

Photocopy and Use Authorization

In presenting this thesis in partial fulfillment of the requirements for an advanced degree at Idaho State University, I agree that the Library shall make it freely available for inspection. I further state that permission for extensive copying of my thesis for scholarly purposes may be granted by the Dean of the Graduate School, Dean of my academic division, or by the University Librarian. It is understood that any copying or publication of this thesis for financial gain shall not be allowed without my written permission.

Signature _____

Date _____

Grizzly Bear Impacts on Rural Resident Well-Being
in Northwest Montana

by

Sara Halm

A thesis

submitted in partial fulfillment

of the requirements for the degree of

Master of Arts in the Department of Sociology, Social Work, and Criminology

Idaho State University

Summer 2020

Committee Approval

To the Graduate Faculty:

The members of the committee appointed to examine the thesis of SARA HALM find it satisfactory and recommend that it be accepted.

Dr. Morey Burnham,

Major Advisor

Dr. Katrina Running,

Committee Member

Dr. Sarah Ebel,

Graduate Faculty Representative

Dr. Alex Metcalf,

Committee Member

Acknowledgements

First and foremost, thank you to the 25 people who took hours out of their day to detail their lives and experiences with grizzly bears for me. Thank you for sharing lemonade on a hot summer day, for welcoming me into your homes and for meeting me in parks, bars, and casinos. Thank you for picking me up at the highway during a snowstorm and driving me to the ranch, as my CR-V would not have made it. Thank you for the tours of your gardens and taxidermy. Most importantly, thank you for your stories. Through your story-telling, I hope to elevate your voices and make living with grizzlies a little bit easier.

Thank you Idaho State University and the Department of Sociology, Social Work and Criminology for this opportunity. Dr. Morey Burnham, thank you for your continuous support, trust, and aggressive editing. I could not have pulled this off without your guidance and belief in me. Rob Rich and Beth Bennett, bless your hearts for reading this thing from start to finish. Thank you Dr. Katrina Running, Dr. Sarah Ebel, and Dr. Alex Metcalf for your support and advice. Thank you Dale Becker, Stacy Courville, Kari Eneas, Tim Manley, Mike Madel, and Jamie Jonkel for your input in the early stages of this project, and thank you for all you do for the bears.

Finally, I have unending gratitude for Luke Lamar and the Swan Valley (which are one in the same). Thank you for illuminating the lives of grizzlies for me. I am thankful for each and every huckleberry scat, glacier lily dig, and muddy track. Luke, thank you for knowing when to drag me outside and when to tell me to stay home and write.

TABLE OF CONTENTS

List of Figures	vi
List of Tables	vii
Abstract.....	viii
Chapter 1: Introduction	1
Chapter 2: Conceptual Framework	4
2.1 <i>Human-Wildlife Interactions and Conflict</i>	4
2.2 <i>Well-Being Framework</i>	6
2.3 <i>Grizzly Bear Conservation and Management</i>	8
Chapter 3: Methods	11
3.1.1 <i>Study Area: Northern Continental Divide Ecosystem</i>	11
3.1.2 <i>Study Site 1: Tobacco River Valley</i>	12
3.1.3 <i>Study Site 2: Rocky Mountain Front</i>	14
3.1.4 <i>Study Site 3: Confederated Salish and Kootenai Tribal Reservation</i>	14
3.2 <i>Data Collection and Analysis</i>	16
Chapter 4: Results and Discussion	21
4.1 <i>Personal Security and Freedom</i>	21
4.1.1 <i>Threatened Safety</i>	22
4.1.2 <i>Mobility Restrictions</i>	23
4.2 <i>Material Livelihoods</i>	29
4.2.1 <i>Economic Loss</i>	29
4.2.2 <i>Opportunity Costs</i>	34
4.2.3 <i>Economic Opportunity</i>	36
4.3 <i>Health</i>	37
4.3.1 <i>Fear and Loss of Sleep</i>	38
4.3.2 <i>Place Attachment</i>	39
4.4 <i>Social Relations</i>	41
4.4.1 <i>Family Relations</i>	42
4.4.2 <i>Community Conflict</i>	43
4.4.3 <i>Government Relations</i>	46
Chapter 5: Conclusion	51
References	54

Appendix A	60
-------------------------	----

List of Figures

Figure 1 Location of Study Sites.....	11
---------------------------------------	----

List of Tables

Table 1 Table of Study Site Socioeconomic Profiles	15
Table 2 Table of Study Sample Demographics.....	19
Table 3 Table of Grizzly Bear Impacts on Rural Communities in Northwest Montana.....	48

Grizzly Bear Impacts on Rural Resident Well-Being in Northwest Montana

Thesis Abstract--Idaho State University (2020)

Wildlife conservation produces costs and benefits for humans. Unmitigated costs and uneven distribution of benefits incurred from wildlife conservation leads to conflict between people and wildlife and groups of people, threatening conservation success. Previous research has focused on visible, material impacts of wildlife conservation. However, reducing conflict will require a broader understanding of wildlife impacts on human well-being. I address this knowledge gap by studying the visible and hidden, nonmaterial impacts grizzly bears have on rural residents of Northwest Montana. My research demonstrates that the nature of impacts to people's well-being depends on the social-ecological context in which human-grizzly interactions are situated. I show that grizzly bears visibly impact livelihoods, health, social relations, personal security, and freedom, which leads to hidden impacts including threats to cultural identity, diminished perceived livelihood sustainability, and enhanced mental, spiritual, and cultural well-being. Revealing these hidden impacts enables the development of more inclusive wildlife conservation.

Key Words: Human-Wildlife Conflict, Grizzly Bears, Well-Being, Hidden Impacts

Chapter 1: Introduction

Recognition of the ecological importance of biodiversity and subsequent global conservation efforts to restore declining wildlife populations has led to range expansion of some species (Chapron et al., 2014; Manfredo et al., 2017; Nyhus, 2016). Simultaneously, human population growth and the development of anthropogenic landscapes have increasingly forced people and wildlife to live in close proximity (Nyhus 2016). Together, these processes have led to a reemergence of human-wildlife interactions in places and landscapes where they had not occurred in generations, producing costs and benefits for local human communities (Chapron et al., 2014; Pooley et al., 2017). Costs, such as threatened safety or livestock loss, and benefits, such as intrinsic value or economic opportunities through eco-tourism, can result in conflict or coexistence depending on how individual people experiences these impacts. Conflict between people and wildlife and among groups of people over how wildlife should be managed (henceforth human-wildlife conflict or HWC) can lead to lethal removal and/or decreased tolerance of the offending wildlife. Proposed solutions to HWC primarily emerge from research narrowly focused on the visible, material impacts wildlife cause, yet fail to consider the complex social, political, and cultural contexts in which HWC is embedded and by which it is influenced (Dickman, 2010; Margulies & Karanth, 2018). However, nonmaterial and often hidden impacts wildlife have are frequently overlooked by researchers because they are difficult to quantify and incorporate into policy development and implementation (Thondhlana et al., 2020). These obscured effects play an important role in shaping how humans and wildlife interact because of the damage they do to individuals and human communities, including diminished mental health, ruptures in social connections, and loss of cultural identity (Barua et al., 2013; Mayberry et al., 2017; Thondhlana et al., 2020).

To elicit the diversity of hidden, nonmaterial impacts that local communities experience from living with wildlife and wildlife conservation, Thonahlana et al. (2020) call for qualitative research focused on capturing the “historical, political, and cultural contexts” that shape human-wildlife interactions through stories, lived experiences, and narratives. Here, I address this call and the dearth of

research on hidden wildlife impacts, by investigating how grizzly bears impact rural resident well-being in Northwest Montana, where after over four decades of protection under the Endangered Species Act grizzly bear populations are expanding, leading to increased human-bear interactions and grizzly bear mortality (Eneas, 2020). To do this, I conducted interviews in three distinct communities in the Northern Continental Divide Ecosystem, one of six grizzly bear recovery areas in the lower 48 states and home to the largest population of grizzlies in the continental U.S. Each community is experiencing a relatively recent increase in grizzly bear populations and associated range-expansion, but differ in the socio-cultural, economic, and geographic dynamics that shape human-grizzly interactions. As such, this study area provides a unique opportunity to understand how varying cultural and livelihood contexts influence the impacts of wildlife on human well-being. By comparing and contrasting how communities are impacted by grizzly bears, I highlight the cultural, economic, ecological, historical, and social contexts that shape human-wildlife conflict and coexistence in particular places while informing our understanding of the lived experience of life intimately intertwined with large carnivores such as the grizzly bear.

To develop my analytical approach, I use a well-being framework to categorize and analyze the positive and negative visible and hidden impacts of living with grizzlies, which recognizes four constituents of well-being: (1) personal security and freedom; (2) material livelihoods; (3) health; and (4) social relations (Mayberry et al., 2017). My findings demonstrate that interviewees experienced a range of visible positive and negative impacts across each well-being constituent, including threatened safety, restricted mobility, economic loss and opportunity, opportunity costs, loss of sleep, chronic anxiety, and intra- and inter- community conflict. In addition, I found several hidden impacts of living with grizzly bears in the NCDE were common among my interviewees, including threats to and loss of cultural identity and associated recreational and livelihood activities, diminished perceived livelihood sustainability, increased mental and spiritual well-being, and enhanced cultural connections. More broadly, my findings show that the way participants experience and interpret these impacts strongly depends on their social-ecological context, with some impacts being site specific and others more universal across my study sites.

Overall, my case study reveals insights into the lived experiences of sharing the landscape with a large carnivore and helps provide a more comprehensive understanding of the full range of hidden and visible impacts that influence human-grizzly bear conflict and coexistence. The extensive list of visible and hidden impacts grizzlies have on human communities identified in my study suggests that while managers must address the material impacts wildlife pose, they must also consider the hidden, unintended consequences conservation programs and policies might have on local people. In assessing these potential consequences, managers must take into consideration the unique social-ecological context in which human-wildlife interactions are situated. For wildlife populations and human communities to thrive, durable conservation solutions must mitigate visible and hidden threats to well-being.

Chapter 2: Conceptual Framework

2.1 Human-Wildlife Interactions and Conflict

Much of the literature on human-wildlife interactions has examined conflicts between wildlife and humans. Human-wildlife conflict refers to negative interactions between humans and wildlife, including interactions that are experienced or perceived, economic or aesthetic, and social or political (e.g. negative interactions among people regarding wildlife) (Messmer, 2009). The primary focus of HWC research has been examining the challenges of living with wildlife, especially predators, with particular attention to the drivers of and solutions to direct conflicts that produce material consequences, such as livestock depredation and human injury or death (Margulies and Karanth 2018).

Human-wildlife interactions and conflict are driven by both ecological and human factors. Ecological drivers include landscape factors such as proximity of human dwelling and attractants to riparian zones and protected areas (Wilson et al., 2006); the spatial and temporal aspects of natural food availability (Cristescu et. al., 2016); learned behaviors of wildlife (Morehouse et al, 2016); and animal health, demographic factors, and expanding wildlife populations (Nyhus 2016). A broad range of human factors driven by multi-scalar processes, ranging from global to local, shape human-wildlife interactions and conflict. In particular, human population growth and subsequent food, energy, and transportation development, have caused widespread land use change, leading to human encroachment into wildlife habitat and increasing interactions between humans and wildlife, causing widespread conflict (Nyhus 2016). While many factors have been shown to affect the frequency of human-wildlife interactions, some researchers suggest regional and local level social processes have the most influence over whether or not an interaction between humans and wildlife becomes a conflict (Dickman 2010). These finer scale determinants are complex, and include local culture; politics; economics; and individual experiences, values, and worldviews related to wildlife (Nyhus 2016). A recent review of the HWC literature identified five primary factors that influence how humans respond to wildlife impacts: 1) value orientations; 2) social interactions; 3) resource dependence; 4) perceptions of risk; and 5) nature of interaction with the animal (Bhatia et al., 2019). Value orientations are the normative beliefs and behavioral expectations of a

social identity group, and shape attitudes and behavior towards wildlife (Bhatia et al., 2019; Manfredi et al., 2016). Social interactions refer to the relationships between an individual and their community, including local wildlife agencies, and shape the perceptions people have about the distribution of costs and benefits of sharing the landscape with wildlife (Bhatia et al., 2019; Pooley et al., 2017). In addition to an individual's values and social relationships, their dependency on natural resources, whether for income, food, or cultural connection, is a strong predictor of how they respond to human-wildlife interactions and wildlife conservation programs, especially if they see wildlife as competition or a threat to those resources (Bhatia et al., 2019; Karlsson & Sjöström, 2011). Because living with wildlife, especially large carnivores, poses risks to people's safety and livelihoods, people's perceptions of those risks and their willingness to accept or adapt to them has influence over how they interact with wildlife and conservation (Dickman 2010; Bhatia et al 2019). Finally, experiences with individual animals shape how people view a species and their conservation, namely whether those interactions are negative and produce feelings of fear and danger, or if they are positive and produce feelings of respect and interest (Bhatia et al 2019). These five primary fine-scale factors are recognized in the literature as powerful influences over human-wildlife interactions. However the relationship between them, human well-being, and the costs and benefits communities experience from living with wildlife are not well understood.

In parts of the world where successful wildlife conservation has led to expanding populations or land use change has put humans and wildlife in closer proximity, local communities experience both costs and benefits to living with wild animals. These costs, and uneven distribution of benefits, can lead to either coexistence or conflict depending on the contours of the fine-scale drivers described above. Broadly, researchers and managers have recognized that if the costs of living with wildlife are not mitigated in local communities, conflict between people and people and wildlife will likely ensue (Thondlhana et al., 2020). Thus, in an effort to decrease conflict, most human wildlife interaction research has focused on identifying the costs of living with wildlife.

However, most research on human-wildlife conflict and the costs of living with wildlife has focused on the visible, material impacts wildlife have on local people, such as human injury and death,

crop raiding, and livestock depredation (Barua et al., 2013; Mayberry et al., 2017; Thondhlana et al., 2020). Visible impacts occur through a direct chain of causation (such as a negative encounter with a grizzly bear) and have material consequences (Mayberry et al. 2017). While addressing the threats wildlife pose to life and livelihoods is important, this narrow focus on material impacts fails to ultimately reduce HWC because nonmaterial, indirect impacts also cause conflict and remain hidden and, therefore, largely ignored. These hidden, nonmaterial costs can be “characterized as uncompensated, temporally delayed, psychological or social in nature” (Barua et al., 2013), and essentially constitute two subcategories: (1) indirect economic costs, such as opportunity and transaction costs; and (2) social costs, such as negative experiences and feelings (Thondhlana et al. 2020). Hidden, nonmaterial impacts often elude researchers because they have many causes, are slow to emerge, and their identification requires time intensive qualitative research methods and ethnographic understanding of focal communities (Barua et al. 2013; Mayberry et al. 2017; Thondhlana et al. 2020).

