

Report on Urban Bears in Prince George, British Columbia - A Survey of Community Attitudes

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Black Bears in Rhinelander, Wisconsin USA

Abstract

The management of black bears (*Ursus americanus*) in urban and/or exurban settings is of growing concern as these mammals, along with coyotes, cougars and others, begin to re-colonize areas from which they had been extirpated. Urban and exurban landscapes can offer much needed habitat to these space-demanding creatures, thereby buffering habitat losses in other areas and protecting populations of these species, but only if conflicts between these animals and humans can be managed and minimized. In the case of urban black bears, they can become quickly labeled as a “problem” bear if they become too reliant on human garbage or other food sources such as fruit trees. A “problem” bear usually becomes a dead bear. In collaboration with the Northern Bear Awareness Society in Prince George, British Columbia, Canada, UNBC researchers undertook a survey of Prince George residents to determine their attitudes towards black bears in their community and to assess views about bear management techniques, including euthanasia. Research demonstrated that residents tended to feel positively towards black bears, although many expressed some concerns about the risks the bears faced. Research could find no evidence of differences in views based upon gender, education or other socio-economic parameters, although the population surveyed was largely urban. Further, research demonstrated a split view on the issue of bear euthanasia, with half being firmly opposed and half appearing to recognize the need although most under certain conditions. Research also demonstrated a significant preference for non-lethal management tools, suggesting an opportunity for the municipal government to explore options for managing human activities that created bear attractants.

Keywords: black bear management, public attitudes towards wildlife, urban wildlife

Introduction

Bears have a storied reputation, either as a serious deterrent to break and enter (as Goldilocks discovered) or as a “soulless, Godless rampaging killing machine” (thanks to comedian Stephen Colbert and the late Colbert Report (<http://wikiality.wikia.com/Bears>) (accessed January 6, 2015)). The reality is of course, more prosaic. However for residents of urban centres adjacent to more rural lands, bears, along with other adaptable larger wildlife such as coyotes, deer, foxes, even cougars, have become a fact of life (Smith, Nielsen and Hellgren 2014). In such rural-urban interfaces, bears at garbage dumps, browsing through neighborhood garbage cans or trying to den up in an unsecured garage are regular occurrences (Belant, Simek and West 2011). So too are complaints to wildlife control officers and the not infrequent death sentence handed out to a persistent urbanized bear.

Municipalities coming to grips with the urban bear phenomena have a number of options available ranging from fines for residents leaving out attractants to destroying any bear found in an inappropriate setting. The determination of what is an appropriate response by a municipality may derive from many variables, but public perceptions may have some influence upon officials seeking re-election in the future. Similarly, advocacy groups lobbying on behalf of vulnerable wildlife may also have a keen interest in understanding the perceptions of an affected public as a basis from which to determine their approaches both towards that public and in their lobbying before government officials. Therefore understanding public perceptions has multiple utilities for the bear and for government agencies and NGOs.

At the invitation of the Northern Bear Awareness Society (NBAS), a non-profit organization concerned with the sensible management of urban bears in the city of Prince George, British Columbia, Canada (www.northernbearawareness.com), researchers from the University of Northern British Columbia undertook a survey of community attitudes towards urban bears and their management. The NBAS was particularly interested in both understanding how city residents felt about the presence of bears in their midst, but also in identifying public receptivity to management approaches that would reduce the number of bears being destroyed annually in the city. These interests framed the study's research questions.

The Context

Wildlife research in recent decades argues that there are three overarching concerns for managers engaged in human-wildlife management: that human population growth and environmental change is increasing faster than ever before in human history; that there is a growing gap between environmental problems and the ability to provide solutions; and that the earth is now a human-dominated system (Jochum et al. 2014: 2). In spite of these issues, most researchers also agree that North America is witnessing a reinhabitation of human dominated landscapes by formerly extirpated species (Don Carlos et al. 2009; Gore et al. 2008; Jochum et al. 2014; Merkle et al. 2014; Zajac et al. 2012). Some smaller predators, such as fox and coyotes, likely never left but larger predators, such as bears and cougars (Jochum et al. 2014; Smith et al. 2014), appear to

be a growing phenomena in urban and suburban areas in regions of North America from which they have long been absent.

As the public finds itself in new and perhaps unexpected conflicts with their new four-legged, rather scary and fabled neighbours, often in their own backyards, wildlife managers are scrambling to find management strategies that protect both human and non-human residents from each others' actions. Finding strategies that allow humans and large predators to co-exist is a critical undertaking. As Bruskotter and Wilson (2014) note, human tolerance is the most significant factor in determining whether larger carnivores, including bears, will be able to survive in an increasingly humanized North America, thus suggesting the case for working to understand human perceptions which might lead to tolerance of these animals. Barusch-Mordo et al. (2014: 8) argue that,

Because urban areas can attract bears in poor food years, a time when the population growth may already be stressed, removal of bears that use the urban environment could negatively affect the population locally or regionally, depending upon the attraction distance of urban areas.

They add that other research suggests that urban areas can serve as “refuges” for wildlife during lean years, providing a safeguard against an overall decline in population, although, in the case of bears, not if an increased urban presence also leads to increased mortality due to human action (i.e. euthanizing “problem” bears).

Research on urban/suburbanizing bears largely focuses upon black bears (*Ursus americanus*) as they are a far more common sight in residential areas than are grizzly bears (*Ursus arctos horribilis*), although a few northern or western North American communities can see both. Black bears find their way into human dominated landscapes primarily due to the presence of regular and reliable food sources (Barusch-Mordo et al. 2014; Belant et al. 2011), in particular easily accessible garbage (Don Carlos et al. 2009) or fruit. Paquet and McCrory (2012: 35) note that

...when we don't manage non-natural attractants, we provide a smorgasbord for bears and teach them to associate people with sources of food. Couple this with the knowledge that bears have amazing capacity to learn and remember, and that sows teach their cubs how to survive in all habitats, including settled ones, and the picture on how and why conflicts develop between bears and people...emerges (emphasis in original).

Barusch-Mordo et al. (2014) found in their Colorado study that during years that natural forage was abundant, bears were less likely to use human provided sources, suggesting that at least part of the cause of bears invading human habitat can be related to ecological change and habitat alterations as a result of anthropogenic changes. Foraging in urban areas might, in some situations, be reversed if outlying foraging habitat is in generally good condition, resulting in increased bear health and survival.

However, some bears may preferentially choose human sourced foods due to the evolutionary advantage offered. Merkle et al. (2013) found that urban bears in Missoula, Montana, for example, were not utilizing human sources due to changes in availability of wild food sources, but had actually changed their foraging activities to fully capitalize upon the high quality human sourced foods available in urban area, in this case apple trees. As a preferred food source, apple trees were more likely to influence the presence of bears in urban areas, given that the food quality was more consistent than that in individual garbage cans. They noted that others studies demonstrate that these “urban” bears change morphologically as well, becoming physically larger, enjoying better reproductive success, shorter activity periods and shorter denning times than their wildland counterparts, indicating the advantages of a superior food source. (The quantities of food potentially available are staggering: the United Nations Environmental Program estimates that in the US, 30-40% of the food supply is wasted, equaling more than 20 pounds of food per person per month; in Canada almost 51% of food ends up being wasted and thrown out; while this is a serious concern for the human world, it is a substantial bonus for urbanized bears (http://www.worldfooddayusa.org/food_waste_the_facts [downloaded May 2, 2015].))

Other factors which can entice a bear into a suburban space include possible habitat. Evans et al. (2014), examined black bear conflicts in exurbs in Connecticut to determine factors linked to human-black bear conflicts, and found that the presence of significant forest cover (42% of a neighbourhood) intermixed with housing was the best predictor of conflicts, as opposed to low or high levels of forest cover. The presence of forest edge also increased conflicts.

