed that wildlife is an essential component of nature (figure 4), suggesting that the residents in the Bow Valley who participated in the survey do not just see wildlife as a commodity, but as an integral part of a bigger picture. Bears in particular have been shown to be an essential part of a healthy ecosystem, which has important implications for “removing 10 percent or even 1 percent of the planet’s species, or substantially reducing their genetic variability and interconnectedness” would be a little like “randomly destroying pieces of an extremely complex mechanism while blindly hoping not to damage some vital element or process” (Kellert, 1996, p. 31). Seventy-three percent strongly believed it has aesthetic value beyond economic benefits, and it is strongly believed by 78 percent of the respondents that wildlife must be preserved out of our moral obligation to future generations (appendix A). Similar findings were reported in the Whistler study, with 86 percent of the people surveyed strongly agreeing that “wildlife must be preserved out of our moral obligation to future generation” and 79 percent strongly agreeing that wildlife in general has aesthetic value beyond economic (2004, Custom Fit Communications).

Figure 4

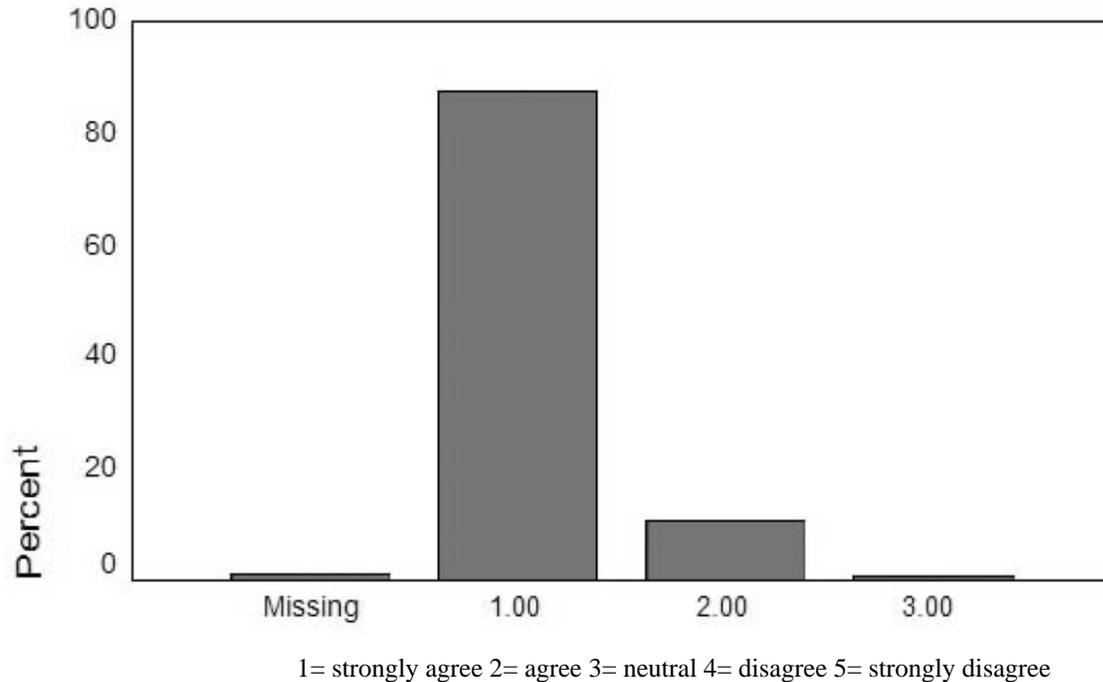


Figure 4: Respondents who believe that wildlife is an essential component of nature

Though the original researches did not offer a definition for “aesthetic experience,” Kellert’s definition of aesthetic experiences is fitting – they are experiences evoking “a strong, primarily emotional, register in most people, provoking feelings of intense pleasure, even awe, at the physical splendor of the natural world” (1996, p. 15). As noted, a strong majority of respondents believe that wildlife is an essential component of nature which is in line with what scientists have written, especially about grizzly bears as an umbrella species in ecosystems. It is difficult to know for sure if the same attitudes would be expressed about specific species, especially carnivores such as bears that have a history of being associated with feelings of fear and conflict with humans.

Reflecting a normal distribution, people reported feeling neutral about engaging in outdoor activity where they might encounter grizzly bears. Only 5 percent of the respondents

claimed to have strong fear about this scenario, whereas over twice that reported a very positive sense of delight (appendix A). This suggests that among the respondents when recreating, fear of grizzly bears is not high. This is not surprising considering that the Bow Valley is populated by many outdoor enthusiasts whose awareness of bears living in the area is probably high. It may also be that the awe associated with seeing a bear in the wild is greater than the fear it may evoke. We can surmise that engaging in outdoor activity here means activity that is not within the community, but probably in the backcountry where respondents also seem to feel grizzly bears belong.

Feelings about seeing grizzly bear presence in the backcountry were generally positive and only slightly more negative if seen in the Bow Valley (urban areas). Signs of grizzly bear presence in the community and on one's property elicited generally negative response -sensation of fear (appendix A). The different feelings noted between seeing grizzly bear presence in the backcountry, in the community or on personal property could be symptomatic of people's beliefs about community and property (what belongs and what doesn't). It may also be common knowledge that bears who enter communities where people live in close proximity are said to be "habituated" and therefore more dangerous; "one of the main risks of habituated bears is that they will take the next step and begin to perceive that people or developed areas are sources of food (Primm & Murray, 2005, p. 104). Herrero describes habituation as what happens when an "animal becomes used to something" (1985, p. 203). The survey question only asked about grizzly bears, which is noteworthy because it may be an internal bias on the researchers' part because most black bears "can become accustomed to people and their foods without endangering human lives" (Herrero, 1985, p. 105). Given the lack of knowledge about bears

noted by respondents it is unlikely that they would know the difference between grizzly and black bears with regard to habituation, though.

