Grizzly Bear mortality summary 2009-2020

The cause, frequency and location of Grizzly Bear mortality in Bear Management Areas 4, 5 and 6

Alberta

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Introduction

In 2010, the grizzly bear was listed as a threatened species in Alberta. Along with this status came a Grizzly Bear Recovery Plan intended to increase grizzly bear numbers to a more sustainable population level. In 2021, an updated [Grizzly Bear Recovery Plan](#) was approved which identifies a Bear Management Area (BMA) specific approach to managing grizzly bears intended to address the unique management challenges within each BMA. This includes a zoning criterion with management zones: Recovery Zone, Support Zone, Habitat Linkage Zone and Outside the BMA (Figure 1). The Recovery Zone, essentially public lands along the foothills and west into the mountains, would inform the management of industrial development and human use. Managing attractants as well as other sources of human-grizzly bear conflict that often results in public safety concerns and bear mortality or translocations would be a priority within this zone. The Support Zone, those lands east of the Recovery Zone, is intended to maintain grizzly bears that have home ranges only partially in the Recovery Zone. The management intention here is to maintain grizzly bear occupancy, likely at lower density than in Recovery Zones, with an emphasis given to sows with cubs. The grizzly bear population in the Support zone will likely not be self-sustaining without dispersal from the adjacent Recovery Zone. The Support Zone will contribute to grizzly bear recovery by increasing the regional population size and ensuring that bears that move in and out of the Recovery Zone can survive. Given that the Support Zone is comprised of largely private lands, it is expected to be a focal area for proactive attractant management strategies to reduce human caused grizzly bear mortality and translocations. The Habitat Linkage Zone identifies key wildlife movement corridors that have significant development including urban areas, major highways and railways. These include the Highway 11 corridor west of Rocky Mountain House, the Trans-Canada Highway in the Bow Valley and the Highway 3 corridor in the Crowsnest Pass.

Occupancy of grizzly bears east of the Support Zones, (i.e. Outside the BMA), is not required to recover Alberta's grizzly bear population. Management tolerance for grizzly bears that come into conflict with humans outside the BMA would be lower, resulting in increased management removals.

This BMA summary is intended to identify the cause and frequency of Grizzly Bear Mortality and where those mortalities are occurring.
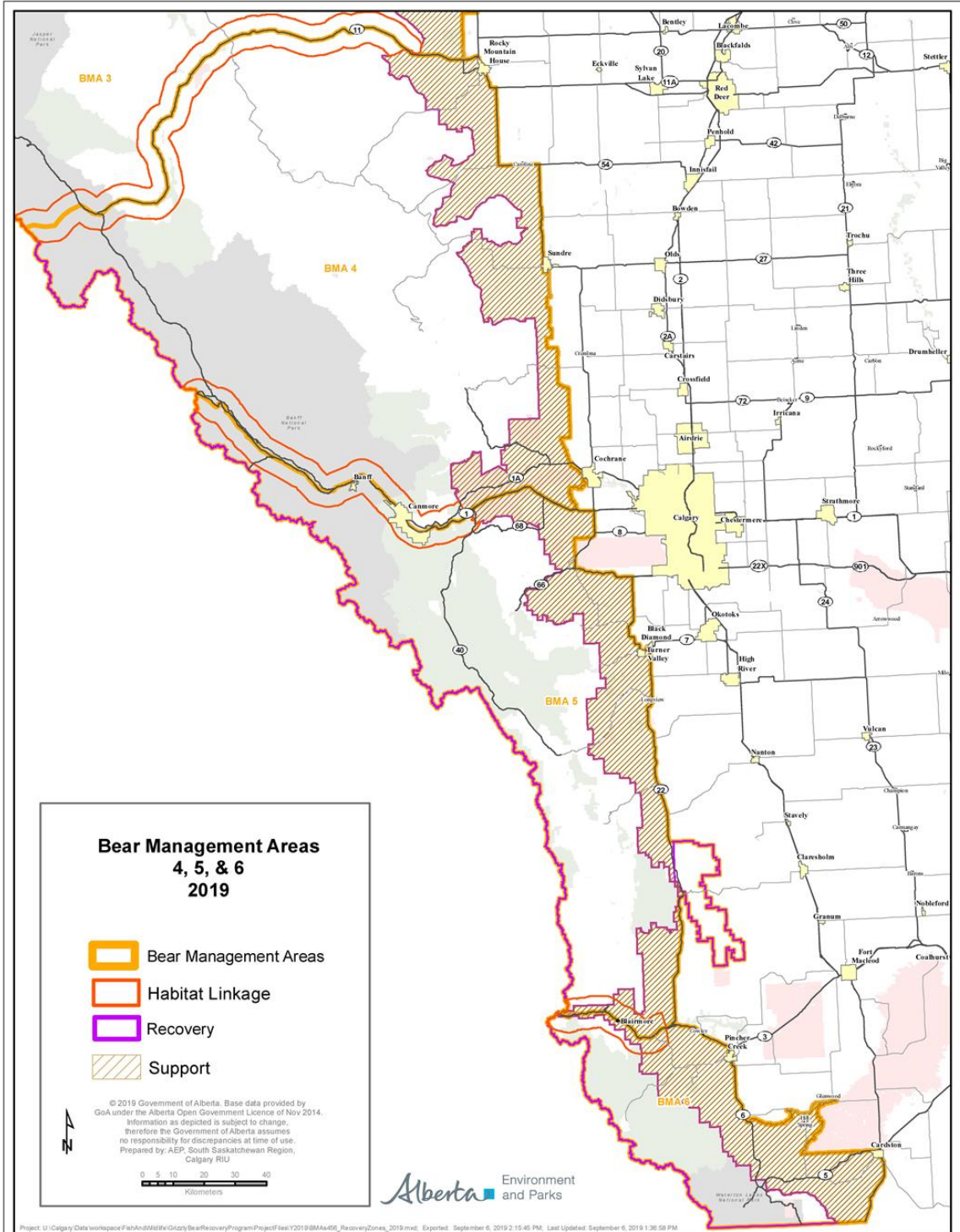
Figure 1. Bear Management Area 4, 5, and 6