The presence of bears is not only a problem in suburban areas but in rural areas adjacent to urban/suburban areas. Belant et al. (2011), note that black bears are responsible for a range of wildlife caused damage. For North American farmers, black bears are the second most common species causing damage (Belant et al. 2011:15). Complaints in recent years appear to be tripling or quadrupling, although the rise in complaints could be the result of the greater number of humans unfamiliar with or uncomfortable around wildlife in quasi-rural areas, in addition to changes in human or bear populations (Belant et al. 2011: 16). Bears can, and do, damage crops, especially fruit crops, apiaries, bird feeders, buildings and cars in a quest for food (research suggests that minivans are preferentially targeted while sedans are avoided due to the ease of bear access or the greater likelihood of food in minivans, this indicates that bears learn very quickly and adapt feeding strategies appropriately (Belant et al. 2011: 17)). However, injuries to humans are relatively infrequent, despite the recent rise in bear-human encounters. Belant et al. (2011: 41) note that the

Integration of human attitudes and perceptions in management strategies will first require improved understanding of human behavior, which in turn will allow prediction of human behaviors that could be modified through education and awareness to reduce bear conflicts.

If black bears are a fact of life in an increasing number of North American suburbs and rural residential locations, and if there are sound ecological reasons for working with the public to develop an increased tolerance for the presence of bears in their backyards, managers must assess best options for building good neighbour relations between bears and humans. There are two types of approaches: control the bear or control the human.

Controlling bears is widely practiced in many areas. Usually this is accomplished by targeting “problem” bears, those thought to be a threat or a persistent nuisance. Some jurisdictions still trap and relocate bears to outlying areas in an attempt to discourage further nuisance problems. However, research suggests that relocation is both costly and largely ineffective (Don Carlos et al. 2009; Belant et al. 2011), so most jurisdictions euthanize problem bears (although they may be live trapped and euthanized out of public sight). Other methods of limiting bear populations appear to be ineffective; for example, Obbard et al. (2014), found that increased legal hunting of black bears in Ontario did not result in decreased human-bear conflicts. Further, as noted earlier, in areas where bear populations are locally threatened, complete removal of any bear from the breeding population may threaten the survival of the species both regionally in the short term and nationally in the long term. The alternative to controlling bears is to control the human population instead.

Research suggests that there are two key approaches to changing human responses to the presence of bears. The first is to change human behaviour that creates inducements for bears to become perceived as threats or nuisances, such as eliminating easily accessible resources like garbage or fruit. The second is to change human perceptions of bears in their communities. To a considerable extent the success of the first approach is dependent upon the success of the second approach: people will only change their behaviour if they think it is worthwhile to preserve bears.

Controlling human behaviour is technically simple, when it comes to bears: humans are simply instructed to eliminate easy access to garbage, residential fruit trees (through promptly removing fruit), bird-feeders, or pet food. This can be easily done through municipal and regional bylaws and strict enforcement through monitoring and severe fines. In reality, of course, such initiatives are usually highly unpopular with local governments due both to cost and public disapprobation during short elective cycles.

Some jurisdictions try to encourage municipal interest in developing bear policies. British Columbia, for example, runs a “Bear Smart Community” Program, developed and administered between the British Columbia Ministry of Environment, the British Columbia Conservation Foundation and the Union of British Columbia Municipalities

(<http://www.env.gov.bc.ca/wld/bearsmart> [accessed April 30, 2015]). It is a

voluntary, preventative conservation measure that encourages communities, businesses and individuals to work together...to address the root causes of bear/human conflicts, thereby reducing the risks to human safety and private property, as well as the number of

bears that have to be destroyed each year. This program is based on a series of criteria that communities must achieve in order to be recognized as being "Bear Smart". The responsibility to manage bear/human conflicts rests with everyone; Bear Smart will require participation from the provincial government, municipal governments, and local citizens to be successful (Introduction: <http://www.env.gov.bc.ca/wld/bearsmart> [accessed May 15, 2015]).

This is a laudable initiative, but it faces two challenges: municipalities see no net benefit outside of a "paper" designation and the efforts required to meet the criteria can be cost prohibitive (Dave Bakker, Northern Bear Awareness Society, personal communication, April 15, 2015). Where local and regional governments face budget challenges, the voters can justifiably object to a redirection of expenditures from more immediate concerns, such as reoccurring road repair.

Downloading the responsibility onto citizens, as a cost savings measure, is also problematic in terms of long term adoption. Barrett et al. (2014) conducted experiments in Florida around the introduction of bear-proof residential garbage cans, including an expensive model specifically designed to be bear-proof and a less expensive modification to existing containers. They noted that the introduction of both the expensive model and the inexpensive modification sharply reduced overall bear-human interactions during the trial period (from 28.2% of residents seeing bears to only 3.2% due to the expensive containers and from 47% of residents seeing bears to less than 10% after six months and 0% after twelve months for the modified can). However the authors found that acceptance of the expensive model by residents was moderated by fears of increased personal costs for either acquisition or waste company handling fees. The low cost modification received, in contrast, enthusiastic support, but in many areas the use of low cost modifications might be limited by various factors.¹

To encourage the public to accept potential additional costs to bear-proof neighborhoods, and thus by extension local governments, attitudes towards and acceptance of the presence of bears must be understood and managed. The research literature suggests that this is a complex issue. Jochum et al. (2014: 2) note that understanding human responses to the intersection of wildlife and human lives requires recognizing that the issue of encounters encompasses both social and ecological components and the relationship between the two. Bears do seem to have some positive attributes in the eyes of the public. Gore et al. (2006) note that many people view black bears positively, given their anthropomorphic appeal and low incidence of fatality (grizzlies would be a very different matter). Don Carlos et al. (2009), in their study, set near Aspen, Colorado, found that 50% of respondents held a positive attitude towards the presence of bears, 35% held both positive and negative feelings towards bears and that only 15% were negative in

¹In Prince George, BC, for example, permanent modifications to existing trash cans, according to the municipality, could interfere with the automated collection process; the municipality thus would not recommend modifying cans to deter bears (Dave Bakker, Northern Bear Awareness Society, personal communication, April 15, 2015).

their feelings. In Illinois, Smith et al. (2014) found that black bears, although realistically a greater threat than were the other species studied, wolves and cougars, were more positively regarded by residents, although their appeal may be mitigated by a number of factors.

A number of studies suggest that urban residents were more supportive of the presence of carnivores than were rural residents (Draheim et al. 2013; Smith et al. 2014). This appears linked to levels of experience, for example urban residents with little on-going exposure to predators (wolves and coyotes) were more positive in their perceptions than rural residents with presumably greater experience. However, a few studies also demonstrated that when urbanites were faced with actual encounters with predators (coyotes in Chicago, Illinois, for example or wolves in Norway), their attitudes were suddenly exceptionally negative as was their tolerance for the presence of the animal; they certainly did not want them near their own home (Smith et al. 2014).

Smith et al. (2014) found that, in Illinois, higher levels of education were linked to a positive perception of larger carnivores including black bears (although again, most did not actually want one near their home). Siemer et al. (2009) noted that personal attributes such as gender (women might be more concerned about potentially dangerous wildlife), could influence attitudes towards bears, but their survey amongst New York State residents found no link between gender and increased concern or an urge to notify authorities about a bear. Personal values, were however, critical in developing a tolerance for bears. Siemer et al. (2009) posited, based upon existing literature, that a number of factors might impact an individual's set of beliefs around bear encounters, including the existing value orientation of a person (someone who already values wildlife or perceives a benefit will be more likely to tolerate a species even after a negative event), as well as personal experience (those who had experiences with bears were more likely to worry less about bears and tolerate their presence more, as bears were familiar).