Seeing a grizzly in close proximity in the backcountry or in the Bow Valley, however, was reported as being nearly equally as fearsome with the most frequent answer being “negative” (appendix A). This suggests that there is an overall fear about grizzly bears when close to humans regardless of the space in which it occurs. How much fear is realistic about bears? Though bears are at the top of the food chain, it is rare that people are treated as prey by grizzly and black bears (Herrero, 1985, p. 209). With fear being such a pivotal emotion it is also worth noting that there are different ways of responding to fear, such as reflected in current bear management strategies or in more subtle ways such as how Russell used relaxation. The “condition of relaxation,” noted by Russell, is a state that humans could achieve when in the presence of bears that “would defuse the aggression that existed between modern people and modern bears” (Russell & Enns, 2003, p. 113). Russell’s experience was unique in that he had the time and resources to learn about the bears sharing the space, and the bears were living in a different environment than those in the Bow Valley.

Using “relaxation” in an encounter with a bear in the Bow Valley may not be effective because the bears in the Bow Valley are subject to much more stressors than those in Kamchatka. Bears in the Bow Valley have roads, people, homes, and a very fragmented landscape to contend with; “the extent to which humans and carnivores are jointly concentrated in a landscape can have major effects on the persistence of carnivore populations. If settlements, roads, livestock, and people are concentrated in the same habitats as predators and their prey, then humans will logically have a much greater impact than if the spatial arrangements were otherwise” (Mattson, 2004, p. 160). “Mountain areas highlight the importance of human numbers

to carnivore conservation” because the “steep terrain complicates” building of homes and other human structures (p. 158). Competition for living space in the Bow Valley brings conflicts over resources resulting in habitat losses for carnivores (Fascione et al, 2004, p. xii). Bears are being squeezed out of the Bow Valley and talking to a food-stressed bear that has just been relocated probably isn’t going to yield a peaceful response. Furthermore, having some fear associated with large predators probably is a good thing, especially as it may help encourage a healthy respect and distancing from that part of nature (Kellert, 1996, p. 25).

Just over half of the people surveyed agreed or strongly agreed that human-bear conflicts were a problem in the Bow Valley, and an even higher number of respondents (75 percent) were optimistic that ensuring a healthy co-existence between humans and bear was possible (appendix A). When given the opportunity for further discussion, over 70 percent declined the option to be contacted for a future focus group or in-depth study (figure 5) but about 40 percent of the people were willing to pay more in property taxes (figure 6) if it ensured that people and bears could live in harmony in the Bow Valley. On a similar note, nearly 40 percent of the respondents in the Whistler study were willing to pay more in taxes to preserve bears in the area (2004, Custom Fit Communications). Of the full-and part-time residents that responded to the survey it appears that though they acknowledge there is a problem with bears, and though they believe there can be peaceful co-existence, they would like someone else to deal with it, even if it costs them.

Figure 5

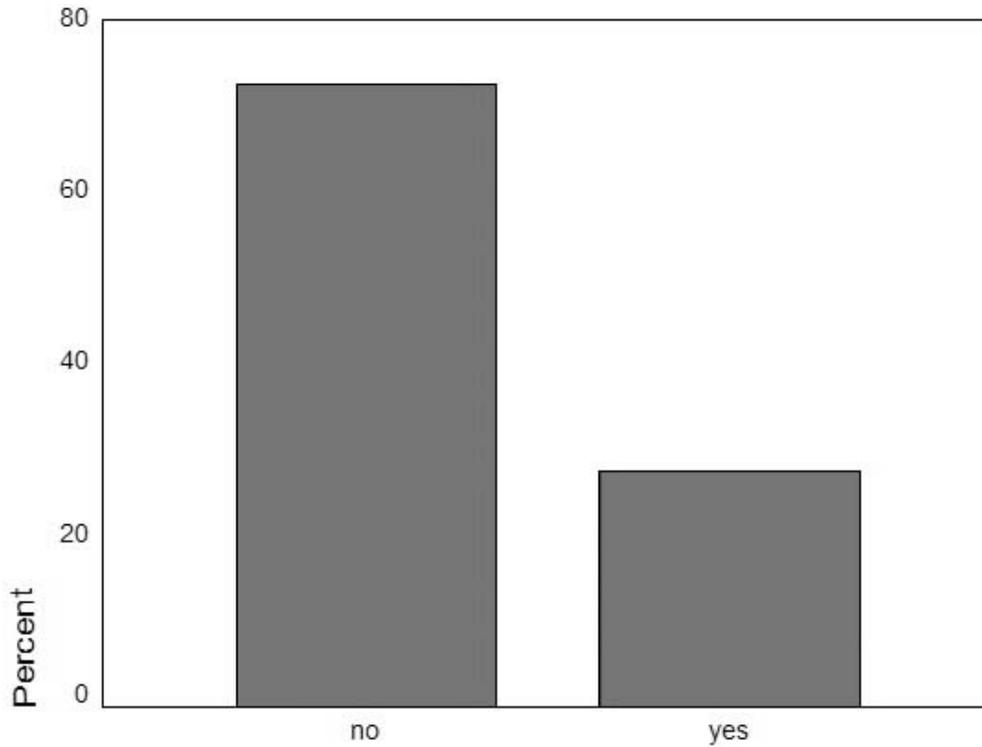


Figure 5: Respondents willingness to be contacted for a future focus group or in-depth study

Figure 6

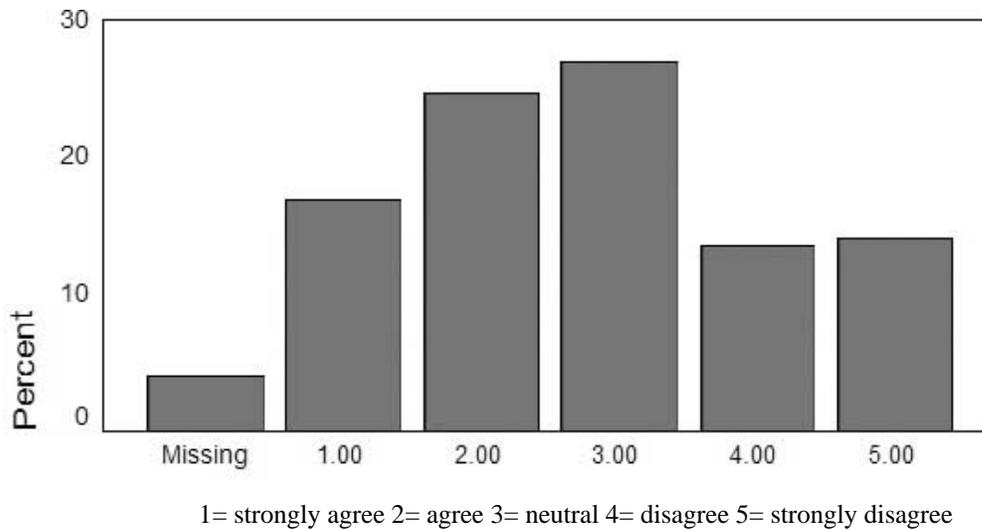


Figure 6: Respondents willingness to pay more in property taxes to ensure people & bears live in harmony in the Bow Valley

