Wildlife Management in Parks and Protected Areas: Indigenous Peoples and Stakeholder Perceptions in Elk Island National Park, Alberta

by

Chelsea Ann Parent

A thesis submitted in partial fulfillment of the requirements for the degree of

Master of Arts

in

Recreation and Leisure Studies

Faculty of Physical Education and Recreation

University of Alberta

Abstract

Elk Island National Park (EINP) is located approximately 35 km from a large urban centre, Edmonton, Alberta. The Park is home to three species of large ungulates, plains bison, wood bison, and elk, that are actively managed. All three species have been used for translocation conservation efforts, but also need to be actively managed due to a lack of natural predators and the confinement within a 2.2 m high fence that surrounds the Park. EINP has historically used various management methods to control ungulate populations, but stakeholder and Indigenous perceptions of these methods have not been empirically explored. This study seeks to understand the level of support key stakeholder groups and Indigenous peoples have towards various management methods used in wildlife management in North America, as may be applied to EINP. Additionally, this study seeks to understand broader implications for perceptions of lethal wildlife management methods, such as hunting. The results from this study have direct implications for wildlife management in EINP and in other parks and protected areas in Canada, that do not possess empirical documentation about stakeholder and Indigenous people's perceptions. Further, the results demonstrate that while key stakeholder groups and Indigenous peoples have collective beliefs about the management methods presented in this study, individual beliefs, specific to the context were demonstrated to be important indicators of nuanced information.

Preface

This is an original work by Chelsea Ann Parent. The research project, of which this thesis is a part, received research ethics approval from the University of Alberta Research Ethics Board, Project Name "Perceptions of wildlife management methods: Elk Island National Park, Alberta", No. Pro00069163, November 24, 2016. The ethics notification of approval can be found in Appendix A.

Dedication

To Stephanie – for inspiring me to keep going.

Acknowledgements

First and foremost, I would like to thank my supervisor, Dr. Howie Harshaw, for helping me along the way through all of the challenging and rewarding moments. The time and effort that he spent has been invaluable and I would have not pursued this area of study without his knowledge and counsel. A special thank you to Dr. Naomi Krogman for being part of the committee and providing her expertise early on in the project, it influenced the process in a number of very positive ways. Thank you to Dr. PearlAnn Reichwein – she has been a supportive mentor from the very beginning and I am forever grateful for her warm and open nature, meaningful chats, and laughs.

Sarah and Christina, I am grateful for all of the time we spent together and the deep friendships we made over the last two years. It was a pleasure to tackle the challenges of graduate school sitting along side two beautiful and intelligent ladies in the many coffee shops around Edmonton.

I am especially grateful for Pat and his endless source of laughter and happiness throughout the last year of this project.

I have met some wonderfully talented and pleasant friends, colleagues, and professors along the way. Thank you for your support, and sharing your endless wealth of knowledge and valuable time with me – Jane D, Lori, Nicole, Emily UM, Michelle, Rylan, Tristan, Nanxi, Michael D, Michael Z, Kelci, CJ, Paulina, Jane H, Dr. Elizabeth Halpenny, Dr. Karen Fox, Dr. Gordon Walker, Dr. Katie Davies, and Dr. Pirkko Markula.

Lastly, thank you to Elk Island National Park and all my former work colleagues for inspiring me to have a life long passion for parks, nature, and people, and for pursuing this research project.

Table of Contents

List of Tables

List of Figures

Chapter One: Introduction

Context and Purpose

Elk Island National Park (EINP) is located 35 km east of Edmonton, Alberta, and is home to two conservation herds of bison: plains bison (*Bison bison*) and wood bison (*Bison athabascae*). For over a century, EINP has been managing bison and other large ungulates – hoofed animals, such as elk (*Cervus canadensis*) and moose (*Alces alces*) within the entirely fenced 194 km^2 area. Although the role of the fences is to keep animals disease-free, it restricts the natural dispersion of large ungulates; it also causes potential for hyperabundance of these ungulates in perpetuity. Parks Canada defines hyperabundant species as "a species whose population has grown to the point where it exceeds the capacity of the landscape to provide enough suitable habitat", and management of hyperabundance species is guided by Management Directive 4.4.11: Management of Hyperabundant Wildlife Populations in Canada's National Parks (Commissioner of the Environment and Sustainable Development, 2013). In effect, the perimeter fence causes damage to the natural environment of the Park, and has therefore become the rationale for managing elk and bison populations.

The *human dimensions of wildlife* management have become an area of study for researchers and practitioners as they seek to better understand the relationships between people and wildlife. The purpose of this study is to gain an understanding of this relationship in a Canadian context through an area of focus – hyperabundant ungulates – in EINP. The study explores key stakeholder groups' and Indigenous peoples' perceptions and the relative acceptability of management methods used to control hyperabundant wildlife, including various forms of hunting. Hunting is not currently permitted at EINP, but has been used in other Canadian National Parks [e.g. Gros Morne (The Global and Mail, 2015), Cape Breton Highlands

(The Global and Mail, 2015), Terra Nova National Parks (CBC News, 2016), and Point Pelee National Park (CBC News, 2015)], to manage hyperabundant ungulates, and has been proposed as an option in the Park's Hyperabundant Ungulate Management Plan (Todd, 2017). The study's results have direct application for EINP while they consider alternative methods to manage hyperabundant bison, elk, and moose in the park.

Wildlife Management in North America and Canada

Contemporary wildlife management in North America dates back to the mid-1800s when recreation groups of anglers and hunters recognized the need to set limits to wildlife consumption in order to preserve and protect wildlife. These groups subsequently assumed the responsibility for managing their habitat (Rocky Mountain Elk Foundation, n.d.). Born from this, the North American Model for Wildlife Conservation (NAMWC) describes the underpinning principles to wildlife management approaches in the United States and Canada that are applied on a conceptual level. The principles include: wildlife as public resource, markets for game are eliminated, allocation of wildlife is by law, wildlife can be killed for only a legitimate purpose, wildlife is considered an international resource, science is the proper tool to discharge wildlife policy, and lastly, democracy of hunting is standard (Geist et al., 2001; Organ et al, 2010, as cited by Organ et al., 2012).

While the NAMWC focuses on hunting and the elimination of markets for game for preservation, it was a group of Canadian senior civil servants who paved the way for wildlife conservation in Canada (Foster, 1998). Civil servants, including Howard Douglas (appointed the second superintendent of Rocky Mountains Park in 1897) and James Harkin (an appointed Commissioner of Dominion Parks in 1912), contributed to recognizing the important of wildlife as a visual tourist attraction and a valuable economic resource (Foster, 1998). Together, actions

by groups of anglers and hunters in the United States and civil servants in Canada, among many others, contributed to the understanding of wildlife as a valuable public economic resource.

Wildlife regulations and legislation in Canada differs from that in the United States; however, there is some coordination as ecological boundaries straddle both countries. Canada is signatory to the Migratory Bird Treaty with the United States and Mexico, the Convention on International Trade in Endangered Species of Fauna and Flora, the Ramsar Convention of Wetlands (Organ et al., 2012), and most recently Canada has made a commitment to protect 17 percent of terrestrial areas and 10 percent of coastal and marine areas under the Convention on Biodiversity (Environment and Climate Change Canada, 2016a). While American wildlife agencies are funded largely through hunting licenses, there is no dedicated funding allocation for Canadian wildlife agencies as they depend on general revenue tax dollars that are allocated to a variety of government programs and initiatives (Organ et al., 2012). Organ et al. (2012) suggest that the future of wildlife management will largely depend on effectively identifying and communicating a new funding structure to governments. In addition to new funding structures, wildlife management agencies must involve the general public in various aspects of the decision-making process to share knowledge and gain acceptance for wildlife management decisions (Johnson & Williams, 1999; Enck et al., 2006) to remain relevant to the general public and society.

Within parks and protected areas, there are jurisdictional rules, laws and regulations. Within Canada, Provincial and Territorial Governments, and the Federal Government share the responsibility for wildlife management subject to the species and area. The Federal Government is responsible for federal lands, including National Parks, migratory species of birds and their nests anywhere. The federal *Species at Risk Act* protects, recovers, and manages species that are

endangered or threatened by extinction or extirpation. The *Canada National Parks Act* (2000) contains regulations that address wildlife, including that "no person shall: hunt, in a park, any wild animal of a species…" (Canada National Parks Act, 2000, p. 21). Key exceptions relate to Indigenous peoples such as traditional renewable resource harvesting activities in Wood Buffalo National Park, and reflect ongoing evolution of co-management.

By regarding wildlife as a public resource as the NAMWC suggests, government agencies bear the responsibility to manage wildlife resources, including their habitats in the public's interest. Wildlife management objectives in National Parks differ from those of Provincial and other Territorial parks and jurisdictions because wildlife is managed based on a Federal mandate to maintain and improve ecological integrity for enjoyment for current and future generations of Canadians (Parks Canada Agency, 2015a). This mandate, handed down from earlier National Parks Act (1988) was initially recommending by Canadians Parks and Wilderness Society (CPAWS), and not the then Parks Branch, now Parks Canada Agency (Kopas, 2007). Historically, hunting was legal within National Parks until the 1930 National Park Act, and additionally entrenched protection and preservation and away from resource extraction (Kopas, 2007).