A number of researchers argue that perceptions of predators in general and bears in particular are linked to perceptions of benefits and risks associated with a species. Bruskotter and Wilson (2014) suggest that, psychologically speaking, a tolerance for bears suggests passive acceptance of the animal's presence while intolerance suggests a lack of acceptance and possible willingness to engage in action against the animal. This is linked to perceptions of negative or positive beliefs about an animal, especially perceived risks or benefits. They note, however, a difference between technical assessment of risk (such as tradeoffs of benefit versus risk) and a lay or public perception of risk (which may involve outrage, fear and limited perception of tradeoffs).

Zajac et al. (2012), examined attitudes in Ohio towards a recovering black bear population and similarly demonstrated that the perceptions of risks and benefits, including the social and ecological benefits of predators, was critical to understanding the public's perception of black bears: the greater the perceived benefit, the greater the tolerance for bears. Bruskotter and Wilson (2014) concur, further arguing that knowledge also appears to offset perceptions of risk, as do Zajac et al. (2012), who argue that increasing a personal level of control, such as through education that increases an individual's ability to control a situation, also enhanced tolerance for

bears.

Several authors argue that tolerance and the linked perception of risks are contingent upon appropriate information (knowledge) being provided to the public through education as well as inappropriate information, such as negative media stories, being restricted. Bruskotter and Wilson (2014) note that the public perceiving benefits appears to be a very strong need underpinning support for anything that poses a risk; messaging that presents both risk and benefits associated with a predator is to be preferred to that only highlighting risks. Gore et al. (2005) found that positive media coverage that emphasized the rarity of human fatalities due to black bear attacks offset coverage of an incident of a bear fatally injuring an infant, suggesting that even an extremely negative bear event could be mitigated through education and information. Siemer et al. (2009) posited, based upon existing literature, that a number of factors might impact an individual's set of beliefs around bear encounters, including media and media coverage of human-wildlife interactions; media coverage of a bear attack might increase a perception of risk, as had happened in some locales in the early 2000s, further, viewing television shows about bears could also elevate concerns.

Gore et al. (2006) found that in New York State, it was individual knowledge/capacity that was at the base of risk perceptions. Reducing exposure to negative bear incidents through public management did not appear to affect a perception of risk, indeed experience with bears decreased a perception of risk, although on the downside they felt that this might increase actual risky behavior, such as inadequate securing of food resources. Siemer et al. (2009) concur that actual experience with bears is significant in mitigating peoples' perceptions of risk and therefore acceptance of the presence of bears.

Interestingly, both Zajac et al. (2012) and Bruskotter and Wilson (2014) found that a final significant factor facilitating acceptance of black bears was a trust in the management agency charged with dealing with bears. Such trust led to a lowered perception of risk and a greater acceptance of bears.

Three studies have examined the linkage of knowledge and bear management strategies. Merkle et al. (2011) note a change in preferred management strategies from reactive (dealing with individual problem bears one on one) to proactive management (in which managers take steps to prevent bears from turning in to problems in the first place). Preferred strategies were primarily education and information campaigns. Don Carlos et al.'s 2009 Colorado study found very mixed responses towards different management initiatives, which varied by attitude towards bears as well as situationally (i.e. what the bear was doing). Many favoured relocation regardless of the situation, which the authors argue suggests the need for better education on management of wildlife, especially around lethal measures.

More disappointingly, studies by Merkle et al. (2011) and Gore et al. (2008) found limited impacts from education in terms of changing peoples' behaviour around bears. Gore et al. (2008) surveyed the impact of education on reducing human behavior creating bear attractants over a one year period in New York State. They found increased bear education produced no changes

in behavior over the handling or storage of garbage or on keeping bird feeders or compost piles. Merkle et al. (2011) also examined the impact of increased education and information on bear-human incidents, in their case in Missoula, Montana, on self-reported human behavior over a four year period. They found that the provision of information and education did not diminish many activities creating attractants, such as having bird feeders, accessible pet food, composting or cleaning BBQ grills. What did change, however, was residents storing garbage in an accessible site. The number of residents storing accessible garbage decreased by about 33%. During this same period resident support for more active management of problem bears increased. Non-lethal management tools were more strongly supported than lethal controls, unless a human death had occurred.

No research currently examines public perceptions of urban bears in northern Canadian communities, the area of our study (although some documentaries exist on the specific issue of polar bear incursions into the community of Churchill, Manitoba (see for example, <http://www.cbc.ca/archives/categories/science-technology/natural-science/polar-bears-on-thin-ice/the-polar-bears-of-churchill-1.html> [accessed March 16, 2015])). Therefore there seems a utility in exploring further attitudes towards bears in a new context.

Study Background and Methodology

Prince George, British Columbia, Canada, self-identifies as British Columbia's Northern Capital. Located in the north-central region of the province, it is largely a primary resource extraction and primary processing economy, reliant upon timber production, and saw and pulp mills. Much of the timber has been impacted by insect attack in recent years leading to a significant reduction in fibre availability. Sawmills have seen closures due to the drop in housing construction in the United States while pulp has also witnessed a production drop. Other primary resources sectors, such as mining and oil pipelines, are anticipated to become near-future drivers of economic growth. In addition, the city serves as a government services centre for federal and provincial agencies, offers some development to support an industrial transportation hub, and provides other economic drivers, including a university, a community college and other small industries. Its population has fluctuated somewhat, but as of 2015 sits at approximately 74,000.

Politically, the municipal population appears to be conservative in its values. Anecdotal evidence suggests that change, particularly that brought about by the advent of a university in 1993, with the concomitant rise in the diversity of social values, has not been well received by older residents, particularly "environmental" or "sustainability" values. The community is proud of its logging town persona, and the environmental and sustainability movements are viewed with both suspicion and some hostility, as values coming from the large urban centres of Vancouver and Victoria far to the south. Municipal sustainability initiatives, such as water conservation strategies, are routinely resisted by tax payers as not necessary. As a consequence, the municipal government has moved very slowly on introducing any initiative that might be viewed as "green." The conservation of green spaces and the resident wildlife occasionally falls in to this category as well. However, in the last 20 years, the socio-economic make of the

population has begun to change through immigration of new residents into the city, attracted by the university and other new opportunities and this has brought a steady change in attitudes towards sustainability initiatives, although the depth and extent has not been documented.

While a significantly urbanized environment, Prince George is surrounded immediately outside its suburban development with rural and wild areas. City planners also created extensive greenbelt development running through many residential neighborhoods and city space which has provided useful corridors into the city for opportunistic wildlife. As industrial development has impacted habitat immediately adjacent to the city, wildlife has become a routine visitor and indeed resident of Prince George. Commonly seen larger mammals include moose (*Alces alces*), deer (*Odocoileus spp.*), cougar (*Puma concolor*), coyotes (*Canis latrans*), and of course bears, largely black bears (*Ursus americanus*) but occasionally grizzly bears (*Ursus arctos horribilis*). With the rise in the number of animals sighted comes the rise in complaints and the number of animals destroyed.

The Northern Bear Awareness Society notes that between 1998 and 2011, the BC Conservation Service has received an average of 1,000 complaints regarding bear sightings in Prince George per annum and destroys around 40 bears per annum (Northern Bear Awareness Society n.d.). These numbers fluctuate substantially from year to year; 2010 saw, for example, 1,861 complaints and 85 bears destroyed, the following year only 480 complaints were received and 12 bears were destroyed. Ciarniello (2008: 1) notes that Prince George had the highest record of bear complaints and bears destroyed in the entire province of British Columbia. From both a species conservation perspective and a humane perspective, the ideal goal would be no bears destroyed, however to reach such a goal, both the municipality and the members of the community would need to take different actions.

To determine whether new actions can be initiated to reduce bear mortality public attitudes need to be elucidated. Thus the Prince George Urban Bear Perceptions study was undertaken.² After discussion with the Northern Bear Awareness Society to determine what data they were interested in collecting, the researchers developed an extensive survey consisting of close-ended and open-ended questions. Key research questions included public experiences with bears, whether the presence of urban bears was perceived positively or negatively by the public, the public's knowledge of bears, whether socio-economic factors or different types of experiences with bears affected those perceptions and how the public perceived different management options, including options that managed bears and options that managed human actions.