Though they are difficult to study, hidden impacts can be as equally detrimental to well-being as material impacts, and the relatively small body of research that has examined them suggests that nonmaterial impacts can diminish physical, mental, and cultural well-being (Barua et al. 2013; Mayberry et al. 2017; Thondhlana et al. 2020). For example, in Botswana where elephants visibly impact the safety of local people and damage crops, living in proximity to elephants also produces hidden impacts, including acute emotional stress; reduced access to clean water, firewood, and affordable food; and diminished ability to socialize with neighbors (Mayberry et al. 2017). Likewise, in Namibia, where a multitude of wildlife species threaten the physical safety of people and damage crops, even people that do not experience these visible impacts suffer from fear of encountering dangerous animals, loss of sleep while guarding crops, and anxiety over diminished livelihood security, all of which decrease their support for the protection of those species (Khumalo & Yung, 2015).

2.2 Well-Being Framework

In this paper, I use a well-being framework derived from Barua et al. (2013) and the “Ecosystems and Human Well-being” report from the Millennium Ecosystem Assessment (Corvalan et al., 2005) and

adapted by Mayberry et al. (2017) to identify both the visible and hidden impacts of an expanding grizzly bear population on rural residents in Northwest Montana. Applying a well-being lens to human wildlife conflict is useful because it identifies positive and negative, hidden and visible impacts as psychological, spiritual, and cultural dimensions are assessed (Mayberry et. al 2017). This process enables contrast among study sites, illuminating how the specific social-ecological contexts in which human-grizzly bear interactions are situated, while calling attention to the hidden impacts that are often obscured or omitted in traditional studies of human-wildlife interactions (Thondlana et al., 2020).

In this framework, human well-being is the outcome of four primary constituents: (1) personal security and freedom, (2) material livelihoods, (3) health, and (4) social relations. Personal security and freedom refer to safety (being protected from risk) and mobility (ability to move freely). Wild animals, especially large carnivores, threaten safety directly with the potential to cause injury or death, and the fear associated with this potential can in turn restrict mobility as people avoid areas where they perceive they are likely to run into wildlife. Material livelihoods includes food security, access to water for drinking and cleaning, access to shelter and other essential resources, and the ability to acquire and maintain income through livelihood activities (work and wealth). In this study, only the work and wealth component was relevant to the participants, and thus the other components were not included. Wildlife can impact material livelihoods when they kill livestock and damage crops, and this disruption in livelihood practices can also have negative implications for the cultural identities tied to those practices (Thondhlana et al., 2020). The health constituent encapsulates both physical health (being free from injury and illness) and mental health (being free of psychological and emotional impairment). As stated above, physical health can be diminished in an attack, but it can also be negatively impacted by loss of sleep as a result of crop guarding throughout the night (Barua et al., 2013) or worrying about negative interactions (Mayberry et al. 2017). Mental health can be negatively impacted from the chronic fear, stress and anxiety previously mentioned, but here I also recognize the potential for positive wildlife impacts on mental health through enhanced cultural and spiritual connections. Finally, social relations includes both positive connections and interactions with family, community, and government personnel and agencies that occur because of

the presence of wildlife, as well as the negative impacts that can occur as familial and community relations are cut-off as mobility is restricted and people are unable to travel and visit neighbors (Mayberry et al. 2017). In addition, social relations also includes the well-documented strains between local communities and government agencies wrought by the presence of wildlife, especially when a species is entangled in and contradicts symbologies, threatens cultural identities, and causes visible damage (Scarce, 1998). Grounding my analysis in these four well-being constituents enables a multidimensional and more holistic assessment of human well-being, revealing the full range of positive and negative impacts wildlife have on local communities.

2.3 Grizzly Bear Conservation and Management

The grizzly bear, *Ursus arctos horribilis*, once roamed from Alaska to Mexico, from the Pacific coast through the Midwestern prairie. Some estimate 50,000 grizzly bears occupied the western United States before European settlement (Servheen, 1995). During this time, native people shared the landscape with the charismatic carnivore, and while different groups each held their own unique perspectives of the animal, many held a deep respect and spiritual connection to bears (Clark & Slocombe, 2009). Since the settlement of Europeans on the continent, the grizzly's range has shrunk dramatically, warranting its designation as a threatened species in the contiguous United States under the Endangered Species Act (ESA) in 1975 (Servheen 1995). This decline was the result of habitat loss and direct human caused mortality. For the population to recover and be removed from the ESA, U.S. Fish and Wildlife Service (USFWS) must prove that the habitat can sustain a viable population, that mortality rates are limited so that the population is stable, and that adequate regulatory mechanisms are in place to maintain recovery beyond delisting (Servheen 1995). Currently, grizzlies in the lower 48 states are restricted to four isolated recovery areas in Wyoming, Montana, Idaho, and Washington; (1) the Greater Yellowstone Ecosystem; (2) the Northern Continental Divide Ecosystem; (3) the Cabinet-Yaak Ecosystem; and (4) the Selkirk Ecosystem. There are two additional recovery areas that are currently unoccupied with proposed reintroductions; (1) the North Cascades Ecosystem; and (2) the Bitterroot Ecosystem (U.S. Fish and

Wildlife Service, 2018). The best available science estimates that today at least 1,850 grizzlies roam in the occupied recovery areas (U.S. Fish and Wildlife Service, 2018).

I use grizzlies as a focal species to study the hidden and visible impacts of living with wildlife for several reasons. First, as large omnivores, grizzly bears induce a wide variety of impacts on humans. Bears threaten human safety and domestic livestock, but unlike other carnivores, they also damage field crops, grain silos, orchards, bird feeders, and compost and garbage containers. The long list of attractants that draw bears closer to humans means that a wide range of people are affected by them, rather than a few groups, such as ranchers or hunters. Second, their ESA status has transformed them into a highly divisive, political animal. Federal oversight of wildlife is viewed unfavorably by many local, rural people as they feel a diminished sense of control over their lives and livelihoods due to increased regulation and restrictions that accompany ESA listings. Third, the grizzly is a flagship species for multiple cultural groups (Douglas & Veríssimo, 2013). They are prominent in Native American stories and traditions, as well as mainstream American culture, representing both the rugged wilderness of Yellowstone National Park and the charismatic “teddy bear,” perhaps because “more than any other North American animal, the bear may remind us of ourselves” (Kellert et al., 1996). Fourth, their conflicting symbolism, embodying at once government control, wildness, danger, and charisma, produces conflict between groups of people (e.g., locals vs outsiders, environmentalists vs extractionists), compounding and expanding the direct, visible impacts described above (Kellert, 1992). Finally, the sustainability of the grizzly bear population in the Lower 48 depends on them sharing human-dominated landscapes. Grizzlies reproduce slowly, and are thus vulnerable to human caused mortality (NCDE Coordinating Committee, 2018). The recovery area boundaries originally drawn by the U.S Fish and Wildlife Service encompass large contiguous parcels of public land. However, long-term population viability depends on genetic connectivity between recovery areas, requiring individual bears to traverse a complex matrix of public and private lands with multiple land uses and potential for conflict with humans (Serveehn 1995). Thus, grizzly bear

management and conservation is more of a social challenge than a biological one, demanding the attention of social science.

Chapter 3: Methods

3.1.1 Study Area: Northern Continental Divide

Ecosystem

The Northern Continental Divide Ecosystem (NCDE), located in northwest Montana, is one of six grizzly bear recovery areas designated by USFWS (Figure 1). This ecosystem is home to an estimated 1,000 grizzly bears, making it the largest population in the Lower 48 states (U.S. Fish and Wildlife Service, 2018). The NCDE is diverse both ecologically and socially. The Rocky Mountains bisect the NCDE and delineate the short grass prairies of eastern Montana from the timbered, glacial valleys to the west, giving the region a diverse array of ecosystems that range from high elevation alpine meadows to low-lying wetland systems, and forest types from dry limber pine and ponderosa savannah to moist western red cedar and grand fir stands. As omnivores and opportunistic generalists, grizzly bears benefit from this ecological diversity and make use of all of these habitats (Committee 2018).

The NCDE's ecological diversity also shapes how humans use the landscape. East of the Continental Divide, large-scale commodity agriculture dominates the prairie and is the center of the local culture and economy. In contrast, land use and the natural resource economy on the west side of the divide is a mixture of timber harvest, recreation, and diversified agriculture. The Rocky Mountains also served as a semi-permeable boundary between Native American groups whose sovereign states comprise part of the region. The Blackfoot Nation's historical territory ranged east of the divide, from the Saskatchewan River to the headwaters of the Missouri River (Craig et al., 2012). Presently, the Blackfoot

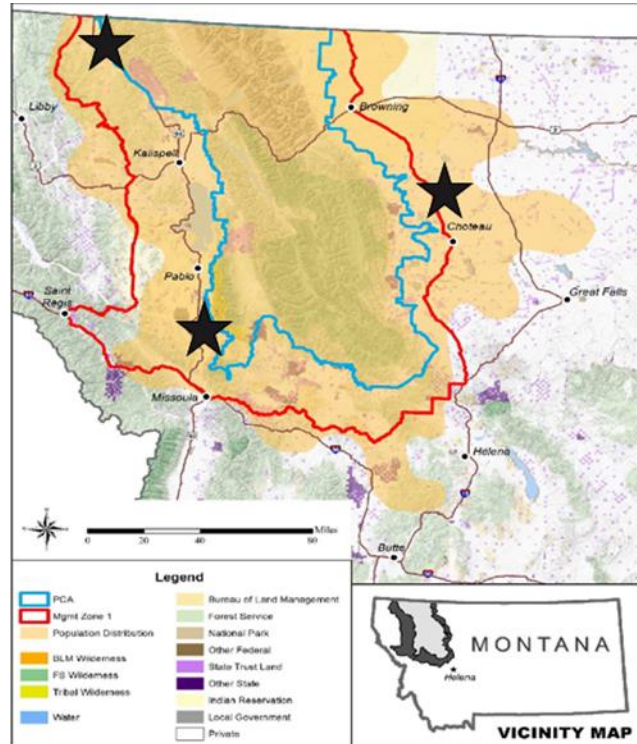


Figure 1. Location of three study sites are depicted by black stars. Beginning from the northwest star and continuing clockwise, the sites are the Tobacco River Valley, the Rocky Mountain Front and the CSKT Reservation.

Indian Reservation borders the east side of Glacier National Park and Canada. The Pend d'Oreille, Salish, and Kootenai, three distinct tribes each with their own culture and historic territories, ranged throughout the Columbia River watershed, primarily west of the continental divide (except for their annual bison hunts on the plains) (Wheeler, 2006). Today, these three tribes occupy the Confederated Salish and Kootenai Tribal Reservation, also known as the Flathead Indian Reservation, which lies west of the Mission Mountains and north of Missoula, MT.

To access the diverse habitats available to them, grizzly bears must navigate this complex land ownership matrix composed of private agricultural lands, rural communities, public national and state forests, and tribal lands. Given the variety of social-ecological systems within the Northern Continental Divide Ecosystem, the region provides an excellent study site to explore how grizzly bears influence human well-being. For this study, I selected three focal communities within the NCDE, each representing a unique confluence of different social and ecological factors that enable comparison of various experienced impacts on well-being from grizzly bears: the Tobacco River Valley, the Rocky Mountain Front, and the Confederated Salish and Kootenai Tribal Reservation. Detailed descriptions of each community are given in the following sections and socio-demographic statistics of each study site are listed in Table 1.

3.1.2 Study Site 1: Tobacco River Valley

The Tobacco River Valley (TRV) is situated in Lincoln County in Montana's northwest corner. It is a rural county, with a population of less than twenty thousand people spread over two million acres. Over three quarters of the land in Lincoln County is under federal ownership and is primarily managed by the U.S. Forest Service (USFS). The timber resource located on these public lands contributed to thirty percent of the County's total labor earnings between 1970 and 1989 (Rasker, 2017). Between 2001 and 2014 timber jobs dropped to six percent of the total labor earnings (Rasker 2017), and, by 2017, just four percent of jobs in the private sector were in the timber industry. In part, and much like other timber towns across the American West, the decline in the timber industry was caused by efficiency gains resulting from the mechanization of logging equipment and sawmills, which allowed sawmills to operate with little

human labor. In addition, in the early 1990s, federal land management agencies reoriented their policy focus from timber production to ecosystem health, leading to less commercial harvest (Rasker 2017). The decline of the timber industry in Lincoln County has caused both economic and cultural upheaval, and the county's unemployment rate is twice the state average. However, many small communities in Lincoln County still consider themselves timber towns, though there are relatively few sawmills and sawyers in them.

In addition to the mechanization, the Endangered Species Act played no small part in the decline of the timber economy in the broader American West and Lincoln County, and the "spotted owl wars" of the 1990s led to a decline in timber harvest and job opportunities and caused conflict between identity groups (loggers versus environmentalists) that still permeate the region (Clark, 2001). In some ways, the grizzly bear has had similar effects on Lincoln County as the spotted owl did on timber towns in the 1990s. Lincoln County overlaps two grizzly bear recovery areas, the NCDE and the Cabinet-Yaak Ecosystem (CYE). The CYE holds a small population of 55-60 grizzlies, and depends on the NCDE for genetic variability (U.S. Fish and Wildlife Service, 2018). Currently, Montana Fish, Wildlife, and Parks (FWP) captures bears from the NCDE and releases them into the CYE to achieve this, but in the future they hope bears will make the trip on their own. The TRV lies on the western edge of the NCDE and plays an important role in connecting the two landscapes and grizzly bear populations.

The TRV is composed of the towns of Eureka, Fortine, and Trego, each of which reflects the cultural and economic trends previously described. As grizzly bears increase in numbers and expand west, these communities have experienced an increased number of human-grizzly interactions and conflicts. Eureka, the largest town in the TRV, borders Canada and appears to be transitioning from a timber town to a tourist town. This trend is occurring throughout Lincoln County, and fourteen percent of the private sector is employed in food or lodging services and nearly a fifth of residences are second homes. These second home owners often bring different cultural values to rural communities, such as prioritizing public land for recreation and wildlife, rather than natural resource extraction (Robbins et. al.,2009).

3.1.3 Study Site 2: Rocky Mountain Front

The Rocky Mountain Front (RMF) refers to the string of small rural communities that dot the eastern edge of the Bob Marshall Wilderness. On the northern edge of the RMF, south of the Canadian border, lies the Blackfeet Indian Reservation, which occupies most of Glacier County. Glacier National Park draws millions of visitors each year, and thus a fifth of the jobs in the private sector in Glacier County are in food and lodging services. Ranching is also an important livelihood and part of the culture on the RMF and Glacier County has some of the highest levels of livestock loss from grizzly bears in the NCDE. Glacier County has a growing population, unlike other parts of the RMF, though it also has a relatively high unemployment and poverty rate.