In reflection of the respondents' answers, current bear management practices in the Bow Valley are not necessarily acceptable. The mean score for killing problem bears was 2.4 (not acceptable) and 33 percent thought it very unacceptable (figure 7). Similarly, residents polled in the Whistler study (2004) were not supportive of killing bears as a management strategy. Responses in the Bow Valley varied considerably with regard to attitudes about using rubber bullets to deter bears, with the mean score equating to the "don't know" category. Though many respondents reported that they didn't want to see bears killed, hardly anyone could say they had good to excellent knowledge of what to do with "problem bears" without killing them and many were not well educated about bear behavior or how to tell bears apart (appendix B). It could be that attitudes about bear management in the Bow Valley are influenced by lack of knowledge about bears and about bear management practices. It is doubtful that the respondents knew, for example, that a recent study that compared perspectives on carnivore management worldwide (Treves & Karanth, 2003, p. 1491) revealed a trend toward developing "nonlethal approaches to carnivore management." The Southern Alberta Attractant Management, Intercept Feeding, and Bear Smart Community programs are examples of alternative approaches. Moreover, "wildlife management is not a simple, linear process...the difficulties often arise from differences in people's perspectives" (Clark & Rutherford, 2005, p. 217).

Figure 7

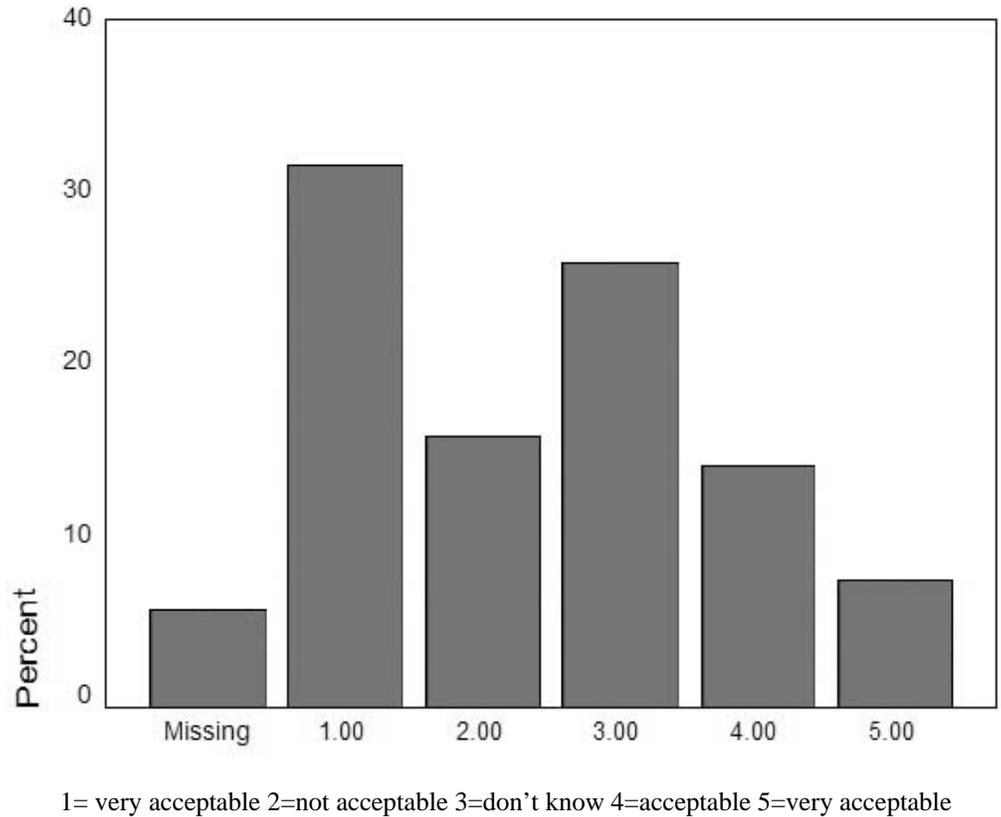


Figure 7: Respondents attitudes about killing problem bears

I posit that bears and humans in and around the Bow Valley is akin to two very different cultures sharing living space in which one is a predominant culture. In this case, people are aware of this other “culture,” they think it valuable to have the other, generally don’t want to see harm come to it, yet they don’t really want to put the effort into learning the language or doing much toward ensuring a peaceful coexistence. Knowing that bears are in the area and claiming to like them, however, does not necessarily equate to accepting them as part of the “community.” If “community” means only the human community (and perhaps domesticated animals), then bears

automatically fall into a category that is outside the boundaries of “community”, bears are “other.” The travesties that result in the segregation and ignorance of “other” people have in part been what has motivated intercultural training and communication – we apply the notion of “understanding” to humans – why not to the non-humans who also live with us? Of course, extending the rights to other species as members of a community thought of as belonging to humans has long been a contentious debate and the ways in which we discriminate are not necessarily obvious until they are “forcefully pointed out to us” (Singer, 1973, p. 95). Similar to having intercultural sensitivity, Russell is of the belief that protocols are required for the meeting of the two species and by learning, such as he did, these protocols peaceful coexistence could be established (Russell & Enns, 2003, p. 9).

Recommendations

Respondents remarked favorably to further educating residents about how to manage backyard attractants and to avoid human-bear conflict. As noted, “successful coexistence between people and grizzlies requires many individuals to integrate bear-safe behaviors into the everyday lives” (Primm & Murray, 2005, p. 125); therefore public education about bears and related issues seems warranted in areas such as the Bow Valley.