The survey also collected a range of demographic data (gender, age, education levels, the presence of children and length of residence in Prince George), geographical data (neighborhood

²In full disclosure, while both researchers live in neighborhoods that see intensive bear activity, one researcher is more comfortable with the approach of destroying nuisance bears, while the other prefers management of human activities to restrict bear mortality. We hope this produced a balanced research approach.

where they resided; the presence of desirable bear habitat), and specific data regarding the participants' knowledge of bears, their specific experiences with bears (such as sightings, or the presence of bear-strewn garbage), and whether they viewed the presence of bears as a positive attribute or negative event.

The researchers then worked with a map of the city of Prince George to select a range of neighborhoods across the different regions of the city. Half of the neighborhoods selected were identified as "bear intensive" as determined by factors such as proximity to green space and by records of actual bear sightings in recent years (as compiled by Northern Bear Awareness Society and the BC Conservation Service). The other half were identified as "not bear intensive". Within each selected neighborhood, individual streets were selected with the goal of equal numbers of detached or semi-detached houses between the neighborhood samples (condos and apartment buildings were excluded). The selection of streets was not completely randomized as some accommodations were included to ensure those administering the survey were on relatively safer streets. A sampling scheme of every third house on a street was then established.

After approval by the Research Ethics Board, the data was collected via door to door surveying in the fall of 2012 and the spring of 2013. Undergraduate students from the University of Northern British Columbia went door to door to administer the survey. It was felt that such a personal approach might improve response rates and also accommodated the fact that the research was conducted without funding.³ Students varied their collection times across different days of the week and between evenings and weekends.

Once all selected streets were surveyed, the data was entered into Excel spreadsheets by the students and then checked for data entry error. Pairwise relationships between variables were examined using the χ^2 test for independence, and where appropriate, Fisher's exact test. The study was designed as a pilot study to identify interesting trends for future study, and in this context a level of significance of 5% was used to assess the significance of the relationship between variables. Some content analysis was also performed on the responses to the open-ended questions.

Results

Survey efforts netted 71 completed surveys. All were included within our data analysis. Surveys were completed within all identified research neighborhoods, although the distribution of responses across neighborhoods was not entirely equitable. Our sample was evenly distributed across gender (35 male and 36 female respondents). The majority (66%) had some post-secondary education (a college diploma or better). Of those who answered the question, the majority (73%) indicated that they had an urban rather than rural background although a significant percentage of respondents reported being active hunters (45%). Only 38% of the respondents had minor children resident in the home.

³Students received course credit for their participation.

Half of our respondents (52%) reported seeing a bear during the year they were surveyed; these were black bear sightings, only one respondent reported seeing a grizzly. Half reported that their neighbors had also seen a bear in that time, suggesting that bears in their neighborhood are common. They are not a constant concern, however, as 79% of respondents who saw bears indicated that bear sightings were occasional (only 13% reported frequent sightings). Thirty-five percent of respondents also reported seeing signs of bears present, such as strewn garbage or scat, although most only saw this occasionally. Most bears were spotted in the evening hours (43%) as opposed to the day (24%), while 27% of those seeing bears saw them both during the day and the evening. The majority (49%) felt that their number of sightings was similar to the previous two years, while 30% felt that they were seeing bears more often and 24% felt that they were seeing bears less often.

Those that reported seeing bears were largely seeing them near or on their property (35%) as opposed to their neighbor's property (24%) or further from these spaces (30%), suggesting that experiences with bears were most often up close and well within "personal" spaces, rather than a remote and thereby "safer" event. Most respondents (38%) however, reported that their bear encounters were relatively benign, consisting of either finding bear scat or observing the bears themselves wandering around without doing any harm. Less benign activities were reported less frequently: scattering garbage (16%), getting into fruit trees or gardens (19%) or going after bird feeders (8%). Feelings towards these less benign events were not, however, measured. Of those reporting bear sightings, only 38% were motivated to call in a report to the BC Wildlife Conservation Service, suggesting that concern over bear sightings was not intense overall. The majority (58%) were also aware of the Northern Bear Awareness Society, suggesting that our respondents' decisions to not call on a Conservation Officer may be linked to relative comfort levels with the presence of urban bears rather than a lack of awareness or ignorance of their options.

Given that our survey respondents were largely urban in their background, it was interesting to find that 61% of all respondents indicated that they felt knowledgeable about bears in general (18% were relatively neutral and 20% felt less knowledgeable). This might in part be explained by the finding that almost half were also hunters. Given this self-indicated knowledge (which we assessed as average through analysing comments), subsequent data may be better understood.

We asked respondents, regardless of whether they had seen a bear that year, about how positively or negatively they felt about seeing a bear on their own street. Forty-four percent of all respondents reported feeling positive or very positive about seeing a bear on their street, while 38% were neutral and 18% felt negatively or very negatively about seeing a bear that close. When we asked for clarification on these feelings, and analyzed their comments, most respondents (42%) indicated that they were not bothered by or were indifferent to the presence of bears in their neighbourhood, 21% either enjoyed seeing bears in their neighbourhood or were concerned about the bear's well-being, 18% reported being worried or frightened by a bear being

in their neighbourhood, while 17% were specifically worried because of risks to neighbourhood children.

We also asked about how positively or negatively all respondents felt about bears being found within Prince George more generally. Forty-nine percent felt positively or very positively about bears being within city limits, 33% were neutral and 14% felt negatively about that situation. When we asked respondents to describe their feelings and categorized the responses, we found that the majority (38%) felt some sense that the bears were in the landscape first and that this was their habitat that humans were encroaching upon. A much smaller group (15%) reiterated feelings of fear at the presence of bears within the city or the sense they should not be within a city. Others noted that they worried about the safety of the bears (11%), or really liked knowing bears were present (8%). About 15% indicated that they were indifferent.

A critical part of this survey was assessing how the public felt about different options for managing the presence or urban bears and the human activities that could bring bears into conflict with their human neighbours. The respondents indicated overwhelmingly that they took personal measures to limit bear problems (80%). The most common measure was to restrict access to garbage or compost (73%). Other less common measures included picking fruit (18%), controlling access to bird feeders (10%) or other actions (2%). Only 17% indicated that they did not take any actions to limit bear problems. When asked to identify attractants bringing bears in to their neighbourhood, the two largest attractants were accessible garbage cans (83%), and the presence of fruit trees (66%). Compost piles/bins were a lesser issue (38%), followed by people who put their garbage cans out too early (37%). Bird feeders were a lesser but still significant concern (28%).

When asked about measures they would like to see taken to address bear activities in neighbourhoods, the most popular measure was issuing warnings or fines to people creating attractants to bears (24%), followed by simply instituting restrictions on humans creating bear attractants such as leaving fruit on trees or making their garbage, compost or bird-feeders accessible (23%). Conversely, relocating or killing a bear was favoured by 20% of respondents (we did not make these responses mutually exclusive, so respondents could favour both controls on humans and controls on bears). Seventeen percent wanted to see better education of humans and only 15% preferred no measures. A small number (14%) wrote in other choices.

When we followed up with specific questions on Conservation Officers killing a problem bear, we found a bi-modal split in opinion. Only 11% of all respondents were neutral. Almost equal numbers were very negative (18%) about killing bears and very positive (20%) about killing bears. Overall, 42% felt negatively or very negatively about killing a problem bear, while 45% felt positively or very positively about killing a problem bear. When we asked respondents to explain their feelings on killing bears, the most common explanation (45%) was an assessment that problem bears really needed to be dealt with. Very few responses in this grouping could be described as enthusiastically in favor of mass shootings. Rather most comments were surprisingly nuanced with regard to only targeting a genuine problem bear and indicating

reluctance over needing to take such an action. Twenty-one percent were outright opposed to killing a problem bear, 15% preferred to see a problem bear relocated, and 8% wanted human misdeeds to be addressed. Ten percent referenced the need to protect children as a rationale for killing a problem bear.