South of Glacier County lies Pondera and Teton Counties. Pondera County contains a small part of the Blackfeet Indian Reservation, as well as a few small ranching towns and Hutterite colonies. Teton County is similar to Pondera culturally and economically, with the exception that the rural towns closer to the mountains market themselves as “gateways” to the Bob Marshall Wilderness and thus have a slightly larger service economy. Pondera County is shrinking in population size, while Teton County has marginal growth. Cattle and sheep ranching and grain crops makeup the primary agricultural products in both counties, and account for nearly a fifth of private employment. Grizzly bears have been absent in communities distant from the foothills of the Rockies for generations, but they are now expanding farther east each year, resulting in more human-bear conflict (NCDE Coordinating Committee, 2018). The continued expansion eastward strains the federal and state agency’s ability to manage bears and bear-related conflict as managers have to adapt to cover larger areas without a corresponding increase in resources. In an attempt to address the growing need for managing human-bear conflict, a new Bear Management Specialist position was created in 2017 by FWP to respond to bear conflict east of Highway 89.

3.1.4 Study Site 3: Confederated Salish and Kootenai Tribal Reservation

Most of the Confederated Salish and Kootenai Tribal Reservation (CSKT Reservation) is within Lake County, which is located north of Missoula and south of Kalispell, and, because of its proximity to

these population centers, has the highest human population density in this study. The population of Lake County has more than doubled over the last five decades and nearly a quarter of private residences are second homes. Flathead Lake is, the largest freshwater lake west of the Mississippi and, has been a major attraction for seasonal residents. The summer recreational opportunities afforded by Flathead Lake supports a moderate tourism industry. Medium- to small-scale diversified agriculture also provides a modest contribution to the local economy. Intensive ranching and farming started on the reservation with the 1910 General Allotment Act, which opened the area to white settlement, and today tribal members are minorities on their own reservation (Frost, 1985). The characteristics that make the valley suitable for farming, including rich soils and extensive wetland systems, also create habitat that grizzlies use intensively in spring and summer (Frost 1985). The CSKT have management authority over grizzlies on the reservation, though they must consult with the USFWS while grizzlies are on the endangered species list. As such, decisions about conflict mitigation and habitat conservation are made by tribal wildlife biologists with guidance from the Tribal Council. Grizzly bear conservation is a high priority for the CSKT. In the Mission Mountain Tribal Wilderness, the first Tribal Wilderness area in the country, the CSKT close a 10,000 acre area to all human traffic during peak hiking season to enable grizzlies to feed unbothered on the army cutworm moths that hide from the summer heat underneath scree on high elevation slopes (McDonald et. al., 2005). This wildlife conservation ethic is deeply rooted in the culture and spirituality of the CSKT, but it is not necessarily felt by all residents on the reservation, especially non-tribal members that hold religious beliefs about humans' dominion over animals (Frost, 1985). These conflicting values, cultures, economies, and land uses likely influence human-grizzly interactions not only on the CSKT Reservation but on the RMF, in the TRV and elsewhere across the NCDE.

Table 1. Study Site Socioeconomic Profiles					
Study Area	TRV	RMF			CSKT
County Data	Lincoln County	Glacier County	Pondera County	Teton County	Lake County

Population (2018) ^a	19,794	13,747	5,972	6,162	30,250
Number of People/1000 Acres ^a	8	7	6	4	29
% Population Change (1970-2018) ^a	9.6%	27.0%	-11.0%	0.5%	107.3%
% Federal Land ^a	74.5%	20.8%	10.4%	17.5%	17.8%
% Tribal Land ^a	0%	70.3%	15.4%	0%	63.8%
Timber % of Private Employment (2017) ^a	3.9%	0%	0%	0%	0.7%
Agriculture % of Private Employment (2018) ^a	3.5%	10.6%	18.2%	21.3%	7.6%
Hospitality% of Private Employment (2017) ^a	14.3%	20%	7.2%	11.1%	13.9%
Unemployment Rate (2018) ^a	7.4%	7.8%	4.1%	3.4%	4.3%
% People Below Poverty Line ^a	16.4%	33.1%	19%	9.8%	20.9%
% Second Homes (2017) ^a	18.3%	13.6%	3.2%	5.9%	23.1%
Number of Livestock Lost to Grizzlies (2019) ^b	0	23	6	5	20
Number of Livestock Lost to Grizzlies (2014) ^b	1	14	2	1	0
^a Data sourced from Headwaters Economics' Economic Profile System https://headwaterseconomics.org/eps ^b Data sourced from the Montana Livestock Loss Board http://liv.mt.gov/Attached-Agency-Boards/Livestock-Loss-Board/Livestock-Loss-Statistics-2019 "Livestock" includes cattle, sheep, horses, pigs and llamas. "Lost" includes confirmed and probable kills					

3.2 Data Collection and Analysis

To elicit the visible and hidden impacts grizzlies have on human well-being, I employed a qualitative approach to data collection. Researchers have increasingly recognized that qualitative methods are needed in human-wildlife conflict research to illuminate the nonmaterial and hidden impacts wildlife have on communities (Barua et al., 2013; Khumalo & Yung, 2015; Thondhlana et al., 2020). In addition to the data collection methods described below, the design, conduct, and results of this study are informed by my own experiences as a resident of the NCDE. Prior to undertaking this research, I lived and worked in a rural community in the NCDE for five years. There, I worked with a local conservation nonprofit involved in public education and outreach focused on reducing human-grizzly bear conflict, as well as

other natural resource policy and management issues. During this time, I regularly attended and helped organize public meetings about living with bears and reducing conflict, and know many of the key players in grizzly bear management. During these meetings and through daily interactions with community members, I witnessed the apparent and subtle ways an expanding grizzly bear population affects the daily lives of rural residents. I observed, and experienced myself, the complexity of these effects in ways that have been either oversimplified or overlooked by experts. My embeddedness within the community has enabled me to understand and empathize with grizzly bears and people from multiple and often contradictory perspectives, including those espoused by state and federal government agencies, non-governmental organizations, and rural residents. I respect and cherish grizzly bears for their intrinsic and ecological value, but I also treasure rural communities and working landscapes that support natural resource based livelihoods.

The primary data used in this study were collected through semi-structured interviews and participant observation in public meetings. Between June 2019 and January 2020, I conducted 25 in-depth, semi-structured interviews with rural residents across my three study sites. Prior to conducting these interviews, I received approval to do my research from the Institutional Review Boards of Idaho State University, Salish Kootenai College, and the Blackfeet Community College. To select interviewees, I used a sampling for meaning approach, which involves “the selection of subjects in research that has as its goal the understanding of individuals’ naturalistic perceptions of self, society, and the environment” (Luborsky and Rubinstein 1995, p. 98). This approach does not aim to sample a specific proportion of a population or category of people, but rather to illuminate context and capture the varying experiences, values, ideas, and social processes in the sample universe (Luborsky & Rubinstein, 1995). To sample for meaning, I selected diverse participants who contributed to a holistic understanding of human-grizzly bear interactions in each study site.

I recruited participants through four main avenues. Three responded to either a physical flyer posted in a public space (e.g., grocery store or post office) or an electronic flyer emailed through a tribal employee listserv. I received contact information for four participants from personal and professional

contacts, including a local wildlife biologist, conservation non-profit employee, and long-time community resident, and I located contact information for seven participants through internet research identifying businesses and individuals that were positively and negatively impacted by grizzlies. Finally, eleven participants were referred to me by other interviewees. Each of these recruitment methods has its own limitations. In particular, reliance on snowball sampling runs the risk of producing a homogenous sample, as participants are likely to recommend people that are in the same social, cultural, and economic networks as themselves (Noy, 2008). To counter this tendency, I specifically asked participants if they could recommend other potential interviewees that have different values and ascribe different meanings to grizzly bears than they do and/or are engaged in a different livelihood. I stopped conducting interviews when new interviews did not add new information, and instead participants repeated narratives and themes heard in other interviews, meaning that saturation had been reached. Saturation in a relatively homogenous group (such as ranchers) can be achieved in a small sample quickly (Guest et. al., 2006), and while there may be groups of people that were not sampled, such as second home owners, the repeated narratives captured in this study sample suggest that the dominant views within each focal community were sampled.

My sample is broad and includes a range of meanings ascribed to grizzly bears, as well as ages, genders, and educational backgrounds (see Table 2 for demographic profile of my sample). It also includes people from varied livelihoods and cultural backgrounds. Participants' current or former occupations included farming, ranching, logging, guest ranching, glamping, natural resource management for tribal or government agencies, taxidermy, education, social work, physical therapy, construction, accounting, and pharmaceuticals. My participants were also culturally diverse, and included religious groups such as Hutterites, Amish, and Christians, and tribal members from the Blackfeet and CSKT.

My interview guide was designed to illuminate the social, cultural, and economic-contexts in which human-grizzly interactions are situated in. To achieve this, interview questions asked participants to describe their community, livelihood, worldview, relationship to natural resources,

Table 2: Study Sample Demographics*				
Demographic Category (% of Study Site Total)		TRV	RMF	CSKT
Gender	Female	40	39	33
	Male	60	61	67
Age Profile	25-45	20	22	33
	46-66	30	44	50
	67+	50	33	17
Education	High school or less	20	17	25
	Some college- 2 year degree	20	50	17
	4 year degree	30	33	33
	Beyond 4 years	30	11	25

* During some interviews a participants' family member joined. In this case, additional demographic information was collected, but responses were counted as one total interview

changes they've observed or made in their daily lives since the grizzly population has increased, their views on grizzly bears and their management, bear encounters, risks and impacts grizzlies pose to them and their community, and opportunities and barriers to living successfully with grizzly bears. While all of these topics were generally covered in every interview, a semi-structured approach was used to allow flexibility and enable the diverse perspectives, roles, and interests of interviewees to guide the focus of the interview. Interviews ranged from forty minutes to two and a half hours, with the average interview lasting just over an hour. Interviews were primarily conducted in person, except for one conducted over the phone, and were digitally recorded with the interviewee's permission, producing over 30 hours of audio recordings. I transcribed recordings verbatim and analyzed transcripts in ATLAS.ti. To analyze the interview data, I followed Friese's (2014) "Noticing, Collecting, Thinking" protocol. I initially read through each interview transcript to identify emergent themes, which were labeled with descriptive codes (noticing). I subsequently read through and distinguished similarity between codes (collecting). Finally, I sorted the themes to tell a larger narrative (thinking) (Friese, 2014). I used the well-being framework (Mayberry et al. 2017) in the "collecting" phase to sort the impacts identified in the preliminary "noticing" phase into larger categories. Then, through extensive memo-writing, I identified relationships between impacts and between places and impacts in the "thinking" phase to complete narrative accounts of the visible and hidden impacts for each well-being constituent.

In addition to interviews, I conducted participant observation at public meetings, including Interagency Grizzly Bear Committee (IGBC) and the Governor’s Grizzly Bear Advisory Council (GBAC) sessions. The IGBC is a collaborative of state, federal, and tribal agencies that manage grizzly bears or their habitat and was formed to support the recovery of grizzly bears “through interagency coordination of policy, planning, management and research” (Committee 2018). The IBGC is divided into subcommittees, one for each grizzly bear recovery area. The subcommittees meet at least twice a year and discuss topics ranging from education and outreach to conflict mitigation and public comments. The GBAC was formed in July of 2019 through an executive order by Montana’s Governor. The Council is composed of 18 Montanans from diverse backgrounds across the state. The goal of the Council is to provide recommendations to the Governor regarding human safety, grizzly bear population health and sustainability, conflict response and prevention, and interagency coordination. They have held monthly meetings that are open to the public and will continue to until their recommendations are due in August, 2020.

Between November 2018 and January 2020, I attended over 45 hours of these grizzly bear focused public meetings. At these meetings, I took extensive notes to record what I saw and heard pertinent to impacts on well-being following the methods outlined in Emerson et al. 2011. While findings from these meetings are not formally presented in my analysis below, my participant observation at these meetings help contextualize and generalize data collected in the interviews and informs my analysis and interpretation of my results. The public comments solicited in these meetings and attendant discussion helped me to understand which of my results is unique to each study site, and which are more broadly applicable in other places wherever humans and grizzly bears overlap in Montana. The data I collected at these meetings was initially helpful for identifying potential holes and weaknesses in my interview data, such as which perspectives might be missing, and then later gave me confidence that I reached saturation because similar ideas and narratives were consistently repeated in the meetings and interviews.

Chapter 4: Results and Discussion

In what follows, I use and adapt the well-being conceptual framework described in section two to provide an analytical tool to identify, categorize, describe, and interpret the impacts an expanding grizzly bear population poses on rural residents in my study sites. The impacts described and analyzed below primarily emerged from the semi-structured interviews, but their prevalence and my interpretations of them are also supported by participant observations in public meetings and direct experience living and working in the NCDE.

My interviews revealed visible and hidden grizzly bear caused impacts that were universal across study sites, as well as site-specific impacts. For the purpose of analysis, in this section I sorted observed impacts into the four major well-being constituents described by Mayberry et al. 2017. However, it is important to note that this conceptual categorization at times obscures the interconnectedness of impacts across well-being constituents. Because of this, I found it necessary to occasionally discuss more than one of the one-well-being constituents in a given section. Within each discussion of the four impacted well-being constituents, I analyze the visible and hidden impacts of grizzly bears and both positive and negative effects, as well as similarities and differences between study communities. While the previously explained definitions of visible and hidden impacts are useful for researchers, similar to the interconnectedness between well-being constituents, the dichotomy between visible and hidden is not always clear cut and impacts exist on a spectrum. However for clarity and to aid in the analysis of the data collected for this study, impacts will be identified as visible or hidden in the following sections. To assure anonymity, I use gender neutral pronouns to refer to participants and provide only enough descriptors to contextualize their quotes. Table 3 provides a summary of the visible and hidden impacts I observed within each of the well-being constituents and showcases exemplary quotes.

4.1 Personal Security and Freedom

Interviewees noted three primary ways that the presence of grizzlies in their communities had visible impacts on their personal security and freedom; 1) threatened safety; 2) fear-based mobility

restriction; and 3) policy-based mobility restriction. Though mobility restrictions had two differing causes (fear and policy), they both resulted in hidden impacts on cultural identity, as I show below.