Of the surveys collected, 60 percent were filled out by males and 40 percent females. Previous studies have found that there is a widespread difference in attitudes toward wildlife between men and women (Kellert, 1996, p. 53), so although it was beyond the scope of this discussion, a future study in the Bow Valley might want to investigate the differences between men and women with regard to attitudes about bears.

A pilot test was not conducted on the 2006 survey, and may have helped streamline some of the questions increasing the survey’s content validity. It is recommended that if Wild Smart conducts another survey that a pilot test be conducted and that measures of reliability are incorporated to determine how internally consistent the questions are in measuring the attitudes and knowledge that they are supposed to be measuring (Fink, 2006, p. 38).

At the time the data for this study was collected Wild Smart was a new initiative. A second survey study would be in order if the organization wanted to test its effect on community members thus far. Future surveys, however, ought to make clear what the term “community” includes or excludes. It would be helpful, of course, to also define what the terms “healthy” and “co-existence” mean. Is segregating bears and humans a “healthy co-existence”? Would more tolerance of bears within urban areas (even with the known risks) be “healthier” overall?

Finally, people in the Bow Valley should not only have access to education about bears, but should be invited and encouraged by bear management strategists and governing principals to participate in the bear-human management decision making process.

Conclusion

The experiences of Charlie Russell and Maureen Enns who lived among the grizzlies in Russia provide excellent examples of humans communicating with bears in peaceful co-existence (Bergman, 2002, p.58). Though their communication strategies may not be practical in different geographic areas or in more urbanized settings, such as large towns with extensive amenities, the experiences of Russell & Enns nevertheless show that peaceful co-existence in close proximity with bears is possible – depending very much on how humans proceed. As bear specialists have echoed, “in learning to coexist with black and grizzly bears, we will need to develop not only more efficient resource and people management but we shall also have to change some of our attitudes and expectations” (Herrero, 1985, p. 260). Clark and Rutherford say that “to achieve coexistence with large carnivores we must think and act in ways that were unthinkable a few, short decades ago. We must minimize local, on-the-ground conflicts between people and predators, while finding ways to change what carnivores mean and symbolize” (2005, p. 7). Furthermore, Taylor and Clark suggest that “if we hope to develop effective policy for managing carnivores, we must acknowledge and understand the full range of perspectives, values, and subcultures of the residents, especially those of the dominant local culture” (2005, p.38). Accepting a more broad definition of the term “community,” one of the subcultures of the Bow Valley are bears and the dominant local culture are humans. Bear management strategies ought to reflect the attitudes and feelings of the people who live in communities with bears. Through surveys and focus groups the range of perspectives and values of humans in the Bow Valley can be found and by broadening the term “communication” to include interspecies, in this case bears, perhaps we can begin to consider the messages they are sending to us – silent or otherwise - as the dominant culture attempts to live in peaceful co-existence with them.

There are obvious disconnects between what the survey respondents in the Bow Valley say they want to achieve with bears, how they feel about bears within shared living spaces, and what messages may be being communicated with bears through bear management techniques. The conflicting messages that arise are that people want bears in the Bow Valley, think they are important to nature, but there are parameters to the space they share, absence of adequate knowledge about bears, and fears associated with living with them. People also seem to want to live in peaceful co-existence and are even willing to pay a price for it through increased taxes, but there seems to be little willingness to get involved in the change process themselves, as reflected in the lack of interest in being contacted for future study. This case study not only contributes to the on-going knowledge base of attitudes and knowledge about bears, most relevant to the people and bears living in the Bow Valley, but also toward the general discussion about what constitutes community and how we communicate with other species. Critical analysis about the meaning of the terms “communication” and “community” as applied to people hoping to achieve peaceful co-existence with bears invites discourse about those issues without engaging in the contentious debate about believed moral standing and perceived rights of a species. The hybrid framework offered by Lestel allows for discussion about bears to be not only about how we affect them - or them us – but how we engage together, living in shared spaces, communicating messages with each other.

Increasing knowledge about bears and challenging attitudes that bears are something “other-than,” something “out there,” may lead to better interspecies communication and better bear management strategies that ultimately get closer to the goal of co-existing peacefully with another of the earth’s carnivores. “The ‘familiarity’ humans develop with an animal is important

because it is thereby that the animal's life becomes the life of *this* and not of *that* one" (Lestel, 2006, p. 172).

One of the findings in the Whistler bear study was that the more contact people had with bears, the less fear they expressed (2004, Custom Fit Communications). Prolonged living with bears, and inviting critical discourse about human-bear issues, may contribute to dispelling myths and therefore fear of the carnivore which could potentially assist bear management specialists in their effort for peaceful co-existence as they meet new pressures with more and more people moving into places where bears exist.

The artificial borders that define frontcountry, backcountry, community and non-urban areas are not obvious to the bears of the Bow Valley. The rules that humans have established for living within these defined areas are communicated across species boundaries through bear management techniques – an on-going learning process of what works and what doesn't. So what messages do we want to send to bears? How would we proceed if bears were another human culture? Are current bear management techniques successful in conveying what people in the Bow Valley want to communicate? These are critical questions for full-and part-time residents to ask as human population and therefore amenities increase in the Bow Valley. More importantly perhaps will be the willingness of people to adapt their own behavior to be in accordance with actions that will achieve peaceful co-existence with grizzly bears, the most widely distributed of all bear species, and black bears, the most prevalent of all bears in the world (Primm & Murray, 2005, p. 101).

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¹ A few surveys were conducted over the phone using systematic sampling by calling every fifth person on every fifth page of the public phone book. There were 20 successful surveys conducted by telephone; considering the small number and that the MRC students aborted the method part way through, the data from telephone surveys was disregarded from this analysis.