A *park* is difficult to define in the literal sense, because of the wide use of the term to describe natural spaces that have been set aside for various broad purposes, such as recreation, leisure, protection, and conservation. In Canada, parks are generally managed by governments: Municipal, Provincial, National, and Indigenous co-management models. Municipal parks are governed by local municipalities and generally have low levels of protection and high levels of use. Provincial/Territorial Parks are governed by each Province and Territory separately and the level of protection, and use vary from low to high. National Parks are managed across Canada by

the Parks Canada Agency (PCA), from the time of the establishment of Rocky Mountains National Park (now Banff National Park) in 1885. The Parks Canada Agency was previously called the Dominion Parks Branch under the Department of the Interior, and was established in 1911 (Lothian, 1987). It was renamed to Parks Canada Agency in 1998 (Parks Canada Agency Act, 1998). Lastly, Parks and protected areas governed by Indigenous co-management models, such as Gwaii Haanas National Park Reserve and National Marine Conservation Area Reserve, "reflects conservation objectives shared by the Haida Nation and the Federal Government despite disagreement about title to the area" (Schulte, 2017, p. 59). These areas represent lands that have been granted protection by the mutual agreement and cooperation of an Indigenous group and the Federal Government for shared goals and objectives related to conservation. Protected areas differ from parks, because their purpose is more specific. The International Union for Conservation of Nation (2008) defines a protected area as a clearly defined geographical space that is recognized, dedicated and managed through legal or effective means to achieve the long term conservation of nature.

Since the establishment of Rocky Mountains National Park (now Banff National Park), National Parks in Canada have experienced shifts in priorities between varying levels of recreation use, and environmental protection and conservation (McNamee, 1993). This environmental protection is evaluated as "ecological integrity", a term used and defined by the PCA, adopted from suggestions by CPAWS as early as 1979, and brought into legislation until 1988 (Kopas, 2007). Ecological integrity, defined as "…a condition that is determined to be characteristic of its natural region and likely to persist" (CNPA, 2000, p. 1), is at the core of the PCA's mandate; managing for ecological integrity includes managing wildlife.

Presently, the goals and objectives of wildlife management in parks and protected areas in North America varies based on the unique geographical, environmental, political, social, and cultural contexts. Within National Parks in Canada, active management of animals is only permitted when a Park is able to sufficiently demonstrate negative impacts to ecological integrity (Parks Canada Agency, 2007). A lack of apex predators and hunting in National Parks can encourage ungulate populations to thrive and become overpopulated, which may have negative impacts on ecological integrity such as reduced forest regeneration from over-browsing (Côté, Rooney, Tremblay, Dussault, & Waller, 2004). Because of EINP's unique circumstance with the surrounding fence, and a lack of natural predators and hunting, active management of wildlife populations is required (Parks Canada Agency, 2007).

Elk Island National Park

In 1906, five members of a local hunting club in Fort Saskatchewan, Alberta put up a $5000 cash bond to the Government of Canada to construct a fence around some of the last remaining elk (*Cervus canadensis*) to preserve the herd from extirpation (Parks Canada Agency, 2012). In 1907, 200 plains bison were reintroduced to EINP from the United States, and the Park became an official national park as Elk Park in 1913 (Parks Canada Agency, 2017a). The Park's herd of bison has a historic trend of population fluctuations dictated by management decisions. In 1915, the bison herd grew to 106, and then grew again to 729 by 1927, with an additional 227 moose, 454 elk and 288 deer (Lothian, 1987). At the time, the ungulate populations were deemed to be hyperabundant with the amount of land to forage and an abattoir was erected in 1928 to remove 230 bison (Lothian, 1987). In only seven years, by 1935, bison populations reached 2,000 and period culls took place to control the population over the next 37 years; estimated to

have removed 7,000 animals (Lothian, 1987). During this time period, meat and hides from animals were sold to the public through public tender (Lothian, 1987).

In the earlier decades of bison management, animals were deemed to be free of disease and were donated to "accredited animal Parks (p. 49) and zoos for display purposes (Lothian, 1987). It was not until 1967 that bison was sold commercially to game farms, and continued to be, which facilitated controlling ungulate populations in the Park (Lothian, 1987). While EINP's bison populations remained disease free, the population established in Buffalo National Park (now Wainwright Military Base Camp) in 1909 had been determined to be infected with bovine tuberculosis and subsequently slaughtered in 1938 and 1939 to eradicate the disease (Lothain, 1987; Brower, 2004).

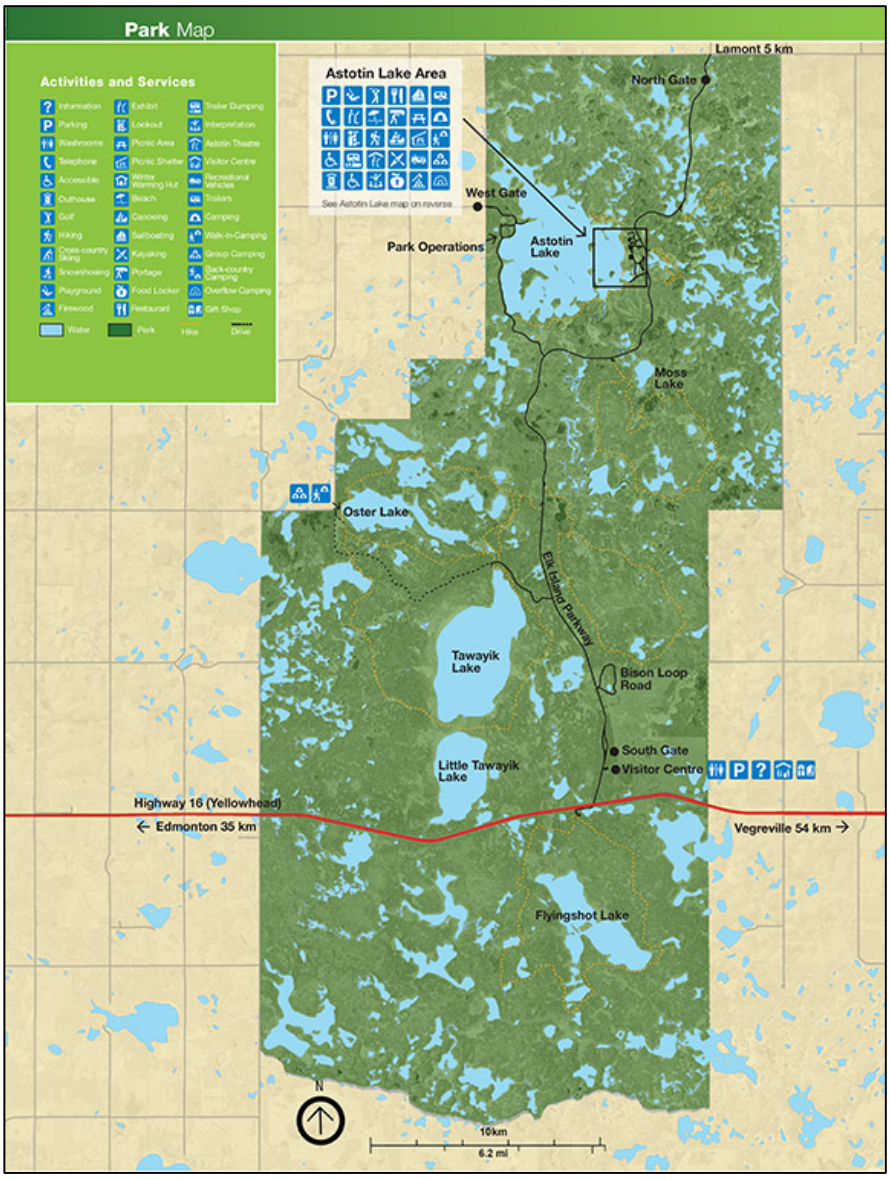


Figure 1. Map of Elk Island National Park (Parks Canada Agency, 2017b).

Today, EINP is a Category II National Park under the IUNC and is located approximately 35 km from Edmonton, Alberta. The Park is 194 km^2 and represents the northern prairies plateau ecosystem for the PCA. As of 2016, it is designated as a core area within the United Nations Educational, Scientific and Cultural Organization (UNESCO) Beaver Hills Biosphere Reserve (Beaver Hills, 2016). Annual visitation to the park is 244,801 in the 2014-2015 season and has

experienced an 8% overall growth in visitation from 2010 to 2015 (Parks Canada Agency, 2015b).

Elk Island National Park Management Plan

Two relevant and significant components of EINP's Management Plan, finalized in 2011, are ecological integrity, and public and Indigenous engagement. Ecological integrity is a key tool for management that acts as the conceptual framework for active management (Woodley, 2010), and engagement is an integral component of management planning that includes Indigenous peoples and stakeholders. The plan highlights each concept extensively and provides a rationale for using engagement as a main element to achieve ecological integrity; to move towards healthy, resilient ecosystems and increased support from Indigenous peoples and stakeholders that would satisfy the objectives set out in the Plan (Parks Canada Agency, 2011a). The Plan outlines direction for Indigenous and stakeholders' engagement separately.

Policy Guiding Indigenous People's Engagement

EINP presents statements about the current relationship with Indigenous peoples and strategies in order to strengthen those relationships. Parks Canada Agency states "develop [a] framework to engage Aboriginal Peoples in park management and programs of relevance and importance to them" (Parks Canada Agency, 2010, p. 12). The Plan further identifies that, "There are also no continuous, partnered initiatives between Aboriginal groups and EINP. Possible partnering opportunities lie in areas related to bison and other wildlife management programs" (Parks Canada Agency, 2010, p. 8). This language is echoed from the previous Truth and Reconciliation Commission of Canada (TRC) and Government of Canada's commitment to reconciliation.