Conversely when we asked about respondents' willingness to pay to relocate a problem bear (if there was a moderate cost), the majority (59%) were willing or very willing to pay (including 24% that were very willing), while 17% were neutral and 21% were unwilling or very unwilling to pay (only 8% were very unwilling). When we analyzed explanations for their willingness to pay to relocate a bear, the majority (40%) indicated that they liked or supported the bears, while 18% argued that humans were in the bears' territory. Of those not in favour of relocation, 18% indicated that was because they felt relocating a bear did not work. Only 10% argued that they simply did not wish to pay.

To try and understand what factors might influence the respondents views towards bears in urban areas and different management options, a number of cross-tabulations were performed linking various demographic indicators with different responses. We assessed various attitudes, preferences and activities (such as calling the Conservation Service to report a bear sighting) against age, gender, education, activities as a hunter or pet owner, and whether respondents had children or had a rural or urban background to determine if these factors influenced people's perceptions of bears and management activities. We had originally hypothesized, for example, that an urban background might result in either more benign attitudes towards bear or greater concern about the presence of bears. Similarly, we assumed that having children might result in a perception that bears posed a risk and needed to be controlled. None of our hypotheses proved correct, however.

We found few correlations between demographic indicators and perceptions of, and attitudes towards, bears. Nor could we find any link with demographic indicators and attitudes towards management approaches with regard to urban bears. We found no link between actually seeing bears in the year of the survey and perceptions of and attitudes towards bears and bear management.

We did find small correlations. Women and hunters were more likely to actually have seen a bear (gender and sighting Chi-Square probability of 0.0440; hunters and sighting Chi-Square probability of 0.7469). People with pets were also more likely to have actually seen a bear (pets and sightings Chi-Square probability of 0.0701). People with a high school education and people with post-secondary degrees were both more likely to have seen a bear than those with only a technical school degree (Chi-Square probability 0.4523). Those that did not compost were slightly more likely to have seen a bear, while those that did were split equally in seeing or not seeing a bear (Chi-Square probability 0.7737). Finally, when we asked about awareness of the Northern Bear Awareness Society, women were more likely to know of the Society (Chi-Square probability 0.0430) as were those with a rural background (Chi-Square probability 0.0645).

Discussion

Given our relatively small sample, our findings must be viewed as not definitive. With this caveat, the findings are of considerable interest and are suggestive of further research and possible policy choices.⁴

Our research in Prince George does confirm some of the previous research on urban bears in the United States and elsewhere. Given the availability of greenspace, river corridors and nearby wilderness, Prince George and the surrounding region nurtures a reasonably healthy black bear population (with the occasional grizzly as well). However, the challenge in Prince George for bears, as is the case in other urban and suburban spaces, is the willingness of the human residents to both accept the presence of bears and to be willing to take steps to limit the human-induced mortality of those bears through changing their choices around management of garbage and other attractants.

As of 2015, Prince George does not have any formal mechanism to manage its human residents and their bear unfriendly choices. The city has not enacted any bylaws on securing garbage, removing fruit or managing appropriately other bear attractants. A 2008 effort (Ciarniello 2008) to gain Bear Smart Community status under the provincial program (<http://www.env.gov.bc.ca/wld/bearsmart> [accessed May 15, 2015]), foundered on the issue of implementation and maintenance costs (Dave Bakker, Northern Bear Awareness Society, personal communication, April 15, 2015). The municipality has instead relied upon low impact education efforts (bear alert signs in neighbourhoods with bear issues; notices on garbage collection schedules mailed to residences) and the volunteer initiatives of the Northern Bear Awareness Society, which conducts education sessions, puts up displays at public events and hangs information signs on residential doors, all without financial support from any level of government. Extant research (Merkle et al. 2011; Gore et al. 2008) would suggest that these education efforts, or even more overt education initiatives, are unlikely to moderate human behaviour, so it is unsurprising that Prince George has one of the highest rates of bear euthanasia in the province (www.northernbearawareness.com [accessed January 30, 2015]). However, this research into public perceptions of urban bears suggests either that there are opportunities to address these issues or that there is a significant cognitive dissonance in the Prince George public regarding bears or perhaps both.

Bears in Prince George appear to generally be viewed positively by the public, a finding similar to other studies (Don Carlos et al. 2009; Gore et al. 2006; Smith et al. 2014). Only 14% of our respondents were fearful of bears, while forty-nine percent felt positively or very positively about bears being within city limits and 33% were neutral. Many felt that bears were the original inhabitants and should be supported and 8% liked bears being present. Where concerns were

⁴ Funds have been secured to expand a related survey to new neighbourhoods in Prince George, BC and Coquitlam, BC, commencing in fall 2015.

expressed it was usually over the risk to children, although our research could find no actual correlation between feelings towards bears and having children.

Unlike research that documented a difference between theoretical tolerance for the presence of bears but not the reality (Smith et al. 2014), our findings appear to support research suggesting that experience with actual bears may increase tolerance. In our research, for example, bears were a fairly common event, with slightly more than half of participants seeing a bear, while 35% saw garbage, scat, or other signs of bear presence. More significantly, we feel, is that while more frequently an occasional event, 60% of bear experiences were either in the respondents very immediate vicinity (their yard or their neighbour's), suggesting such up close and personal experiences were not creating fear or worry, indeed only 38% of respondents were motivated to have called in a complaint. Further our research appears to support other findings that knowledge also creates tolerance (Siemer et al. 2009; Wilson 2014; Zajac et al. 2012), as 61% of our population self-reported feeling knowledgeable about bears. It is uncertain, however, whether this is an unusually high level of knowledge in comparison with comparable communities. Such experiences may lead to improved behaviour, 80% of those we surveyed were taking steps to limit bear attractants (although our sample might be biased by the possibility that those who were willing to do a survey were already quite bear-aware).

However, unlike other studies (Draheim et al. 2013; Smith et al. 2014), we found no evidence that urban origins were correlated with more positive views of bears, although all those surveyed were presently in an urban setting. We also found that education levels and gender had no effect on positive or negative views of bears, in contradiction of extant research or conjecture (Siemer et al. 2009; Smith et al. 2014). In point of fact our study could not link any demographic indicator to either positive or negative perceptions of bears. Our finding may confirm the findings of Bruskotter and Wilson (2014) and Zajac et al. (2012), who suggest that the association of the perceived benefits of a species may offset or reduce of perception of risk, as some respondents noted "it means lot of encounters, but it's a sign of a healthy ecosystem."

One interesting finding of this research is the self-reported voluntary actions taken to limit bear attractions. Survey participants recognized that easily accessible garbage (88%) and unharvested fruit trees (66%) were issues in their neighbourhoods and were responsible for attracting bears. The vast majority (80%) also indicated that they themselves took steps to limit bear attractants, particularly by restricting access to garbage. A small minority (17%) indicated that they did not take any actions to limit bear problems. This is an interesting finding, given the actual numbers of complaints filed with the Conservation Service and the number of bears euthanized annually in Prince George. Coupled with the high level of tolerance and positive feelings for bears in general, and a strong preference for non-lethal measures of controlling bear problems, Prince George presents an anomaly: if our survey findings can be generalized to the larger community, Prince George should not have such a high rate of bear complaints and euthanasia. It is certainly possible we experienced a skewed sample or the phenomenon of participants biasing their responses to avoid judgment by those doing the survey. However, there may also be an increase in voluntary initiatives that has yet to be reflected in bear activity (it may only take one careless

human to perpetuate a problem in a neighbourhood, and the bears will know precisely which house that is). It is possible that the situation around bears is complex, with municipal/provincial policies out of step with a majority of the population and driven by a small but vocal segment of the community. This likely requires further research to explain, but raises a troubling question about what is driving policy (or non-policy) around bears: a lack of public interest or a misinterpretation of public interests by government officials. It may also suggest that there might be a public receptiveness to further government and NGO activity to reduce bear conflicts. The sense that “people need to take responsibility” has the potential to be built upon.

