

# **Nordegg Resident Bear Perceptions Survey and Bear Hazard Assessment**



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**Nordegg Community BearSmart Program**

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*Nordegg Resident Bear Perceptions Survey and Bear Hazard Assessment*

Photographs: Alan Ernst and Sharon Carpenter

Additional copies of this publication may be downloaded from the Nordegg BearSmart Program website at <http://BearSmart.nordegg.ca>

## **About the Nordegg BearSmart Program**

Nordegg's BearSmart Program is a project of the Nordegg Community Association. The Nordegg BearSmart Program was founded in 2011 after receiving a grant from Alberta Ecotrust Foundation. The Nordegg BearSmart Program conducts outreach and education about living safely with bears, advocates for BearSmart municipal development, and sells bearproof garbage bins to residents. The Nordegg BearSmart Program website is at <http://BearSmart.nordegg.ca>



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Finally, we would like to thank the Nordegg Community Association, Clearwater County and the residents of Nordegg for their support of the Nordegg BearSmart Program and their interest in co-existing with bears.

# Nordegg Resident Bear Perceptions Survey and Bear Hazard Assessment

## Contents

<b>1. Introduction</b> .....	<b>3</b>
1.1 The BearSmart Program .....	3
1.2 About Nordegg .....	3
1.2.1 Environmental Setting .....	3
1.2.2 Land management.....	4
1.2.3 The Nordegg BearSmart Program.....	4
1.3 Grizzly Bear Biology .....	4
1.3.1 Description.....	4
1.3.2 Distribution.....	5
1.3.3 Reproduction .....	5
1.3.4 Habitat .....	5
1.3.5 Food Habits .....	6
1.3.6 Behaviour .....	6
1.4 Black Bear Biology .....	6
1.4.1 Description.....	6
1.4.2 Distribution.....	7
1.4.3 Reproduction .....	7
1.4.4 Habitat .....	7
1.4.5 Food Habits .....	7
1.4.6 Behaviour .....	7
1.5 Status of Grizzly and Black Bears in Alberta.....	7
<b>2. Methods</b> .....	<b>9</b>
2.1 Methods .....	9
2.1.1 Bear Perceptions Survey.....	9
2.1.2 ENFOR Database.....	9
<b>3. Survey Results</b> .....	<b>10</b>
3.1 Survey Respondents.....	10
3.1.1 Land Description.....	10

3.1.2	Residence Type.....	10
3.1.3	Respondent Age and Years in Nordegg.....	10
3.2	Habitat and Attractants.....	11
3.2.1	Property Habitat.....	11
3.2.2	Regional Habitat.....	11
3.2.3	Natural Attractants.....	12
3.2.4	Non-Natural Attractants.....	13
3.2.5	Garbage Disposal Method.....	14
3.3	Bear Observations.....	15
3.4	Perceptions of Black Bears.....	15
3.4.1	Opinions about Black Bears.....	15
3.4.2	Desired Black Bear Population Size.....	16
3.4.3	When is it appropriate to shoot a black bear?.....	16
3.4.4	Black Bear Benefits.....	16
3.4.5	Emotions Elicited by Black Bears.....	17
3.5	Perceptions of Grizzly Bears.....	18
3.5.1	Opinions about Grizzly Bears.....	18
3.5.2	Desired Grizzly Bear Population Size.....	18
3.5.3	Grizzly Bear Benefits.....	18
3.5.4	Emotions Elicited by Grizzly Bears.....	18
3.5.5	Where can humans and bears co-exist?.....	19
3.6	Minimizing Human-Bear Conflict.....	20
3.6.1	Interest in individual solutions to human-bear conflicts.....	20
3.6.2	Interest in community solutions to human-bear conflicts.....	20
3.6.3	Participating in a BearSmart Program.....	20
3.6.4	How would you like to share information?.....	20
3.6.5	Recommended Management Actions.....	21
<b>4.</b>	<b>Bear Conflicts.....</b>	<b>22</b>
4.1	The ENFOR database.....	22
4.1.1	Location of Bear Occurrences.....	22
<b>5.</b>	<b>Discussion.....</b>	<b>28</b>
<b>6.</b>	<b>References.....</b>	<b>30</b>

## List of Figures

Figure 1. Grizzly Bear Conservation Boundaries, 2008.....	8
Figure 2. Percent of survey respondents that ranked the quality of bear habitat on their property as non-existent, poor, good or excellent. ....	11
Figure 3. Percentage of survey respondents that ranked the quality of bear habitat in the Nordegg region as either poor, good or excellent. ....	12
Figure 4. Percentage of survey respondents who reported vegetation attractants on their property. ....	12
Figure 5. Percentage of respondents who reported animal attractants on their property. ....	13
Figure 6. Percentage of survey respondents who reported non-natural attractants on their property. ....	14
Figure 7. Reported preference of garbage disposal. ....	15
Figure 8. Survey respondent’s opinions on black bears. ....	16
Figure 9. Survey respondents opinions on when it is appropriate to shoot a black bear. ....	17
Figure 10. Range of emotions elicited by black bears. ....	17
Figure 11. Emotions elicited by grizzly bears.....	19
Figure 12. Respondent’s opinions on where bears and humans can co-exist. ....	19
Figure 13. Respondents preference for information on BearSmart information. ....	21
Figure 14. Number of bear incidents per year from 1999 to 2011 as recorded in the ENFOR database. ....	23
Figure 15. Number of incidences of bear conflicts for all years (1999-2011) totaled by month. .	24
Figure 16. Number of grizzly and black bear deaths and relocations recorded in the ENFOR Database.....	25
Figure 17. Locations of Nordegg nuisance occurrences 1999-2011. ....	26
Figure 18. Location of nuisance occurrences related to garbage 1999-2011.....	27
Figure 19. Nuisance occurrences related to garbage or other attractants.....	28

## List of Tables

Table 1. Total number of survey respondents for each resident land type.....	10
Table 2. Survey respondents recommended management actions to protect people and bears in Nordegg. ....	21

# Nordegg Resident Bear Perceptions Survey and Bear Hazard Assessment

## Executive Summary

Nordegg is a hamlet on the eastern slopes of Alberta's Rocky Mountains. The community is a former coal mining town approximately 100 kilometres west of Rocky Mountain House and is located in Clearwater County. In 2000 Clearwater County released the Nordegg Development Plan that outlined detailed plans for the redevelopment of Nordegg. The West Country department of Clearwater County is responsible for the sale of land and properties in Nordegg. The Nordegg Development Plan envisions a community of 2,500 to 3,000 permanent residents.

The Bighorn Backcountry, surrounding and continuing west of Nordegg, is a popular recreational area that supports hiking, mountain biking, hunting, ATV use, fishing, climbing, ice-climbing, snowmobile use and cross country skiing. There are over a dozen campgrounds within 20 km of Nordegg and random camping is also popular. Long weekends in the summer result in thousands of campers and other visitors to the region around Nordegg.

Nordegg is located in core habitat for grizzly and black bears. This report consists of the results of a survey of Nordegg residents about their experiences and tolerance of living alongside bears and includes a preliminary hazard assessment based on historic bear incidents in the region.

Surveys were completed over 2 years between October 2009 and September 2011. Surveys were completed in the presence of the surveyor. In total 167 household surveys were completed by Nordegg and area residents, out of 285 known addresses.

Areas with high potential for human-bear conflict within the Nordegg area were identified through mapping Bear Occurrence reports from 1999 to 2011 obtained from Alberta Environment and Sustainable Resource Development in Rocky Mountain House, Alberta. These reports are a record of complaints or sightings received by the public. Bear occurrence reports represent those areas where bears are seen by the public and are therefore are not necessarily representative of bear use of Nordegg and the surrounding areas.

The results of the Nordegg resident perception survey indicates that a large majority of Nordegg residents appear to highly value both black and grizzly bears and strongly support maintaining populations of both species. The most common emotion elicited by both species of bear was "marvel". The second most common emotion for grizzly bears was "fear", suggesting there is an

opportunity to educate residents about the risks. There appears to be a large appetite for more information about living alongside bears and a recognition that living in core grizzly bear habitat brings unique responsibilities for residents.

The Government of Alberta's ENFOR database provides some evidence of bear conflict in the vicinity of Nordegg. The ENFOR database included 171 bear occurrence records for the Nordegg area collected between 1999 and 2011. Of the occurrence records, 113 (66%) were identified as incidents including enforcement, conflict, and nuisance records. There appears to be high inter-annual variation in reported bear incidents with peak years in 2003 and 2006. There have been low, but slightly increasing reported incidents since 2009.

The vast majority of incidents involve garbage or other attractants. While current conflict levels are relatively low, the known loss through death or relocation of a minimum of 10 grizzly bears from the region due human activities is a cause for concern.

Many communities in bear habitat in Western Canada have introduced bylaws to prevent accidental or intentional feeding of bears. The results of this survey suggest that a majority of Nordegg residents would be receptive to similar bylaws for Nordegg. While a significant proportion of Nordegg residents would like to purchase a bearproof garbage bin, many residents believe there should be incentives to support their purchase.

Since forming in 2011, the Nordegg BearSmart program has sold over 30 bearproof garbage bins to residents at a cost of \$200-250. The strong voluntary support for the program indicates a willingness among residents to support bear conservation efforts.



# 1. Introduction

## 1.1 The BearSmart Program

The Alberta BearSmart Program is a province-wide initiative, developed by Alberta Environment and Sustainable Resource Development (ESRD) designed to increase public safety, reduce bear-human conflicts and reduce the number of bear mortalities in Alberta.

The BearSmart program is a community driven process that typically involves two steps. The first step, outlined in this report, involves conducting an initial assessment of issues. The second step involves implementing a management plan for the community in partnership with municipalities, residents, and the provincial government.

This report is a preliminary hazard assessment for the community of Nordegg and presents information on attitudes and knowledge of the residents of Nordegg about living with bears based on a survey of Nordegg residents.

## 1.2 About Nordegg

Nordegg is a hamlet on the eastern slopes of Alberta's Rocky Mountains. The community is a former coal mining town approximately 100 kilometres west of Rocky Mountain House and is located in Clearwater County. Nordegg has a permanent population of approximately 100 people with an equal number of seasonal and weekend residents, but is growing rapidly as a recreation, retirement, and vacation centre. There is currently a small urban population close to the historic townsite and substantial acreage and cabin developments are occurring in the northern portion of the townsite.

In 2000 Clearwater County released the Nordegg Development Plan that outlined detailed plans for the redevelopment of Nordegg. The West Country department of Clearwater County is responsible for the sale of land and properties in Nordegg. As of January 2012, Nordegg lots sold include of ninety-six residential lots, sixty-three cottage lots, twelve commercial lots, twelve duplex units, five industrial lots, one separate residence and the Recreation Association Campground. Sale of urban residential lots and development in south Nordegg is set to commence in 2013. The Nordegg Development Plan envisions a community of 2,500 to 3,000 permanent residents, with 80% of the residents anticipated to reside in South Nordegg and 20% of the residents in North Nordegg.

### 1.2.1 Environmental Setting

Nordegg is located in the Upper Foothills Natural Region. The elevation of the Nordegg townsite varies between 1,535 metres above sea level on the forested slopes of Coliseum Mountain to 1,308 metres alongside Shunda Creek.