Study Area

BMA 4, 5 and 6 are located in the southern portion of Alberta. The BMAs are separated by major east/west highways; BMA 4 lies between Highway 11 and the Trans-Canada Highway, BMA 5 between the Trans-Canada and Highway 3, and BMA 6 between Highway 3 and the Montana/USA border.

The study area includes the Rocky Mountain Natural Region, which lies in the western portion of the BMAs consisting of mountains, high foothills and deep valleys. The Foothills Natural Region, lying along the eastern edge of the Rocky Mountains is characterized by grasslands, shrubs, forests and alpine areas above tree line. These two natural regions comprise the majority of the Recovery Zone. The Parkland Natural Region to the east is the transition area between the foothills and grasslands and includes the Support. In the southern portion of the study area, the Grassland Natural Region drops abruptly eastwards into a prairie grassland landscape of private lands (Support) described as some of the most productive farming and ranching land in Alberta.

There are multiple communities that exist within the study area including Rocky Mountain House, Calgary, Canmore, Blairmore and multiple smaller towns. Agriculture plays a significant role with large grazing leases and private cattle and horse operations, as well as many small private 'ranchettes' producing a variety of livestock. Recreational activities such as hunting, fishing, hiking, mountain biking and both frontcountry and backcountry camping occur. Industrial activity in the form of forestry and natural gas development is significant. These diverse levels of human activity in bear habitat result in regular interactions between bears and people. At times, these interactions can result in high risk to public, cause property damage or other public safety concerns, which can also lead to bears being euthanized or translocated.

Methodology

Grizzly bear mortality records were obtained from Government of Alberta ENFOR Occurrence Reports and Registration records. Bears were classified as to their age and sex whenever possible. Age class of bears were categorized as adult, sub-adult, young of year or unknown. For a definition of age classes, refer to Appendix 1.