Appendix A

Wild Smart 2006 Survey Statistics: Attitudes

Wildlife is an Essential Component of Nature					
1=strongly agree 2=agree 3=neutral 4=disagree 5=strongly disagree		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	156	87.6	88.6	88.6
	2.00	19	10.7	10.8	99.4
	3.00	1	.6	.6	100.0
	Total	176	98.9	100.0	
Missing	System	2	1.1		
Total		178	100.0		

Mean	1.1193
Median	1.0000
Mode	1.00

Wildlife has an Aesthetic Value Beyond the Economic Benefits					
1=strongly agree 2=agree 3=neutral 4=disagree 5=strongly disagree		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	131	73.6	74.9	74.9
	2.00	32	18.0	18.3	93.1
	3.00	10	5.6	5.7	98.9
	4.00	1	.6	.6	99.4
	5.00	1	.6	.6	100.0
	Total	175	98.3	100.0	
Missing	System	3	1.7		
Total		178	100.0		

Mean	1.3371
Median	1.0000
Mode	1.00

Wildlife must be Preserved out of Moral Obligation to Future Generations					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	140	78.7	79.5	79.5
	2.00	30	16.9	17.0	96.6
	3.00	4	2.2	2.3	98.9
	4.00	2	1.1	1.1	100.0
	Total	176	98.9	100.0	
Missing	System	2	1.1		
Total		178	100.0		
N	Valid	176			
	Missing	2			
Mean		1.2500			
Median		1.0000			
Mode		1.00			

Bear/Human Conflicts are a Problem in the Bow Valley					
1=strongly agree 2=agree 3=neutral 4=disagree 5=strongly disagree		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	33	18.5	19.2	19.2
	2.00	65	36.5	37.8	57.0
	3.00	39	21.9	22.7	79.7
	4.00	28	15.7	16.3	95.9
	5.00	7	3.9	4.1	100.0
	Total	172	96.6	100.0	
Missing	System	6	3.4		
Total		178	100.0		
Mean		2.4826			
Median		2.0000			
Mode		2.00			

Willing to pay more Property Taxes to Ensure People & Bears Live in Harmony in the Bow Valley					
1=strongly agree 2=agree 3=neutral 4=disagree 5=strongly disagree		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	30	16.9	17.5	17.5
	2.00	44	24.7	25.7	43.3
	3.00	48	27.0	28.1	71.3
	4.00	24	13.5	14.0	85.4
	5.00	25	14.0	14.6	100.0
	Total	171	96.1	100.0	
Missing	System	7	3.9		
Total		178	100.0		
Mean	2.8246				
Median	3.0000				
Mode	3.00				

Bears can be Eliminated from the Bow Valley Without Negative Consequences					
1=strongly agree 2=agree 3=neutral 4=disagree 5=strongly disagree		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	3	1.7	1.7	1.7
	2.00	8	4.5	4.5	6.3
	3.00	11	6.2	6.3	12.5
	4.00	36	20.2	20.5	33.0
	5.00	118	66.3	67.0	100.0
	Total	176	98.9	100.0	
Missing	System	2	1.1		
Total		178	100.0		
Mean	4.4659				
Median	5.0000				
Mode	5.00				

It is Possible to Ensure a Healthy Co-existence Between People & Bears in the Bow Valley					
1=strongly agree 2=agree 3=neutral 4=disagree 5=strongly disagree		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	69	38.8	39.4	39.4
	2.00	67	37.6	38.3	77.7
	3.00	22	12.4	12.6	90.3
	4.00	14	7.9	8.0	98.3
	5.00	3	1.7	1.7	100.0
	Total	175	98.3	100.0	
Missing	System	3	1.7		
Total		178	100.0		

Mean	1.9429
Median	2.0000
Mode	1.00

Don't Mind Bears in the Backcountry but don't Belong in or Near Community or Near High Concentrations of People					
1=strongly agree 2=agree 3=neutral 4=disagree 5=strongly disagree		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	19	10.7	11.0	11.0
	2.00	54	30.3	31.2	42.2
	3.00	43	24.2	24.9	67.1
	4.00	37	20.8	21.4	88.4
	5.00	20	11.2	11.6	100.0
	Total	173	97.2	100.0	
Missing	System	5	2.8		
Total		178	100.0		

Mean	2.9133
Median	3.0000
Mode	2.00

Engage in Outdoor Activities in area where Might Encounter Grizzly Bears					
1=very negative 2=negative 3=neutral 4=positive 5=very positive		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	10	5.6	5.7	5.7
	2.00	35	19.7	19.9	25.6
	3.00	62	34.8	35.2	60.8
	4.00	48	27.0	27.3	88.1
	5.00	21	11.8	11.9	100.0
	Total	176	98.9	100.0	
Missing	System	2	1.1		
Total		178	100.0		

Mean	3.1989
Median	3.0000
Mode	3.00

See signs of Grizzly Bear in Neighborhood					
1=very negative 2=negative 3=neutral 4=positive 5=very positive		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	34	19.1	19.7	19.7
	2.00	63	35.4	36.4	56.1
	3.00	46	25.8	26.6	82.7
	4.00	26	14.6	15.0	97.7
	5.00	4	2.2	2.3	100.0
	Total	173	97.2	100.0	
Missing	System	5	2.8		
Total		178	100.0		

Mean	2.4393
Median	2.0000
Mode	2.00

Sign of Grizzly Bear on Property					
1=very negative 2=negative 3=neutral 4=positive 5=very positive		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	60	33.7	34.9	34.9
	2.00	55	30.9	32.0	66.9
	3.00	38	21.3	22.1	89.0
	4.00	13	7.3	7.6	96.5
	5.00	6	3.4	3.5	100.0
	Total		172	96.6	100.0
Missing	System	6	3.4		
Total		178	100.0		

Mean	2.1279
Median	2.0000
Mode	1.00

Encounter grizzly bear in close proximity in the backcountry					
1=very negative 2=negative 3=neutral 4=positive 5=very positive		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	40	22.5	23.3	23.3
	2.00	59	33.1	34.3	57.6
	3.00	38	21.3	22.1	79.7
	4.00	26	14.6	15.1	94.8
	5.00	9	5.1	5.2	100.0
	Total		172	96.6	100.0
Missing	System	6	3.4		
Total		178	100.0		

Mean	2.4477
Median	2.0000
Mode	2.00

Encounter Grizzly Bear in Close Proximity in the Bow Valley					
1=very negative 2=negative 3=neutral 4=positive 5=very positive		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	44	24.7	25.7	25.7
	2.00	59	33.1	34.5	60.2
	3.00	36	20.2	21.1	81.3
	4.00	25	14.0	14.6	95.9
	5.00	7	3.9	4.1	100.0
	Total		171	96.1	100.0
Missing	System	7	3.9		
Total		178	100.0		
Mean		2.3684			
Median		2.0000			
Mode		2.00			