North Nordegg is characterized by mature mixedwood forest dominated by White Spruce, Lodgepole Pine and Trembling Aspen. Along Shunda Creek, wetland communities are characterized by willow and birch shrubs with open meadows dominated by grasses and sedges.

The region around Nordegg supports populations of both Grizzly Bears (*Ursus arctos horribilis*) and Black Bears (*Ursus americanus*). Sustainable resource development surveys and publishes population estimates on their website; visit <http://www.srd.alberta.ca/FishWildlife/> for more information. Grizzly bears population in the area between Hwy 11 and Hwy 1 (between Nordegg/Rocky Mountain House and Canmore Banff) was estimated at 45 (range, 41 to 52) grizzly bears and the density estimate was 5.25 bears/1000 km<sup>2</sup>. Black bear density for the area west of Nordegg was estimated to be between 8 and 11 bears/1000 km<sup>2</sup>. This region is designated as core grizzly bear habitat, meaning it has high habitat value for this species (Fig 1).

### 1.2.2 Land management

Nordegg is surrounded by the Kiska-Willson Public Land Use Zone (PLUZ) of the Bighorn Backcountry. The Bighorn Backcountry is a 5,000km<sup>2</sup> recreational area adjacent to Banff and Jasper National Parks managed by Alberta Sustainable Resource Development under Public Land Use Zone (PLUZ) regulations. The Kiska-Willson PLUZ designation precludes most types of industrial development and restricts ATV and snowmobile travel to designated trails.

The Bighorn Backcountry is a popular recreational area that supports hiking, mountain biking, hunting, ATV use, fishing, climbing, ice-climbing, snowmobile use and cross country skiing. There are over a dozen campgrounds within 20 km of Nordegg and random camping is also popular. Long weekends in the summer result in thousands of campers and other visitors to the region around Nordegg.

### 1.2.3 The Nordegg BearSmart Program

Nordegg's BearSmart Program is a project of the Nordegg Community Association. The Nordegg BearSmart Program was founded in 2011 after receiving a grant from Alberta Ecotrust Foundation. The Nordegg BearSmart Program conducts outreach and education about living safely with bears, advocates for BearSmart municipal development and sells bearproof garbage bins to residents. The Nordegg BearSmart Program website is at <http://BearSmart.nordegg.ca>

## 1.3 Grizzly Bear Biology

*The following section is taken from: Alberta Sustainable Resource Development, 2011. Mountain View County West of Highway 22. Preliminary Bear Hazard Assessment.*

### 1.3.1 Description

In profile, the snout rises sharply into broad “dished” face. The ears are rounded, noticeable but not prominent. There is a pronounced shoulder hump. The claws of the front feet are long, sometimes with a white streak, and they make an obvious imprint in the track — five to eight centimetres (two to three inches) ahead of the toes. When standing on the level, a grizzly's body

profile slopes backward from the high point at the front shoulders. Colour varies from tawny brown to black. Fur is often "grizzled" in appearance (silver-tipped) but this is not true of all grizzlies, nor does this occur at all times of the year. The adult male (or boar) body weight average is 180 kilograms (400 pounds), but in better habitats, body weight can be 325 kilograms (716.5 pounds) or more. The adult female (or sow) body weight average is about two-thirds that of the male. Adult forefoot print width is about 14 centimetres (5.5 inches). Adult rear foot print length is about 25 centimetres (9.75 inches).

### **1.3.2 Distribution**

Historically, grizzlies once occupied the prairie and parkland areas of Alberta, but conflicts with people have resulted in them being eliminated from most of these areas. Grizzly bears prefer open or semi-open country, and are found in the foothill, mountain and boreal regions of the province. Their current range includes areas in or near the Rocky Mountains and in some boreal forest areas of north-central and north-western Alberta.

### **1.3.3 Reproduction**

Grizzly bears reach breeding maturity by the age of five to seven years. Female grizzlies, on average, breed only once in three to four years. Mating takes place in June or July, and the embryo does not develop until fall when bears enter dens for their winter dormancy. One or two cubs, or more rarely three, are born during the winter (the most common litter size is two). At birth, cubs weigh only 340 to 680 grams (12 to 24 ounces), but grow rapidly to about 15 kilograms (33 pounds) by the time they leave the den in April. Cubs remain with the sow for 28 to 29 months, through the second winter, but leave her before she mates again. The sow aggressively protects her cubs from all real or possible threats, including adult male grizzly bears, which may attack and kill undefended cubs.

### **1.3.4 Habitat**

Because of a combination of social and other ecological requirements, grizzly bears require large areas of land or "space" on an annual and lifetime basis. Grizzly bears also require a mix of seasonal habitats in their annual homeranges in order to have sufficient access to the full range of primary food sources. Greater topographic complexity can result in improved habitat for grizzly bears (Merrill et al. 1999), and several studies of grizzly bear habitat selection find positive relationships between terrain ruggedness and habitat selection (Nielsen 2005, Northrup 2010). In the spring, dry, steep subalpine grasslands are the favoured habitat for grizzlies in the mountain regions, whereas moist stream banks and channels are preferred by grizzlies in the boreal forest. In the summer, typical grizzly bear habitats may include wet streamsides in mature spruce forest, gully bottoms, groundwater seepage areas, wet meadows and fens, disturbed sites (e.g., roadsides), toes of avalanche slopes, moist east- and north-facing slopes near treeline, and regenerating burns and clearcuts. In winter, the grizzly usually digs its den on a slope where the ground is stabilized by root systems of trees and shrubs and where accumulation of snow adds insulation.

Bears may use roadways for both food and travel (Roever *et al.* 2008a,b). However, increased road density typically reduces habitat for both grizzly bears and black bears (Rogers and Allen 1987, Mace *et al.* 1996). Grizzly bears tend to be more sensitive to roads than black bears (Aune 1994). Aune (1994) found that grizzly bears avoided areas within 300m of roads while black bears would select for areas within 100m of roads. For grizzly bears, high road densities can render areas non-habitat (Mace *et al.* 1996). Grizzly bear sensitivity to roads has been linked to human use (Northrup 2010). Northrup (2010) found that grizzly bears selected areas around roads that were used by <20 vehicles/day, but avoided areas with higher traffic volumes.

### **1.3.5 Food Habits**

The diet of a grizzly bear changes with the seasons and can include berries, grasses, roots, ground squirrels, insects, mice and fish. In early spring, diet is primarily vegetarian, consisting of such food items as overwintered bearberry and roots of *Hedysarum sp.* Grizzlies will readily eat carcasses of winter killed animals, carrion, and occasionally kill deer, moose, elk or even black bears. By summer, the diet can expand to include horsetails, grasses, sedges, cow parsnip, elk and moose calves, and ants. The autumn diet includes buffaloberry, blueberry, crowberry, low-bush cranberry, saskatoon, and other berries.

### **1.3.6 Behaviour**

In Alberta, grizzly bears are active from spring until late autumn. As a rule, grizzlies enter dens during a major snowfall (late October for females, late November for males). They spend the winter in a mostly dormant state, though they do not do so for the same long duration as black bears, and they will periodically wake and roam close to their winter den. Like northern black bears, grizzlies "hibernate" for the winter, although the period spent in the winter den averages slightly less and they do occasionally wake up and roam near the den during the winter.

## **1.4 Black Bear Biology**

*The following section is taken from: Alberta Sustainable Resource Development, 2011. Mountain View County West of Highway 22. Preliminary Bear Hazard Assessment.*

### **1.4.1 Description**

In profile, the snout and face form a straight line - no "dished" face. The ears are pointed and somewhat prominent. They have no shoulder hump. The claws of front feet are short, usually black and make little or no imprint in the track. When standing on the level, a black bear's body profile slopes forward from the high point at the hips. The normal colour is black and it may have a brownish muzzle or a white v-shape across the throat or chest. However, the colour varies brown through cinnamon to blond. The adult male (or boar) body weight average is 100 to 200 kilograms (220 to 440 pounds). The adult female (or sow) body weight average is 45 to 140 kilograms (100 to 310 pounds). Adult forefoot print width is about 9.5 centimetres (3.75 inches). Adult rear foot print length is about 18 centimetres (7 inches).

## 1.4.2 Distribution

Historically, the black bear was widely distributed throughout most of North America. It evolved as a forest-dwelling species and under natural conditions is shy and secretive, rarely venturing far from the security of forest cover. Currently it occurs in about 74 percent of the province.

## 1.4.3 Reproduction

Black bears usually reach breeding maturity by the age of three-and-a-half years. Mating takes place in June and July. However, development of the embryo is delayed until the fall. One to four cubs are born in February while the sow is in the winter den. Tiny at birth, weighing about 250 to 350 grams (9 to 12 ounces), black bear cubs grow rapidly, and weigh about two kilograms (five pounds) by the time they emerge from the den in April. Cubs remain with the sow, sharing her den during the second winter. The following spring, the cubs leave to forage on their own. While not as aggressive as sow grizzly bears, a sow black bear will protect her cubs from all real or possible threats.

## 1.4.4 Habitat

Black bears can be considered forest obligates (Weaver 2000) and utilize forested habitat more than do grizzly bears (Aune 1994). The black bear inhabits most of Alberta's forested land and are also common in open forests throughout the mixed-wood, foothill, and montane life zones. .

## 1.4.5 Food Habits

The diet of black bears varies with the seasons. Their spring diet may include carcasses of winter killed animals, overwintered bearberry, poplar buds, horsetails, sedges, dandelions, peavines and clovers, and moose and caribou calves. Their summer diet may include sarsaparilla, peavine, ants and other insects, and fish. Their autumn diet may include berries, particularly red buffaloberries in mountain regions, and blueberries and other berries in the boreal forest. In years of berry failures, black bears may seek out human refuse.

## 1.4.6 Behaviour

Black bears are active from spring through to autumn. In northern climates such as Alberta, black bears escape severe winter weather and food shortages by hibernating. Black bears in Alberta spend 5 to 6 months in their winter dens in a state of hibernation. In this state, the black bear's body temperature is lowered by 7 to 8°C, and metabolism is reduced 50 to 60 percent. They do not eat, drink, or excrete anything during the entire denning period and lose 10 to 30 percent or more of their body weight.

## 1.5 Status of Grizzly and Black Bears in Alberta

Grizzly bears are designated as *Threatened* in Alberta. Nordegg is one of very few Alberta communities considered to be within core habitat for grizzly bears, identified as areas of high

habitat value and generally low mortality risk (Figure 1). Nordegg is located at the boundary of two grizzly bear management units, Yellowhead, to the north of Highway 11 and Clearwater to the south of Highway 11. Black bears are designated as *Secure* in Alberta, meaning that their populations are healthy and widely distributed.