Results

Bear Management Area (BMA) 4

A female grizzly bear was killed on the Big Horn Indian Reserve west of Rocky Mountain House in July. She had been translocated earlier that summer from Pincher Creek for killing cattle. This was the only mortality known to have occurred in BMA 4 in 2020. There have been 21 known grizzly bear mortalities between 2009 and 2020 in BMA 4. Illegal harvest accounts for 33 per cent (7 of 21) of all recorded mortalities (Figure 2). This is followed by transportation strikes (road and rail), at 29 per cent (6 of 21). Ten bears (48%) were male, five female (24%) and six (26%) unknown. Seven bears (33%) were adults, six sub adults (29%), one young of year (5%) and seven (33%) were unknown.
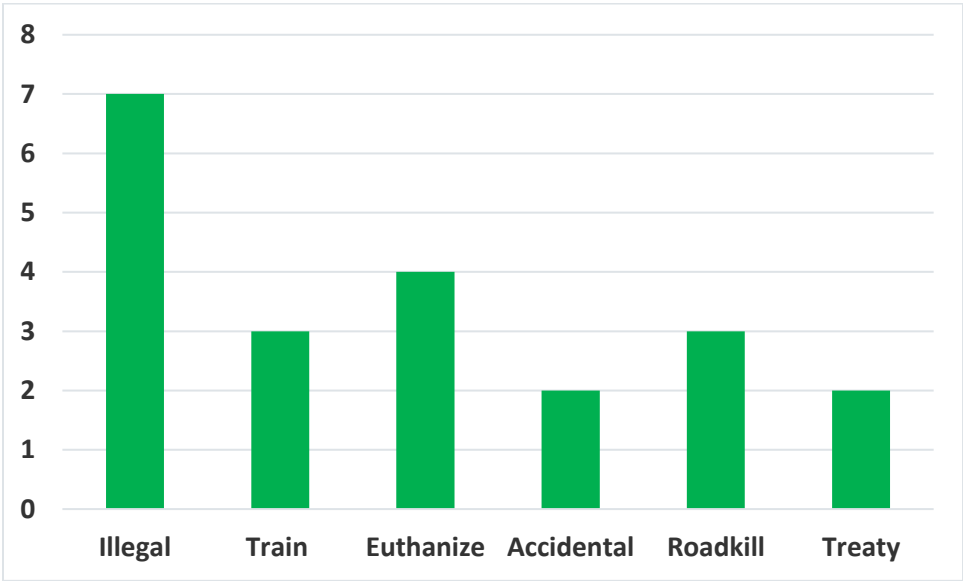

Figure 2. BMA 4 Grizzly Bear Mortality Causes 2009 to 2020 (N= 21)

Of the 16 known mortalities where a Management Zone was assigned, 50 per cent (8 of 16) occurred within the Support Zone, 44 per cent (or 7 of 16) occurred within the Recovery Zones and one occurred outside the BMA (Figure 3). The majority of mortality in the Recovery Zone were due to illegal activity (4 of 7). Transportation kills and bears euthanized because of public safety concerns were the main causes of mortality in the Support Zone (3 each).
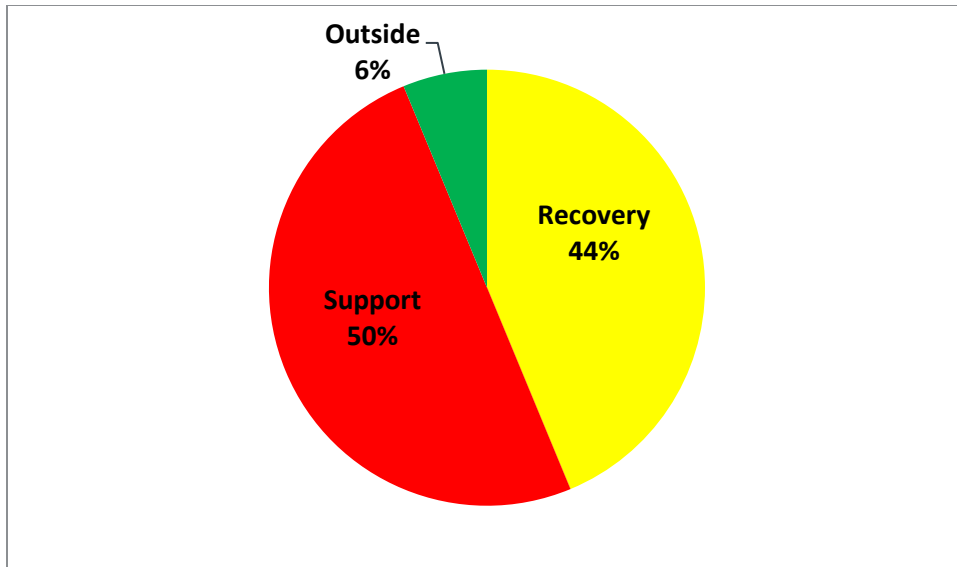
Figure 3. BMA 4 Grizzly Bear Mortality by Zone 2014 to 2020 (N= 16)