Further bolstering this suggestive finding are results on the issue of approaches to bear management in Prince George. Our research partially upholds Merkle et al.’s (2011) finding that there is a preference for management that prevents bears from turning in to problems in the first place over euthanasia. Our findings on management strategies are also consistent with Don Carlos et al.’s 2009 Colorado study as both projects found very mixed responses towards different management initiatives. In Colorado, responses appeared to be situational (i.e. what the bear was doing). In Prince George, although we did not link preferences to circumstances, this may explain the bimodal nature of the Prince George response to euthanizing bears. In our study, only 20% favoured relocating or killing a bear. Oddly, almost equal numbers were very negative (18%) about killing bears and very positive (20%) about killing bears. About 42% felt did not wish to see a problem bear euthanized, while 45% accepted euthanizing a problem bear. This finding may echo the Colorado finding, as comments suggest that while respondents accepted a need to target a threat (a situational assessment), few were unilaterally certain that euthanasia was the only choice.

Supporting this interpretation is the finding that, in Prince George, there was also a significant willingness to pay for bear relocation as an alternative to euthanasia (59% of respondents), justified by the fact that respondents liked bears. While relocation is not an option favoured by Conservation Officers, a willingness to pay is a well researched indication of support for an action, and a significant indication that Prince George residents might seek options to routine and on-going euthanizing of bears as a solution. Less conclusive, but suggestive were findings on preferences for mechanisms to address human behaviours instead. A significant number of respondents supported active targeting of activities creating problem bears, including issuing warnings or fines or creating laws that restrict activities creating attractants. Only a small minority (15%) wished to see no measures taken. Taken together, we believe there may be grounds to revisit the idea of developing a municipal bylaw actively addressing the creation of bear attractants that is supported by penalties.

Prince George and its surroundings are not unique in North America in the fragility of the status of wildlife populations (Jochum et al. 2014). While neither the provincial government nor the Canadian government consider bears (black or grizzly) threatened or endangered under endangered species legislation, bear populations are as susceptible to environmental change as any other large animal species. Changes in climate in northern BC, resulting in less precipitation in the spring and summer, can challenge bears in finding sufficient wild forage during their

crucial feeding period before winter denning. Increased industrial resource development in the north of the province eliminates or disrupts habitat for safe feeding or denning, forcing wildlife to find alternatives. As researchers have noted, the availability of urban or exurban lands as alternate wildlife habitat can make a critical difference in ensuring wildlife survives into an uncertain future (Barusch-Mordo et al. 2014). If the human residents of Prince George can find ways of co-existing with their four-legged neighbours, northern BC bears have a better chance at a secure future.

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Appendices

Appendix One

Responses to “Can you describe how you would feel about seeing a bear in your street”

- \$ worried about kids
- \$ would call 911
- \$ they're neat to see, but keep your distance
- \$ concerned
- \$ concerned because too many people know nothing about bears, small children on the street
- \$ don't bother me
- \$ doesn't bother
- \$ I need to get to work, they're not safe
- \$ I just like wildlife
- \$ we are in their zone
- \$ doesn't bother
- \$ kids
- \$ dangerous
- \$ I worry for the bear
- \$ don't care too much, it's what bears do
- \$ was raised on a farm, if they aren't hungry and don't have cubs they're benign, I was concerned because the bears were hungry and out really late in fall
- \$ worried about kids; bears should be free to roam
- \$ it's cool; nature
- \$ it wouldn't bother me
- \$ if there's no food the bear will just move on
- \$ not threatened by bears; not concerned
- \$ curious and concerned; what is the bear doing?
- \$ doesn't faze me if they stick to themselves
- \$ because of concern for the kids
- \$ I hugely care because I have kids
- \$ got to be wary, check your yard before going out
- \$ I was taught to respect them, I do not really want to see them but I am not upset
- \$ they come up from the back greenbelt and Moore's Meadow. It's their natural habitat
- \$ they're good along the greenbelt, but not on the street
- \$ run into them all the time!
- \$ I don't mind sharing the world, but I worry about young children
- \$ I love it
- \$ expect to see it
- \$ doesn't bother me
- \$ wouldn't bother me, would not be alarmed
- \$ if she was indoors when she saw it

§ like to know they're healthy
§ don't bother me
§ I have no problem with the animals
§ don't really bug me
§ as long as no one hurts them, they don't scare me, I respect them
§ we're in their territory
§ that's how we know Mother Nature has done her job
§ fine with it
§ fine as long as not outside with bear
§ if children were around and it was a threat, would shoot. If not would just chase it away
§ doesn't bother (no little kids)
§ just fine it's where they are
§ would rather not see them
§ I am very scared of them, and the bear is not scared of me
§ indifferent
§ haven't seen many, know the precautions
§ depends on the bear
§ don't care, doesn't bug me
§ wouldn't be angry; concern that it should be relocated
§ neutral
§ we live in an area with lots of bears
§ it would be unusual in such a populated area
§ likes bears, believes problem is humans fault
§ got rid of the fruit tree
§ quite a few kids here
§ personally does not bother, but school is nearby so is concerning
§ totally fine, they do not want me or my dog
§ don't mind them, but their safety is in danger. Don't want them hurt
§ depends if kids are outside or not
§ curious
§ anxious about children's safety
§ we live in the north
§ they are dangerous
§ doesn't bother if a problem

Appendix Two

Responses to “Can you describe how you feel about there being bears in the city limits”

§ really scary
§ hard to say, but we're fairly bear aware in this community
§ as long as they are controlled
§ It's not beneficial to anyone, there's a reason bears come into a city, we're drawing them in so we need to change

\$ doesn't affect us
\$ fine with it
\$ if they don't harm me I don't harm them
\$ they can be a nuisance
\$ as long as they are dealt with properly
\$ accepts it, we have encroached on their habitat
\$ kids
\$ concerned for bears' safety
\$ people get too upset about it
\$ because I like them and am concerned about them having enough habitat, we are
\$ encroaching. I like them not in the area, but I feel bad for them
\$ harmful for the bear
\$ it's their world not ours, just a fact of life
\$ nothing wrong with it
\$ kind of neat; wouldn't try to feed a bear; being mindful
\$ I would rather see black bears than grizzlies!
\$ it's nice that they're here, but I have concern about walking the dog or with the kids. It
\$ makes me less comfortable
\$ would prefer if they were in the bush
\$ we are in their natural habitat, we are the intrusion
\$ I love seeing wildlife, but do not want to not see them, but I also do not want to be scared
\$ part of living up here, live with it. We live on rivers and greenbelts
\$ there's lots of greenspaces and they were here first
\$ doesn't bother me at all, we live here in the north
\$ they were here first
\$ love bears; not afraid of bears
\$ it's common
\$ fact of life; it's their environment; can expect to see them near the river
\$ it's part of their ecosystem too, no thought about it at all
\$ doesn't bother her
\$ it's bs we kill them later
\$ if you are aware they are out there, they have to go somewhere. This is nothing new, we
\$ are pushing into forested areas
\$ don't really care
\$ just worry about little kids, schools, parks
\$ bears are opportunists
\$ we have to live with them, it's our home with them
\$ not safe for bears or people
\$ bears were here first
\$ don't bother me, people are silly\
\$ don't care either way
\$ I feel for them and pick up fruit so bears do not come, it does not make me happy because
\$ I fear for my grand kids

indifferent though nice to see
we are surrounded by wildlife, it's their home and ours
parks
it means lot of encounters, but it's a sign of a healthy ecosystem
shouldn't be there because they'll get hurt; inevitable
indifferent
we have to share the environment with animals of all kinds
they were here first
invading their space; bear problems in the north are common
feel comfortable, as long as they on a street block
only aggressive bears are an issue
shouldn't be near schools or streets for their own good
part of our environment
it's a given, we live in the bush
it's pretty common; there should be bears
not scared of bears
not bad
not good for the bears
we are encroaching on their land, it is a part of living here
for bears sake wish they weren't