The Truth and Reconciliation Commission is one component of Indian Residential Schools Settlement Agreement, with a mandate to inform all Canadians about Indigenous people who were forcefully removed from their families and homes and sent to residential schools (Truth and Reconciliation Commission of Canada, n.d.). The TRC acts as a mechanism to support both truth and reconciliation between former students of the Residential schools, their families, their communities and all Canadians (Indigenous and Northern Affairs Canada, 2017) and was launched in 2008 and a final report completed in 2015. In the same year, the TRC was launched in 2008, former Prime Minister Stephen Harper delivered a formal apology to Indigenous peoples of Canada. These initiatives and formal declarations revealed to surface in participants' consciousness when speaking about the management method, hunting by Indigenous peoples. Participants of the current study alluded to using hunting as a tool for reconciliation, explicitly using the term "reconciliation", as presented and used in the public rhetoric through the TRC. Throughout Chapter Four and Chapter Five, the term is used and is assumed to be used in the context provided here.

Policy Guiding Stakeholders Engagement

Two objectives identified in the Plan, relevant to stakeholder involvement, are identified and are supported by one another. First, "enabling park stakeholders to get more involved in park management through an advisory process" (p. 12), with an action to "regularly [inform] and [seek] input from neighbours and local communities about proposed park activities" (p. 12) through open houses, newsletters, and information bulletins in the media. Second, an objective to that "EINP's stakeholders are actively involved in park decision-making processes, creating support and advocacy for the park" (p. 13), with an action to establish a park advisory process.

The Park's main emphasis for wildlife management is bison. The Park manages two sub-species of bison for conservation purposes, which are separated by the Yellowhead Trans-Canada Highway 16 in two distinct sections of the Park (i.e. north and south), and are kept isolated to preserve the genetic stock and prevent hybridization. In addition to bison, the Park has actively managed their elk populations in the north and south areas of the Park. The Park has minimum viable population targets and target adult population numbers for bison and elk in the *Main Park Area* (north) and *South Area* (south) (Parks Canada Agency, 2010), see in Table 1.

Table 1. Ungulate Population Targets

Species	Recommended Population Size	Recommended Minimum Viable Population	Aerial Census (2016-2017)
Plains Bison	250-275	175	383
Wood Bison	260-300	245	333
Elk (Main Park)	375-400	350	611
Elk (South Area)	75	50	115
Moose (Main Park)	275	250-350	38
Moose (South Area)	75-100	50-75	224

Note. Reprinted from *Elk Island National Park: Draft Hyperabundant Ungulate Management Plan* information handout from an open house on June 1, 2017, by Parks Canada Agency, n.d.

EINP has stated that "the costs and logistics of managing elk populations are becoming increasingly prohibitive… and other options for managing the herd are presently being considered" (Parks Canada Agency, 2012). In addition, Chronic Wasting Disease (CWD), a progressive, fatal, and degenerative disease of the brain of free ranging or farmed ungulates (Government of Alberta, 2016), is a concern spread from the east in Canada, and, thus, moving animals to other areas will become increasingly risky.

Hyperabundant Ungulate Management Plan

Nearing the completion of this study, EINP held two open houses, one in May and one in June of 2017 to engage the public on the topic of their 10-year Hyperabundant Ungulate Management Plan. The open houses presented six options to the public to provide comments and ask questions. These options included lowering the fence in some areas for moose and elk, sell the animals to auction (for bison), sell the animals directly to slaughterhouses (elk, moose, bison), hunting by Indigenous and non-Indigenous, and a cull by Park staff (Todd, 2017). Results from these open houses, and the strategy the Plan identified were not available at the time of the study's completion.

Conclusion

Wildlife management in North America is guided by the NAMWC, but becomes complex when each management context is independently evaluated. EINP is especially complex because of the iconic bison species, the presence of the fence for purpose of conserving the bison, the close proximity of the Park to a large urban center, the lack of natural predators, and prohibited hunting. Researchers in the United States and in Canada have explored these complexities in various cases to investigate how humans are connected to wildlife through the field of the *human dimensions of wildlife* research.

Chapter Two reviews the literature associated with stakeholder engagement and public participation in wildlife management; perceptions/acceptability of wildlife management including hunting; and values/attitudes. These three areas of focus are rooted in the *human dimensions of wildlife* field through an environmental sociology lens. The literature review provides a foundation upon which to situate the current study in the field and rationale for investigating in a Canadian context.

Chapter Three outlines the methods used and their rationale, and describes the participant groups chosen for the study. Further, the third Chapter describes data management, analysis, and project limitations. Chapter Four is broken into two sections, the first describes the profiles of the participants for the focus groups and group interview, followed by a snapshot of the resulting discussions for each management method posed in the focus groups and group interview. In Chapter Five, I highlight the themes that were discovered through thematic content analysis and discuss each of them in relation to the literature. Lastly, in Chapter Six, I present five recommendations for Parks Canada Agency and EINP to consider with regard to managing hyperabundant ungulates.

Chapter Two: Literature Review

This literature review is largely guided by the *human dimensions of wildlife* field, with an environmental sociology discipline perspective. By using an environmental sociology lens, a thorough understanding of the interaction between people (e.g. stakeholders and the public) and wildlife can be achieved. In order to gain an understanding of these interactions, examples from the *human dimensions of wildlife* field will be explored. A substantial degree of the literature surrounding the *human dimensions of wildlife* has been written in the United States and abroad, and are focused on public lands managed by state wildlife agencies, and human-wildlife conflict. The literature review will explore three key areas: stakeholder engagement and public participation in wildlife management; perceptions/acceptability of wildlife management including hunting; and values and attitudes. The following literature includes wildlife management of parks and protected areas, and public lands focused mainly in North America.

Study Area: Elk Island National Park, Alberta, Canada

EINP employs ungulate management programs for two primary reasons. First for conservation efforts to relocate/repopulate other areas in North America and abroad. Second because of a lack of apex predators, and presence of the fence that has resulted in an inability for ungulates to disperse beyond the Park boundary. The first has been an integral component of the reintroduction of bison species throughout North America, and a legacy for PCA and Canada. The latter result in the hyperabundance of ungulates, and in some cases, animals need to be removed because they will likely damage the environment if they persist at populations that cause unnatural trends in biological succession (Cole, 1971).

Public perceptions of ungulate management in Canada is not strong in the literature, and few have explored the public acceptability of using lethal methods (Dubois & Harshaw, 2013;

Campbell & Mackay, 2003), such as hunting, to protect the natural environment (Koval & Mertig, 2004). Detailed reports on consultation processes that do occur within National Parks are not easily accessible to the public. PCA and EINP have communicated a commitment to engage with Indigenous peoples and public stakeholders (Parks Canada Agency, 2011a, Parks Canada Agency, 2011b). The 2010 EINP Management Plan identifies an objective that strives to enable stakeholders to get more involved in the management of the Park through an advisory process. In order to enable stakeholders, Park management must first understand their attitudes towards the Park and the Agency to better understand how they enable them to get involved. This understanding has been previously explored regarding attitudes of ungulate management (Vernon & Clark, 2016; Diefenbach, Palmer, & Shope, 1997; Donnelly & Vaske, 1995).

Indigenous Hunting

At the beginning of the study, the role of Indigenous hunting in EINP was unclear. A search of online material including National Park policy was investigated to come to a conclusion that was used for the purpose of this study. The position offered may not reflect the current position of EINP or PCA with regard to Indigenous hunting at EINP or any other National Park. According to Nathan Cardinal, a Park Warden, Parks Canada's position is that:

> Legislation used to establish national parks prior to 1982 extinguishes any Aboriginal or treaty rights with regards to those parks. Consequently, of the forty national parks and park reserves in Canada, harvesting as an Aboriginal or treaty right takes place in twenty of them — primarily in parks and park reserves established after 1982 or those established in northern Canada under comprehensive land claims. (Cardinal, 2008)

Park's Canada Policy, provided by Heritage Canada, in Section 3 of National Parks section states:

> National parks are special areas which are protected by federal legislation from all forms of extractive resource use such as mining, forestry, agriculture, oil, gas and hydro electric development and sport hunting. In some new national parks, however, certain traditional resource uses by local residents may be allowed to continue. Such activities must not destroy or seriously impair the natural values for which the park was established. They will be clearly agreed to in each case at the time of formal establishment of the national park. It is also essential that in establishing new national parks Parks Canada honour the treaties of Indian people which in some cases may involve hunting, fishing and trapping rights in national parks. (p. 41)

EINP was established as a Park prior to the 1982 Constitution Act of Canada, first in 1913 as a Dominion Park, and then again in 1930 as a National Park under the National Parks Act (Parks Canada Agency, 2017c). Therefore, based on the legislation explored, for the purpose of the focus groups, it was assumed that EINP falls within the statement provided by Nathan Cardinal, and that Indigenous hunting is not currently permitted or exercised at EINP.

Human Dimensions of Wildlife

The *human dimensions of wildlife* were defined by Fulton as "understanding how people think about and interact with the natural environment to improve stewardship of natural resources" (Canadian Wildlife Directors Committee, 2013, p. 3). Further, there is a difference between social sciences (how we behave); and ethics (how we ought to behave); that human dimensions' perspective strives to understand human values, but not to determine which is right or wrong, as that is social philosophy (Canadian Wildlife Directors Committee, 2013) or law. The field "seeks to understand how people value wildlife, how they want wildlife to be managed, and how they affect or are affected by wildlife and wildlife management decisions" (Decker,

Brown, & Siemer, 2001, p. 3). Cordell et al. (n.d.) suggest that adding human dimensions to ecosystem-based management of natural resources provides a holistic view about social, political, and economic environments within decision-making. Social components such as stakeholder engagement and more broadly, public participation in decision-making processes are central to sustainable practices between agency management, wildlife, and people. This desire for stakeholder involvement has heightened the need to integrate social and cultural components of the matrix of stakeholders involved in wildlife management decision-making.