Bear Management Area (BMA) 5

There were twelve grizzly bear mortalities in BMA 5 in 2020. This was the highest number of mortality since recording started in 2009. Five were road kills including four young-of-yar cubs (two family groups of 2 cubs each) along Highway #22 in August. There were three different mortalities related to self-defence, all involving hunters. One hunter shot and killed a female grizzly bear that charged him. She had three YOY cubs that were eventually captured and sent to the Vancouver Zoo. Seven of these mortalities occurred within the Support Zone, two in the Recovery Zone and three outside the BMA. There have been 69 known mortalities in BMA 5 between 2009 and 2020; 31 (45%) of those were transportation related (29 roadkill/ 2 rail kill) (Figure 4). Illegal kills comprised 17 per cent (12 of 69). Over half of BMA 5 mortalities involved male bears (51% or 35 of 69). There were 21 female mortalities (30%) and 13 (19%) where sex was unknown. Age class mortalities included 31 adults (45%), 15 sub adults (22%), 11 young of year (16%) and 12 unknown (17%).

Since 2014, of the 42 mortalities within BMA 5 where a Management Zone was identified, 18 mortalities (43%) occurred in the Support Zone, nine each (21%) in the Recovery Zone and Outside the BMA and six (14%) within the Habitat Linkage Zone (Figure 5).
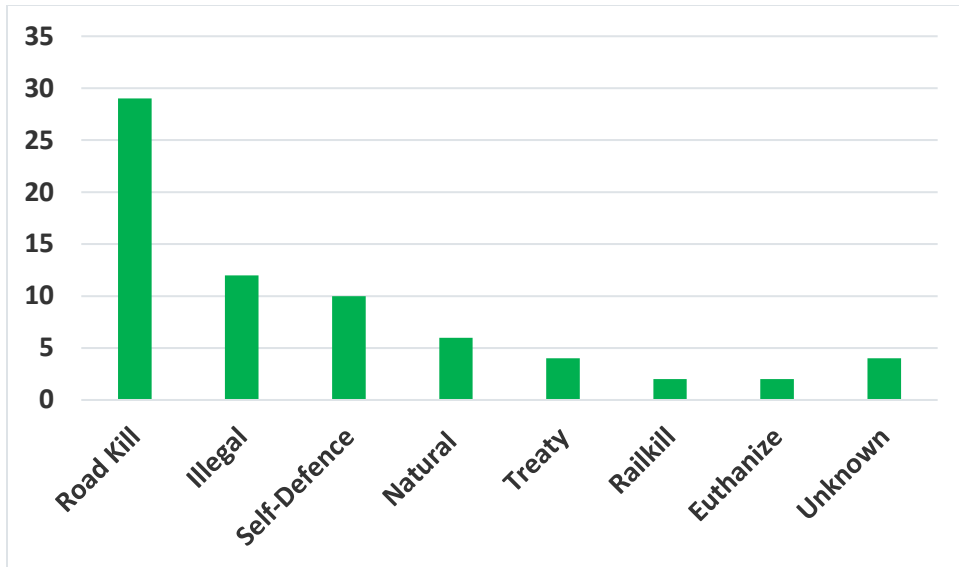
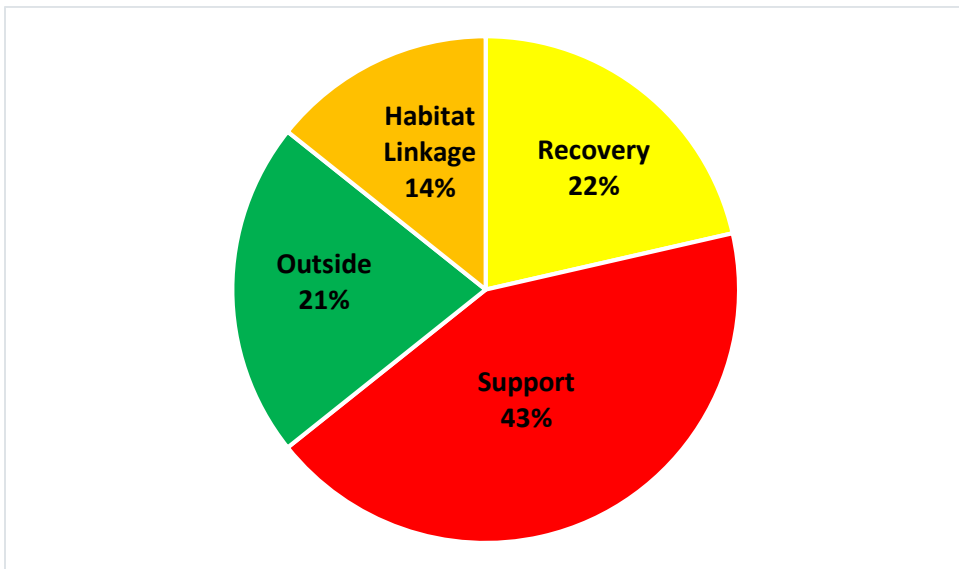*Figure 4. BMA 5 Grizzly Bear Mortality Causes 2009 to 2020 (N= 69)*