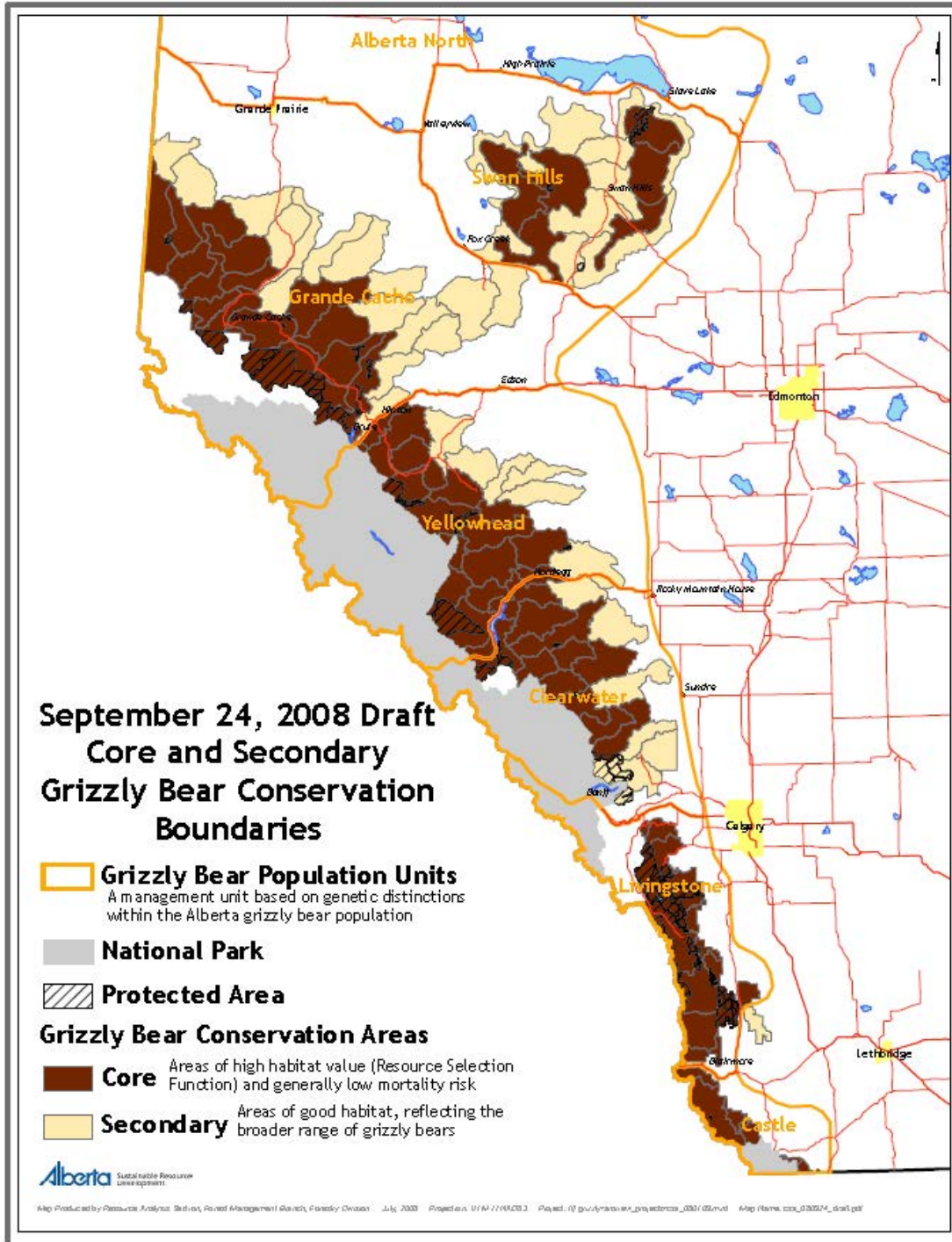


Figure 1. Grizzly Bear Conservation Boundaries, 2008.

# 2. Methods

## 2.1 Methods

### 2.1.1 Bear Perceptions Survey

Resident surveys were completed over 2 years between October 2009 and September 2011. Surveys were completed in the presence of the surveyor. A copy of the survey is attached as an appendix to this document. In total 167 household surveys were completed by Nordegg and area residents, out of 285 known addresses. Not all residents completed all parts of the survey, which accounts for the different sample sizes of some of the results.

### 2.1.2 ENFOR Database

Bear complaints and sightings for the Nordegg region are collected via the Alberta Environment and Sustainable Resource Develop ENFOR database. Areas with high potential for human-bear conflict within the Nordegg area were identified through mapping Bear Occurrence reports from 1999 to 2011 obtained from Alberta Environment and Sustainable Resource Development in Rocky Mountain House, Alberta. These reports are a record of complaints or sightings received by the public. Bear occurrence reports represent those areas where bears are seen by the public and are therefore are not necessarily representative of bear use of Nordegg and the surrounding areas.

# 3. Survey Results

## 3.1 Survey Respondents

167 individuals completed at least part of the survey. Of these 147 (88%) resided in, or had property in the community of Nordegg, while 12% lived in locations outside Nordegg including commercial ventures in the vicinity of Nordegg and Misty Valley, a small acreage community surrounded by crown land 30 km east of Nordegg.

### 3.1.1 Land Description

### 3.1.2 Residence Type

32% of respondents were seasonal residents with secondary residences in Nordegg. 25% of respondents had urban residences in Nordegg and 20% of respondents had primary acreage residences in the vicinity of Nordegg. The remaining 23% of respondents included commercial operations, seasonal campground residents and a small number of other land user types (Table 1).

**Table 1. Total number of survey respondents for each resident land type.**

Land Description	Total
Seasonal Acreage	55
Residential	41
Acreage with dwelling	34
Commercial	16
Campground	14
Leased Land	3
Farm or ranch	2
Trapline	1
Undeveloped land	1
Total	167

### 3.1.3 Respondent Age and Years in Nordegg

47% of survey respondents were between 51 and 70 years of age. 39% of respondents were aged between 31 and 50 years. 11% of respondents were age 30 or less and 11% of respondents were older than 70 years. (n=150)



Far fewer respondents answered the question about length of time that they had lived in Nordegg. 43% of respondents who answered the question had lived in Nordegg between 6 and 20 years. 36% of respondents had lived in Nordegg for less than 6 years. 21% of respondents had lived in Nordegg more than 20 years. (n =67).

## 3.2 Habitat and Attractants

### 3.2.1 Property Habitat

Residents were asked to rank the quality of their property as bear habitat. Options were excellent habitat, good habitat, poor habitat or no habitat (Figure 2). 48% of respondents ranked their property as poor bear habitat and 12% of respondents said their property included no bear habitat. A total of 40% of respondents said their property was either good or excellent bear habitat (n=155).

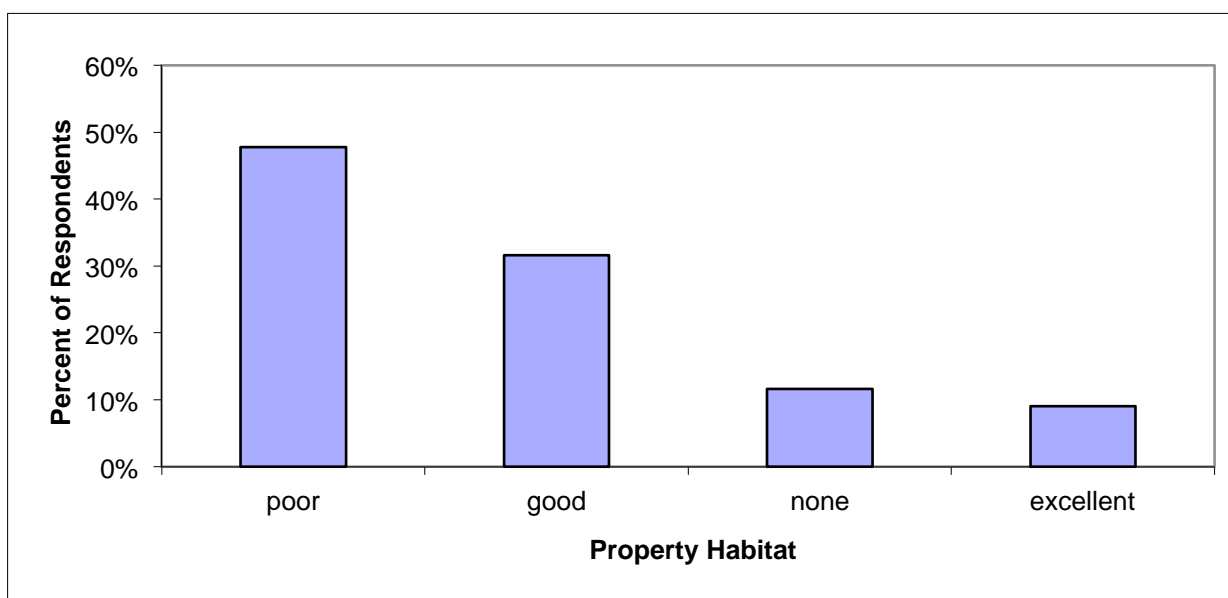


Figure 2. Percent of survey respondents that ranked the quality of bear habitat on their property as non-existent, poor, good or excellent.

### 3.2.2 Regional Habitat

Residents were asked to rank the quality of habitat in Nordegg and the surrounding area for bears. Options were grouped into excellent habitat, good habitat, poor habitat or no habitat (Figure 3). Far more Nordegg residents ranked habitat in the region as good or excellent for bears. 58% of respondents ranked regional habitat as good for bears, 37% of respondents chose excellent habitat and only 5% of respondents identified regional habitat as poor. No Nordegg residents identified none as the amount of regional habitat for bears (n=153).

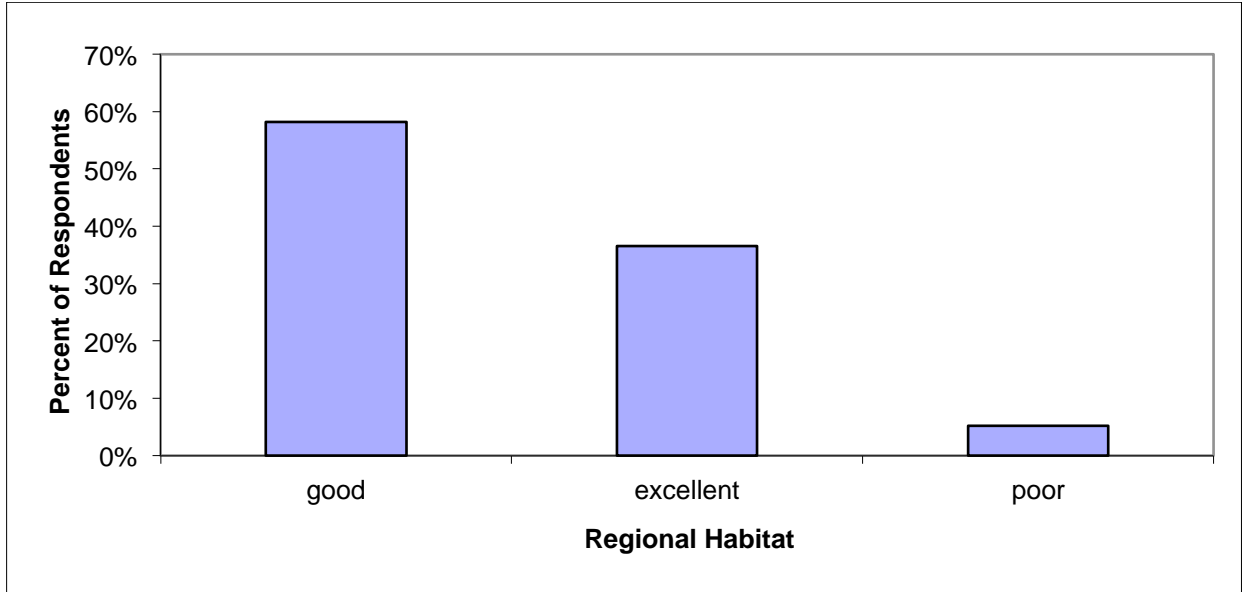


Figure 3. Percentage of survey respondents that ranked the quality of bear habitat in the Nordegg region as either poor, good or excellent.