4.1.1 Threatened Safety

In my interviews, perhaps the most tangible visible impact described was the potential grizzlies have to cause human injury or death. While no one interviewed in this study had experienced physical harm from a grizzly bear encounter, there have been documented grizzly bear attacks near each study site over the last decade, and knowledge of these incidents contributed to how participants assessed grizzly bear impacts. While grizzly bear attacks are considered rare, incidents are on the rise globally, as both bear and human populations increase (Bombieri et. al., 2019). Between 2000 and 2015, grizzly bears attacked 62 people in the lower 48 states (specifically Idaho, Wyoming, and Montana), resulting in seven deaths (Bombieri et al., 2019). In September of 2019, four people were injured in three separate grizzly bear attacks in southwest Montana (Cramer, 2019). Knowledge about these attacks from news coverage and personal communications, as well as directly experienced negative encounters with grizzly bears, led participants to describe hidden impacts in the form of chronic feelings of unsafety, worry, and anxiety.

This was especially true on the RMF, where my interviewees reported observing bears more frequently than people interviewed in the other two study sites. In one interview on the RMF, a multigenerational Montanan told multiple stories about negative encounters they and their neighbors had experienced. Common to each was that these individuals were engaged in routine daily activities, such as hunting, fixing fences, or caring for livestock, when suddenly they encountered a grizzly and felt that they were in extreme danger. This fear builds up and becomes worse over time and causes people to change their behavior, as this resident reflected;

“I would say, going back to my stories, 18 years ago is when I experienced a different behavior, and then about ten years ago it started getting really bad and four years ago is when I had those incidents with my kids so, and my kids don’t play outside... it’s really different than the way I grew up because I grew up roaming and exploring the woods and the prairies and I loved it and

it's really different, the biggest thing I talk about is human safety, but it's true, it's real for the people that live here and...it's scary, it's really scary”

Importantly, the fear my interviewees felt triggered impacts across other well-being constituents examined in this study, but interviewees especially highlighted how feelings of compromised safety restricted their mobility and caused them to stop visiting certain areas of cultural or recreational importance.

4.1.2 Mobility Restrictions

Interviewees described two primary ways their mobility had been visibly impacted by an expanding grizzly bear population; 1) loss of access to riparian areas; and 2) loss of motorized access to roads located on public lands. I describe each of these mobility restrictions in more detail below. Both led to feelings of loss of cultural identity by interviewees. First, the most reported mobility restriction was that interviewees now avoided riparian areas and limited where their children could play to reduce the risk of encountering grizzly bears. Participants who described mobility restrictions because of their fear of encountering bears primarily reside on the RMF. This is best exemplified by one retired rancher who explained, “when I was a kid we used to spend hours on the creek, but I wouldn’t let my grandkids do that anymore, it's kind of too bad in a way, it's just one of those things I guess...my wife doesn't go down in the creek and pick berries anymore.” This rancher moved to the RMF as a child in the 1950’s, a time when there were lots of young, ranching families and few grizzlies. When describing their childhood, they fondly recalled that as soon as chores were finished, they would run down to the river unsupervised with the neighborhood kids to skinny dip, make fishing poles out willow sticks, and more generally enjoy the freedoms of rural life. Since then, the grizzly bear population, density, and distribution has increased significantly on the eastern Front (NCDE Coordinating Committee, 2018). Creek bottoms and wetlands provide bears with important seasonal forage and security, especially on the RMF where dense vegetation that can hide an animal as large as a grizzly is limited (Wilson et al. 2006). Nearly every participant interviewed on the RMF indicated that they now avoid riparian areas and told stories similar to the rancher’s above. For example, consider this statement from a different rancher who grew up on the RMF,

raised their own family along a creek with a dense grizzly population, and is now helping raise their grandchildren in the same place, as they describes the impacts of grizzly bears as a loss of the freedom to explore and live relatively carefree:

“the hardest thing is... to try and raise children, grandchildren... they have no freedom. So I mean our kids used to run up and down the creek, fish, you know, that was back, we, even when we did have grizzly bears, not to the extent we do now, but they could at least go out and go fishing and come back usually, pretty safe. But now they can't, they can't be in the yard.”

During our interview, it was evident that this rancher was not necessarily upset that their grandchildren are not catching fish, but, instead, that they were mourning the loss of the ability of future generations experience the carefree, rural childhood that they lived, an experience that many people in my study communities pointed towards as a reason for living or moving there. Because of the cultural importance of activities that occur in riparian areas, including fishing, berry picking, and walking along the creek, interviewees were deeply saddened by their inability to continue to engage in them. Underlying these acute emotional responses to mobility restrictions was not only a sense of loss associated with their recent inability to engage in valued forms of recreation but also the loss of a way of life.

Fear of encountering a bear was not the only impact on mobility described by study participants. Another visible impact of increased grizzly presence on mobility described by interviewees was restricted public land access, meaning how and where they hunted, fished, or recreated for generations has dramatically changed. In the TRV and elsewhere in western Montana, changes in public land access were introduced in the 1980's and 1990's when miles of open roads were gated on public lands after researchers learned that grizzly bears avoid areas with high road densities and illegal killing of grizzlies was more likely in areas with extensive human traffic (Cristescu et al., 2016; Mace et. al., 1996). In most cases, these gates do not prevent people from entering these state and federal lands by foot, bicycle, or horse. However, they do prevent motorized access (limited winter access by snowmobile is allowed in most cases). Interviewees described the hidden impacts of the presence of the gates in similar ways to those invoked by their fear of grizzlies, explaining how the physical barriers imposed by grizzly

conservation means the way they engage in culturally symbolic activities, such as hunting or berry picking, have drastically changed, leaving residents mourning for the loss of experiences they can no longer reproduce.

A retired logger in the TRV, whose parents came to the area in the early twentieth century, recalled driving through the forest with their family, stopping to picnic, fish, or swim in one of the many lakes in the area. While explaining the reason for closing many of these roads were the site of important memories, they bemoaned:

“they just don't want people out in the woods, they want you to stay in the town I guess, and they don't really, the federal government owns the property but the people should be allowed to go out there and when the roads was all in, people went everywhere, you know huckleberry picking, wood gathering, just being out in the woods, fishing and stuff, but there's gates everywhere.”

The “they” this life-long resident refers to, are in their words, “the tree hugging community, all them gillionaires.” Similar to the visible impact on mobility in the RMF, the restriction on public forest access in the TRV was portrayed by interviewees as an assault on residents' rural way of life and cultural identity by “outsiders.” Another rural resident in the TRV, a multi-generational Montanan, leader in the local church, and lifelong hunter, lamented these losses by drawing attention to how they mean future generations will no longer be able to hunt and fish the way they did growing up:

“I mean it could make me cry right now. The places that I grew up hunting I cannot get my son to, because, you know, at one point the gate was three miles from the mountain... now it's like seven miles, I can't walk in seven miles and then start hunting where I used to be, then hunt all day, and then, it's just not possible. Could I take horses? Yeah, I could take horses, but the access, you know, the ability to have horses, I mean it's just a whole 'nother scale, now you're packing into wilderness basically, so the access has been stripped away, and that's only one spot, there's hundreds of closures that were closed to preserve grizzly bear habitat”

Here, my results again show the connection between changes in how a culturally significant activity is practiced and grieving the loss for the next generation. This hunter and local leader is not

simply sorry that they can no longer reach their favored hunting spot in a day, they are devastated by the idea that they cannot share that place with their son. This sense of loss was so powerful that they began crying as they explained how they had been impacted. They acknowledges that it is still physically possible to get to that hunting spot, but that they cannot reproduce the experiences they remembers because of the added complicated logistics and distance. Thus, the gates put in place to conserve grizzlies not only physically change the way people engage with public forests, they change meaning people attach to these places. Before the gates, these were places to engage in a rural lifestyle, to be free and unencumbered. However, for many interviewees, that rural life is now seen as unavailable to the next generation, and these places have instead become sites of loss and frustration.

Through these stories, my results demonstrate how the obvious visible impact of restricted mobility is interwoven with hidden impacts that can be identified when the meaning participants ascribe to changing material circumstances are considered. In my study area and similar rural places, the activities my interviewees reported no longer pursuing connect individuals to place, community, and family and serve to reproduce the landscape and other meanings that underlie the rural culture, identity, and history they so highly value (Hall, 2013; Pouta et. al., 2006). Thus, mobility restrictions that diminished opportunities to engage in these symbolic practices led some interviewees to interpret the increased presence of grizzly bears as a threat to their rural culture and as the cause of the loss of their cultural identity.

While many interviewees on the RMF and TRV felt that grizzly bears negatively impacted their mobility and freedom, a few people I interviewed acknowledged that the presence of grizzlies changed the way they moved about the landscape, but had more neutral or conflicted feelings about these impacts. For example, a RMF resident that recently built an electric fence around their home after a grizzly bear killed their sheep explained:

“I used to take a lot more walks along our creek... I rarely go outside the fence now, so I feel like I'm locked in and they get to roam. Yeah, I don't really like that part, but on the other hand, I still

have plenty of enjoyment. So rather than risk a confrontation with the bears, so it's you know, mixed. We love the bears. We hate the bears.”

This resident felt conflicted about grizzlies, expressing that they were upset about depredation, yet felt some comfort from the electric fence. Further, while they resented that they were trapped behind the fence, they enjoyed seeing bears. This perspective is important to include as it shows that impacts are dynamic and do not always lend themselves to clear cut conceptual categorization of positive and negative impacts.

Additionally, several participants explained how expanding grizzly bear populations had led them to impose self-enforced limits on their own mobility and participation in treasured cultural activities to protect and benefit bears because grizzlies positively impacted their cultural and spiritual well-being. Positively impacted participants explained that grizzlies enhance the wildness of their surrounding landscape, create ecosystem balance, and/or connect them to their tribal culture. For example, a few interviewees described modifying their berry picking behavior in areas that were important to grizzlies. One, after responding that they did not carry bear spray because they avoid going to places where they would encounter bears, explained how they started buying huckleberries from the farmer's market rather than pick them in the foothills outside their backdoor to avoid bears. They also noted that they do not hike into the nearby wilderness area anymore for the same reason. Rather than interpret these mobility restrictions as the loss of personal freedoms and attendant loss of cultural identity, this multi-generational Montanan did not feel that these were negative impacts, and instead were necessary sacrifices that went along with living in a rural and wild place.

Other interviewees went a step farther and discussed the mobility restrictions and the subsequent change in cultural practices as leading to increased well-being because it allowed them to live in close proximity to grizzlies, therefore enhancing their cultural and spiritual well-being. The case of a tribal member on the CSKT Reservation illustrates this positive impact. During our interview, they explained that when they harvest berries on tribal lands, they do not pick as much as possible. Instead, they try to leave some berries because they recognize that wild berries are an important food source for bears. On

the reservation, the CSKT restricts mobility by closing the 10,000 acre Grizzly Bear Conservation Area within the Mission Mountain Tribal Wilderness to all human traffic to protect bears (McDonald et al. 2005). Rather than feeling negative about this restriction, this interviewee felt proud that bears were given such respect: “I love how they close parts of the Missions for the bears, especially when they're feeding, whether it's ladybugs, or whatever it is that they're feeding on. And just being respectful of them. I think if we're respectful of them, they've always been respectful of us for the most part.” For this tribal member, even though they are an avid hiker, they are more than happy to give up certain freedoms because the positive impact grizzlies have on their mental, spiritual, and cultural well-being outweigh the loss. Through this, it becomes apparent that the mutual respect for wildlife, and especially grizzly bears, deeply rooted in tribal culture shapes the way some tribal members perceive mobility restrictions and loss of freedom. This view was reinforced by another tribal member on the CSKT reservation as they reflected on the possibility of grizzlies recolonizing one of their favorite places to hike and backpack:

“When that happens, the risk will increase when I go backpacking down there, and well, that does make me nervous on a certain level. I also recognize that grizzly bears were there a long time before humans were there. So it's not really my place to take over... if they're going to come back and they should because that's where they belong. And I'll just have to try to figure out how to deal with it.”

The views of these two CSKT tribal members provide a stark contrast to the negative visible and hidden impacts on mobility and freedom described by study participants on the RMF and in the TRV. This participant acknowledges that the expansion of grizzlies may impact how they hike and backpack, which for them is a culturally and spiritually significant activity. However, they do not feel that their freedom is negatively impacted. Participants that acknowledged impacts but did not feel that they were necessarily negative, used words like “magnificent” and “awe-inspiring” to describe grizzlies. The key difference between how people interpreted these impacts depends on whether grizzlies were seen as a threat to cultural identity or as a lifeline for cultural and spiritual preservation. Generally, those who described negative visible and hidden impacts to personal freedom and security discussed in detail how grizzlies

threatened their cultural identity and connection to place. Conversely, study participants who described positive hidden impacts because of changing mobility restrictions explained that bears preserved or even enhanced their cultural and spiritual connections to the natural world, which will be further discussed in the following sections.

4.2 Material Livelihoods

The rural residents I interviewed described two primary ways that grizzly bears visibly impacted a wide range of livelihoods in my study sites: 1) economic loss from damage caused by bears; and 2) economic loss from bear conservation policies. Economic loss resulting from both bear damage and management policies produced hidden, negative impacts on cultural identity as bears threatened the perceived sustainability of natural resource based livelihoods. Additionally, some interviewees described the hidden opportunity costs attached to grizzly conflict prevention. A few participants acknowledged the positive impacts grizzlies may have on livelihoods through economic opportunities in the tourism sector. I discuss these visible and hidden impacts on livelihoods in more detail below.