Figure 5. BMA 5 Grizzly Bear Mortalities by Zone 2014 to 2020 (N= 42)

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Bear Management Area (BMA) 6

There was one known mortality in 2020. An older adult male in poor condition was euthanized after killing cattle in May near Mountainview. There have been 35 known mortalities in BMA 6 between 2009 and 2020. Eight (23%) of those bears were euthanized, six were transportation related (17%) (four road and two rail) and five each (14%) were killed illegally or through legal Native Treaty harvest (Figure 6). Two thirds of BMA 6 mortalities involved male bears (65% or 23 of 35). There were 11 females killed (31%) and one (3%) where sex was unknown. Twenty-one bears were adults (60%), five were sub-adults (14%), six were young of year (17%) and three were unknown (9%).
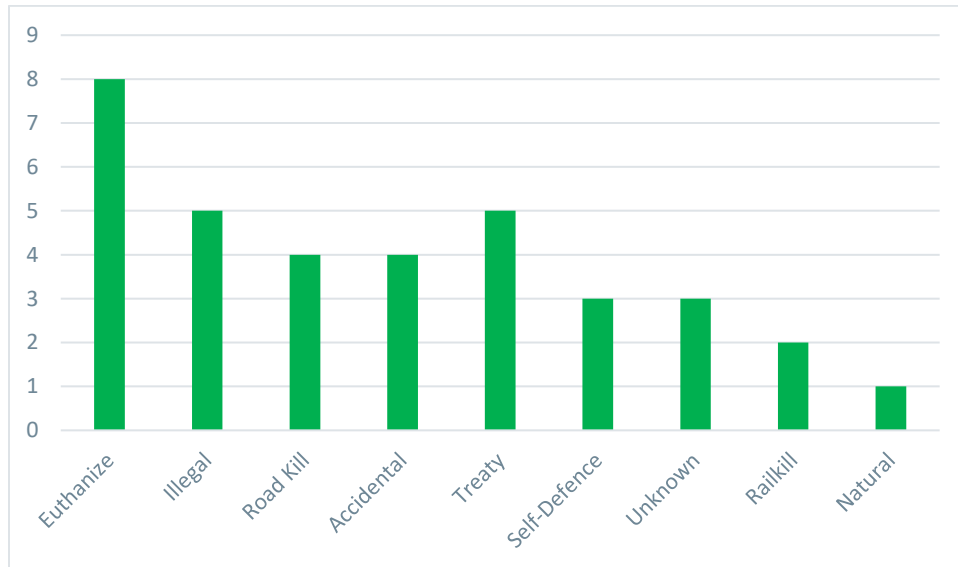

Figure 6. BMA 6 Grizzly Bear Mortality Causes 2009 to 2020 (N= 35)