### 3.2.3 Natural Attractants

Natural attractants can include vegetation such as buffalo berry, bearberry and other berries, dandelion, clover and alfalfa, insects (such as ant nests, wasp or bees nests) and dead wildlife. Nordegg residents were asked to list which of these natural attractants existed at their property (Figures 4 & 5).

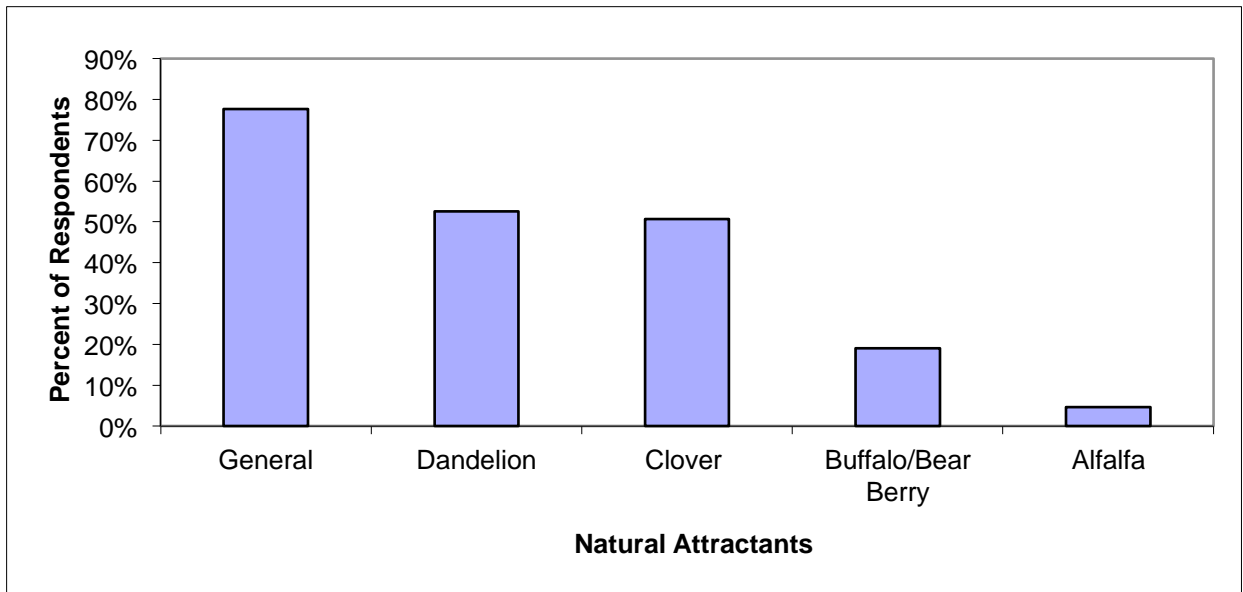


Figure 4. Percentage of survey respondents who reported vegetation attractants on their property.

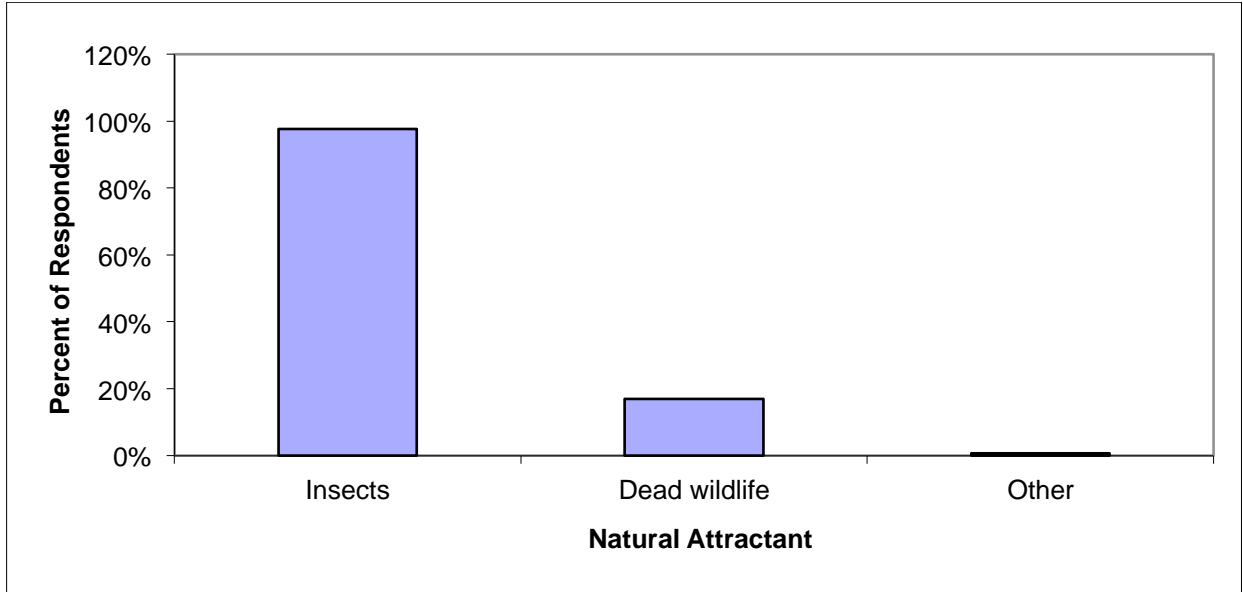


Figure 5. Percentage of respondents who reported animal attractants on their property.

### 3.2.4 Non-Natural Attractants

Non-natural attractants can include garbage, human food, pet food, barbeques, bird feeders, ornamental fruit trees, vegetable gardens, beehives, compost and burn barrels. Nordegg residents were asked to list which of these non-natural attractants existed at their property (Figure 6). Barbeques were the most common attractant noted, with over 80% of respondents identifying them. 67% of respondents listed garbage as an attractant. Recycling, birdfeeders and pet food were also common attractants. Compost, vegetable gardens and fruit trees were all uncommon attractants in Nordegg and identified by 6% or less of respondents (n=152).

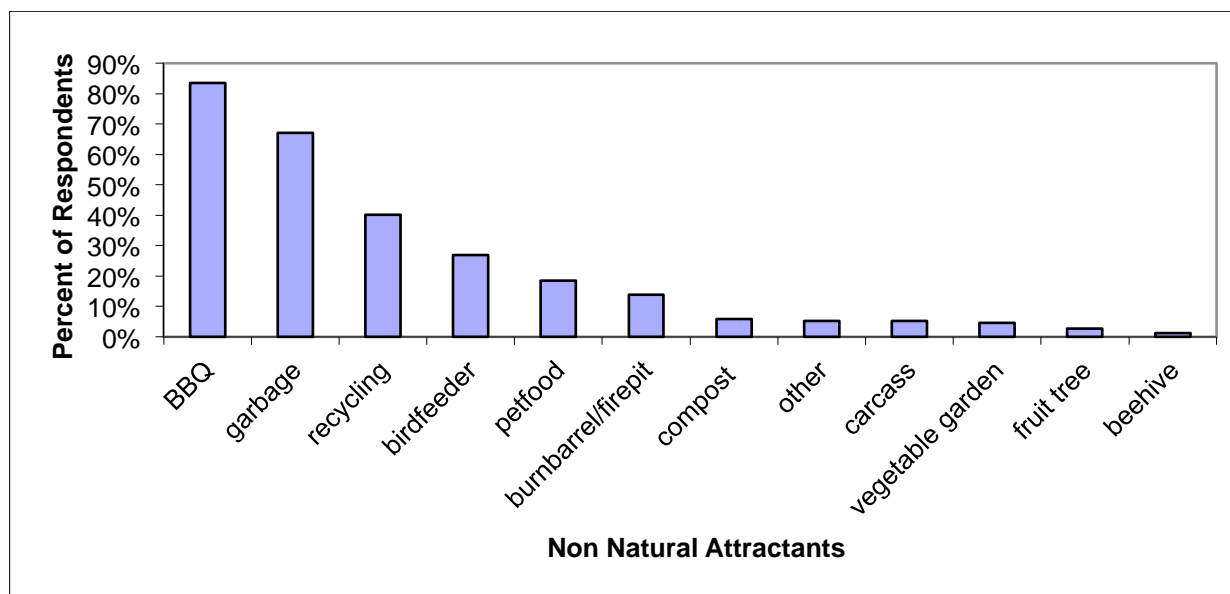


Figure 6. Percentage of survey respondents who reported non-natural attractants on their property.

### 3.2.5 Garbage Disposal Method

Residents were asked how they stored garbage if they burned garbage or used bearproof or non-bearproof garbage bins. There is currently no curbside garbage collection in Nordegg. The Rocky Mountain Regional Solid Waste Management Authority operates a waste transfer station just west of Nordegg. A separate waste transfer station is located at Cline River, approximately 45 km west of Nordegg.

90% of Nordegg residents who answered with survey question identified landfills off their property (Figure 7). At the time of the survey only 3% of respondents stated they use bearproof garbage bins. Only 5% of respondents stated they used non-bearproof garbage bins, which suggests that the remainder of Nordegg residents may store their garbage in buildings or other structures (n=149).

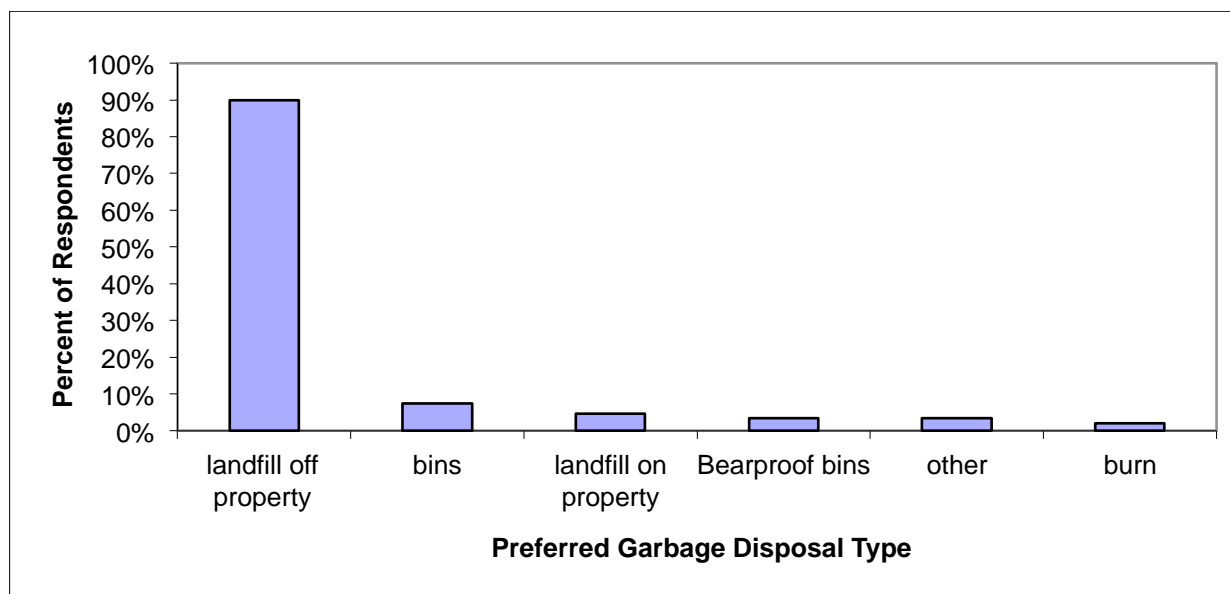


Figure 7. Reported preference of garbage disposal.