National Parks in Canada have a history of public stakeholder involvement (Kopas, 2007) beginning with 1979 National Parks Policy Statement, when a series of public workshops across the country took place for comments regarding the policy (Kopas, 2007). For the first time, a request from individuals from the workshops resulted in a summary document that outlined how comments were incorporated into the policy. Kopas (2007) further identifies the changes in public participation in national parks: low levels of public participation into the 1980s as government tried to reassert control over policy processes, and public participation processes moved toward "more organized, more bureaucratic, and less 'participatory' than in the 1970s" (p.93). The example of the 1979 National Parks Policy statement highlights positive chance in National Parks in Canada with public involvement, but that participation processes fluctuate over time.

Public Participation

Arnstein (1969) developed a framework for the range of participation that citizens can have with regard to decision-making. She states "there is a critical difference between going through the empty ritual of participation and having the real power needed to affect the outcome of the process" (p. 216). Eight rungs or levels were suggested for the "ladder of public

participation" (p. 216), that ranged from non-participation: *manipulation*, and *therapy*; to degrees of tokenism: *informing*, *consultation*, and *placation*; to the last degrees of citizen control: *partnership, delegated power*, and *citizen control*. The level of participation that an organization or agency chooses to engage in will be a matter of serving what they are mandated to do legally, or the objectives they desire by implementing the participation of citizens. Within each level of participation, there are a variety of methods that can be used to elicit the public's participation.

Rowe and Frewer (2000) evaluated eight methods for public participation: referenda, public hearings/inquiries, public opinion survey, negotiated rule making, consensus conference, citizen's jury/panel, citizen/public advisory committee, and focus group. Within these methods, the nature of participants, time scale/duration, and characteristics/mechanism vary between them (p. 8-9). Effectiveness proved to be dependent on the objectives of the participation process, such as empowering and educating citizens, re-educating administrators, and enabling administrative systems and processes, and subsequently, barriers to effectiveness differed for each (e.g. realities of citizens' lives, administrative systems and processes, and participation methods) (King, Feltey, & O'Neill Susel, 1998). Rowe and Frewer evaluated the methods based on acceptance criteria and process criteria. Their conclusion was that no one method is better than another or even more effective, because acceptance depends on the context and evaluative criteria. Instead, they suggest that using two in conjunction or a "hybrid" (Smith, Nell, & Prystupa, 1997, as cited by Rowe & Frewer, 2000, p. 24) is most desirable, and that it will be situationally based.

Public participation approaches in government decision-making have been critiqued by many for their effectiveness (Innes & Booher, 2004; Crosby, Kelly, & Schaefer, 1986; Kathelene & Martin, 1991). Innes and Booher (2004) suggest that it is not just the tools and techniques to

employ public participation that influence its effectiveness, but "authentic" (p. 317) participation must work for all parties, stimulate interest and investment from, and acknowledge the underlying relationships between citizens and administrators. Similarly, meaningful public participation has been recommended, especially in an environmental context (Stewart & Sinclair, 2007; Tanz & Howard, 1991; Sinclair & Doelle, 2003). Stewart and Sinclair (2007) suggest that "integrity and accountability, influence, fair notice and time, inclusiveness and adequate representation, fair and open dialogue, multiple and appropriate methods, adequate and accessible information, and informed participation" (p. 166) are all essential elements of participation that is meaningful.

Perceptions of management inside national parks differs from other parks and protected areas, and therefore management is faced with using adaptive management (Riley, Siemer, Decker, Carpenter, & Berchielle, 2003), utilizing best practices that compliment both scientific and public support (Lee, 1993). Stringer, Dougill, Fraser, Hubacek, Prell, and Reed (2006) suggest that under an adaptive management framework, there is potential to employ more democratic management by facilitating social learning and enhancing knowledge translation between agencies and stakeholders. Adaptive management is an approach that encourages learning while doing (Parks Canada and the Canadian Parks Council, 2008, p. 61) and "treating economic uses of nature as experiments, so that we may learn efficiently from experience" (Lee, 1993, p. 8). This approach fosters monitoring, reviewing, and changes in management action based on the results of the monitoring and reviewing efforts. Lee (1993) emphasizes that this approach also fosters "social learning" (p. 8), that acknowledges political change is fueled by conflict, where bounds of society are challenged.

Further, there are two similar but different concepts based on adaptive management: adaptive resource management (ARM) and adaptive impact management (AIM). ARM is the most common framework in the wildlife context, and is applied to improve understanding and performance of various species' population dynamics models, by integrating science and management more broadly (Enck, Decker, Riley, Organ, Carpenter, & Siemer, 2006). AIM is a more recent concept (Riley et al., 2003) that integrates people into the matrix of management to enhance decision making through information sharing among scientists, managers, and stakeholders (Riley et al., 2003). Riley et al. (2003) argue that by integrating people, wildlife agencies increase their relevancy and stakeholder satisfaction.

Integrating public engagement in natural resource management can improve relationships and trust, may communicate goals for management, and create respectful and inclusive social processes (Vernon & Clark, 2016). It has also been suggested that by engaging stakeholders early on in the process of management, the likelihood of stakeholders' support for management decisions increases (Johnson & Williams, 1999; Enck et al., 2006) and can reduce potential conflicts (Bjerke, Vitterso, & Kaltenborn, 2000). Although engaging stakeholders can result in positive adoption of management objectives, engagement can also raise expectations amongst the public that may result in conflict when stakeholders' views are inconsistent with management actions (Cooke, 2001) or if management actions are inconsistent of stakeholders views and expectations.

Stakeholder Engagement in Wildlife Management

Riley, Decker, Carpenter, Organ, Siemer, Maffield, and Parsons (2002) note that it is important to distinguish managers from stakeholders in terms of who defines and passes judgement on the importance of effects (and subsequently the impacts) of wildlife management

and decision-making. The purpose of stakeholder engagement is therefore, to incorporate learned stakeholder perceptions and attitudes into decision-making for two reasons. The first reason is to maximize positive impacts for both agency and public and second, to minimize negative impacts, by giving voice and ownership to stakeholders for contributing to finding solutions to problems (Riley et al., 2002). Further, scholars in the *human dimensions of wildlife* have suggested that efforts to understand public perceptions toward wildlife management policies and actions need to be directly focused on situations or on context-specific cases (Zinn, Manfredo, Vaske & Wittmann, 1998; Koichi, Cottrell, Sangha, & Gordon, 2013; Decker, Jacobson, & Brown, 2006) rather than generalized from sociodemographic variables such as age, sex, education, residence and income (Donnelly & Vaske, 1995).

Chase, Decker, and Lauber (2004) posed the question: "What do stakeholders want" (p. 629) for public participation of wildlife management? Their results used theory and literature, and guidance from agency staff and stakeholders to best design context-specific stakeholder engagement processes. The results suggest the highest quality engagement processes incorporated the following factors (starting with the most important): uses scientific information, has genuine influence, treats all citizens equally, promotes communication, is time-effective, is cost-effective, and weighs input. The authors caution that the relative importance of the factors is dependent on the method of engagement process (i.e. no input, unsolicited comments, closed meetings, open meetings, surveys, and task forces). Specifically, for closed meetings, factors ranking most important were: uses scientific information, promotes communication, and weighs input. Citizens reportedly felt that if they had more at stake or the degree of importance was higher, their input should have more weight. For example, if a group is more directly effected by the decision-making process, their input would have more weight than someone who is not

directly impacted. The "most preferred" (p. 637) public engagement methods were in order of most preferred to least preferred: citizen task forces, open meetings, surveys, closed meetings, unsolicited comments, and no input. In conclusion, stakeholders were more concerned with the overall quality of the process and that citizens were treated equally.

Stakeholder engagement that is transparent and fair has proven to increase stakeholder satisfaction and trust in management (Decker, Forstchen, Pomeranz, Smith, Jacobson, Organ, & Batcheller, 2015). Engaging stakeholders in wildlife management is a difficult task and continues to challenge government agencies and management because of the complexity of various interest groups and the changes in demographics with higher levels of urban residents than in recent decades (Decker et al., 2015). Stakeholders are defined as any person who will be either directly or indirectly affected by wildlife management or wildlife itself (Decker, Krueger, Bear, Knuth, & Richmond, 1996) and, can be independent or in any combination including recreational, cultural, social, political, economic or involve health and safety interests (Riley et al., 2002). Identifying stakeholders in a federal public agency, such as the PCA, is difficult due to varying interests, and the benefits and costs of decision-making for each of the stakeholder groups.

Managers practiced good governance by incorporating stakeholders into decision-making processes, but this process poses real problems of operating under efficient manners and causes "an apparent conundrum" for government wildlife agencies (Decker et al., 2015). Decker et al. (2015) suggest that well-designed stakeholder engagement processes may be able to help managers identify, prioritize, and help weigh impacts on different management scenarios. This process also provides complete, current, and balanced information about the public's interest and expectations of management outcomes with regard to wildlife management (Decker et al., 2015). Overall, well-designed stakeholder engagement processes avoid conflict between stakeholders

and management by providing inclusiveness, transparency, and fairness, with an emphasis to engage stakeholders well before and throughout decision-making (Decker et al., 2015; Shindler & Cheek, 1999) and not because it is just *part of the process*.

One approach to public engagement is the creation of task forces. This approach was used in Pennsylvania for white-tailed deer, by inviting traditional stakeholders such as "hunters and other groups with emerging concerns such as biodiversity, public safety, and animal welfare to negotiate decisions about changes to deer populations" (Decker et al., 2015, p. 177). This kind of approach fosters stakeholder satisfaction and trust in management from engaged stakeholders (Lauber & Knuth, 1998).