Since 2014, there have not been any recorded mortalities within the Recovery Zone of BMA 6. Of the 21 recorded mortalities where a management zone was identified, 15 (71%) occurred within the Support Zone and six (29%) Outside the BMA (Figure 7).
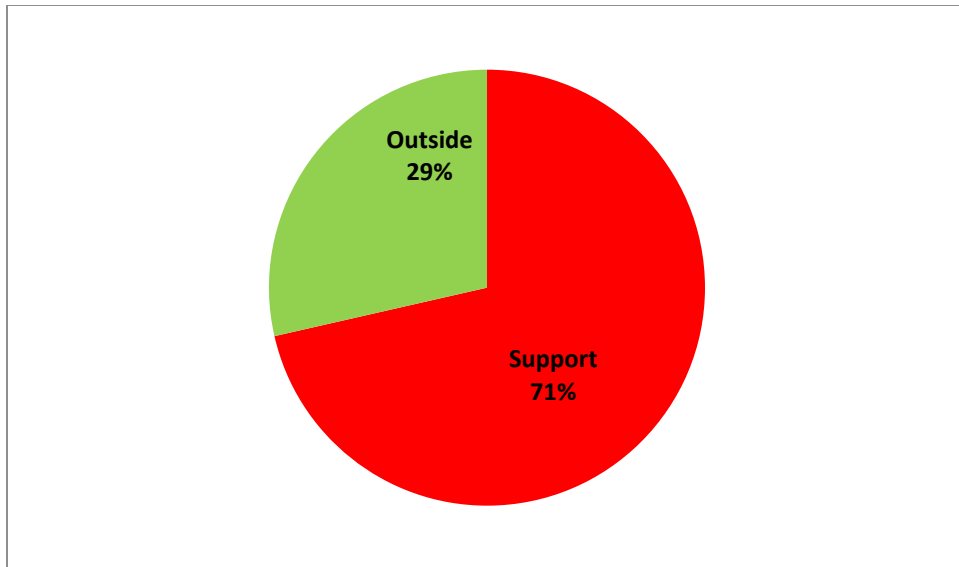
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Figure 7. BMA 6 Grizzly Bear Mortality by Zone 2014 to 2020 (N= 21)

Bear Management Area (BMA) 4/5/6

Over half (55% or 69 of 125) of mortalities within the 3 BMAs occurred within BMA 5. BMA 4 and BMA 6 accounted for 21 (17%) and 35 (28%) mortalities respectively. The majority of mortalities are due to transportation related causes. There were 36 road related deaths and seven rail deaths (Figure 8). Transportation related mortalities constitute a third (40 of 125 or 32%) of all mortalities in the three BMAs. Illegal deaths accounted for 24 (19%) of mortalities.
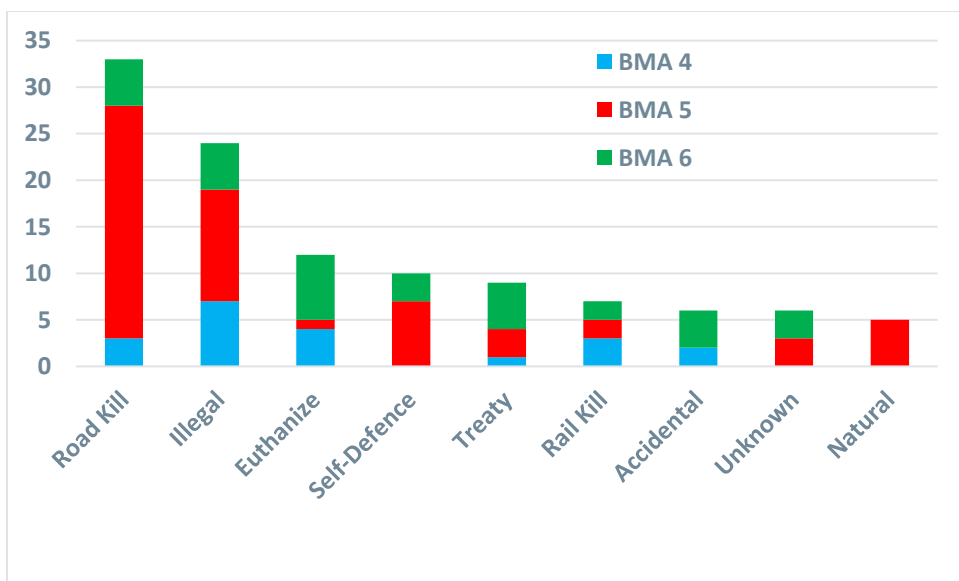

Figure 8. BMA 4, 5, and 6 Grizzly Bear Mortality Causes 2009 to 2020 (N=125)