4.2.1 Economic Loss

On the RMF and on the CSKT Reservation, where residents and my interviewees depend on farming and ranching as their main source of income (much more so on the RMF), study participants reported that bears have killed or injured their livestock, including cattle, sheep, chickens, pigs, as well as livestock guardian dogs. Bears also damaged crops, such as corn, grains, and alfalfa. However, the extent to which grizzlies impacted livelihoods and participants' well-being greatly varied across both studies sites and individuals. For instance, one farmer on the CSKT reservation conservatively estimated that they has lost around \$100,000 over two decades to bears eating and damaging their crop, while a rancher on the RMF reported losing one calf and several pigs in 40 years of raising livestock in grizzly country. For some producers these visible economic losses were burdensome, and along with other stressors, led them to question the sustainability of their current livelihood. All interviewed farmers and ranchers described the way that agriculture has changed since they first started out, with many emphasizing that increased

costs of land and equipment, volatility of commodity prices, shrinking profit margins, the increasing average age of farmers, and lack of young people returning to work the land have all undermined their bottom line, increased the risks they face, and have made making a living more difficult. For many of them, the impacts of grizzlies are entangled with and inseparable from these other livelihood risks and pressures, with each producing cumulative economic losses and serving to amplify the severity of the others. For example, the rancher described above, conveyed how ranching has become harder due to uncontrollable external forces, such as the climate, cost of production, and beef prices:

“Ranching has changed big time in that... It's just not fun anymore...the elements have been against us so much. I mean we used to worry about drought, but that's not been our case. We've had two major floods in a row back to back and it's just devastating at the ranch and the winters have been so cold and so snowy that calving was just a nightmare. I mean our dead animal pits are full this year because of it... the economy, the price of our product versus the price of what we have to operate with, a tractor in 2005 I bought a brand new tractor... for \$85,000. I priced one this winter to replace it, \$165,000. I mean its double, just doubled and the, our income is definitely not doubled. Our income a few years ago, four or five years ago...we got almost two calf checks in one year...and that was awesome, but immediately it went down, but in the meantime the price of rental grass goes doubled and it's never come down...that's way too much, way too much [for] the price we're getting for calves. So it's you know, you got to really tighten your belt and that's why we had to be so large, both my boys were home for the last six years and we, you know, we're a big operation and also was a lot of work and not a lot of reward there, other than the satisfaction of living where we do and being able to do what we do”

All of the pressures this rancher describes, as well as mechanization, has led to the consolidation of ranches, increasing the size of individual operations, while decreasing the number of families that can make a living in these small communities on the RMF, where there are limited employment opportunities outside agriculture. These local economic and demographic changes in turn threaten the rural identity and way of life tied to agricultural livelihoods. In the above quote, the rancher alludes to the nonmaterial

rewards of being a rancher, living a rural lifestyle and being surrounded by open space. As the literature on rural livelihoods has shown, natural resource based professions are more than just ways to earn a living. Rather, livelihoods strategies address both material and social needs and are constitutive of and entangled with identities and cultural values (Carr, 2013; Hinrichs, 1998). As such, rather than a job, agriculture is better thought of as a lifestyle, connecting people to previous generations, community, and place, similar to the foraging and recreational activities described in the previous section. Thus, when grizzlies visibly impact an agricultural livelihood there are simultaneous hidden impacts on identity and culture. Consider the perspective of another rancher and tribal member of the Blackfeet Nation on the RMF, as they explain the negative impact grizzly bears have on the local economy and community:

“Agriculture is the biggest economy here on the reservation...we have the highest confirmed grizzly bear depredations in the state and the amount of money that takes from this community is huge... and it's actually really hard, people don't get into ranching for the money they get into it because they love it, they love the lifestyle...and producers really can't do much about [grizzlies], you know, there are people with, not only with that factor but with the price of grass, grazing going up, it went up drastically, there are producers that are not able to, they can't make a living, so they've had to sell in the last few years, so financially, it is a huge factor... this is hurting families, hurting hard working families that are working several jobs to pay the bills and provide for their family. If it's the thing that's putting you out of business, to me, I think that's a pretty big deal, not looking at it so much from a financial aspect but what it's doing in the long run, it is hurting those families but it's hurting our economy and it's hurting our community in so many different ways that we don't, or won't see.”

Here again, this participant, who works a full-time job and helps out on the family ranch, describes how the negative impacts bears have on livelihoods do not occur in isolation of the other external pressures and challenges that go along with making a living from agriculture. This participant also emphasized that the hurt that the losses caused by grizzly bears to the local economy, which they

define as primarily an agricultural one, is synonymous with the loss of cultural identities associated with rural, natural resource-based work.

Interestingly, few people interviewed in this study expressed that their personal finances were significantly impacted by grizzlies, but, instead, articulated how other local producers were suffering losses. Previous research has found that while wildlife depredations do not have a significant impact on the livestock industry as a whole, they can have significant effects on individual producers, as conflicts are disproportionately experienced in hotspots (Muhly & Musiani, 2009). While there is debate in the literature about quantifying the economic loss associated with farming and ranching alongside wildlife, including assumptions about whether depredations are additive or compensatory (Hebblewhite, 2011; Treves & Santiago-Avila, 2020), calculating the monetary value of indirect losses (including weight loss, injury, and disease vulnerability due to stress) (Laporte et. al., 2010), and the number of carcasses detected versus those that remain undetected (Morehouse et. al., 2018), the focus of this study is not attach a dollar sign to this loss but to understand how losses impact well-being. Thus, I do not differentiate between “real” and “perceived” loss, as many other depredation specific research does. Instead, I demonstrate how grizzly bear impacts on material livelihoods are experienced and interpreted by interviewees through what rural sociologists have described as the “embeddedness” of rural work, a concept which draws attention to the ways that farming, ranching, and other rural livelihoods are entangled with personal and cultural identities and networks of social relations and reciprocity (Hinrichs, 1998). Instead of “perceived” conflict or financial loss, through my research I identified indirect, nonmaterial impacts to the cultural and social elements of livelihoods as hidden impacts, taking the operational and materially focused definition of work and wealth as a well-being constituent offered by Mayberry et al. (2017) and adding to it identity as a critical and often hidden component of livelihood well-being. In my research, the hidden impacts grizzly bears have on work and wealth include challenging the perceived sustainability of livelihoods, specifically natural resource based livelihoods, and therefore threatening the identities of the people involved in those industries.

To further exhibit the impacts grizzlies have on material livelihoods and cultural identity, consider the similarities in the way residents in the TRV, where the timber industry dominates the area rather than agriculture, talk about grizzly impacts on logging. Though the mechanism of the visible impact differs (grizzly conservation policies rather than direct damage caused by bears), the hidden impact on cultural identity attached to livelihoods is the same. Employment in the timber industry has shrunk in the TRV in the last few decades. However long-time residents still identify the small towns there as logging communities and grieve the loss of those livelihoods. Participants in the TRV attributed this economic shift in the community to several interacting reasons, but many emphasized the role of the Endangered Species Act and associated litigation. Under the Endangered Species Act, public land managers, such as the USFS and the Montana Department of Natural Resource Conservation (DNRC), must assess and mitigate all potential effects a management project has on grizzly bears, using the best available science. Any failure to do so could result in a lawsuit and deferment of the project. These lawsuits are common when logging projects in public forests in the NCDE are proposed, and can last for years while the litigants (often environmental NGOs) and agencies argue over interpretations of science and policy, while the loggers who would be employed to do the work are left without jobs. Though these changes began three decades ago, people continue to feel this visible livelihood impact, as well as the hidden impact of feeling there are less jobs available for the next generation and that an entire industry is no longer viable. A life-long resident of the TRV, who was raised in a logging community, used the analogy of the timber industry as the “lifeblood” of the community, and demonstrated the significant role timber livelihoods played in local culture and identity;

“We had, what, three mills and hauling logs... it was huge. I mean it's kind of like cutting somebody's heart out and saying ‘well, how come you're not thriving? Why aren't you doing okay?’ Your lifeblood just bled out on the ground and you have nothing and it's sort of like, oh well, well, everything will be so much nicer now because, because nobody can cut any trees down... and just the animosity that people feel toward the government and the people that caused it to happen and that a handful of people can go to a court and say well we just don't think people should cut trees

down anymore because it's ugly and then some woodpecker lost their home, you know. Well, we all lost our homes because you did this, you know, and yeah the woodpecker has worth, but so do all those people that lost their jobs and their homes, or had to leave or you know, I mean literally people lost their livelihoods”

The “woodpecker” they refer to is a metonym for any Threatened or Endangered species. Similar to the external forces described above that have changed agricultural livelihoods, the timber industry has changed for several reasons. Along with mechanization, globalization, and decreasing timber availability, environmental regulations, including the Endangered Species Act and those designed to protect grizzly habitat, decreased the overall amount of timber harvested in the 1980’s and 1990’s (Clark, 2001). Though grizzly bears alone are not responsible for the decline in logging jobs in the TRV, similar to the agricultural industry described above, they are entangled in these changes, and, in my interviews, they were often described as linked. For example, another life-long resident of the TRV, who began their career as a sawyer around time state and federal agencies were being sued for not adequately managing grizzly bear habitat, described the decline of the logging industry. They made the decision to leave forestry school after watching managers “pulling their hair out” over the things “they were being asked of by the court, [that they were] having to prove and it was just a nightmare.” Through their observations of the decline of the timber industry and the community that depended on those timber jobs, they concluded, “the mills are gone, the jobs are gone, the futures are gone, and all predicated on the idea that this is what we need to do to save the grizzly, and I think its complete falsehood. It really truly is a war on our culture and our communities have suffered in ways that are egregious.” This resident defines threats to the logging industry as a “war on our culture,” clearly demonstrating that livelihoods and cultural identity are inextricably linked for many residents in the NCDE, while simultaneously associating the loss of livelihoods with grizzly bear conservation policy.

4.2.2 Opportunity Costs

In addition to the economic and cultural identity losses described above, interviewees also described the opportunity costs that go along with implementing conflict prevention measures, such as

electric fencing, while also connecting them to hidden impacts on other well-being constituents. For example, a sheep rancher on the RMF estimated that a third to half of their day is now spent on routines such as repairing and maintaining their electric fence and checking in on their sheep more often than they used to when there were no grizzlies in the area. In my interviews, it was apparent the time and energy invested in prevention limits the amount of other work that can be done, while also limiting the ability of interviewees to mentally and physically disconnect from work. This inability to separate oneself from work was another hidden impact caused by grizzlies and associated conservation policy, and the sheep rancher explained how the fencing had restricted their freedom and mobility and affected their mental well-being by limiting their ability to go on or enjoy a vacation: “it's crippling for us, when we want to go on a vacation, which we don't do very often, but when we have gone, something's gone wrong with the electric fence... We haven't lost [livestock] to a bear in two or three years now, but it's because of really diligent maintenance mainly.” As these results show, participants felt that prevention methods, including electric fencing and livestock guardian dogs, may resolve some impacts grizzly bears have on livelihoods, but they also created opportunity costs. For some, the benefits of implementing prevention measures outweighed the costs, while others, especially those who described how conflict prevention measures produced hidden impacts on other well-being constituents, such as government relations or freedom and mobility, felt the tradeoffs were not worth the costs. While several government and non-government programs have been developed to mitigate the visible impacts grizzlies have on agricultural livelihood, including widespread programs that provide funding or materials for electric fences that residents can put around their attractants to keep bears away, participants in this study had mixed responses to the question of whether this conflict prevention tool is effective. In part, this is because while agencies and NGOs offer to cost-share and provide labor for the construction of the fence, it is the landowner's responsibility to maintain the fence. Participants who received these electric fences reported that while the protection from grizzlies afforded by the fences was appreciated, the labor required to maintain the fences was burdensome and took time and resources that could have been better used on other remunerative activities. For example, a Hutterite farmer on the RMF who had used an electric fence cost-share program

to build a fence around a dead pit on the colony that had attracted bears, posing a safety risk to humans and depredation risk to their livestock, explained the fence solved their bear problem while creating a labor sink and associated opportunity costs:

“It's been very effective, but very, very high maintenance, a lot of my time has went into that and this year I told myself, I'm done, now [FWP] has got two options... they can either go keep the fence up, which they're not going to do because it's quite a lot more work than a lot of them are used to, or they can come and pick up our dead carcasses...you know, like managing this fence back there it took me three years to get to this point, I didn't just get there overnight, I felt like, why in the world should we help [FWP] increase the numbers when there are already way, way too many. I'm feeling the more conflicts we can shove down FWP's throat the better off we're going to be in 10-15 years”

Compounding the opportunity costs this farmer faced from their time spent on fence maintenance was the strain the fence and dealing with grizzlies, has put on their relationship with the government agency that in their view should bear the responsibility for both. The hidden impacts of grizzly bears on social relations, including with government and federal agencies, will be discussed in section 4.4.3, but, here, it is important to recognize the visible impact grizzly bear conflict prevention has on agricultural livelihoods.

4.2.3 Economic Opportunity

Similar to personal security and freedom, the impacts of grizzly bears on material livelihoods were not only discussed in negative terms. In my interviews, participants recognized and discussed how grizzly bears contribute to livelihood opportunities and invigorated the local economy through wildlife and nature-based tourism. Participants who described these benefits mainly lived in the TRV, which receives a significant amount of tourism because of its proximity to Canada and Glacier National Park. These views were best exemplified by a retired biologist who has lived and worked in the TRV for 30 years as they articulated the evolution of bear's impacts on livelihoods as viewed by the local community,

explaining that initially residents felt that grizzlies detracted from the local economy and now some see economic value bears can bring to their community:

“There was a lot of anger towards grizzly bears, any endangered species, because they felt it inhibiting their ability to log as in the past, with the changing mix of people here, and I think that has certainly decreased a lot. And now, bears and other wildlife are one of the draws and bring recreationists here. So they have value in other ways now, it is much more accepted than it used to be.”

Similarly, a non-tribal member who has lived on the CSKT reservation for over a decade speculated,

“Bears... bring us far more community resources in than they take away... I think that they bring in a lot of tourists. I'm not the only one that follows wolf packs in Yellowstone online or you know, there's a following and those people come and spend days, weeks photographing bears and that brings resources, financial monies to towns like West Yellowstone and all the way out as they travel through and I'm sure Glacier Park is the same kind of thing, they are far bigger resource magnets than anything else.”

While no one interviewed in this study stated that their livelihood directly benefited from grizzly bears, it was recognized by a few participants that grizzlies benefited the local economy by drawing in tourists. All three of the study communities experience some level of seasonal tourism, as they are all within a few hours of Glacier National Park and the opportunity to view wildlife is one of the leading attractions for tourists (Nickerson, 2003). This glimpse into the potential economic opportunities bears bring to rural communities merits further research, and can build upon the work of Richardson et al (2014) who found roadside bear viewing opportunities brought an additional \$10.1 million into the local economy around Yellowstone National Park (Richardson et. al., 2014).

4.3 Health

Through interviews, I identified three ways that participants' health had been affected by grizzly bears: 1) feelings of fear and anxiety related to their safety and the welfare of their loved ones; 2) loss of sleep from stress and the presence of bears during the night; and 3) increased cultural, spiritual, mental

well-being through place attachment. While I describe each of these health effects in more detail below, it is important to note that participants rarely disclosed specific health impacts. Rather, health stressors, such as fear and anxiety, were mentioned subtly in stories about encounters or in descriptions about how life has changed as the bear population has increased in my study site. This limitation in my data is partially a result of the difficulty of the subject matter and the cultural taboos of discussing mental health. Similar to Mayberry et al (2017), my interviews did not reveal widespread health impacts, but the data does offer glimpses into the hidden health impacts rural residents experience from sharing a landscape with grizzlies.