Using Rubber Bullets to Deter Bears					
1=very unacceptable 2=not acceptable 3=don't know 4=acceptable 5=very acceptable		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	21	11.8	12.3	12.3
	2.00	25	14.0	14.6	26.9
	3.00	41	23.0	24.0	50.9
	4.00	59	33.1	34.5	85.4
	5.00	25	14.0	14.6	100.0
	Total		171	96.1	100.0
Missing	System	7	3.9		
Total		178	100.0		
Mean		3.2456			
Median		3.0000			
Mode		4.00			

Killing "problem" Bears					
1=very unacceptable 2=not acceptable 3=don't know 4=acceptable 5=very acceptable		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	56	31.5	33.3	33.3
	2.00	28	15.7	16.7	50.0
	3.00	46	25.8	27.4	77.4
	4.00	25	14.0	14.9	92.3
	5.00	13	7.3	7.7	100.0
	Total	168	94.4	100.0	
Missing	System	10	5.6		
Total		178	100.0		
Mean	2.4702				
Median	2.5000				
Mode	1.00				

Contact for Future Focus Group or in depth Study					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	129	72.5	72.5	72.5
	yes	49	27.5	27.5	100.0
	Total	178	100.0	100.0	

Appendix B

Wild Smart 2006 Survey Statistics: Knowledge

Aware that Grizzly and Black Bears live in the Bow Valley Area					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	178	100.0	100.0	100.0

An Understanding of Bear Behavior					
1=poor knowledge 2=fair knowledge 3=neutral 4=good knowledge 5=excellent knowledge		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	28	15.7	16.1	16.1
	2.00	59	33.1	33.9	50.0
	3.00	34	19.1	19.5	69.5
	4.00	42	23.6	24.1	93.7
	5.00	11	6.2	6.3	100.0
	Total		174	97.8	100.0
Missing	System	4	2.2		
Total		178	100.0		
Mean	2.7069				
Median	2.5000				
Mode	2.00				

How to Avoid Attracting Bears to Property					
1=poor knowledge 2=fair knowledge 3=neutral 4=good knowledge 5=excellent knowledge		Frequency	Percent	Valid Percent	Cumulative Percent
		Valid	1.00	10	5.6
2.00	40		22.5	23.0	28.7
3.00	24		13.5	13.8	42.5
4.00	75		42.1	43.1	85.6
5.00	25		14.0	14.4	100.0
Total	174		97.8	100.0	
Missing	System	4	2.2		
Total		178	100.0		

Mean	3.3736
Median	4.0000
Mode	4.00

How to Handle Garbage in a Bear Proof Manner					
1=poor knowledge 2=fair knowledge 3=neutral 4=good knowledge 5=excellent knowledge		Frequency	Percent	Valid Percent	Cumulative Percent
		Valid	1.00	2	1.1
2.00	18		10.1	10.3	11.5
3.00	7		3.9	4.0	15.5
4.00	89		50.0	51.1	66.7
5.00	58		32.6	33.3	100.0
Total	174		97.8	100.0	
Missing	System	4	2.2		
Total		178	100.0		

Mean	4.0517
Median	4.0000
Mode	4.00

How to tell a Grizzly from a Black Bear					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	18	10.1	10.4	10.4
	2.00	26	14.6	15.0	25.4
	3.00	23	12.9	13.3	38.7
	4.00	73	41.0	42.2	80.9
	5.00	33	18.5	19.1	100.0
	Total	173	97.2	100.0	
Missing	System	5	2.8		
Total		178	100.0		
Mean	3.4451				
Median	4.0000				
Mode	4.00				

What to do if see a Bear in the Distance in Backcountry					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	19	10.7	11.0	11.0
	2.00	21	11.8	12.1	23.1
	3.00	23	12.9	13.3	36.4
	4.00	81	45.5	46.8	83.2
	5.00	29	16.3	16.8	100.0
	Total	173	97.2	100.0	
Missing	System	5	2.8		
Total		178	100.0		
Mean	3.4624				
Median	4.0000				
Mode	4.00				

What to do if see a Bear in the Closer Range in Backcountry					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	27	15.2	15.8	15.8
	2.00	34	19.1	19.9	35.7
	3.00	22	12.4	12.9	48.5
	4.00	70	39.3	40.9	89.5
	5.00	17	9.6	9.9	99.4
	32.00	1	.6	.6	100.0
	Total	171	96.1	100.0	
Missing	System	7	3.9		
Total		178	100.0		
Mean	3.2632				
Median	4.0000				
Mode	4.00				

How to Avoid Attracting a Bear while Camping					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	7	3.9	4.0	4.0
	2.00	28	15.7	16.2	20.2
	3.00	12	6.7	6.9	27.2
	4.00	90	50.6	52.0	79.2
	5.00	36	20.2	20.8	100.0
	Total	173	97.2	100.0	
Missing	System	5	2.8		
Total		178	100.0		

Mean	3.6936
Median	4.0000
Mode	4.00

Who and How to Contact to Report a Bear Sighting or Confrontation					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	29	16.3	16.8	16.8
	2.00	39	21.9	22.5	39.3
	3.00	22	12.4	12.7	52.0
	4.00	61	34.3	35.3	87.3
	5.00	22	12.4	12.7	100.0
	Total		173	97.2	100.0
Missing	System	5	2.8		
Total		178	100.0		

Mean	3.0462
Median	3.0000
Mode	4.00

What Options there are for Dealing with Problem Bears without Killing them					
1=poor knowledge 2=fair knowledge 3=neutral 4=good knowledge 5=excellent knowledge		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	28	15.7	16.1	16.1
	2.00	40	22.5	23.0	39.1
	3.00	31	17.4	17.8	56.9
	4.00	62	34.8	35.6	92.5
	5.00	13	7.3	7.5	100.0
	Total		174	97.8	100.0
Missing	System	4	2.2		
Total		178	100.0		