Appendix Three

Responses to "Can you tell us what you know about bears?"

not enough paper for how much he knows
they're related to pigs, what they eat and they are scavengers
hibernate; aren't aggressive unless cornered; not as many as there used to be
hibernate, have cubs in the den, number of cubs is based on food source and supply,
never have problems with a bear in the bush - just in the city, how you interact with bears
is how they interact with you
omnivore, black bears can climb trees and grizzlies don't, hibernate
very powerful
they're big, be very loud, act big if they are around you
nope!
can be traveling loners, search for easy food sources
hibernate; feed on berries; nuisance in the city
I have been in the bush my whole adult life
walk away, contain dogs, more afraid of us, beware of grizzlies
in general unless they are very hungry/looking for food/have cubs they're not aggressive,
grizzlies have a hump and are solitary, more afraid of people than we are of them
wild; unpredictable; black bears run away; grizzlies attack more; good sniffers; don't see
too well

\$ feel threatened; bluff like a dog as warning; move away if you stand your ground; more afraid of you
 \$ you can tell age by the diameter of the poop and diet, grizzly vs black bear by the footprints, markings of territory, females have smaller heads, love to eat dandelions/clovers/berries
 \$ hibernate; omnivores; prefer berries; not aggressive hunters; won't attack humans without cause; grizzlies have their own territory and are more shy, more dangerous; hungry in the spring; give birth during hibernation; takes a while to wake up in the spring; can run fast; bear claws are not nice
 \$ bear attack types (defensive vs predatory), when you are camping don't wash your dishes and throw the water into the woods
 \$ most likely they try to avoid me, be more cautious of mama bears with cubs
 \$ types of bears: black bear versus grizzly, know what to do when I encounter a bear and I know what they eat
 \$ they hibernate, hungry/drowsy in the spring, beware of grizzly, bb aren't so bad, be respectful
 \$ habitat, weather, hibernation schedules, what they like to eat
 \$ general stuff and safety
 \$ can identify footprints, black bear versus grizzly, there is a grizzly sanctuary down south, black bears don't truly hibernate
 \$ stay away from them, go the opposite direction if you see a bear
 \$ they're as scared of us as we are of them, don't make eye contact, don't turn or run
 \$ hibernate; protect young; get hungry and come into town
 \$ difference between black and grizzly; don't get between mom and cubs
 \$ they're docile, scared of us, I have had many encounters
 \$ hibernate in winter; leave them alone, they leave you alone; mom and cubs; don't leave garbage out
 \$ tracks; scat; black bear vs. grizzly bear; mom and cubs; mutual respect
 \$ don't get between a mom and cub, grizzly has a hump, big claws on a grizzly
 \$ I have a generalized awareness of animals
 \$ black vs brown, grizz has pear ears, black bear have round ears. Grizz has the big shoulder muscle
 \$ generally more scared of us, hibernate
 \$ expert knowledge. Know habitat, food and types of bears
 \$ hibernate in winter; cubs born in spring; if they have food you don't see them; less bear sightings over the decades; can be harmful
 \$ they are unpredictable; be careful around them
 \$ powerful and persistent if hungry
 \$ large and can be destructive
 \$ have done lots of reading
 \$ black, grizzly, come in fall to eat berries/grass
 \$ really nothing

- \$ feeding habits, sleep cycles, weight gain for winter, they love crab apples, smart about food sources and will return to them
- \$ know the precautions, know about not putting out garbage and safety
- \$ they don't eat people; eat berries; more aggressive w/cubs; grizzlies are larger; not the threat they're made out to be
- \$ a black bear can tree you, don't climb a tree, leave the area, make lots of noise (just talking is enough), teach dog to circle so they don't bring animals back to you
- \$ they like eating garbage; aggressive when scared; black bears are fine; more scared of grizzlies; don't get between mom and cub
- \$ keep food up, not in tents; don't get between mom and cub; make noise on hikes
- \$ I work with bears, catch them to put radio collars on
- \$ they like to eat berries, garbage is an attractant, normally afraid of humans, make lots of noise while hiking
- \$ will eat anything and are very strong
- \$ take bear spray; bells on fanny pack; stay out of their way; make them aware of your presence
- \$ do not leave garbage out, do not bother the cubs, and make noise
- \$ used to teach hunter training so has been around bears a lot
- \$ don't leave garbage or anything that smells out, avoid them - make yourself big, show no fear if they charge you. Make noise!
- \$ they eat fish, are omnivores and are common in BC
- \$ scared of people, will stay away if you make noise, smell food (apples, garbage), will come back for food
- \$ hibernate; not aggressive unless you antagonize them; remember sources of food; generally avoid people; like to eat salmon, good fishers
- \$ more scared of us; they get hungry; we have moved them out of their habitat
- \$ nice if you're nice to them; garbage is a problem
- \$ I know how to act if you encounter them, and some preventative measures
- \$ keep garbage tidy, keep fruit off the trees, and the basics, such as using noisemakers in the bush

Appendix Four

Responses to "Do you take any actions to limit bear problems yourself?"

- \$ no garbage is outside
- \$ put garbage in garage, bird feeders without feed in the bear season
- \$ strap down garbage can lid, no compost, no food products outside, no garden
- \$ no meat or fish in compost
- \$ don't put garbage out early
- \$ no garbage lying around; no fruit trees
- \$ leave nothing outside with odour, don't put garbage out until morning
- \$ try not to put garbage out
- \$ pick apples; keep gates closed

\$ in the fall we keep the garbage inside and don't put it out until the day of garbage pick up
 \$ don't use bird feeders, carry a bear bell, make noise, put garbage out on garbage day
 \$ pick apples, don't put bird food out
 \$ bungee cord garbage lid down, keep bottles inside, take down bird feeders
 \$ I freeze my smelly garbage, and wait to put my garbage out
 \$ pick fruit, no compost, take stuff directly to the transfer station
 \$ pick fruit, no compost, only put bird seed out at appropriate times
 \$ don't put anything that attracts them out
 \$ keep bbq clean, don't put out stinky garbage, in the fall put the garbage away
 \$ garbage inside; pick up apples
 \$ pick apples; keep garbage in garbage can
 \$ no composting; garbage in garbage can
 \$ keep garbage in doors
 \$ picking apples; garbage can out on morning of garbage day; no compost
 \$ pick fruit
 \$ collect fruit, compost and garbage can
 \$ we have no fruit trees anymore, garbage is always clean and put away, we pick up
 \$ wrappers, pop cans, and garbage off the street
 \$ keep garbage inside
 \$ keep garbage in shed
 \$ put up a fence
 \$ I would do anything to protect bears. No garbage, no food
 \$ garbage firmly closed; bottles packaged
 \$ keep garbage inside
 \$ keep garbage in garage
 \$ keep garbage and compost inside; pick apples off trees
 \$ don't compost, freeze garbage, no bird feeders/food
 \$ keep garbage inside
 \$ pick fruit and my husband monitors the garbage can
 \$ put out garbage when it is the proper time, do not feed our dog outside
 \$ proper disposal of garbage
 \$ no fruit trees; no bird feeders; no compost
 \$ closed compost (sealed), don't let garbage overflow, keep cars closed, keep smelly stuff
 \$ in the shed, pick and keep the fruit off the ground
 \$ keep garbage in can; don't leave food out
 \$ garbage in the backyard
 \$ common sense things- no compost, no fruit trees
 \$ keep garbage in garage and don't put out until morning, remove attractants
 \$ keep garbage inside
 \$ removing fruit tree; garbage can inside
 \$ keep garbage secure
 \$ keep garbage inside
 \$ keep everything in garage, put a bear bell on the dog