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A breakdown of mortality sex classes identified 68 males (54 %), 38 females (30 %) and 19 Unknown (15%). Adults comprised 59 (47%) of mortalities, 26 sub-adults (20%), 18 young of year (14%) and 22 Unknown (18%). Fifty two per cent (41 of 79) of mortalities within the three BMAs occurred in the Support Zone (Figure 9). BMA 6 had no recorded mortalities in the Recovery Zone (Figure 10). There were also no recorded mortalities in the Highway 11 or Highway 3 Habitat Linkages. The Support Zone continues to be the Zone with the highest mortality overall in each of the three BMAs.
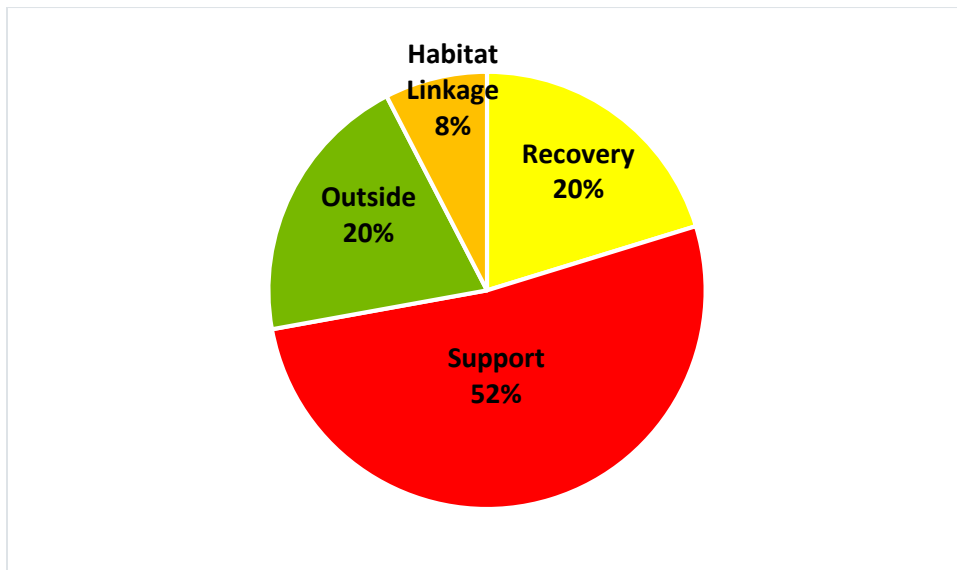

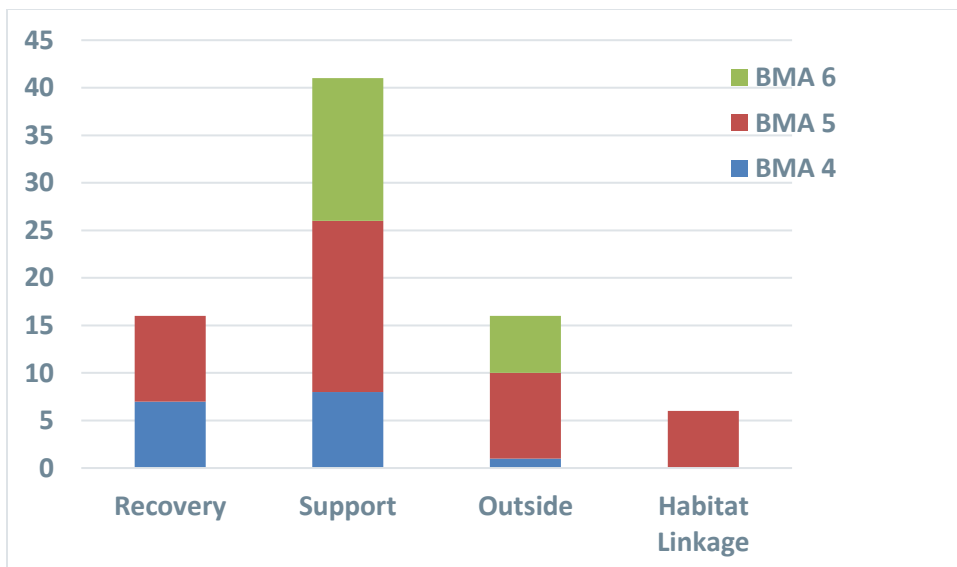*Figure 9. BMA 4, 5, and 6 Grizzly Bear Mortality by Zone 2014 to 2020 (N= 79)*

Figure 10. BMA 4, 5, and 6 Grizzly Bear Mortality by Zone and BMA 2014 to 2020 (N= 79)