### 3.3 Bear Observations

48 respondents (a little less than one third of respondents) reported seeing at bear at their property.

### 3.4 Perceptions of Black Bears

#### 3.4.1 Opinions about Black Bears

86% of respondents felt that black bears had aesthetic, ecological or economic value and should remain as part of our natural heritage. 13% of respondents felt that black bears were inconvenient but should be tolerated. 1% of respondents reported that black bears were pests and should not be tolerated (n = 139) (Figure 8).

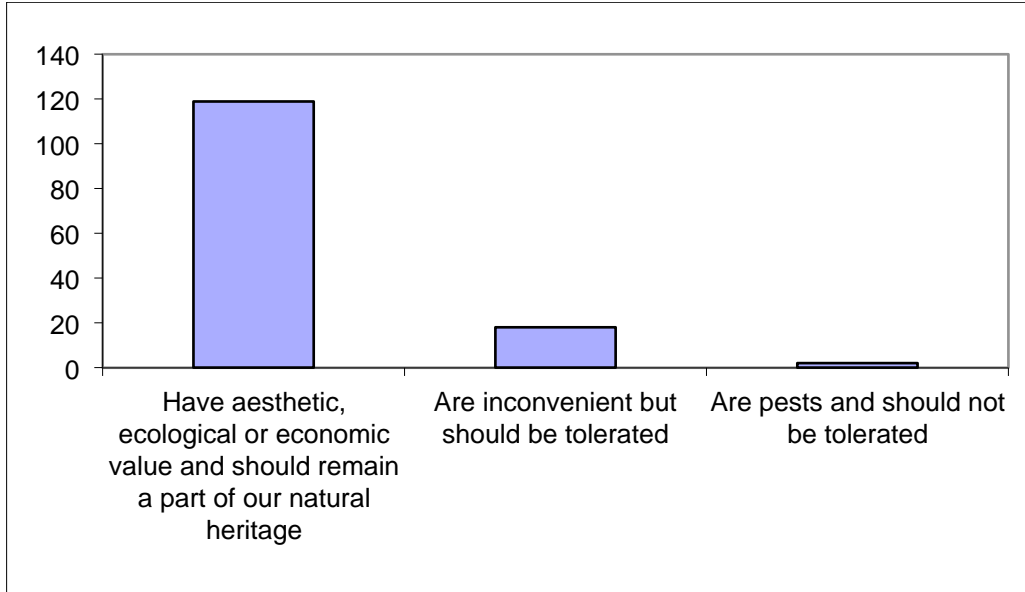


Figure 8. Survey respondent’s opinions on black bears.

### 3.4.2 Desired Black Bear Population Size

85% of respondents felt that black bear populations should be maintained at present levels. 8% of respondents felt that black bear populations should be increased and 7% of respondents felt black bear populations should be reduced (n = 122).

### 3.4.3 When is it appropriate to shoot a black bear?

Less than 1% of respondents thought it was appropriate to shoot a black bear that was passing through. 22% of respondents thought it was appropriate to shoot a bear that was eating non-natural foods. For black bears that were threatening humans, 85% of respondents thought it was appropriate to shoot a black bear (n=167)(Figure 9).

### 3.4.4 Black Bear Benefits

When asked to answer the question “Do you think that the benefits (such as ecological value, natural heritage, hunting/outfitting etc.) of having black bears in Alberta outweigh the risk of co-existing with them?” 72% of respondents agreed with the statement, 28% disagreed (n = 159)

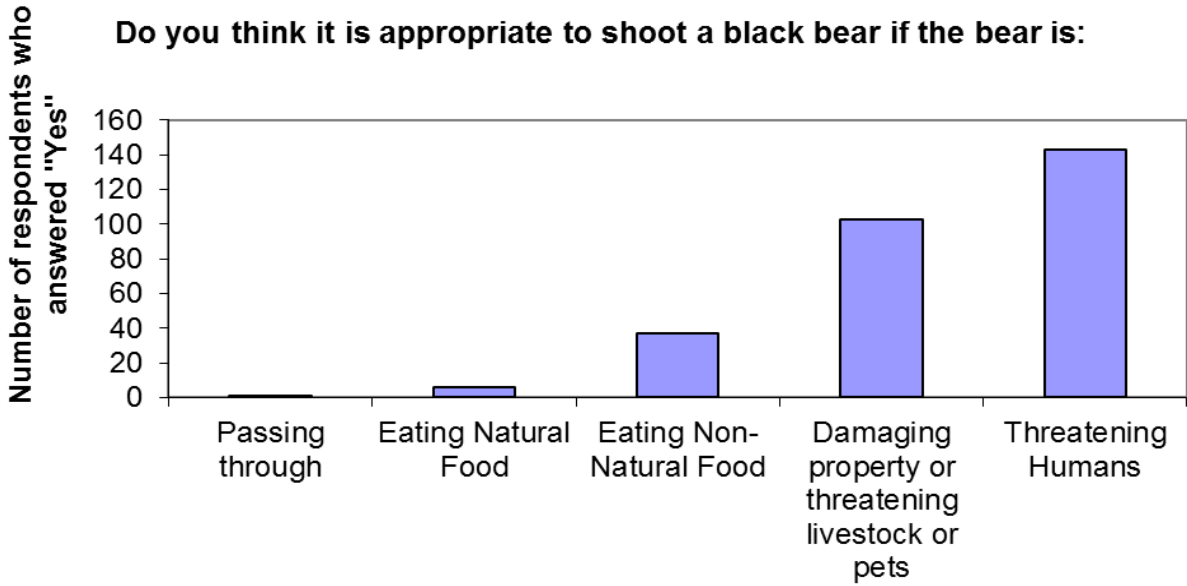


Figure 9. Survey respondents opinions on when it is appropriate to shoot a black bear.

### 3.4.5 Emotions Elicited by Black Bears

The most common emotion elicited by black bears was *Marvel* (n = 67), followed by *Curiosity* (n = 44), *Uneasiness* (n = 33), *Fear* (n = 27), *Indifference* (n = 16) and *Respect* (n = 11) (Fig 10).

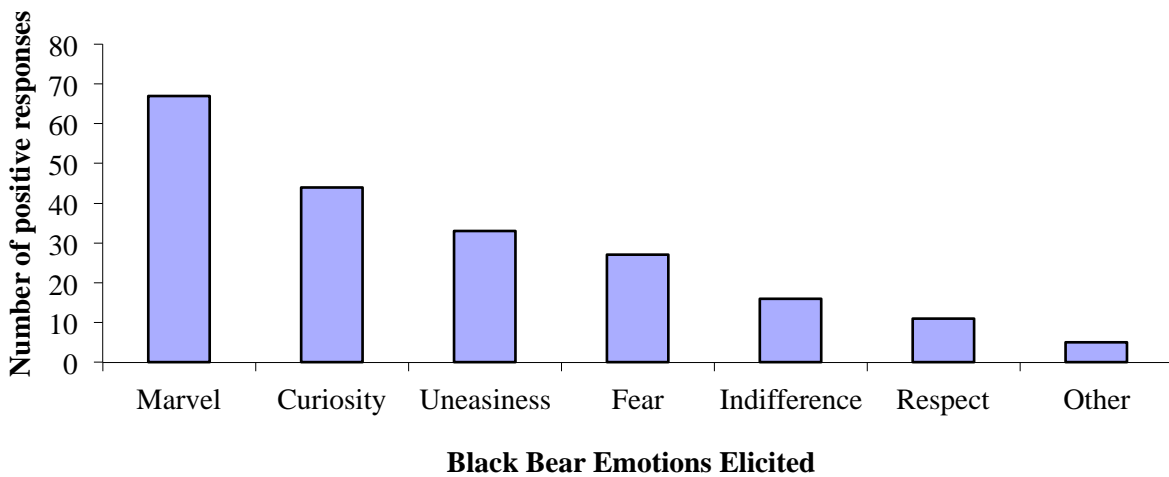


Figure 10. Range of emotions elicited by black bears.

### 3.5 Perceptions of Grizzly Bears

#### 3.5.1 Opinions about Grizzly Bears

89% of respondents felt that grizzly bears had aesthetic, ecological or economic value and should remain as part of our natural heritage. 11% of respondents felt that grizzly bears were inconvenient but should be tolerated. No Nordegg respondents reported that grizzly bears were pests and should not be tolerated (n = 133)

#### 3.5.2 Desired Grizzly Bear Population Size

78% of respondents felt that grizzly bear populations should be maintained at present levels. 15% of respondents felt that grizzly bear populations should be increased and 7% of respondents felt grizzly bear populations should be reduced (n = 110).

#### 3.5.3 Grizzly Bear Benefits

When asked to answer the question “Do you think that the benefits (such as ecological value, natural heritage, hunting/outfitting etc.) of having Grizzly bears in Alberta outweigh the risk of co-existing with them?” 59% of respondents agreed with this statement. 41% disagreed with this statement.

#### 3.5.4 Emotions Elicited by Grizzly Bears

The most common emotion elicited by grizzly bears was *Marvel* (n = 65), followed by *Fear* (n = 50), *Curiosity* (n = 42), *Uneasiness* (n = 30), *Respect* (n = 10) and *Indifference* (n= 8 ) (Figure 11).