4.3.1. Fear and Loss of Sleep

As described in section 4.1, impacts related to fear primarily occurred on the RMF where participants and their neighbors encountered bears more frequently. As noted there, no one I interviewed has been physically harmed by a grizzly, but several described grizzly bear encounters in which they felt they were in danger, feelings that lasted long after the incident. The fear felt in the moment of encounter can be described as a visible impact on mental health, but the chronic stress, anxiety and worry that continuously impacts an individual and were described by several participants are often hidden because they occur long after the encounter or after reading or hearing about a negative encounter that someone else experienced. These chronic feelings of stress were described by a rancher on the Blackfeet Indian Reservation on the RMF, who grew up with little worry about grizzlies, but after several close encounters that they and their family have experienced over the last 20 years, no longer feels safe:

“I mean, I walk around here sometimes during the day, you know, and I'll go over to take care of that calf one day, I can hear some breathing in the brush right there and I mean, you feel so damn helpless. Because I mean, I don't carry a gun around with, I do carry bear spray...But in, twice in the last two years, I've had to pull it out. Which was never, I mean, living and riding in this country, that was you know, bear spray was like, oh, who needs that. Now I make sure I have it in there. I hope to hell I never have to use it because I don't want to lay a lot of trust in just that. And then look at all the attacks, it's almost weekly from, well, I mean, it's early, the attacks we've had already. But you

know once hunting season starts on the Front here, around Choteau, there's almost one a year, at least one...If I went out on the deck I don't even know if I'd still feel safe.”

For some, feelings of fear and anxiety was compounded by a loss of sleep caused by the presence of grizzlies. For example, a participant described being so frequently woken up by dogs barking at bears on the property that the only time they received a restful night's sleep was during hibernation season. A similar sentiment was echoed by a sheep rancher on the RMF: “I breathe a sigh of relief when I think they're finally asleep. It's like, it's like you lighten the way you look at things, lightens up, you're not so afraid to go do things...and when they first come back in the spring I go ‘here we go.’” While interviewees did not go into much detail about the long-term negative effects of these health impacts, my interviews make it clear that the mental health costs of living with grizzlies and other wildlife are an area of research that requires further investigation, as the heavy weight of continuously worrying about grizzlies will likely have consequences beyond loss of sleep (Dotson, 2019).

4.3.2 Place Attachment

In my interviews, grizzly bears were also seen to positively impact the mental health of community members, primarily those who live on the TRV and CKST reservations. Because these positive impacts of grizzlies on health are not captured in the well-being framework described in section two, I added two additional sub-categories to the Mayberry et al. (2017) framework that conceptually elucidate how participants described the positive health impacts and the affirmation they feel from sharing a landscape with grizzly bears: spiritual and cultural well-being. Participants described several ways that grizzlies positively impacted spiritual, cultural, and mental well-being by enhancing their place attachment. Defined by Scannell and Gifford (2017) as “the cognitive-emotional bond to a meaningful setting,” place attachment includes both social and biophysical dimensions and has been shown to enhance psychological and cultural well-being (Brehm et al., 2004; Craig et al., 2012; Scannell & Gifford, 2017). In interviews, residents described three ways that grizzlies strengthen their place attachment. First, grizzlies were described as symbolizing wilderness and participants connected their emotional bond to their surroundings to the presence of wilderness in the region. Here, some participants explained that

recreating in grizzly country felt different than hiking or camping in places without them because it meant you were in a more rugged, wild place, partly because you needed to be more alert and present, and partly because grizzly bears thrive in more remote areas. In the TRV, a life-long resident that has been hiking, hunting, and logging in the area for 80 years, explained the spiritual value of being immersed in grizzly country:

“They’re my number one animal. Of all the animals. I look at it this way, if I had to live here and hike these mountains here and for whatever reason the grizzly, they decided to just get rid of them, this would be a country without a soul. He’s the greatest animal that ever walked in my book. I have nothing but respect for him.”

For this resident, and all of the other people I interviewed that described positive mental health impacts from living in grizzly country, grizzly bears are a symbol of the wild place they call home and deepen their connection to place. Second, the role of grizzlies in maintaining and increasing ecosystem balance was commonly referred to when participants described the positive impacts grizzly bears have on the region. Participants who articulated that they valued ecosystem balance and increased feelings of wildness recognized that grizzlies have evolved on this landscape and therefore play an important role in local ecologies. This balance created by grizzly bears signified to participants that the place they love is “healthy,” and similar to the “wildness” described above, this enhanced their well-being. A tribal member on the CSKT reservation, who moved away for many years and has recently returned to the place they feels deeply connected to, explains the positive effects grizzlies have:

“They’re here to help with balance. You know, it's like, once they reintroduced like wolves and bears in Yellowstone. You notice how the balance shifted again, and things got really good, the waterways got really good, you know, that's how it all works. If you allow nature to actually work and participate with it, it will be very balanced...it's like when I go up into the, up into the mountains, I have a definite respect. And I have an awareness about bears and I think that's really good.”

Wildness and ecosystem balance enhanced place attachment for participants that did not experience negative impacts on other well-being constituents. Participants from a variety of backgrounds, including transplants, multigenerational Montanans, and tribal members expressed enhanced place attachment from living with grizzly bears. The special connection between tribal members and place attachment is further described below as the third way interviewees described positive impacts from grizzly bears.

For some tribal members, grizzlies provided a significant connection to tribal history and culture through place attachment. It is important to note tribal members were a small portion of the study sample (four out of 25), and included members from different tribes. Thus, the individual viewpoints in this study do not reflect views of all native people, nor the views of all Salish or Blackfoot people. It is also important to consider the intersectionality of the tribal members interviewed in this study, as each individual holds intersecting identities in addition to their tribal affiliation. Tribal members on the CSKT reservation interviewed in this study identified grizzly bears as sacred animals, and explained that their presence on the landscape connects them to the history of their people, which positively impacted their mental health. When asked, ‘when you think about grizzly bears, what do you think about?’, one CSKT member eloquently wove together the three elements of place attachment grizzly bears enhance, “when I think about grizzly bears, I think about rugged, primeval and wild places, I think about a time before colonization, I think about a keystone species that is really such a symbol of the natural environment as it existed, before colonization came and touched this place.” Both the CSKT and the Blackfoot Nation have official stances about grizzly bears, opposing hunting if grizzlies are federally delisted and naming them as sacred (Chaney, 2020). Interviewees on the Blackfoot reservation, did not state that grizzly bears enhanced their place attachment or well-being, and, instead, both my interviewees experienced many of the negative impacts described in the previous sections.

4.4 Social Relations

Participants described three ways that the presence of grizzly bears in their communities impacted their social relations by influencing the ways they interact with their families, communities, and the

government: 1) barriers to visiting nearby family members, 2) inter and intra community conflict, and 3) resentment towards government agencies. Each of these impacts is described in more detail below.

4.4.1 Family Relations

On the RMF, where bear encounters are more common than in my other study areas, interviewees described how their fear of bears has changed the ease of and frequency with which they are able to visit and socialize with neighboring family members. On the RMF, it is common for ranches, which encompass thousands of acres, to contain multiple homesteads, housing different familial generations, which allow for simple travel by foot, horse, or bike from one home to another. Though reported negative impacts on family relations was not widespread, two ranchers described how their children and grandchildren could no longer walk to their neighboring family member's house safely because grizzly bears frequented the area. The effect of the presence of grizzly bears on family relations was exemplified by one rancher who explained that they and their parents have long depended on one another for borrowing items when they run out of something and cannot go to town, and articulated how their ability to do so has been compromised because their son is too afraid of encountering a bear to walk over to their parent's house:

“Living in a rural area, sometimes you're cooking and you need to borrow something, so my mom will use me as a backup and I'll use their as a backup...so in those situations I'll tell my son to run over and grab an extra loaf of bread and they'll be like, they won't go. They was over visiting my parents and... my mom told him to run back and they said 'no I'm gonna get eaten by a bear'”

Another rancher, who has lived with bears all their life and watched their populations grow and expand echoed these themes as they recalled a recent incident that exemplifies the impacts of grizzlies on social relations on the RMF. During our interview, they explained that they believe that there are now too many bears on east of the Continental Divide, and described a recent evening in which their grandson rode his pony over to their house for a short visit. Just after the boy left, they saw a grizzly bear walking across the

path their grandson used to ride home. The sighting angered and worried the rancher, and they felt their grandson had narrowly avoided a possibly deadly encounter. More importantly, the experience led them to conclude that a simple evening visit from their grandson was no longer safe. These impacts on family relations are related to the fear-based restricted mobility described in section 4.1.1, and experiences like the ones described above and their impact on social relations were unique to the RMF because of the open space and spatial arrangement of family ranches on the landscape, in which multiple generations of a family are within walking or riding distance to each other, separated by areas frequented by bears. More research is needed to fully understand how well-being is impacted by these changes to visiting behavior, and future research should further investigate the impacts grizzly bears have on family relations in other potentially vulnerable communities. For example, while the Amish family interviewed in this study did not explicitly state that their family relations were impacted by grizzlies, they did describe several negative encounters that occurred on public roads while they were traveling within their community. The Amish live in single family homes in close proximity to their family members, similar to ranching families, and they only travel by foot, bicycle, or horse because their religious beliefs prevent them from driving cars, putting them at higher risk of encountering bears, which might change the way they interact with their neighbors and families.

4.4.2 Community Conflict

In all three study communities, grizzlies' negatively impacted intra and inter-community relations, most significantly through visible conflict between different actor groups over grizzly bear management. Many interviewees described how grizzly bears instigate or exacerbate divisions between groups of people, such as "outsiders" and "old-timers" or "agriculturalists" and "environmentalists" within their communities. A sheep rancher in a town of less than a hundred people on the RMF framed the conflict grizzlies amplify in their community as a division between the worldviews of people in agriculture and the people not involved in agriculture that are also newcomers to the region: "there's two camps, there's the agriculture camp of 'they're over-running us, they're changing our lives, we need to get rid of them

blah blah blah' and then there's the environmentalist camp, 'oh they're cute and fluffy and they were here first and we all just need to evaporate and go away.'" Similarly, in the TRV and CSKT intra-community conflict revolved around issues of education and ignorance, with one group of people viewing themselves as educated about bears, wanting bears on the landscape, and being willing to adapt to their presence, and one group seen by the first as resistant to change because they are either too ignorant or unaware of how to change their behavior to successfully live with bears or too lazy to do so. A longtime resident, and now retiree in the TRV, explained that they feels burdened by having to educate all of the newcomers in their town about living with wildlife. They also emphasized their frustration with neighbors that would not take their advice, and continued to leave out food attractants for wildlife:

"It gets frustrating after a while. Try to educate them and we're surrounded by people that are new here and you know, don't call the game warden every time a bear walks through your property... Yeah, I get tired of trying to keep people safe...we've been here long enough that people kind of rely on us, but you know, they're not receptive that information then."

In both the TRV and on the CSKT Reservation, participants stressed that they believed educating the uneducated would resolve conflict between people and bears. Common to each narrative about community divisions described by interviewees was that the responsibility to get educated about or coexist with wildlife was always placed on some "other," outsiders, newcomers, Canadians, even though many of the people I interviewed had themselves caused problems with bears by allowing them to get a food reward on their own property or in other ways. In my interviews and through my participant observation experience, it was apparent that this tendency to place blame and responsibility through othering creates negative impacts on inter-community relations, and thereby well-being, because it creates divisions between groups of people that have to live together, rupturing community politics and social networks. This type of conflict between new-comers and old-timers is well documented in the West, where natural resource amenity seekers bring different and conflicting values into extraction dependent rural communities (Robbins 2009), and, in my study, was most visible in the TRV.

The tensions and social divisions described do not only occur within communities and between communities in my study area, but are also directed to exogenous groups of people because, as several interviewees explained, external actors, such as environmentalists, urbanites, and Californians, are perceived to have more influence in grizzly management than locals do, even though locals are the ones that have to live with the costs of sharing a landscape with a large carnivore. In many interviews, these tensions were exacerbated by feelings that environmentalists and urbanites look down on local, resource dependent people and are critical of the way rural people live. Participants involved in logging and agriculture were especially sensitive to this, and several explained how they feel their livelihoods are villainized in mainstream culture. For many interviewees, this villainization was especially problematic because, in their view, their detractors fail to understand the role that the open-spaces created by farms and ranches play in allowing grizzly bears to be on the NCDE landscape. This position was clearly articulated by a rancher who discussed the cluelessness of people that live in cities while stressing that not only do urbanites not know where their food comes from, but they do not understand the habitat benefits agriculture provides for wildlife:

“We know where our food comes from and you're not living in the city thinking that our food comes from the grocery store, and why do we need all these farmers and ranchers out in the West because they're taking up space that our wildlife could be living on? And I get a lot of people telling me, if you don't like ranching with bears why don't you just move? And I have to keep explaining to them that if I didn't have all those cows and horses and all these wide open acres their bears won't have a place to live, and they're like, well, they would still live there, and I'm like no because there would be 50 houses right here. So I think, I think we probably have the best perspective and maybe I just think that because I live here, but I feel like rural America knows what's going on. We don't live in this dream world of whatever I need I'll just get at the store”

Similar to the intra-community conflict described above, this inter-community conflict and the social divisions it creates likely damages individual and community well-being while simultaneously making

successful grizzly bear management difficult. Brehm et al. (2004) recognize open communication, or “the efficiency of channels for transmitting information and resources among people and to the extent of honesty, completeness, and authenticity of the exchanges in communicative relationships” and collective action, or “people working together in pursuit of their common interests as well as a process of building social relationships,” as key conditions of community well-being (Brehm et al. 2004). In my study site, the conflicts over grizzly bear management between communities creates and consistent othering of actors with different viewpoints about grizzly management likely erects barriers to open communication and collective action, thus negatively impacting well-being.

4.4.3 Government Relations

In my study, the final way that grizzly bears impacted social relations in the NCDE was through their influence on how study participants felt about and interacted with the government agencies responsible for bear management. In particular, many participants opined that wildlife management agencies that manage wildlife only listen to and manage bears for the interests of people with money and/or an environmental agenda (e.g., urbanites, environmentalists, Californians). This was evidenced by a retired logger in the TRV who expressed overall indifference about living with grizzlies, but had strong negative sentiments towards the litigants that affect timber sales in the TRV and the USFS, “a lot of people blame the bear for the forest not selling any timber but it’s not the bear’s fault, it’s the people’s fault that’s running the shittin’ forest service, that’s my opinion, they listen too much to those tree hugging whiners.”