Stringer et al. (2006) examined stakeholder engagement in three international cases studies in Austria, Botswana, and Bangkok. They specifically examined the different types of roles that stakeholders can contribute to at different stages of adaptive management. Their analysis uncovered key factors to successful adaptive management. The first was flexible participation to facilitate feedback and social learning. Second was scale, whereby the smaller the scale, the more accessible it was to local stakeholders and the challenges associated with moving from local-scales to larger institutional changes on policy levels. Third, they found that multi-stakeholder participation is important; involving multiple groups of stakeholders enabled horizontal dialogue between stakeholder groups and vertical dialogue with higher institutional levels. Among the challenges they highlighted were that often stakeholder groups with a vested interest and who were already involved often drown out other stakeholders that are less vocal, and that management needs to identify and engage all stakeholders. Stringer at al. (2006) caution that not all stakeholders can be involved in every stage of the process, and that participation can take the forms of consultation, engagement, or devolution.

In conclusion, researchers demonstrate that there is a need for both scientific and public support, and a call for increased public education and communication efforts (Diefenbach, Palmer, & Shope, 1997).

Range of Public Acceptability in Wildlife Management

The level of support or the level of acceptability stakeholders give to a management decision varies with their knowledge, beliefs, attitudes, and economic, social and environmental conditions (Riley & Decker, 2000). Acceptability is defined as "a judgment or decision regarding the 'appropriateness' of a particular action or policy" (Bruskotter, Vaske, & Schmidt, 2009, p. 121). Research is aimed at understanding what informs public perceptions toward specific wildlife management actions and to guide management communication efforts to bolster acceptance (Campbell & Mackay, 2003). Gauging acceptability of the stakeholders and the public in the *human dimensions of wildlife* has been undertaken using a variety of methods.

Acceptability of wildlife management has been explored using specificity and the cognitive hierarchy (Whittaker, Vaske, & Manfredo 2006; Donnelly & Vaske, 1995), which is when there is specificity between variables, there is likely to be larger predicted correlations. For example, general wildlife value orientations are better at predicting general support for hunting, rather than specific situations that require human intervention for problem wildlife (Whittaker, Vaske, & Manfredo 2006). Acceptability has also been explored using normative beliefs (Zinn et al., 1998; Campbell & Mackay, 2003), which use social norms to evaluate acceptability, and wildlife value orientations (Fulton, Manfredo, & Lipscomb, 1996), which are basic belief patterns.

Koichi et al. (2013) investigated management of feral pigs in Australia's West Tropics World Heritage Area, an invasive species, and the acceptability of different methods of

population control: trapping, hunting, fencing, and poison baiting. They compared levels of support between stakeholder groups of locals and tourists; generally, local residents voiced more support for all methods than tourists and implies that local residents had more awareness of issues than tourists did. Overall, the most important factors were diverse for tourists and local residents; humaneness for tourists, and direct social and/or economic benefits and effectiveness for local residents. Koichi et al. (2013) conclude that different stakeholder groups determine the acceptability of differing methods of wildlife management independent of each other because of the difference in experience and awareness.

Acceptability of Lethal Methods, including Hunting

Wildlife management in Canada has been guided by the NAWMC which has two fundamental principles that wildlife is for the non-commercial use by citizens and should be managed for sustainable population levels indefinitely. This model suggests that hunting contributes meaningfully to population management and hunters are "the most effective logistical agents of actual population management" (Heffelfinger et al., 2013, p. 3).

In the case of the elk hunt in Grand Teton National Park, Wyoming, Vernon and Clark (2016) have identified the basic policy problem: "that the social and decision-making process for elk management in the park… has consistently failed to provide an ameliorative process for integrating and adjudicating diverse perspectives, leading to a persistent policy problem" (p. 847). Diverse stakeholder groups have indicated that the traditional management process favours consumptive wildlife users over non-consumptive and this may result in decisions that are more representative of the former, resulting in conflict. They offer recommendations to improve social and decision-making processes to enhance effective governance and management that are rooted in the NAMWC principle that wildlife resources are a public trust.

Koval and Mertig (2004) explored the attitudes of the public and wildlife agency staff toward lethal wildlife management. Results suggest that staff were more likely to be supportive, although overall support for lethal methods was high, and is likely due to the public being unfamiliar with the practices, resulting in less support. The highest support for lethal methods were for the purpose of controlling wildlife diseases, species survival, and public safety. Koval and Mertig (2004) emphasize that case-specific studies are better able to predict public reactions to lethal management practices.

Dubois and Harshaw (2013) explored the "humane" dimensions of lethal wildlife management, defined as "the ethic of animal welfare, which seeks to promote animal health, prevent suffering, and allow animals to live in ways that suit their natural adaptation" (Fraser, 2008, as cited by Dubois & Harshaw, p. 2). Results demonstrate a range of acceptability about killing wildlife for various reasons, or identifying trade-offs for preferences based on situational or context-specific rationales. Participants were asked about the degree of acceptability of population reduction techniques for wildlife management including trapping, sedating and relocating, drugging and sterilizing, and culling of bears. The most acceptable were trapping, sedating and relocating, while culling was the least acceptable, with a caveat that culling would be acceptable if it was carried out by professional biologists and not hunters. This demonstrates a lack of confidence from the public in hunters, especially to follow rules about demographics for hunting quotas from wildlife agencies. Dubois and Harshaw suggest public education could be used to explain the effects of relocation, as the public is often unaware of the ineffectiveness and inhumaneness associated with relocation. Although sterilization techniques are often supported in favour over culling, the authors suggest participants may also be unaware of the high cost and lack of effectiveness, and that it is highly invasive for animals.

Campbell and Mackay (2009) emphasize that discrepancies in public understanding the role of hunting in conservation is in part due to a lack of communication to people outside of the hunting community. Traditional communication has been exclusively targeted at hunting community, and anti-hunting audiences or animal rights groups. They suggest that the "uncommitted middle" (p. 32) of people in between has been ignored and this middle may not be aware of the responsibilities of wildlife agencies in relation to their role in the hunting community. The authors call for communications targeted at this middle to counter inaccurate perceptions of hunting and wildlife agencies that are responsible for the governance of hunting.

Theory - Cognitive Hierarchy Model

The cognitive hierarchy model (Homer & Kahle, 1988) provides a framework that has been widely tested and used in the *human dimensions of wildlife* to guide understanding of public attitudes concerning fish and wildlife (Adams, 1988, as cited by Bath, 1998). Scholars in the field have applied the model (Figure 2), to varying contexts to test various elements: predicting *behaviour,* based on people's *values,* which is meditated by their *attitudes*. Values are fewer in number, slow to change, central to personal beliefs and can transcend situations (Vaske & Donnelly, 1999). Attitudes, unlike values, are less permanent and more subject to change. Behaviours are the most numerous, faster to change and most specific to situations. The model has expanded to include value orientations, "patterns of direction and intensity among basic beliefs" (Fulton, Manfredo, & Lipscomb, 1996, p. 27). Value orientations have been applied to protected area management by using two contrasting value orientations: *domination* and *mutualism* (Teel, Manfredo, Jensen, Buijs, Fischer, Riepe, Arlinghaus, & Jacobs, 2010). Teel et al. (2010) results suggest that modernization and urbanization have contributed to a shift from *domination*, which emphasizes human benefit of the environment, to *mutualism*, which

emphasizes a more biocentric philosophy that places value on healthy environments and wildlife (Manfredo, Teel, & Dietsch, 2016).

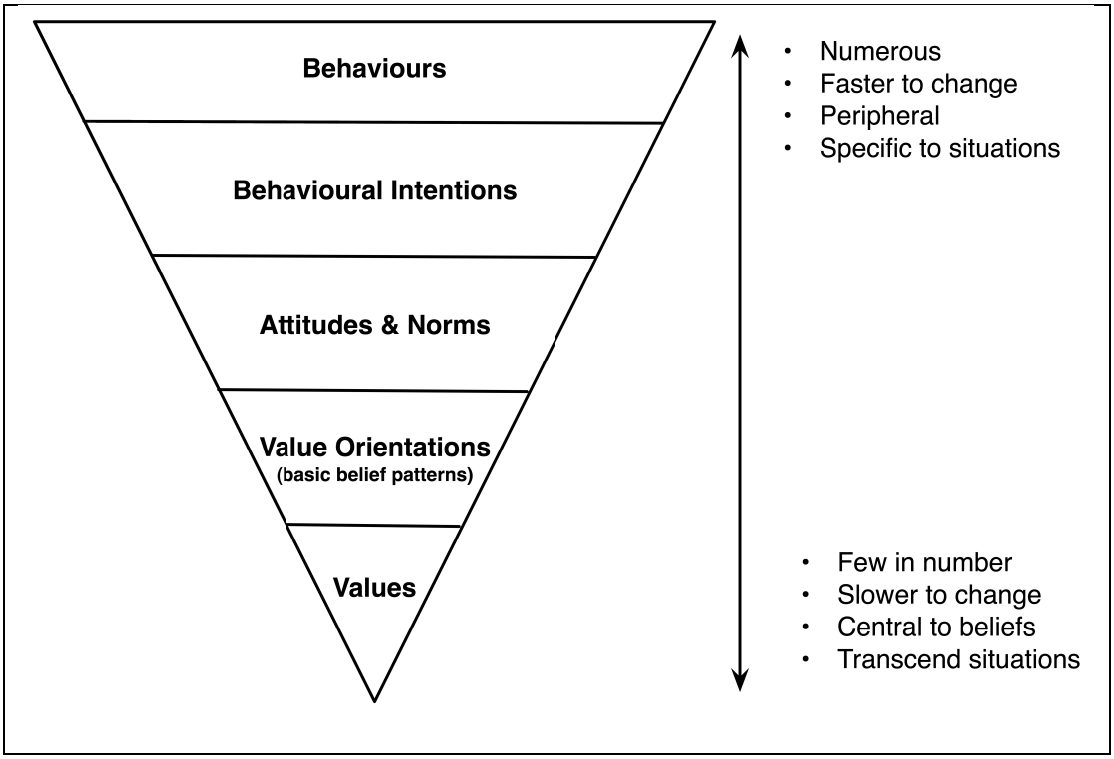


Figure 2. Cognitive hierarchy: Relationships between values, norms, attitudes/beliefs, and behaviour (Adapted from Fulton et al., 1996 as cited in Vaske & Donnelly, 1999).