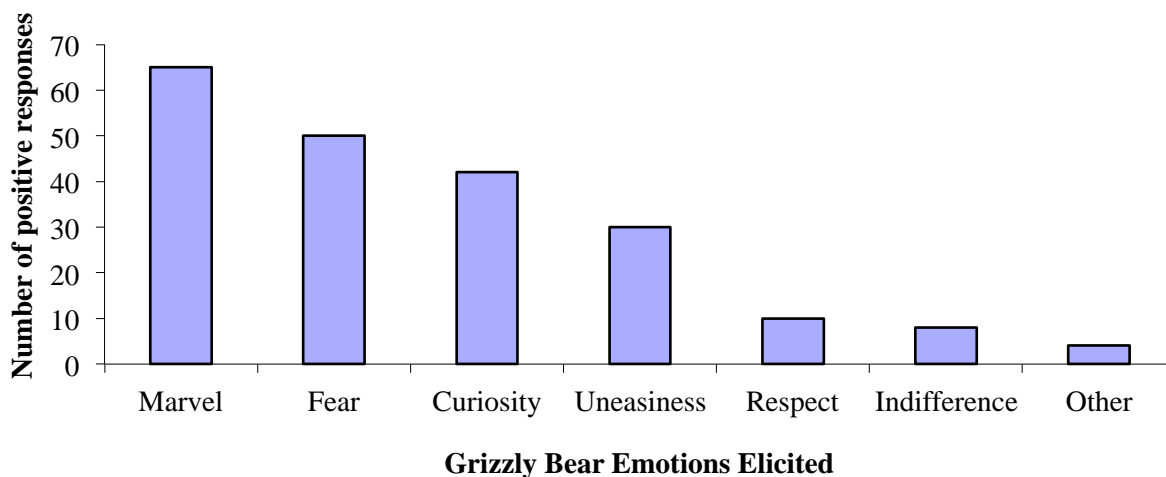




Figure 11. Emotions elicited by grizzly bears.

### 3.5.5 Where can humans and bears co-exist?

Nordegg residents were asked to identify places that they believed humans and bears could co-exist (Figure 12). 83% of respondents chose *backcountry areas*, 57% of respondents stated *only in National and Provincial Parks and Protected Areas*. 50% of Nordegg respondents believed it was tolerable for humans and bears to co-exist in residential areas bordering forested areas or protected areas.

Only 23% of residents believed bears and humans could co-exist in *rural areas*, and only 9% and 1% of respondents believed in co-existence in *campgrounds and urban/tourist residential centres* respectively. (n = 155)

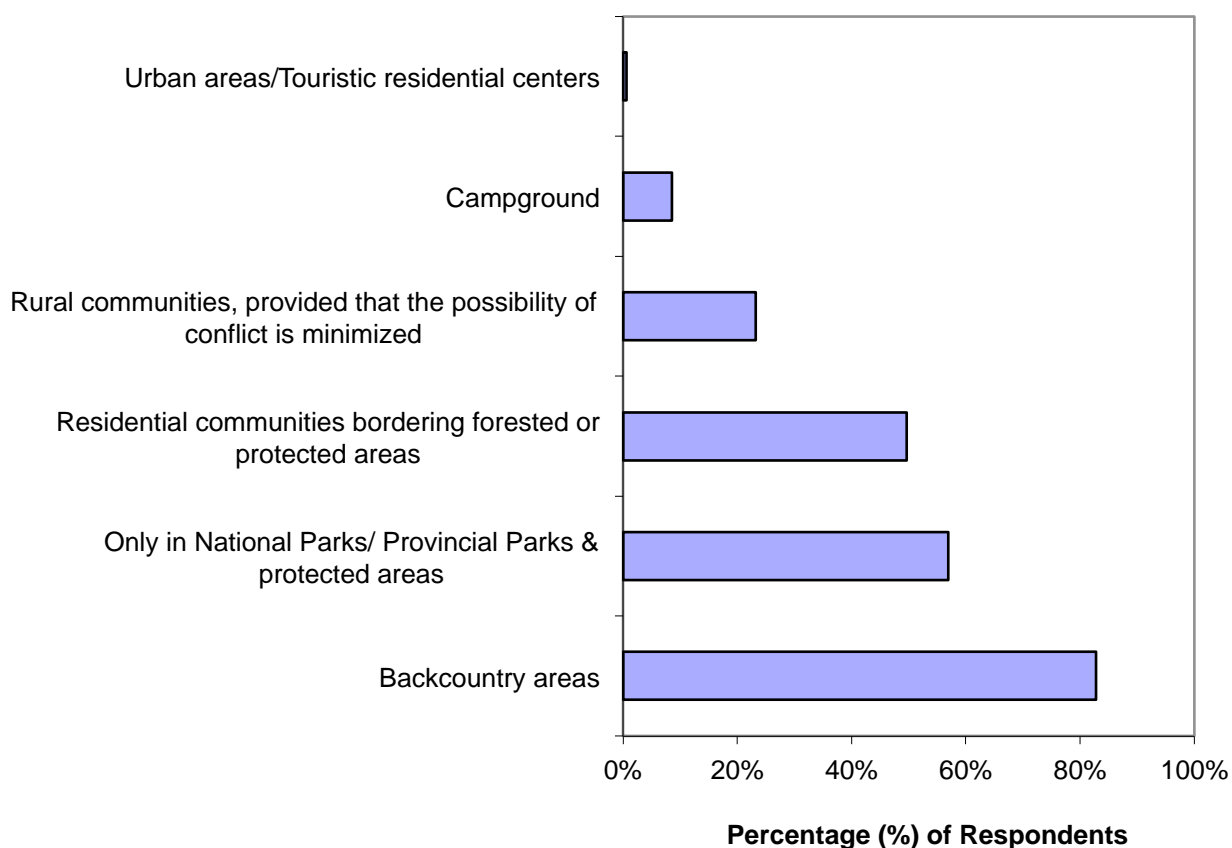


Figure 12. Respondent’s opinions on where bears and humans can co-exist.

## **3.6 Minimizing Human-Bear Conflict**

### **3.6.1 Interest in individual solutions to human-bear conflicts**

Nordegg residents indicated a high level of interest in participating in activities to reduce human-wildlife conflict. 72% of respondents indicated that they would be interested in receiving more information about bears and other wildlife and possibilities to minimize conflict

46% of respondents indicated they would be interested in actively participating to workshops and community based programs such as Bear-Smart.

34% of respondents indicated they would be interested in acquiring a bear-proof garbage can.

19% of respondents were interested in protecting their livestock and facilities with electric fences, while another 19% of respondents were not interested in any of the proposed options.

### **3.6.2 Interest in community solutions to human-bear conflicts**

Nordegg residents expressed a high level of support for community-led activities to reduce human-wildlife conflict. 72% of respondents supported the provision of bear proof dump sites and carcass removal programs 54% of respondents supported bylaws to minimize conflict with wildlife. 56% of respondents supported the community providing more incentives for the provision of bearproof garbage cans and electric fences. Only 10% of respondents indicated they were not interested in any of the proposed options.

### **3.6.3 Participating in a BearSmart Program**

### **3.6.4 How would you like to share information?**

Respondents were provided with a range of preferred options for receiving BearSmart information (Figure 13). The most common option was by the internet, identified by 42% of respondents. 17% of respondents would prefer to receive information from postings at mailboxes or public boards. Other forms of communication, including information at fish and wildlife offices, via telephone and from public meetings were identified by 16%, 14% and 8% of respondents respectively.

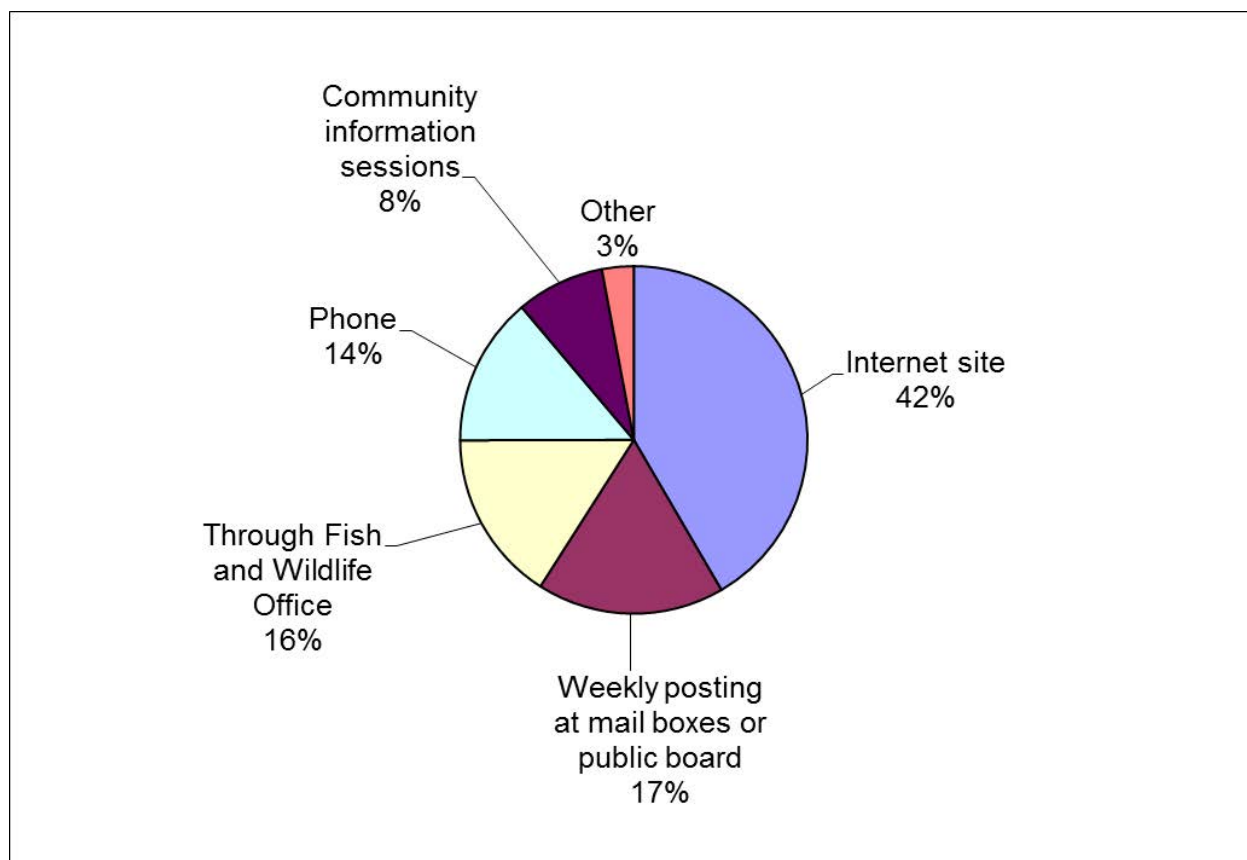


Figure 13. Respondents preference for information on BearSmart information.

### 3.6.5 Recommended Management Actions

131 community members provided a total of 177 comments on recommended management actions to protect people and bears in Nordegg (Table 2). The most common unprompted management action recommended by interviewees was education and provision of increased information (n = 55). The second most common action cited was improved personal garbage management, including the use of bearproof garbage bins (n = 38). The third most common recommended action was the use of municipal bylaws and use of fines to prevent intentional or accidental feeding of bears through poorly stored garbage or birdfeeders (n = 22). A summary of all management action recommendations noted more than once is listed below:

Table 2. Survey respondents recommended management actions to protect people and bears in Nordegg.