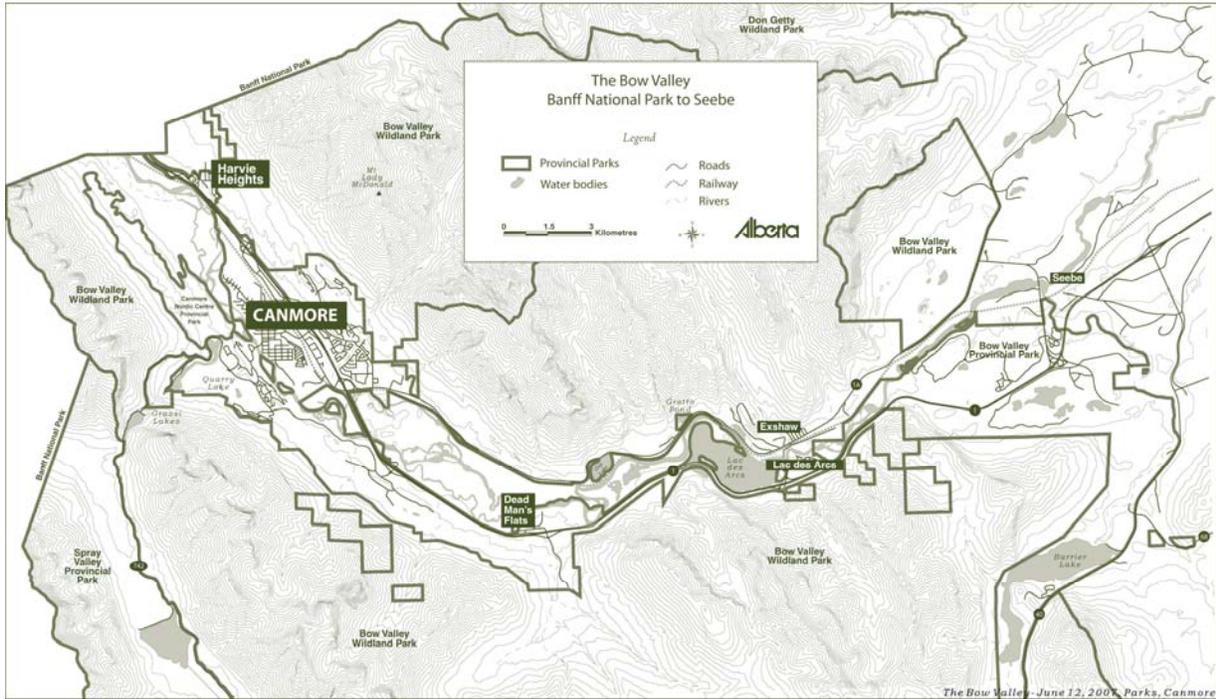
Mean	2.9540
Median	3.0000
Mode	4.00

Educating Residents to Manage Backyard Attractants					
1=very unacceptable 2=not acceptable 3=don't know 4=acceptable 5=very acceptable		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	4	2.2	2.3	2.3
	2.00	1	.6	.6	2.9
	3.00	6	3.4	3.4	6.3
	4.00	45	25.3	25.9	32.2
	5.00	118	66.3	67.8	100.0
	Total	174	97.8	100.0	
Missing	System	4	2.2		
Total		178	100.0		
Mean	4.5632				
Median	5.0000				
Mode	5.00				

Educating Residents & Visitors how to Avoid Bear/Human Conflict					
1=very unacceptable 2=not acceptable 3=don't know 4=acceptable 5=very acceptable		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	4	2.2	2.3	2.3
	2.00	2	1.1	1.2	3.5
	3.00	3	1.7	1.7	5.2
	4.00	46	25.8	26.6	31.8
	5.00	118	66.3	68.2	100.0
	Total	173	97.2	100.0	
Missing	System	5	2.8		
Total		178	100.0		
Mean	4.5723				
Median	5.0000				
Mode	5.00				

Appendix C

Map: Bow Valley, Alberta



Appendix D

2006 Wild Smart Survey

Soon to be launched, the ***Bow Valley WildSmart Community Program*** will encourage efforts by businesses, individuals and local governments to reduce negative human/wildlife interactions via education, the creation of on the ground management actions, and fostering cooperative community involvement. This survey is part of a host of tools that will allow *WildSmart* to come up with education programs that will have real impact in the Bow Valley community. Thank you for taking time to fill it out!

PART 1: RESIDENCY

- You are a permanent resident in the Bow Valley
- You own or regularly rent a home in the Bow Valley

PART 2: AWARENESS

1. Have you heard about the Bow Valley's *WildSmart* initiative? Yes No

2. Before this survey, were you aware that grizzly and black bears live in the Bow Valley area? Yes No

3. Have you had a personal encounter with either a grizzly bear or a black bear?
 - Yes No

 - b. Approximately how far away was the bear?
 - Less than 30 meters Further than 30 meters

 - c. Was it in the Bow Valley between the Banff Park gate and the Kananaskis River? Yes No

4. Have you ever seen evidence that bears are present in the Bow Valley?
 - Yes No
 - What were the signs?
 - Scat
 - Tracks
 - Pawed over logs
 - Plant root diggings
 - Claw marks on trees
 - Overturned rocks
 - Other _____

5. Do you think, in the past 5 years, the grizzly bear population in the Bow Valley has:
 - Decreased
 - Remained about the same

- Increased
- Don't know

PART 3: EMOTIONS

6. Seeing or interacting with wildlife evokes different feelings in people. Below are different scenarios involving human/bear interaction. On a scale from 1 to 5 how does each scenario make you feel? 1 represents a sensation of strong fear, 3 signifies a neutral sensation and 5 a sense of delight. Picture yourself in the following situations:

	1 Very Negative	2 Negative	3 Neutral	4 Positive	5 Very Positive
You engage in outdoor activities in an area where you might encounter grizzly bears					
You see a grizzly bear by the side of the road in your car					
Grizzly bear presence is evident in the backcountry (outside of an urban area)					
Evidence of grizzly bear presence is seen in the Bow Valley					
You see signs of a grizzly bear in your neighbourhood					
You see sign of a grizzly bear on your property					
You encounter a grizzly bear in close proximity in the back country					
You encounter a grizzly bear in close proximity in the Bow Valley					

PART 4: ATTITUDES

Please indicate on a scale from one to five how much you agree or disagree with the following statements. On this scale 5 means “strongly agree” and 1 “strongly disagree”. 3 is neutral.