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The highest number of annual mortalities for the 3 BMAs combined occurred in 2014 (18), 2016 (16), 2013 (15) and 2020 (14) (Figure 11). In the case of specific BMA mortality, BMA 5 recorded the highest annual mortality in 2020 (12) followed by 2013 (9) and 2016 (8). BMA 6 also recorded eight mortalities in 2014. There have only been 3 years when there were no mortalities recorded within a BMA; 2010 (BMA 4), 2012 (BMA 4) and 2017 (BMA 6).
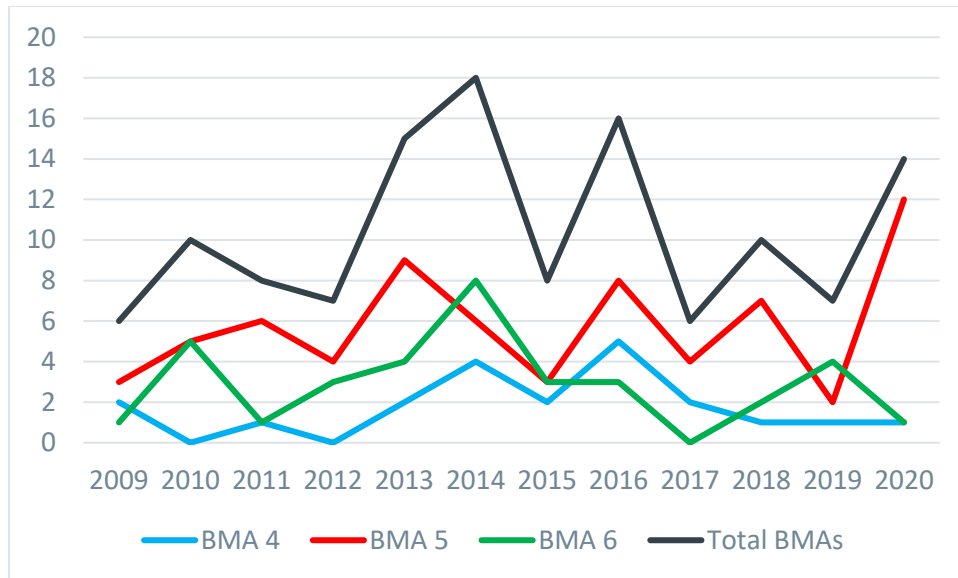

Figure 11. BMA 4, 5, and 6 Grizzly Bear Mortality by Zone and Year 2009 to 2020 (N= 125)

Conclusion

Significant portions of the Recovery Zones of each BMA fall within protected areas or public land use zones where motorized access is managed. There has been work by the forestry and oil and gas sector to reclaim and/or close roads in attempt to reduce the overall access footprint.

The Support Zone has the highest rate of grizzly bear mortality of all the management zones in BMA 4, 5, and 6. Private lands exists throughout most of this zone. In the interest of public safety and grizzly bear conservation, wildlife managers have introduced various programs intended to reduce the number of negative interactions between bears and people and the ensuing potential for human caused grizzly bear mortality to occur. Much of this effort continues to be focused within the Support Zone. Programs such as Wildlife Predator Compensation and Alberta Bear Smart are important tools to help support communities and other stakeholder groups living, working and recreating in bear country. There are ongoing conflict prevention programs in these BMAs delivered by AEP and local community groups such as:

- Mountain View BearSmart

- Bow Valley WildSmart

- Crowsnest Bear Smart

- Waterton Biosphere Reserve Carnivores and Communities Program

The presence of these local community groups help have proven to be an effective tool assisting both AEP and local landowners in reducing conflict. Local groups, with arm's length assistance from AEP when required, provide credible and flexible local based solutions to large carnivore conflict, which further promotes local engagement, and, in most cases, prevention of any future conflict.

The programs include securing attractants through the use of bear proof garbage systems, electric fence, sea cans, bear proof grain storage, natural vegetation and fruit tree removal from developed areas, deadstock management and multiple education programs that focus on conflict prevention. These conflict prevention programs can help to ensure that landowners, particularly within the Support Zone, do not experience public safety and property damage concerns from grizzly bears. A reduction in negative interactions with bears, particularly on private lands within the Support Zone, will help to maintain tolerance levels for grizzly bears, an essential component of grizzly bear recovery in Alberta.

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Appendix

Bear Age Classes

Adult: Independent bear, usually 5+ years

Sub-adult: Dependent bear accompanied by mother, post first year, usually 2-4 years

Young of Year: Dependent bear in first year accompanied by mother

Unknown: Unable to Determine Age or Not Reported