Whittaker, Vaske and Manfredo (2006) explored the relationship of value orientations and "the general acceptability of hunting urban wildlife populations and specific wildlife management actions" (p. 515). In contrast with other studies, they examined the value orientations of *protection-use* and *wildlife appreciation*, and suggested that the *specificity principle* [a central concept in the cognitive hierarchy model, which they described as "when correspondence between variables are similar (in terms of target, action context, and time)] correlations between variables are predicted to be larger" (Fisbein & Ajzen, 1975; Manfredo et al., 1998, as cited in Whittaker, Vaske & Manfredo, 2006). For example, value orientations may predict the general acceptability of wildlife management population control methods with more accuracy than acceptability to specific situations (Whittaker, Vaske, & Manfredo, 2006). Results

demonstrate that different value orientations can predict acceptability of some wildlife management actions; and further, that this prediction is stronger for general value orientations and general management actions rather than specific value orientations and specific actions. Therefore, the study demonstrates that value orientations are an important component of exploring and evaluating components of the cognitive hierarchy model with regard to wildlife and wildlife management.

Whittaker, Vaske, and Manfredo (1998) explored the acceptability of wildlife population control techniques amongst urban residents. The results produced more support for lethal techniques as the human-wildlife conflict increased, but demonstrated a difference in acceptability amongst specific species. Overall, the study demonstrated that acceptability is situational and largely dependent on the context. As the study did not include any species of ungulates, it can be assumed that acceptability would vary or be different amongst ungulate populations in EINP as well.

Conclusion

The study of the *human dimensions of wildlife* is complex. The application of a 'one-size fits all' approach to studying and managing interactions between management and stakeholders is complicated and/or unlikely to work. Stakeholder values, attitudes and behaviours will be shaped by regional culture, specific experiences and many other factors that are outside of management's control and therefore, tailored inquiry to site-specific scenarios are warranted. Recommendations for engaging with stakeholders in ungulate management have been to take part in a new *arena*, such as a bottom-up approach in contrast to the tradition top-down agency controlled, strictly scientific management considerations (Vernon & Clark, 2016; Brunner, Steelman, Coe-Juell, Cromey, Edwards & Tucker, 2005). Bottom-up approaches such as

collaborative public workshops, or focus groups, offer a common ground to discuss management issues, understand diverse stakeholder perspectives, values and standpoints, clarify goals and offer opportunity to produce alternative policy that respects and reflects the diverse stakeholder interests (Vernon & Clark, 2016). Finally, without focused inquiries on perceptions or general involvement of stakeholders, Indigenous peoples and the public in Canadian specific parks and protected areas, inaccurate generalizations can be made between the United States and other areas, and cannot accurately reflect unique nuances specific to Canadians. This is due to specific Canadian legal, political, and cultural contexts that are explicit to parks, protected areas, conservation, and governance (e.g. Indian Act, Indigenous treaties, Canadian National Parks Act).

The current study was approached in a qualitative manner in order to better understand in-depth and nuanced perceptions of managing hyperabundant ungulates in EINP to contrast and compliment previous approaches to understanding perceptions of wildlife management in quantitative approached. The study asks:

1. What is the range of acceptability for stakeholders and Indigenous peoples of various methods for managing hyperabundant ungulates in EINP?
2. What are the perceptions of using lethal methods such as harvesting and/or hunting to control hyperabundant ungulate populations?

By asking about perceptions, participants were able to demonstrate their attitudes and preferences through words that are meaningful to them. By using focus group and group interview situations, probing and clarifying questions were used to tease out nuanced meanings individually and as a group. These nuanced meanings have provided an understanding of a previously unknown phenomenon to management and scholarship about context-specific

perceptions, attitudes, and preferences towards a unique Canadian wildlife management issue at EINP and an iconic species of bison.

Chapter Three: Methods

Methodology

A qualitative methodological approach was being used to improve understanding of a phenomenon specific to groups of people (i.e., stakeholders and Indigenous peoples), and place (e.g. EINP). Qualitative research acknowledges that the researcher is subjective in their interpretation of meanings they seek within their data (Denizen & Lincoln, 2005). The specific purpose for this study is to "map" (Markula & Silk, 2011, p. 8) the phenomenon of perceptions of Indigenous peoples and stakeholders in a Canadian context, because there is little known about the topic. This "mapping" allows relationships to be drawn by highlighting the differences and impacts, and from there, can demonstrate "a need for change" (Markula & Silk, 2011, p. 9). Variation identified in perceptions and preferences of individuals from stakeholder groups and Indigenous peoples allows nuances to emerge and be presented in a narrative approach.

A paradigm is "an overarching set of beliefs that provides the parameters… of a given research project" (Markula & Silk, 2011, p. 25). This study is guided by the interpretive paradigm. It acknowledges that people and the social world are complex, and the objective is to understand people's "behaviours, meanings and experiences within a particular social setting" (Markula & Silk, 2011, p. 31). Most importantly, researchers in this paradigm co-construct the reality of the research with the participants and accepts that the process is interactive between the researcher and the participants. The most effective way to produce co-constructed realities and knowledge for this research purpose is through focus groups and group interviews.

In addition, I acknowledge my position, background, and motives for conducting this research as a consideration for how the research was designed, conducted, and presented. I worked as a seasonal staff at EINP for four consecutive summers from 2013-2016, first as an

Interpreter for one summer, working with school programs and the general public, and then as a Resource Conservation Officer for three summers working on ecological monitoring programs, visitor safety, and wildfire management. This work experience and familiarization with the Park enabled me to have a high level of working knowledge and understanding of the challenges that the Park faces. My motive for conducting the research was to investigate a topic that was a relevant challenge for EINP, because I desired for the research to have direct management implications.

Focus Group Approach

This study's primarily qualitative data collection employed focus groups (Morgan, 2004), and using some quantitative tools for ranking acceptability. Focus groups were used to elicit discussion amongst groups and to share and tease out social norms and attitudes toward specific topics (Stewart & Shamdasani, 2015). Additionally, workshop-like approaches can hold the most promise for public involvement in natural resource-related decisions (Heberlein, 1985). Stewart and Shamdasani (2015) recommend that each focus group consist of 8-12 participants – eight to have enough people to provoke significant discussion and no more than 12 to keep the group small enough for meaningful contributions from each participant. The format of the focus groups and sequence of questions were standardized for each group to ensure consistency across participant inquiry and to draw accurate themes across the data collected. Focus groups were audio recorded. Audio recordings enabled transcription and thematic analysis post-focus group. In addition to audio recordings, a volunteer assistant was present for two focus groups to record observations of body language, group dynamics, and important points made by participants noted for further analysis.

The number of focus groups was determined based on the number of identified stakeholder groups. While the ideal number of participants as identified by Stewart and Shamdasani (2015) is 8-12, the focus groups contained 3-10 participants each and the group interview contained two, with a total of 28 participants.

Participant Sampling

Qualitative inquiry suggests purposeful sampling methods to select participants for data collection (Markula & Silk, 2011). Three methods of sampling were used: maximum variation sampling, criterion sampling, and snowball sampling (Patton, 2002). Maximum variation sampling was used to identify stakeholder groups for the study, by finding cases that "document uniqueness… and important shared patterns that cut across cases and derive their significance from having emerged from heterogeneity" (Patton, 2002, p. 235). Criterion sampling was used for the identification of the focus groups, to capture central themes across a high level of variation (Patton, 2003). Criterion sampling was used to identify up to 12 participants of each group that met the requirements of:

- having a high level of direct or indirect contact, communication and connection to EINP;
- have an association with one of the identified key stakeholder groups; and
- be 18 years of age or older.

Finally, snowball sampling was used in conjunction with maximum variation and criterion sampling, as identified leaders within the groups were contacted to solicit interest for their members to participate in the focus groups. Snowball sampling involves "starting with one person well-situated to be interviewed about a special topic and then asking this person for more participants" (Patton, 2002, as cited by Markula & Silk, 2011, p. 94).

Indigenous and Stakeholder Group Descriptions

Data was collected from five groups of people. The first, was a group interview with the Enoch Cree Nation. The Enoch Cree Nation was engaged using a group interview because of the size of the group – two individuals. Enoch Cree Nation has not been referred to as, and is not, a stakeholder (Joseph, 2012). Indigenous peoples "have the ability to launch legal action to protect their constitutionally protected rights" (Joseph, 2012, para. 5), which is an important distinction between Indigenous peoples and non-Indigenous stakeholder groups during engagement practices. Further, on May 10, 2016, Canada embraced and declared that it is "a full supporter of the Declaration" (Bennett, 2016). The United Nations Declaration on the Rights of Indigenous Peoples (UN General Assembly, 2007) demonstrates international efforts and policy that supports Indigenous peoples. Within Canada, Indigenous peoples are not regarded as just stakeholders, but require to be "treated as a third party level of government, in addition to federal and provincial governments" (National Aboriginal Forestry Association, 2000, p. 2).

The remaining four focus groups were held with representatives of the following identified stakeholder groups: (1) Friends of Elk Island Society (Friends), (2) Wildlife and Park Management Professionals, (3) Adjacent Land Owners, and (4) Beaver Hills Initiative. The following are descriptions of the Indigenous Nation and stakeholder groups that were engaged in the research.