- \$ don't leave garbage out, pick apple tree
- \$ keep garbage in garage in spring/fall. Don't have fruit trees or compost
- \$ don't leave garbage can out; don't steal baby bears
- \$ chopped down fruit tree; secure garbage
- \$ keep garbage in can; don't leave food out
- \$ pick fruit off of trees and the ground, and keep the garbage and compost secure
- \$ garbage is always tidy and closed
- \$ keep garage inside and covered. Got rid of fruit trees

Appendix Five
Responses to “other measures to control bear activities”

- \$ we need to deny access to food sources
- \$ bear proof garbage containers
- \$ people have to educate themselves to be bear aware. Awareness plus education equals no restrictions
- \$ Not having to pay for garbage dump off, people around here just dump into fields
- \$ common sense; people need to take responsibility; more conservation
- \$ when someone calls be sure to help them
- \$ not sell off crown land; protected land for bears
- \$ knowledge! Warn people and tell people how to control food, info packets - people just don't know
- \$ increase the hunt
- \$ the government is doing a good job as is. Parks with locking lids are good, and we should stop building houses in their territory
- \$ more conservation officers
- \$ town shouldn't be charging people to go to the dump b/c people will leave garbage lying around
- \$ I really do not know. I do not know how much of a problem they are in the bowl, conservation officers should come and look after it

Appendix Six
Responses to “can you explain your response to the question on how you feel about killing a problem bear”

- \$ kids; bear will keep coming back
- \$ don't like anything dead
- \$ but it depends on the bear (health etc.)
- \$ rather relocate
- \$ they have no choice, they need to deal with the problem
- \$ we are in their habitat
- \$ does not like it, rather relocate
- \$ could be someone's dinner

§ I feel it's better to trap and take away
§ try relocating bear; education
§ very against it, only acceptable if last resort after relocating
§ they do a reasonable job
§ keep it safe
§ never like to see an animal destroyed
§ so be it if it's a problem
§ on a need to basis, which should be rare!
§ we've caused the problem for the bear
§ don't need to kill them
§ not fair to the bear; feel bad for the bear
§ it's a necessity, but I don't like it
§ nuisance; danger to children
§ don't automatically do it; make an attempt to relocate first
§ I have no problem, it's the difference between me and them
§ I feel badly about it
§ because the bear doesn't know better
§ it's not fair, we're in their habitat
§ I care about safety, but I am on the fence about it. What do they justify as a problem
bear?
§ depends on "problem bear"
§ yes, if it's a problem or aggressive
§ shouldn't be the first plan of action, hence conserve. Need to use better judgment
§ sometimes it has to happen, but it's never a good thing
§ some become problems; interfere with people
§ bears habituated to an area lose fear of humans
§ I'm really disheartened to see it happen
§ if it's the only thing they can do
§ if they have to they have to
§ we're in their home
§ I do not believe there are many problem bears, more nuisance bears, but they can be
situationally problematic
§ don't really care
§ if it seems dangerous and has been reported lots
§ we're in their territory
§ "Problem" is different for everyone, bears are just as scared of us as we are of them. The
conservation system is not doing any good conserving
§ sometimes it has to be done
§ if a problem bear, no issues with it
§ no issue with it
§ not against it
§ bears will come back, a fed bear is a dead bear
§ by then the bear is a threat

\$ very sad, would like to see the bear relocated
 \$ should relocate far into the bush
 \$ not fair to the bear, they're drawn in by someone else's actions
 \$ they have to kill garbage bears
 \$ it's bad because it means the people in the neighbourhood haven't done their jobs
 \$ safety of people more important than bears; we build in their habitat
 \$ if it's a threat to people
 \$ you have to, I'm not happy about it but it has to be done
 \$ if it's a problem bear it always will be, it's a safety risk each time it comes back
 \$ very against it
 \$ rather see it relocated
 \$ problem bears are usually drawn to areas and usually scared of people
 \$ if a problem bear no problem with it
 \$ they've gotta do it. Part of living in the North, a bear is not as important as a child
 walking to school
 \$ it's completely wrong, unless it was attacking people. Not the bear's fault!
 \$ there's enough of them out there, they're animals - not people, it's better to protect people
 if bear is a reoccurring problem
 \$ every attempt should be made to relocate it
 \$ if they are a problem it has to be done
 \$ if you relocate it, it will come back
 \$ I have mixed feelings, it is bad for the bear, but it will keep coming back
 \$ would rather see relocation
 \$ no problem with it

Appendix Seven

Responses to “can you explain your response on willingness to pay to relocate a problem bear”

\$ as long as it's taken care of
 \$ rather see the bear go off and do its thing, if it costs a couple bucks so be it
 \$ depends - we need to understand what type of bear is a successful relocation. If you can
 do it - do, but if not it's a waste of money
 \$ we use money on other unnecessary things, would be a good use of money
 \$ ok once
 \$ we have financial struggles
 \$ I don't believe in killing wildlife
 \$ they were here first so shouldn't just kill them
 \$ we pay enough taxes
 \$ though they come back it is nice to try. In the Yukon we would paint the bears three
 different colours for every them you see them. Three strikes and they are put down
 \$ they'll just come back
 \$ we encroach so we should be expected to contribute

\$ already pay taxes
\$ better option than killing the bear
\$ depends on the bear; relocating doesn't always work
\$ we're in their domain
\$ if it's not a problem bear
\$ bears are territorial, that's just messing things up. Not effective
\$ I prefer to see them relocated, but if they are a problem or aggressive sometimes you
\$ have to kill them
\$ would want proof it works
\$ we put out the attractants in the first place
\$ there is always a cost, but if it got astronomical I would not be as willing
\$ don't like it, but it comes down to numbers
\$ sometimes it's the human's fault, we leave out attractants
\$ they gotta live too
\$ no problem at all! Maybe there could be a neighbourhood bear fund?
\$ they have to control them somehow; relocation a better option
\$ trespassing on their territory
\$ we are interfering in their land, we are an invasive species, it's their land, relocate them
\$ far away
\$ not really a solution
\$ don't want them to kill them, use the pothole money!
\$ it does not work, they return to their original spots
\$ just because, so it doesn't have to die. Don't want them to rely on people
\$ because they don't know any different, they don't know the parameters, they are just
\$ looking for food
\$ don't know where food is if they are moved; it would be the same as killing them
\$ use economic factors to control population. How many problem bears do we have? Can
\$ the bear population take it? Under certain conditions I would spend the money regardless
\$ relocate a bear only once
\$ need more conservation officers; animals need to be better protected
\$ believes it is humans fault bears are a problem, would rather see relocated than killed
\$ would prefer relocating over shooting
\$ bears come back, won't help
\$ already pay taxes
\$ rather see the bear live
\$ rather see relocated
\$ no problem paying knowing the bear is going to their home
\$ it should be charged to corporations
\$ sometimes relocation doesn't work, bears come back or just die (especially cubs)
\$ wildlife is important; keep them safe
\$ a bullet is cheaper; there are zillions of bears
\$ they always come back
\$ we have to share the environment, we as humans attracted them, need to live in harmony

\$ totally willing
\$ as long as the cost is moderate
\$ rather see a bear moved than dead
\$ should be more onus on people. Money from fines could help relocating costs
\$ if possible. Not it's fault it's in town and so we have to take responsibility
\$ depends on the cost, where they bear was going and the chances of the bear returning
\$ there's lots of bears out there. Probably better to stop the problem, but if there is a person
causing the problem fine by them
\$ depending on the cost
\$ bears were here first
\$ not if it's being a problem
\$ it is everyone's responsibility to keep bears out, even if it costs
\$ ok once, but not twice for same bear