Management Recommendations	No. of comments
More education and information	55
Better garbage control including use of bearproof garbage bins	38
Fines and bylaws	22
Leave bears alone	9
Better community waste disposal/dump hours/bearproof facilities	9
Information/signage on bear sightings/recent activity	8

Open the hunting season	7
Other	7
Decrease populations/move bears	6
Close roads to off highway vehicles and 4x4 vehicles	3
Use rubber bullets/aversion treatments	3
There are no issues to worry about	3
More provincial leadership and resources	3
Do not feed bears/address attractants	2
Stop residential expansion in Nordegg	2

# 4. Bear Conflicts

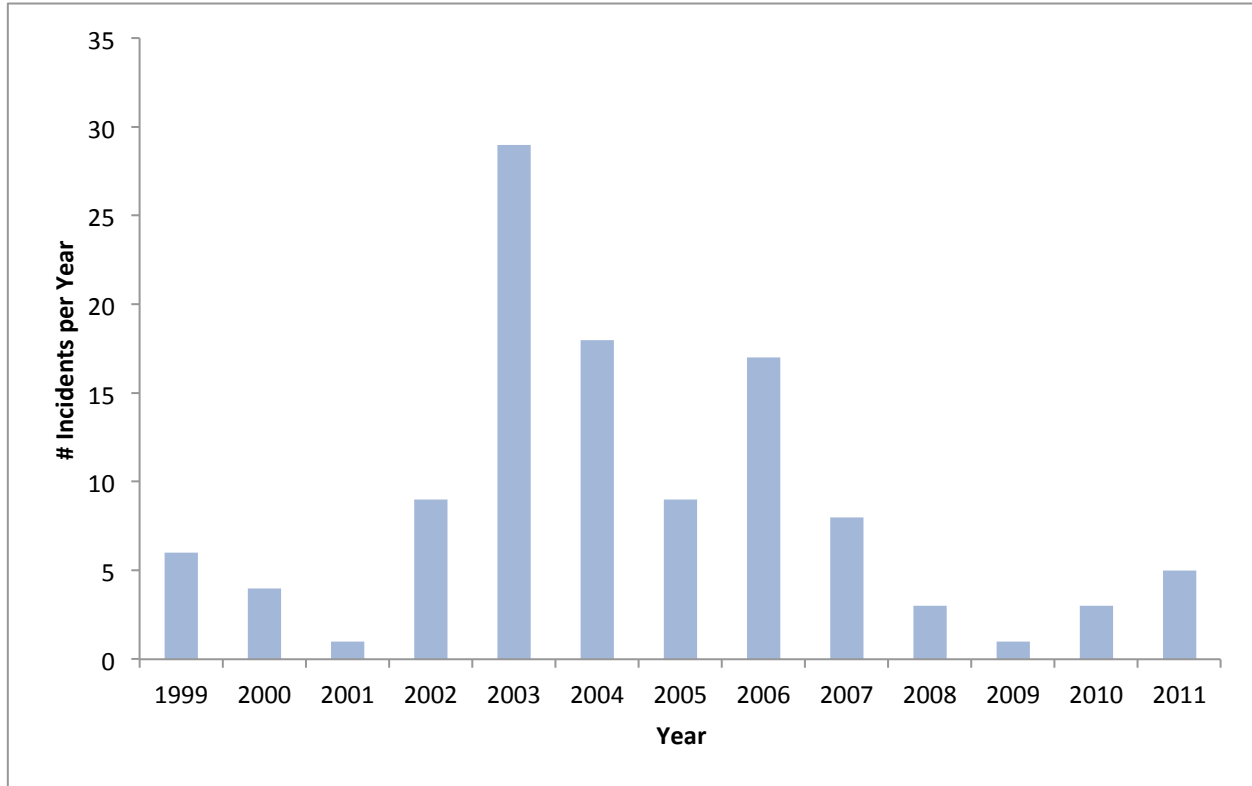
## 4.1 The ENFOR database

Areas with high potential for human-bear conflict within the Nordegg area were identified through mapping Bear Occurrence reports from 1999 to 2011 obtained from Alberta Environment and Sustainable Resource Development in Rocky Mountain House, Alberta. These reports are a record of complaints or sightings received by the public. Bear occurrence reports represent those areas where bears are seen by the public and are therefore are not necessarily representative of bear use of Nordegg and the surrounding areas.

### 4.1.1 Location of Bear Occurrences

The ENFOR database included 171 bear occurrence records for the Nordegg area collected between 1999 and 2011 (Figure 14). Of the occurrence records, 113 (66%) were identified as incidents including enforcement, conflict and nuisance records. There appears to be high inter-annual variation in reported bear incidents with peak years in 2003 and 2006. There have been low, but slightly increasing reported incidents since 2009 (Figure 14).

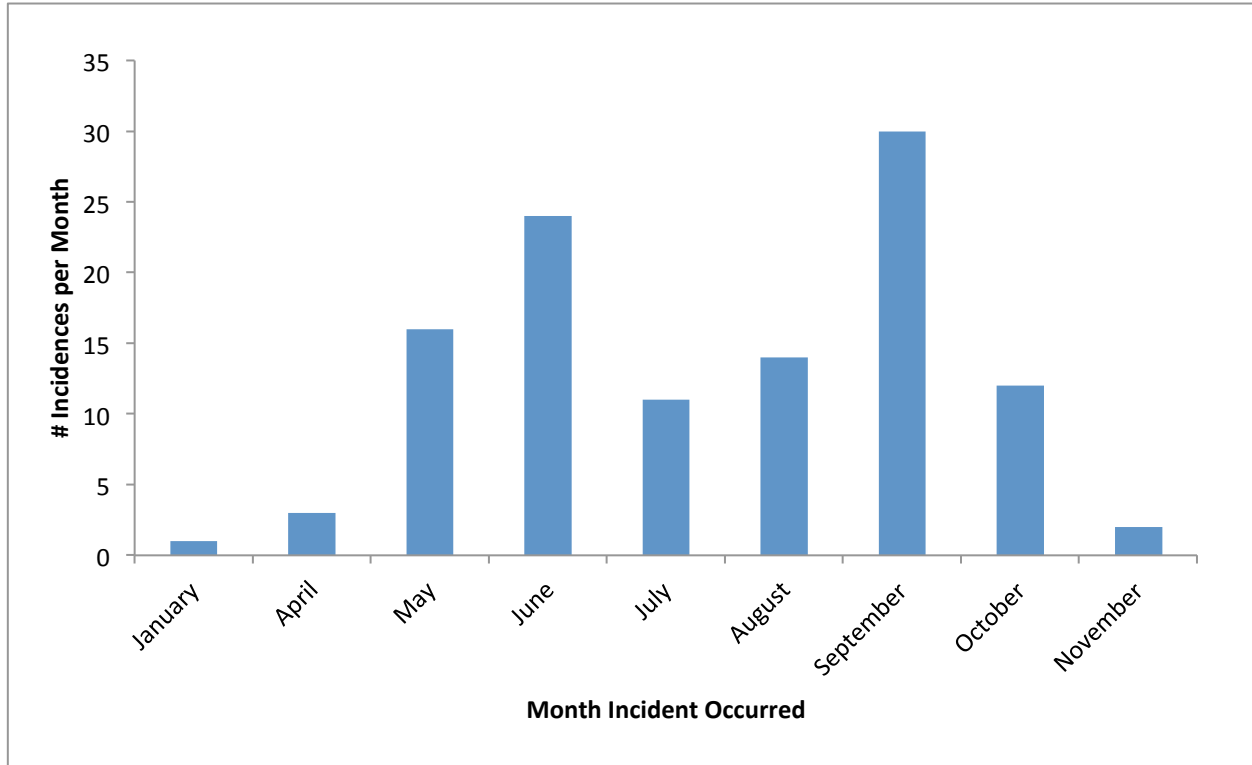
## Bear Conflicts



**Figure 14. Number of bear incidents per year from 1999 to 2011 as recorded in the ENFOR database.**

Incidents have been recorded for all months except December, although the peak months for bear-human conflict in the Nordegg area are June and September (Figure 15)

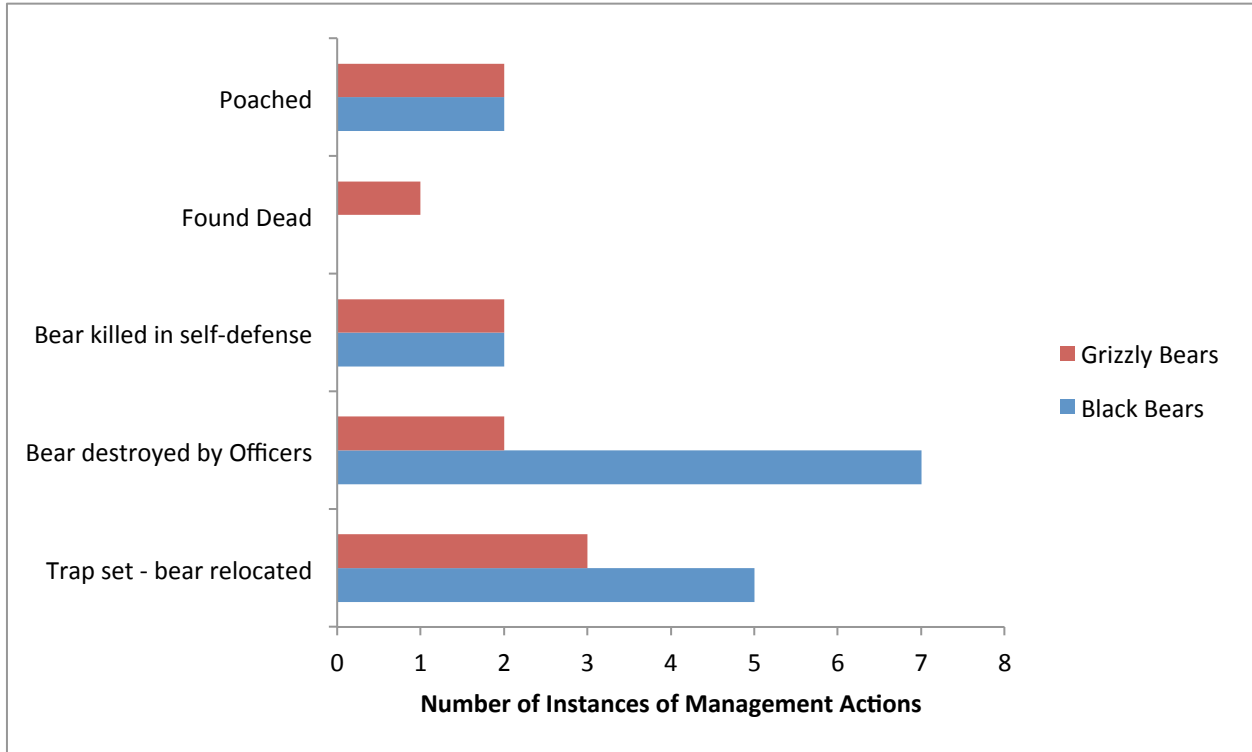
## Bear Conflicts



**Figure 15. Number of incidences of bear conflicts for all years (1999-2011) totaled by month.**

In total 26 bears were reported as killed or relocated by the ENFOR database over the time period from 1999 to 2011, including 10 grizzly bears and 16 black bears. Bears killed by wildlife officers or relocated represented the majority of reported mortalities or bears removed from the ecosystem (Figure 16). However, since these are reported mortalities only, they may under-report the actual numbers of bears poached or killed in self defense.