Enoch Cree Nation

Enoch Cree Nation is a "progressive and proud First Nation" west of Edmonton, Alberta and is located within Treaty No. 6 Territory (Enoch Cree Nation, 2016a). Original peoples of the Enoch Cree Nation are presumed to be the Strongwood Cree, who were in the Beaver Hills area since 1670. Today, the Enoch Cree Nation is made up of almost 2100 members. The Nation has

a vision to be a "self-sufficient, unified, and prosperous Nation" and states that its focus to "actively seek to preserve and promote our culture, language, history, and spirituality while advancing our economic, education, health, and social well-being of people" (Enoch Cree Nation, 2016b, para. 3). Enoch Cree Nation was chosen to participate because of their previous relationship with EINP, as demonstrated through participating in EINP's event day celebrations.

Adjacent Land Owners

Adjacent Land Owners were chosen as a stakeholder group to engage with based on geographic vicinity to the park – land owners whose land is touching the boundary of the park or a road that is touching the boundary of the park. Adjacent Land Owners were determined to be important stakeholders because there could be implications for methods that created impacts either directly or indirectly on their lands.

Wildlife and Park Management Professionals

Wildlife and Park Management Professionals working in biology and land use-planning were sought out to understand varying perceptions of wildlife management methods, given their experience in parks and protected areas outside of a national park setting. They were chosen as a stakeholder group to provide a professional opinion outside of Park staff members. Their perspective was important to gain an understanding of implications for each method that was used outside of EINP. Additionally, this stakeholder group could potentially be consulted by EINP in the event that another organization or level of government were to logistically run a method such as hunting, similar to Gros Morne National Park where the provincial government of Newfoundland and Labrador assisted the Park in implementing their hyperabundant moose hunt.

Beaver Hills Initiative

The Beaver Hills Initiative is an internationally recognized United Nations Educational, Scientific, and Cultural Organization (UNESCO) biosphere reserve as of 2016 (Beaver Hills Initiative, 2017). It is located in the Beaver Hills moraine, 20 minutes east of Edmonton that is encompasses EINP, Miquelon Lake Provincial Park, the Cooking Lake Blackfoot Provincial Recreation Area, the Ukrainian Village and the Strathcona Wilderness Centre (Beaver Hills Initiative, 2017). The Beaver Hills Initiative consists of more than 20 organizations, including governments on the local, provincial and federal levels and local residents, Indigenous organizations, NGOs, and academic institutions. Together with EINP, the Beaver Hills Initiative aims to address issues from rapid economic development by sharing and developing tools and knowledge to create a living and working landscape that is in line with environmental conservation (Beaver Hills Initiative, 2017). The Beaver Hills Initiative were chosen as a stakeholder group because EINP is a core-protected area within the biosphere reserve.

Friends of Elk Island Society

The Friends of Elk Island Society is a non-profit association that has been incorporated since 1984, that "cooperates with Parks Canada to promote understanding, appreciation, and respect for Elk Island National Park" (Friends of Elk Island Society, n.d.). The Friends of Elk Island Society are involved in a number of research activities that are in conjunction with various universities, organize trail clean-ups, organize hiking and snowshoeing activities, as well as have a presence in the park on event days that promote their commitment to promote understanding, appreciation, and respect (Eaton, 2016). This non-profit organization was identified as an important stakeholder to engage because of their advocacy work for the Park.

Focus Group/Group Interview Recruitment

The participants of the four focus groups and one group interview held affiliations with each of the identified stakeholder groups. Initial contact was made with the groups via an identified leader or general contact through an Internet search and snowball sampling after that. Once contact was made, they were informed of the purpose of the research and asked to recommend members of their organization to participate. Recommended individuals were asked to contact the primary investigator directly to secure a spot in the focus group.

Adjacent Land Owners were invited through a mail out invite that was placed in their mailbox. This group was difficult to reach with a mail-out initiation to physical mailboxes. Unfortunately, mailboxes around most of the Park were removed and replaced with community mailboxes. I was not able to access these community mailboxes or able to identify which mailbox corresponded with the properties around the Park. Therefore, I was only able to administer 25 mail out initiations to approximately 25% of the Adjacent Land Owners, which yielded a response from five people; two could not make it the night of the focus group.

Focus Group/Group Interview Situation

The location for the focus groups were determined based on the identified needs of the participants. Stewart and Shamdasani (2015) suggest that participants are more likely and willing to show up for focus groups if the location is accessible and convenient for them. Two focus groups were held at a community hall in Fort Saskatchewan; one at a meeting room in the Strathcona Community Centre and one in downtown Edmonton. Two focus groups were held in the evening at the community hall in Fort Saskatchewan. The third focus group was held from in the afternoon at the Strathcona Community Centre; it was cancelled and rescheduled due to only

one participant showing. The last focus group was held from in the afternoon at a downtown building in Edmonton. The group interview was held at the University of Alberta in the morning.

Pilot Focus Group

One pilot focus group was conducted to test the dynamics and flow for the focus group method. The pilot focus group was held at the University of Alberta with four volunteers two months prior to the first focus group with research participants. The pilot focus group helped test and shape the flow of the activities and subsequently the official four focus groups. For example, after the pilot focus group the structure of questions were changed from formally structured to semi-structured and a more conversational approach to the list of questions.

Focus Group Protocol

The focus group protocol consisted of semi-structured open-ended questions to facilitate meaningful conversations about the topic (Markula & Silk, 2011). The nature of the focus group started by providing participants with base-line information about the context of hyperabundant ungulates in EINP, followed by brief descriptions of the seven hypothetical management methods (i.e., capture and relocate, birth control, predator reintroduction, do nothing, harvesting by park staff, hunting by Indigenous peoples, and hunting by experienced big game hunters). These methods were chosen because they represented a sample of the potential methods that are used in North America to control ungulate populations.

Next, participants were asked to rank the acceptability for each method described (e.g. very acceptable, somewhat acceptable, somewhat not acceptable, not acceptable, not sure) on a worksheet. The discussion was organized by going through each method to elicit perspectives about the level of acceptability of the methods. These flowed into more in-depth questions that move beyond their experience, to open-ended questions about their opinions/values, feelings, and

knowledge (Patton, 2002). The focus groups concluded with a ranking activity where every participant was given seven dot stickers; and each management method was posted on the wall on an individual sheet of paper. Participants were asked to distribute the seven dots according to the method(s) they thought were most acceptable. For example, one participant could place three dots on "capture and relocate", two dots on "hunting by Indigenous Peoples", and two dots on "birth control", to represent "capture and relocate" as the most acceptable, followed by equal acceptability between "hunting by Indigenous peoples" and "birth control".

Group Interview Approach

A group interview approach was used for participants from the Enoch Cree Nation. There were two participants and this approach fostered a more personal, safe space to speak to a sensitive subject for the participants. This interview is classified as an semi-structured, formal interview, where the role of the interviewer was a subjective participant in order to remain as open and adaptable as possible and probe to discuss issues that arose in the conversation (Silk & Markula, 2011). Participants in this interview did not complete worksheets or the ranking activity.

Group Interview Protocol

The group interview consisted of a semi-structured interview where there were a set of questions regarding the acceptability of each method, but largely took on a conversational tone that touched upon all methods. This approach facilitated an open discussion to allow for points of interest to emerge from the interviewee, while being guided by the interviewer.

Data Management

After each focus group, audio files were backed up on a USB. Data from worksheets were entered into a password protected excel database and stored securely in a locked cabinet in

my home office. Audio recordings were transcribed by the Primary Investigator and all other observations compiled into one raw transcript file for each focus group and group interview. All electronic data was password protected and physical documents (i.e., worksheets, ranking pages, and informed consent) kept in a locked filling cabinet in my home office.

Data Analysis

Data analysis was conducted based on the six stages of recommended by Marshall and Rossman (1999): organize the data, generate categories or themes, code the data, test emergent understandings of the data, search for alternative explanations of the data, and write-up the data analysis. Organizing the data started with transcribing the focus groups and interviews and importing the text files into Nvivo software. Each transcript was imported into Nvivo and sorted based on group and management method (e.g. birth control, predator reintroduction, etc.). Thematic analysis was used to generate categories from the data using an emergent strategy. Next, the transcripts were coded by applying the identified categories. From there, testing the emergent understandings of the data and searching for alternative explanations was done through challenging the nuances of meaning against other understandings of perception in the *human dimensions of wildlife* management literature and discussions with Dr. Harshaw. Data analysis is presenting in Chapters Four and Five through the Results and Discussion sections.

Ethics

An ethical application was submitted and approved by the University of Alberta Ethics Board. Participants in the focus groups and group interview were provided an information sheet that outlined their rights as research participants including anonymity and confidentiality, that their participation was completely voluntary, and they had a right to withdraw from the study without consequence. All participants were required to provide signed consent prior to

participating in the study. Project approval was obtained before the research was conducted through the Human Ethics Review Process provided by the University of Alberta, and is provided in Appendix A.

All focus groups and group interview were audio recorded. The recordings were used to capture discussions, and then were transcribed. The transcriptions were used for analysis, that is summarized in Chapters Four and Five. Participants were notified that the focus groups were audio recorded in the signed consent letter and had the opportunity to express if they did not want to be recorded, which no participant exercised. Information and consent letters are provided in Appendix B. The audio recordings are kept on a USB stick in a locked cabinet in my home. Participants were asked to use their first name or nickname during the duration of the focus groups and group interview, but were not used to link people to transcribed data. Only the name of the group they identify with (e.g. Friends of Elk Island Society, Adjacent Land Owners, etc.) and a given participant number were used to identify participants. Contact information of the participants were kept in a separate password protected excel document from the analysis and will be deleted after follow-up contact is made with participants with results from the study.