The visible impacts grizzly bears had on my study participant’s relationship and interactions with government agencies is partially the outcome of their protected status under the ESA. In much of the American West, federally protected and damage-causing species cause stress and strain relationships between government officials and rural residents because residents feel like their ability to prevent conflict is unnecessarily restricted, and it is well established that federally managed species have become symbols of government control and diminished local power (Scarce 1998). To gain local power,

participants in all three study sites felt that living with grizzly bears would be easier if they were allowed to exercise lethal control, both through a regulated hunting season and individual intervention to protect their livestock or property. This sentiment was most common on the RMF. Participants in the TRV also expressed a desire for more local lethal control, but not as insistently as RMF participants, mainly because they did not feel the need to protect their livelihood. On the CSKT Reservation, there was more acceptance over current grizzly bear management practices than in my other study sites, as residents and especially non-tribal members are more accustomed to tribal management of grizzlies and wildlife more generally. For example, in our interview a resident and member of the Amish community expressed frustration that they and other non-tribal members cannot hunt and participate in wildlife management on the reservation, but overall explained that they accepted that that was a fact of life living where they do, “We are more or less used to that, I guess, living here on the reservation because we can't really do anything about all the whitetail deer that eat our garden and all that so [not being able to hunt grizzlies if they were delisted] wouldn't be something new for us.”

For many participants, the chief cause of their strained relationship with the government was not just their lack of power and control over grizzly bear management. Rather, they felt that the strict protections surrounding grizzlies meant that bear well-being was valued more than human well-being, as reflected in this story told to me by a Hutterite farmer told about a relocated grizzly bear who they felt had not been moved far away enough from the conflict site to adequately increase human safety:

“When you see how they're managed, public safety is no longer a concern and I'll give you a good example, last year a 950 lb male last fall got into the vegetable cleaning and packing facility at Birch Creek Colony... they captured that bear [and] took it 69 air kilometers around East Glacier... whoever decided to relocate that bear 69 air kilometers from where it was into where it was at salad bar surely, they did not think about public safety. It's these instances you know, it's these repeat instances that really, really get people riled up”.

This participant, and others on the RMF, expressed outrage over what they believed to be agency overvaluing of grizzly bears and the undervaluing of human safety and livelihoods. As several pointed out, these valuations can be clearly seen in how the compensation programs for livestock depredation and rewards for poaching a grizzly bear showcase the economic value placed on the lives of bears without requiring an equal investment in human lives.

Table 3. Grizzly Bear Impacts on Rural Communities in Northwest Montana			
Well-being Constituent*	Visible Impacts	Hidden Impacts	Exemplary Quote
<i>Personal Security & Freedom</i> Safety The condition of being protected from risk Mobility The ability to move freely and easily as needed or desired	Injury, death Restricted motorized access on public lands limits culturally significant land uses (hunting, fishing, berry- picking) Loss of carefree travel	Feeling unsafe, and/or chronic fear, stress, worry about potential bear encounters Fear limits culturally significant land uses Grieving for the loss of a way of life Loss of ease of mobility decreases social interactions	“It’s kind of like living in the nice neighborhood where little old ladies used to push strollers up and down and grandkids were playing on the streets and then MS-13 moves in and starts up a crack house next door and everybody walls up their houses and that’s kind of what it’s like when you have this going on” “We’re losing our freedoms... as a kid freedom was you know, we got our work done and grabbed a fishing pole and go fishing till dark, my kids haven’t been able to enjoy that on this creek here... but any of these streams along this front I wouldn’t turn anybody loose, so there’s a freedom that’s lost” “I don’t go get huckleberries anymore, I buy them at the farmers market... a bear in the huckleberry patch, I mean, it’s their... because they needs it, they needs the calories... I can still get my huckleberries and the bears are happy. We’re all happy”
<i>Material Livelihoods</i> Work & Wealth Ability to acquire and maintain adequate monetary income or valuable assets through livelihood	Livestock/ crop loss Property damage Loss of time and money to prevention Decreased timber harvest	Worry over diminished livelihood sustainability Threatened livelihood identity Opportunity costs	“I think most of the forest has been harvested, I don’t know what’s left, and the environmental regulations they put such a limit on stuff... I kind of see both sides of it and I’m not pro logging and I’m not anti-logging... but there is a point, grizzly bears, they’ve become, what would you call that, an issue, well we can’t harvest here, you can’t do this, you can’t have so many roads, can’t have open roads because it’s grizzly bear habitat” “Loss of livestock is huge, and I know people think ranchers are rich because we have all this land but really we’re very poor and these

strategies. Ability to maintain livelihood identity	Economic opportunity through tourism		animals need to stay alive for us to eat and the other thing they don't think about is we really love our animals and that's why we do it, so loss of livestock is a big deal, another thing people don't think about is the damage they cause, they dig up fields, they stress out our animals, even if they don't eat them, they don't gain weight, they tear into the grain bins and barns and houses, whatever they want to tear into they're going to"
<i>Health</i>	Injury, death	Fatigue	"it got so bad I was only sleeping about 4 hours a night because they would come in, the dogs would kind of hold them at bay... and so I always say my favorite season is hibernation because it's the one time I get rest"
Physical Health The state of being free from illness or injury	Loss of sleep	Stress, anxiety, fear about grizzly encounters	
Mental & Spiritual Health The state of being free of psychological or emotional/spiritual impairment	Fear, stress from encounter	Increased mental well-being from enhanced place connection to	"I think there's an impact spiritually for us, there's just a difference, a huge difference, from being in the mountains where there are grizzly bears as opposed to where there are not and I love that, I love that feeling that there are things out there that are more awesome than us"
		Increased spiritual well-being and cultural connection	"I think about power. Majestic, sacred animal...they are like the king of the forest, so to speak, but they're like a sacred animal, always respect them."
<i>Social Relations</i>	Intra-community conflict over management	Loss of ease of mobility decreases social interactions	"My grandson goes to see grandma one night...they were visiting out front of the house. Anyway, they decided to go home, put their pony away for the night. They just got home and I come into the house and I looked up and a grizzly bear walked right through the yard right across their path and that, you know, that's the way we lived...This is no way to live."
Family & Community Positive connections and interactions with kin and neighbors	Inter-community conflict over management	Ruptures in social relations and othering	
Government Connections and interactions with government authorities and bodies	Lethal control/harassment of grizzlies prohibited	Feelings of demonization	"I have heard people ask what's the compensation for a kid and even that compensation, the minute you take one penny from them you're actually saying it's right what that grizzly bear's doing if they come out to your place and kill livestock and at the end of the day it is not right"
		Resent government	
		Feeling powerless	"Just allow us to protect ourselves a little bit and our livelihood... it would be worse to shoot a grizzly bear than a human being... there were some wanted posters out about finding a dead
		Feeling devalued	

grizzly... they were wanting 10, 15 thousand dollars to find [information] and when's the last time you seen a poster like that around here for a human?"

Chapter 5: Conclusion

Large carnivores, such as grizzly bears, are the most complex wildlife populations to conserve because of the wide range of costs and benefits they bring to local communities (Chapron et al., 2014; Lamb et al., 2020). The success of grizzly bear and other controversial predator conservation depends on the ability and willingness of humans to share the landscape, as large carnivores exist in low densities and require large home ranges, inevitably bringing them into contact with people (Chapron et al 2014). For these reasons, coexistence and tolerance are often stated goals of wildlife conservation, but these terms remain ambiguous in HWC research. Coexistence and tolerance are sometimes used interchangeably to describe attitudes, or both passive and active behaviors (Frank, 2016). Varying conceptualizations of coexistence limit the ability of wildlife managers and policy makers to develop and evaluate sustainable solutions to HWC because the concept itself rarely identifies clear goals that easily translate into policy tools (Brenner & Metcalf, 2020; Carter & Linnell, 2016). More recently, researchers have suggested that coexistence and tolerance exist on a spectrum, rather than a dichotomy (Brenner & Metcalf, 2020; Frank, 2016). This research expands discussions about coexistence and tolerance, showing the complexities of human-wildlife interactions, and expanding and deepening our understanding of the full range of human well-being impacts local communities experience living alongside grizzly bears.

Broadly, my results demonstrate that the way individuals experience and interpret impacts on well-being is dependent on the social-ecological context that human-grizzly interactions are situated in, with some impacts being site specific and others being universal across my study sites. Some of these visible impacts are well documented, namely threats to human safety, economic loss from livestock loss and crop damage. The hidden and more nuanced impacts include threats to and loss of cultural identity and associated recreational and livelihood activities, diminished perceived livelihood sustainability, increased mental and spiritual well-being, and enhanced cultural connections. Notably, communities and individuals that are rooted in agricultural and timber based livelihoods were the more negatively impacted by grizzly bears across the three study communities. People involved in these livelihoods experienced

visible economic loss, both directly caused by bears and through grizzly management policies, and hidden opportunity costs and threats to cultural identity. Additionally, this study added to the body of literature on human-wildlife conflict and well-being by highlighting how livelihoods are inextricable from cultural identity, demonstrating that the negative impacts grizzly cause go beyond material losses. Thus, conceptualizations of coexistence should consider mitigation of both material and non-material impacts. For example, in the context of grizzly bear management, these results suggest that conflict mitigation programs, such as depredation compensation and electric fencing, will not alone create landscapes of tolerance for grizzlies. In addition to these efforts to address material well-being impacts, researchers and managers should consider place-based, collaborative, and adaptive management strategies that enable rural residents to share their stories and feel involved in grizzly bear conservation. Though the impacts described in this study weighed heavily on the negative end of the spectrum, participants again and again emphasized that they did not want grizzlies extirpated, suggesting opportunities for the collaborative production of conservation strategies that enable coexistence are possible.

While this research illuminated aspects of the well-being impacts living with grizzly bears that are otherwise hidden, there were limitations. First, though the sample provided a broad glimpse of the experiences of different identity groups, it was not large enough to thoroughly investigate how grizzly bears impact different groups of people, namely tribal members and religious communities such as Amish and Hutterites. Second, some well-being constituents are more difficult to discuss than others, such as mental health, and require a longer time investment to understand how grizzlies impact health over time. Third, this research focused on communities where grizzly bears are expanding and increased encounters are relatively new. This newness likely explains the strongly negative views of many of my participants towards grizzlies, as well as the strength of their opinions. It is likely that the strength and negative orientation of many of my participant's interpretations of how they have been impacted by grizzly bears would dampen over time as they become more accustomed to living with them. As such, future research should be conducted in communities that have lived with bears for generations to compare and contrast

how grizzlies impact well-being as people grow accustomed to or learn to live with them. Finally, this study highlighted many negative well-being impacts rural residents face, and merely skimmed the surface of positive well-being impacts. Future research should analyze the range of positive impacts bears bring, such as economic opportunities.

References

- Barua, M., Bhagwat, S. A., & Jadhav, S. (2013). The hidden dimensions of human-wildlife conflict: Health impacts, opportunity and transaction costs. *Biological Conservation*, 157, 309–316. <https://doi.org/10.1016/j.biocon.2012.07.014>
- Bhatia, S., Redpath, S., Suryawanshi, K., & Mishra, C. (2019). Beyond conflict: exploring the spectrum of human-wildlife interactions and their underlying mechanisms. *Oryx*. <https://doi.org/10.1017/S003060531800159X>
- Bombieri, G., Naves, J., Penteriani, V., & Selva, N. (2019). Brown bear attacks on humans: a worldwide perspective. *Scientific Reports*, 9(8573), 1–10. <https://doi.org/10.1038/s41598-019-44341-w>
- Brehm, J. M., Eisenhauer, B. W., & Krannich, R. S. (2004). Dimensions of Community Attachment and Their Relationship to Well-Being in the Amenity-Rich Rural West. *Rural Sociology*, 69(3), 405–429.
- Brenner, L. J., & Metcalf, E. C. (2020). Beyond the tolerance / intolerance dichotomy : incorporating attitudes and acceptability into a robust definition of social tolerance of wildlife. *Human Dimensions of Wildlife*, 25(3), 259–267. <https://doi.org/10.1080/10871209.2019.1702741>
- Carr, E. R. (2013). Livelihoods as Intimate Government: Reframing the logic of livelihoods for development. *Third World Quarterly*, 34(1), 77–108. <https://doi.org/10.1080/01436597.2012.755012>
- Carter, N. H., & Linnell, J. D. C. (2016). Co-Adaptation is Key to Coexisting with Large Carnivores. *Trends in Ecology & Evolution*, 31(8), 575–578. <https://doi.org/10.1016/j.tree.2016.05.006>
- Chaney, R. (2020). Tribal experts caution grizzly recovery plan needs time, 2–9.
- Chapron, G., Kaczensky, P., Linnell, J. D. C., von Arx, M., Huber, D., Andrén, H., ... Anders, O. (2014). Recovery of large carnivores in Europe' s modern human-dominated landscapes. *Science*, 346(6216), 4–7. <https://doi.org/10.1126/science.1257553>
- Clark, C. (2001). Stability and Moral Exclusion: Explaining Conflict in Timber-Dependent Communities. *Human Ecology Review*, 8(1).
- Clark, D. A., & Slocombe, D. S. (2009). Respect for grizzly bears: An aboriginal approach for co-existence and resilience. *Ecology and Society*, 14(1). <https://doi.org/10.5751/ES-02892-140142>

- Corvalan, C., Hales, S., McMichael, A., Butler, C., Campbell-Lendrum, D., Confalonieri, U., ... Younes, M. (2005). *Ecosystems and Human Well-Being*.
- Craig, D., Yung, L., & Borrie, W. (2012). Blackfeet belong to the mountains: Hope, loss, and blackfeet claims to glacier national park, montana. *Conservation and Society*, 10(3), 232–242.
<https://doi.org/10.4103/0972-4923.101836>
- Cramer, R. (2019). Another Hunter Survives Grizzly Bear Attack In Western Gravelly Mountains. *Montana Public Radio*.
- Cristescu, B., Stenhouse, G. B., Goski, B., & Boyce, M. S. (2016). Grizzly bear space use, survival, and persistence in relation to human habitation and access. *Human-Wildlife Interactions*, 10(2), 240–257. Retrieved from <https://digitalcommons.usu.edu/cgi/viewcontent.cgi?article=1035&context=hwi>
- Dickman, A. J. (2010). Complexities of conflict: The importance of considering social factors for effectively resolving human-wildlife conflict. *Animal Conservation*, 13(5), 458–466.
<https://doi.org/10.1111/j.1469-1795.2010.00368.x>
- Dotson, D. H. (2019). There's More to the Story: Shedding Light on Conflict Species Identification and the Unknown Impacts of Conflict with Predators.
- Douglas, L. R., & Veríssimo, D. (2013). Flagships or Battleships Deconstructing the Relationship between Social Conflict and Conservation Flagship Species. *Environment and Society: Advances in Research*, 4, 98–116. <https://doi.org/10.3167/ares.2013.040107>
- Eneas, K. (2020). *Influence of Livestock and Electrified Fences on Livestock Depredation and Habitat Selection by Grizzly Bears in the Mission Valley, Montana*. University of Montana.
- Frank, B. (2016). Human – Wildlife Conflicts and the Need to Include Tolerance and Coexistence : An Introductory Comment. *Society & Natural Resources*, 29(6), 738–743.
<https://doi.org/10.1080/08941920.2015.1103388>
- Friese, S. (2014). *Qualitative Data Analysis with ATLAS.ti* (Second Edi). SAGE Publications Ltd.
- Frost, J. R. (1985). *Living with the grizzly: Perceptions of Mission Valley residents*. University of Montana.
- Guest, G., Bunce, A., & Johnson, L. (2006). How Many Interviews Are Enough?: An Experiment with Data Saturation and Variability. *Field Methods*, 18(1), 59–82.
<https://doi.org/10.1177/1525822X05279903>