7. Wildlife in general

	1 Strongly agree	2 Agree	3 Neutral	4 Disagree	5 Strongly Disagree
You think the presence of wildlife has an economic value					
Wildlife is an essential component of nature					
Wildlife has an aesthetic value beyond the economic benefits					
Wildlife must be preserved out of our moral obligation to future generations					

8. Grizzly and black bears in the Bow Valley

	1 Strongly agree	2 Agree	3 Neutral	4 Disagree	5 Strongly Disagree
Bears in the Bow Valley have economic value as a tourist attraction					
Having bears in the Bow Valley enhances my quality of life					
Bear/human conflicts are a problem in the Bow Valley					
I would be willing to pay more in property taxes to ensure that people and bears can live in harmony in the Bow Valley					
Bears can be eliminated from the Bow Valley without any negative consequences					

9. Grizzly and black bears in and around Canmore

	1 Strongly Agree	2 Agree	3 Neutral	4 Disagree	5 Strongly Disagree
I believe that it is possible to ensure a healthy co-existence between people and bears in the Bow Valley					
I don't mind bears in the back country, but bears don't belong in or near the community and they certainly don't belong near high concentrations of people					

PART 5: INFORMATION/KNOWLEDGE

10. Please answer these questions as well as you can. Please don't worry if you don't know the answers to the questions.

When recreating in bear country, the best way to avoid an encounter is to:

- a. carry bear spray
- b. have an unleashed dog with me
- c. make lots of noise
- d. wear bear bells
- e. Stay in groups of six or more

Can you name three ways to avoid attracting a bear to your property?

1. _____
2. _____.
3. _____

Name two ways to distinguish a black bear from a grizzly bear.

1. _____
2. _____

Name three things you might see in the bush to indicate a bear is in the area.

1. _____

2. _____

3. _____

11. In this part of the survey we would like you to think about the general knowledge you presently have about grizzly and black bears. How would you rate your knowledge regarding the following items? The scale is 1 to 5, where 1 means “poor knowledge” on the item 5 means “excellent knowledge”.

	1 Poor Knowledge	2 Fair Knowledge	3 Neutral	4 Good knowledge	5 Excellent Knowledge
An understanding of bear behavior					
How to avoid attracting bears to your property					
How to handle garbage in a bear-proof manner					
How to tell a grizzly from a black bear					
What to do when you see a bear in the distance in the backcountry					
What to do when you encounter a bear at closer range in the back country					
How to avoid attracting a bear while camping					
What to do if a bear comes onto your property					
Which wildlife corridor areas are closed to human use except on designated trails					
Who and how to contact to report a bear sighting or confrontation					
What options there are for dealing with 'problem' bears without killing them					

12. Please indicate how acceptable you believe the following bear management options would be. The scale is one to five where 1 means “not at all acceptable” and 5 means “very acceptable”.

	1 Very unacceptable	2 Not acceptable	3 Don't Know	4 Accept- able	5 Very acceptable
Educating residents how to manage backyard attractants					
Educating residents and visitors how to avoid bear/human conflict					
Use of fines to enforce improper attractant management					
Using noise deterrents like bangers and screamers to deter bears from entering neighbourhoods and recreation areas					
Removing berry bushes and other natural foods from where we don't want bears to linger					
Restricting development in areas used by bears					
Using rubber bullets to deter bears					
Capturing and relocating bears					
Killing “problem” bears					

PART 6: RECREATION AND PREPERATION

13. Are you aware of any areas closed to human activity in the Bow Valley (not including private lands)? Yes No

14. Do you always carry, and know how to use, a bear deterrent (ie bear spray, bear banger) when walking, hiking or mountain biking in the Bow Valley?
Yes No Sometimes

15. Do you travel alone in bear country? Yes No Sometimes

16. Have you ever read a manual or seen an instructional video about how to stay safe in bear country? Yes No

17. Do you own a dog or dogs? Yes No

18. Does Canmore have a law requiring dogs to be on-leash except in designated areas?
Yes No Don't know

19. Do you utilize off-leash areas to walk your dog? Yes No

20. Do you support on leash regulations in certain parts of the Bow Valley?
Yes No

21. What do you generally do when you see a trail sign that says 'Warning – Bear in area'?

- Go back the way I came
- Continue on
- Continue on with extra caution
- Not applicable

22. What do you generally do when you see a trail sign that says 'Closed – Bear in area'?

- Go back the way I came
- Continue on
- Continue on with extra caution
- Not applicable

23. Are there areas in your community to go if you want to learn more about avoiding negative bear/human interactions? Where are they?

Part 7: DEMOGRAPHICS

24. To determine what area you live in the Bow Valley, please indicate the first three numbers and letters of your postal code – (if not, what area do you live in Bow Valley?)

Postal Code _____

- Silver Tip
- Three Sisters
- Hospital Hill
- Cougar Creek
- Downtown
- Elk Run
- Exshaw
- Lac des Arcs
- Deadman's Flats
- Harvie Heights

Other _____ []

25. In which of the following outdoor activities do you participate in the Bow Valley?

- Camping
- Canoeing/Kayaking
- Hiking in back country
- Rock climbing
- Hiking or walking in “front” country (areas in and around populated areas)
- Wildlife viewing
- Fishing
- Hunting
- Golfing
- Biking on urban biking paths
- Mountain biking on trails
- Extreme mountain biking

26. In what year were you born 19_____

27. Including yourself - how many are in your household? _____

28. Of these, how many are children under the age of 18 living at home? _____

29. What is your highest level of education you have completed?

- Secondary school
- Secondary school graduation
- Trades or other non university education
- Some university
- Bachelor’s degree or higher
- Refused

30. Male [] Female []

Later this fall we might conduct focus groups or in-depth interviews exploring alternatives for WildSmart educational campaigns more in depth. Would you be interested in participating in a focus group or interview later on?

Yes? Please record name and phone number _____

Thank you for your input – your responses are very valuable and will make a difference