## Bear Conflicts



**Figure 16. Number of grizzly and black bear deaths and relocations recorded in the ENFOR Database.**

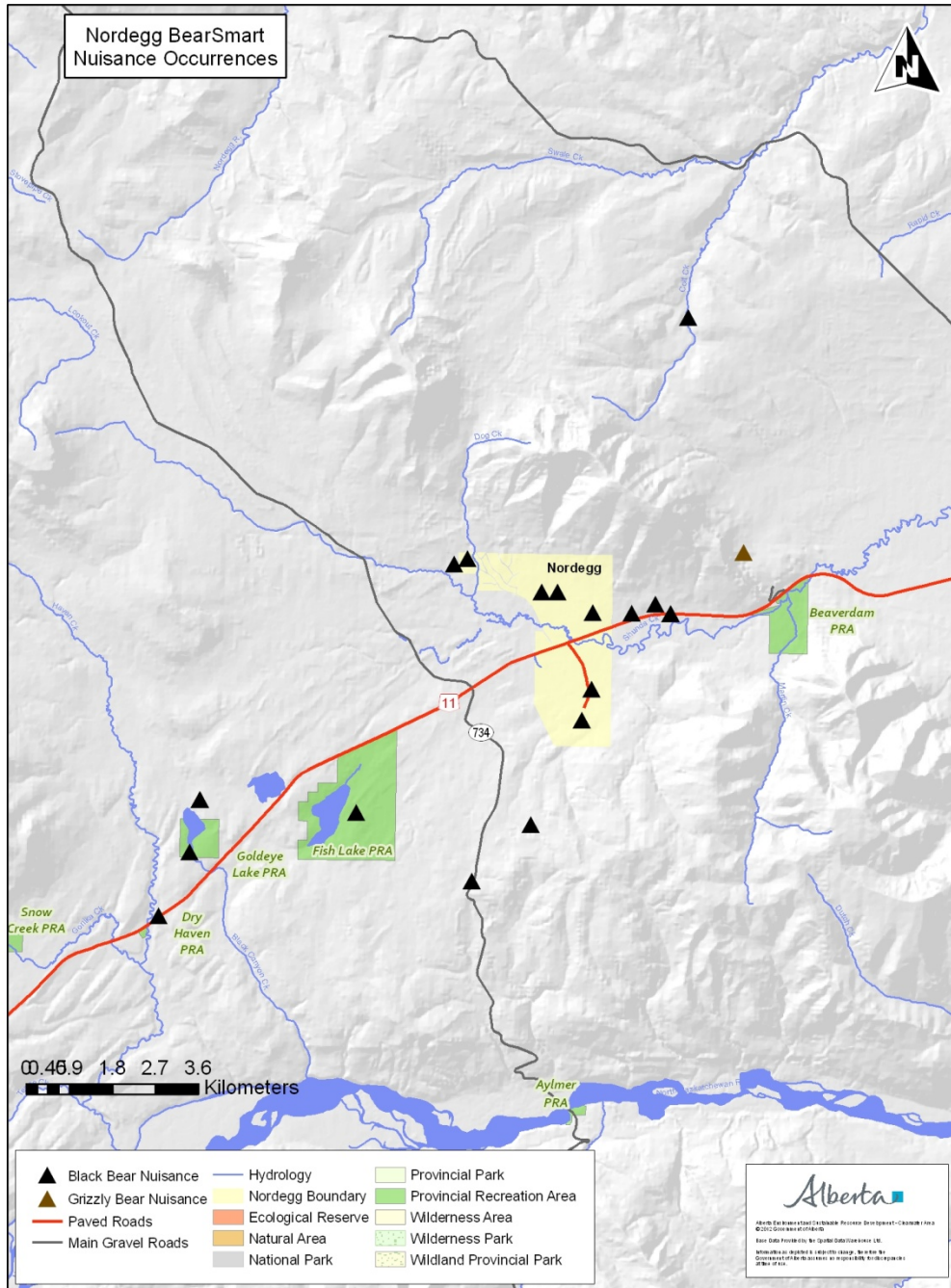


Figure 17. Locations of Nordegg nuisance occurrences 1999-2011.

Nuisance occurrences tend to be associated with areas of high human use such as the community of Nordegg and random and designated campsites along the David Thompson highway corridor (Figure 17 & 18).



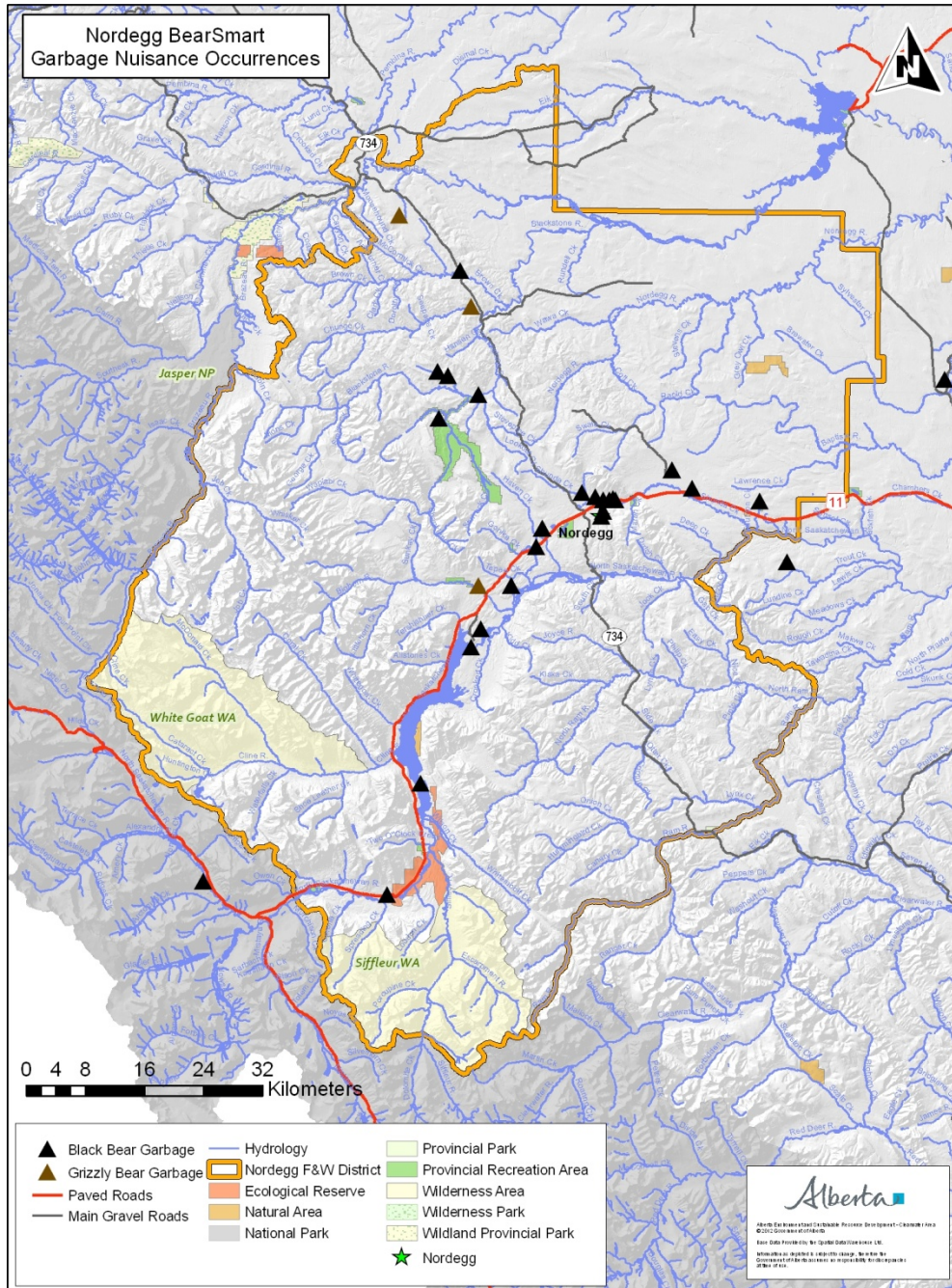
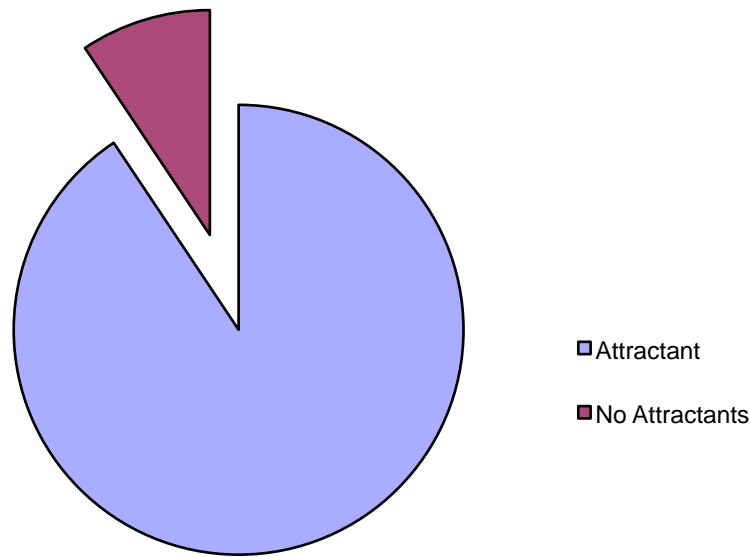


Figure 18. Location of nuisance occurrences related to garbage 1999-2011.



**Figure 19. Nuisance occurrences related to garbage or other attractants.**

Over 90% of reported nuisance occurrences in the ENFOR database included attractants, such as garbage (Figure 19).

## 5. Discussion

The results of the Nordegg resident perception survey indicates that a large majority of Nordegg residents appear to be highly value both black and grizzly bears and strongly support maintaining populations of both species. The most common emotion elicited by both species of bear was “marvel” although the second most common emotion for grizzly bears was “fear”, suggesting there is an opportunity to educate residents about the risks.

There appears to be a large appetite for more information about living alongside bears and a recognition that living in core grizzly bear habitat brings unique responsibilities for residents.

Nordegg is located in core grizzly bear habitat in Alberta. In 2011 a new water treatment facility was completed that will support substantial new residential and commercial development in Nordegg and downtown redevelopment is set to begin in 2013. There is a

time-limited and unique opportunity to develop a model BearSmart community in Nordegg "from the ground up" prior to human and bear conflicts developing.

Since forming in 2011, the Nordegg BearSmart program has sold more than 30 bearproof garbage bins to residents at a cost of \$200-250. The strong voluntary support for the program indicates a willingness among residents to support bear conservation efforts.

The Government of Alberta's ENFOR database provides some evidence of bear conflict in the vicinity of Nordegg. The vast majority of incidents involve garbage or other attractants. While current conflict levels are relatively low, the known loss through death or relocation of a minimum of 10 grizzly bears from the region due human activities over the past 13 years is a cause for concern.

Many communities in bear habitat in Western Canada have introduced bylaws to prevent accidental or intentional feeding of bears. The results of this survey suggest that a majority of Nordegg residents would be receptive to similar bylaws for Nordegg. While a significant proportion of Nordegg residents would like to purchase a bearproof garbage bin, a majority of respondents believe there should be incentives to support their purchase.

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