- Hall, C. M. (2013). Why forage when you don't have to? Personal and cultural meaning in recreational foraging: A new zealand study. *Journal of Heritage Tourism*, 8(2–3), 224–233. <https://doi.org/10.1080/1743873X.2013.767809>
- Hebblewhite, M. (2011). Unreliable knowledge about economic impacts of large carnivores on bovine calves. *Journal of Wildlife Management*, 75(8), 1724–1730. <https://doi.org/10.1002/jwmg.206>
- Hinrichs, C. C. (1998). Sideline and lifeline: The cultural economy of maple syrup production. *Rural Sociology*, 63(4), 507–532. <https://doi.org/10.1111/j.1549-0831.1998.tb00690.x>
- Karlsson, J., & Sjöström, M. (2011). Subsidized fencing of livestock as a means of increasing tolerance for wolves. *Ecology and Society*, 16(1). <https://doi.org/10.5751/ES-03878-160116>
- Kellert, S. R. (1992). Public Attitudes toward Bears and Their Conservation. *International Association for Bear Research and Management*, 9, 43–50.
- Kellert, S. R., Black, M., Rush, C. R., & Bath, A. J. (1996). Human Culture and Large Carnivore Conservation in North America. *Conservation Biology*, 10(4), 977–990. <https://doi.org/10.1046/j.1523-1739.1996.10040977.x>
- Khumalo, K. E., & Yung, L. A. (2015). Women, Human-Wildlife Conflict, and CBNRM: Hidden Impacts and Vulnerabilities in Kwandu Conservancy, Namibia. *Conservation and Society*, 13(3), 232–243. <https://doi.org/10.4103/0972-4923.170395>
- Lamb, C. T., Ford, A. T., Mclellan, B. N., Proctor, M. F., Mowat, G., & Ciarniello, L. (2020). The ecology of human–carnivore coexistence. *Proceedings of the National Academy of Sciences*, 201922097. <https://doi.org/10.1073/pnas.1922097117>
- Laporte, I., Muhly, T. B., Pitt, J. A., Alexander, M., & Musiani, M. (2010). Effects of wolves on elk and cattle behaviors: Implications for livestock production and wolf conservation. *PLoS ONE*, 5(8). <https://doi.org/10.1371/journal.pone.0011954>
- Luborsky, M. R., & Rubinstein, R. L. (1995). Sampling in Qualitative Research. *Research on Aging*, 17(1), 89–113.
- Mace, R. D., Waller, J. S., Manley, T. L., Lyon, L. J., & Zuuring, H. (1996). Relationships Among Grizzly Bears , Roads and Habitat in the Swan Mountains Montana. *Journal of Applied Ecology*, 33(6), 1395–1404.
- Manfredo, M. J., López-Bao, J. V., Karns, G. R., Ripple, W. J., Chapron, G., Ard, K., ... Carter, N. H.

- (2017). Modernization, Risk, and Conservation of the World's Largest Carnivores. *BioScience*, 67(7), 646–655. <https://doi.org/10.1093/biosci/bix049>
- Manfredo, M. J., Teel, T. L., & Dietsch, A. M. (2016). Implications of human value shift and persistence for biodiversity conservation. *Conservation Biology*, 30(2), 287–296. <https://doi.org/10.1111/cobi.12619>
- Margulies, J. D., & Karanth, K. K. (2018). The production of human-wildlife conflict: A political animal geography of encounter. *Geoforum*, 95(June), 153–164. <https://doi.org/10.1016/j.geoforum.2018.06.011>
- Mayberry, A. L., Hovorka, A. J., & Evans, K. E. (2017). Well-Being Impacts of Human-Elephant Conflict in Khumaga , Botswana : Exploring Visible and Hidden Dimensions. *Conservation and Society*, 15(3), 280–291. <https://doi.org/10.4103/cs.cs>
- McDonald, T., Tanner, T., Bigcrane, L., & Rockwell, D. (2005). *Mission Mountains Tribal Wilderness: A Case Study*.
- Messmer, T. A. (2009). Human – wildlife conflicts: emerging challenges and opportunities. *Human-Wildlife Interactions*, 3(1), 10–17.
- Morehouse, A T, Graves, T. A., Mickle, N., & Boyce, M. S. (2016). Nature vs. Nurture: Evidence for Social Learning of Conflict Behaviour in Grizzly Bears. *PLoS ONE*, 11(11), 165425. <https://doi.org/10.1371/journal.pone.0165425>
- Morehouse, Andrea T., Tigner, J., & Boyce, M. S. (2018). Coexistence with Large Carnivores Supported by a Predator-Compensation Program. *Environmental Management*, 61, 719–731. <https://doi.org/10.1007/s00267-017-0994-1>
- Muhly, T. B., & Musiani, M. (2009). Livestock depredation by wolves and the ranching economy in the Northwestern U.S. *Ecological Economics*, 68, 2439–2450. <https://doi.org/10.1016/j.ecolecon.2009.04.008>
- NCDE Coordinating Committee. (2018). *Conservation Strategy for the Grizzly Bear in the Northern Continental Divide Ecosystem*.
- Nickerson, N. P. (2003). *What the People Think: Glacier National Park and Vicinity*.
- Noy, C. (2008). Sampling knowledge: The hermeneutics of snowball sampling in qualitative research. *International Journal of Social Research Methodology*, 11(4), 327–344.

<https://doi.org/10.1080/13645570701401305>

- Nyhus, P. J. (2016). Human–Wildlife Conflict and Coexistence. *Annual Review of Environment and Resources*, 41, 143–171. <https://doi.org/10.1146/annurev-environ-110615-085634>
- Pooley, S., Barua, M., Beinart, W., Dickman, A. J., Holmes, G., Lorimer, J., ... Milner-Gulland, E. J. (2017). An interdisciplinary review of current and future approaches to improving human–predator relations. *Conservation Biology*, 31(3), 513–523. <https://doi.org/10.1111/cobi.12859>
- Pouta, E., Sievänen, T., & Neuvonen, M. (2006). Recreational wild berry picking in Finland - Reflection of a rural lifestyle. *Society and Natural Resources*, 19(4), 285–304. <https://doi.org/10.1080/08941920500519156>
- Rasker, R. (2017). *The Transition from Western Timber Dependence: Lessons for Counties*. Retrieved from https://headwaterseconomics.org/wp-content/uploads/Lessons_Timber_Transition.pdf
- Richardson, L., Rosen, T., Gunther, K., & Schwartz, C. (2014). The economics of roadside bear viewing. *Journal of Environmental Management*, 140, 102–110. <https://doi.org/10.1016/j.jenvman.2014.01.051>
- Robbins, P., Meehan, K., Gosnell, H., & Gilberiz, S. J. (2009). Writing the new west: A critical review. *Rural Sociology*, 74(3), 356–382. <https://doi.org/10.1526/003601109789037240>
- Scannell, L., & Gifford, R. (2017). The experienced psychological benefits of place attachment. *Journal of Environmental Psychology*, 51, 256–269. <https://doi.org/10.1016/j.jenvp.2017.04.001>
- Scarce, R. (1998). What do wolves mean? Conflicting social constructions of *Canis lupus* in “bordertown.” *Human Dimensions of Wildlife*, 3(3), 26–45. <https://doi.org/10.1080/10871209809359130>
- Servheen, C. (1995). The Grizzly Bear Recovery Program : Current Status and Future Considerations. *International Association for Bear Research and Management*, 10, 591–596.
- Thondhlana, G., Mark, S., Olav, P., Eeden, L. Van, Pascual, U., Sherren, K., & Murata, C. (2020). Non-material costs of wildlife conservation to local people and their implications for conservation interventions. *Biological Conservation*, 246(February), 108578. <https://doi.org/10.1016/j.biocon.2020.108578>
- Treves, A., & Santiago-Avila, F. (2020). Myths and assumptions about human-wildlife conflict and coexistence. *Conservation Biology*, 00(0), 1–8. <https://doi.org/10.1111/cobi.13472>

U.S. Fish and Wildlife Service. (2018). Grizzly bear (*Ursus arctos horribilis*). Retrieved May 12, 2019, from <https://www.fws.gov/mountain-prairie/es/grizzlyBear.php>

Wheeler, M. J. (2006). *History of Indian hunting and fishing rights as they pertain to the Confederated Salish and Kootenai Tribes and the Hellgate Treaty of 1855*. The University of Montana.

Wilson, S. M., Mattson, D. J., Madel, M. J., Graham, J. M., & Merrill, T. (2006). Landscape conditions predisposing grizzly bears to conflicts on private agricultural lands in western USA. *Biological Conservation*, 130, 47–59. <https://doi.org/10.1016/j.biocon.2005.12.001>

Appendix A

Interview Guide

Thank you for taking the time to talk with me today. I am a graduate student at Idaho State University, and this research is part of my master's thesis, which seeks to understand how rural communities are affected by expanding grizzly bear populations and how rural people envision a future where humans and bears live successfully. The interview should take about 60 minutes. Everything you tell me during the interview will be kept strictly confidential and your name will not be revealed to anyone. For the purpose of data analysis, it would be really helpful for me to record this conversation. Are you comfortable with this? If not, please let me know now. Again, thank you for your willingness to participate in this interview. Unless you have any questions, let's go ahead and get started.

To begin, I'd like to get know you better. I have a couple of questions about how and where you grew up and what you do or did for a living.

I. Background and Family History

a. Socio-demographics

- i. What year were you born?
- ii. What is your educational background?
- iii. For the tape, what town do you live in?
- iv. Do you live here full time?
- v. How long have you lived here?
- vi. What do you do for fun?

b. Upbringing

- i. Describe where you grew up
 - If here: How many generations of your family have lived here/out West?
 - Where did they come from?
 - What brought them here?

- If not here: Urban? Rural?
- When and why did you come here?
- ii. How did your parents or grandparents talk about natural resources, such as land, forests, or wildlife?

II. Livelihood

- a. What do you do for a living?
 - i. (If retired, what did you do?)
- b. How has your work changed? For instance, is your work affected by changes in the economy, community, or landscape?
- c. How does your livelihood shape how you see the world?

Next, I have a couple of questions about what you care about and why, to help me understand how you see the world.

III. Community Attachment and Place Meaning

- a. Community Attachment
 - i. Describe this community
 - People? Livelihoods? Schools? Leaders?
 - ii. What do you like about this community?
 - Can you give me an example?
 - iii. Dislike?
 - Can you give me an example?
 - iv. Is there anything you would change about this community?
 - v. How has this community changed since you've lived here?
 - What are the main reasons for this change?
 - vi. What makes someone part of this community?
 - vii. What makes someone an "outsider"?

- Can you give me an example without naming anyone?

b. Place Meaning

- How do you use your land? (if landowner)
- When making decisions about managing your land, what do you consider?
- How do you use public/Tribal land?
- Do you feel a special connection to this place?
- Can you describe a specific place and how it makes you feel?
 - Are wildlife part of this connection?
 - Would you feel differently if there were more or less of certain animals?

Now, I'd like to talk about grizzly bears, your experiences with them, how they make you feel, how you think they should be managed and how they impact this community.

IV. Grizzly Bears

a. General

- When you think of grizzly bears, what do you think about?
- In general, how do you feel about grizzlies?
- Can you describe a grizzly bear encounter, either you or someone you know has had?
- Recently there has been a lot of media coverage about the removal of the Yellowstone grizzly bear population from the Endangered Species Act, specifically about a potential hunting season and the following lawsuit and relisting of the population. What do you think about these debates?
- Do you think this grizzly bear population should be removed from the endangered species list?
 - If that were to happen, what would be different?

b. Impacts

- i. What is it like living with grizzly bears?
- ii. How do you use places or lands with bears?
- iii. How have you been impacted by grizzly bears?
 - Negatively?
 - Positively?
 - Livelihood?
- iv. Does the presence of grizzly bears change the connection you feel to this place?
- v. What kinds of risks do grizzly bears pose to you?
- vi. Do these risks impact your decision making?
- vii. How has your community been impacted?
 - Who is impacted? (What kinds of people)
 - What resources are impacted? (Farms/Ranches/Public Land/Grazing/Timber/Recreation)
 - Negatively?
 - Positively?
- viii. What kinds of risks do grizzly bears pose to your community?
- ix. Are there risks you are willing to accept?
- x. Are there risks you are not willing to accept?
- xi. Where should grizzly bears be allowed to live in this area?
 - Public land/private land/ag land/ in town
- xii. Where shouldn't grizzly bears be allowed to live in this area?
 - Public land/private land/ag land/ in town
- xiii. How have grizzly bear populations changed in the last 10 or 15 years?
 - In general, how do you feel about these changes?
- xiv. Has the presence of grizzlies changed any daily or seasonal habits?

- xv. Such as hunting/gathering, recreating, farming, ranching routines?
- xvi. Farmer/Rancher: Have grizzlies impacted your decision-making?
- xvii. Have you noticed changes in your community since grizzlies have become more prevalent in the area?
- xviii. If there are more bears than now in the area, what else might change?
 - Community?
 - Land uses?
- xix. What benefits would more grizzly bears bring?
 - Challenges?
 - Impacts?

c. Coexistence

- i. What are your thoughts about how grizzlies are managed in this area?
- ii. Do you feel you have a say in grizzly bear management? Why or why not?
 - Who influences how grizzly bears are managed?
 - Who is left out of the conversation?
- iii. What needs to happen for people and bears to live together successfully in this community?
- iv. What is it about this community that makes it possible for these things to happen?
- v. Is there anything that makes living with bears easier?
 - Are there people, agencies, or groups that make it easier?
- vi. What might prevent these things from happening?
- vii. Is there anything that makes living with bears harder?
 - Are there people, agencies, or groups that make it harder?
- viii. What do you think living with bears will look like 10 years from now?

- Why?

ix. What do you think living with bears should look like 10 years from now?

- Why?

That's all the questions I have for you. Is there anything else you'd like to tell me about living with grizzly bears?

Thank you for your time.