Research Limitations and Considerations

There were groups of people who were not chosen to participate in the study. The general public were not included for two reasons. First, the study was not looking for a representative sample of the public – because I was only interested to engage with stakeholders and Indigenous people for the purpose of this study. Second, the study is using qualitative purposeful sampling methods, which means that the groups were chosen due to their unique interest and relationship to EINP. Similarly, with visitors to EINP, it was determined there was no feasible approach to target a representative sample of visitors to the Park in a focus group setting because of the large

visitor base and the restrictive timelines for the study. Lastly, EINP staff were not chosen to participate because of the sensitivity of the topic and potential controversy surrounding hunting in a national park, thus potential risk for staff to share their perspectives.

At the time of data collection, I was a new board member for the Friends of Elk Island Society. This affliction was communicated to the Ethics Research Board at the University of Alberta. Additionally, I had worked at Elk Island National Park for four consecutive summers as a seasonal staff member from 2013-2016.

The current study uses wildlife value orientations as a guiding framework to make sense of attitudes that emerged from the focus groups. While they have been useful to gain a better understanding of participants' views on methods to manage hyperabundant ungulates, they are not empirically reliable because of the differences in study design, methodology, and interpretation. The study did not follow any prescribed set of steps directly from one source, but drew on a number of sources to fit the research question.

The principle of specificity, or attitudes being associated with specific animal species (Fishbein & Ajzen, 1975; Fishbein & Manfredo, 1992), proved to be an important factor in acceptance of management actions depending on specific circumstances (Manfredo et al., 1998), and was supported throughout the focus groups. As suggested by many participants across focus groups, the species of ungulate (e.g. bison, elk, moose) was an important determinate for the level of acceptability of a method. For example, capture and relocate was more acceptable for bison to be translocated than it was a moose because moose are not herd animals and would require more resources to do so. Using this principle could have enhanced applicability of elicited attitudes towards methods for specific ungulates.

Similarly, Kaltenborn, Bjerke, Nyahongo, & Williams (2006) argue that preferences for management actions also vary across species, and preferences are influenced when a species is considered a "flagship" species. Flagship species are singled out to provoke support for conservation efforts and has been effective in soliciting conservation awareness in organizations in developed countries. Therefore, it is important to note that in this study, we have grouped bison, elk, and moose into one category of ungulates – although bison have been used as a "flagship" species within EINP and other national parks and conservation efforts in North America.

Chapter Four: Results

The Results have been organized in two sections. The first section addresses findings from the focus groups and group interview. The second section addresses each population method and presents the key themes, concerns, and preferences of each focus group. I describe the participants' characteristics and highlight the most predominate discussion components across the focus groups and group interview, which serve as a basis for drawing themes from the data. Themes are presented in Chapter Five.

In the focus groups, participants completed two exercises that evaluated the range of acceptability for the seven management methods. The first was the "individual ranking" exercise, and the second was a "group ranking" exercise. In the individual ranking exercise, participants were asked to rank each method as either acceptable, somewhat acceptable, somewhat not acceptable, not acceptable, or not sure. This individual ranking of the methods was limited to the method under consideration, independent from other methods, and were completed privately on a worksheet. In contrast, in the group ranking exercise, participants were limited in the units (e.g. dots) they could allocate to all of the methods. In the group ranking exercise, participants were each given seven dots to place among the methods and asked to allocate those dots based on their acceptability, and were completed in front of the whole group.

There were three differences of the two exercises. First, individual rankings were completed on a private worksheet, where the group ranking exercise was done as a group, suggesting there could have been peer pressure from other group members to conform. Second, the individual ranking exercise was completed before the group discussion, and the group ranking exercise was completed after the discussion, suggesting learning could have occurred through discussions; this may have changed participants' preferences on acceptability. The tables

in the next section refer to individual ranking and group ranking to demonstrate the differences in individual acceptability and relative acceptability of the focus groups. All socio-demographic information presented below was explicitly asked in a demographic worksheet included in Appendix C.

Adjacent Land Owners

There were three participants in the Adjacent Land Owners focus group. All participants were over the age of 65 and lived in rural areas. All participants had been visiting the park for over 20 years; two of the participants has visited EINP for 50 years. Two participants identified as male and one identified as female. One participant identified as a hunter. All participants described their connection to the park as living adjacent to it.

As illustrated in Table 2, Adjacent Land Owners only rated capture and relocate (57%) and harvest by Park staff (43%) as acceptable during the group ranking exercise. These preferences were supported by their discussion that emphasized the importance of relocating animals from EINP for conservation purposes. These participants reported that birth control would negatively influence the natural selection of the ungulate herds and affect the genetics of these particular populations.

Table 2. Acceptability of wildlife management methods for Adjacent Land Owners.

Adjacent Land Owners (n=3)		
Wildlife Management Method	Acceptability – Individual Ranking	Acceptability – Group Ranking
Capture and Relocate	100%	57%
Birth Control	66.6%	0%
Predator Reintroduction	33.3%	0%
Do Nothing	0%	0%
Harvest by Park Staff	100%	43%
Hunting by Indigenous Peoples	0%	0%
Hunting by Experienced Big Game Hunters	0%	0%

Note. Individual acceptability was measured using individual, private worksheets. The group ranking exercise illustrates the preferences of the group as a whole (i.e. /100%).

After the discussion, participants indicated that predator reintroduction would not be safe or sustainable for surrounding communities in the group ranking because of the risk to small children, and a large number of properties with farm animals that could be taken by predators. In the group ranking and discussion, all participants were firmly opposed to hunting by both experienced big game hunters and Indigenous peoples in EINP for two reasons. Firstly, they said that the Park ungulates are comparable to domestic animals because of the Park fence and lack of natural predators, and therefore they perceived it as inhumane. Secondly, a concern of safety for visitors and surrounding land owners. Adjacent Land Owners believed that the Park should communicate with Adjacent Land Owners on a regular basis about management strategies and activities – something they said the Park used to do, but have not for the past two decades.

Friends of Elk Island Society

Eight people from the Friends of Elk Island Society attended this focus group. One participant was aged 25-34, one was aged 45-54, three were aged 55-64, and three were older than 65. Only one of the eight participants identified as female, while the other seven identified as male. Five of the eight participants lived in rural areas and three lived in urban areas. Participants had been visiting the Park for an average of 22 years, with their primary connections being part of the Friends of Elk Island Society group, for recreation, and research. One participant identified as a hunter.

As illustrated in Table 3, the Friends of Elk Island Society rated capture and relocate (34%) and predator reintroduction (34%) equally as most acceptable during the ranking exercise. Harvest by Park staff (16%) and hunting by Indigenous peoples (13%) were the next two popular approaches. Most participants agreed that that capture and relocate was “important to do” and a good contribution to conservation by “re-wilding” areas. Agreement was observed when one participant said: “It is good ecologically to reintroduce them to areas and to re-wild those areas. I think it is an important thing. It is a limited number of animals, [and] obviously it doesn't work for all species but as part of a mixed strategy, I think it is good” (Tim, the Friends of Elk Island Society).

Table 3. Acceptability of wildlife management methods for the Friends of Elk Island Society.

Friends of Elk Island Society (n=8)		
Wildlife Management Method	Acceptability – Individual Ranking	Acceptability – Group Ranking
Capture and Relocate	100%	34%
Birth Control	62.5%	2%
Predator Reintroduction	75%	34%
Do Nothing	37.5%	2%
Harvest by Park Staff	75%	16%
Hunting by Indigenous Peoples	62.5%	13%
Hunting by Experienced Big Game Hunters	37.5%	0%

Note. Individual acceptability was measured using individual, private worksheets. The group ranking exercise illustrates the preferences of the group as a whole (i.e. /100%).

As demonstrated by the individual ranking and the group ranking, all participants believed that capture and relocate was the best of the methods to provide opportunities for the public to participate in management activities, such as learning about the capture and relocate process through interpretation or volunteering. At present, the public is not invited to volunteer with capture and relocating efforts, but members of the Friends of Elk Island Society have been invited in the past, which may be where this participant's perspective is rooted. The Park does have interpretive programming that invites the public into the facilities, but not while bison are present. Thus, the opportunities to involve and engage with the public in this option may not be as prolific as is demonstrated by this perspective.

Friends participants were accepting of allowing predators back on the landscape due to the belief that National Parks are landscapes that should be as natural as possible. Participants viewed predators as a natural part of the EINP landscape because they were coming in on their own. Abe said, "To me predator reintroduction is very sound ecologically and I think it is just by

far the best way in. The whole idea of parks is supposed to be as natural as possible". Carl continued with:

> I think there is a public perception of some people who I have talked to are in agreement with [predator reintroduction] because they see that as, again, that natural sort of thing happening, and again that is a very broad term.

Hunting by either Indigenous peoples or the public (0%) was believed to be problematic by participants in the group ranking, when compared to other options because of the potential safety issues. However, most participants emphasized that hunting by Indigenous peoples is important to their culture; "…for them to sustain the culture that… is dying… a culture of… living off the land" (Hugh). For hunting by experienced big game hunters, most Friends participants believed there would be a negative perception from the public: "… if we open it up to professional hunters, I think that starts to look very corporate and I think that could be damaging, actually, to the image [of EINP]" (Carl). This suggests that participants believe the public would perceive a hunt in the Park as a funding generator, instead of a management purpose for ecological integrity. Although participants perceived the public perception around hunting as negative, they agreed these perceptions could be managed by education and proactive public communication and engagement that explained why hunting would need to be used as a management tool.

Wildlife and Park Management Professionals

There were five participants in the Wildlife and Park Management Professionals focus group. Participants were biologists, ecologists, and park planners. Three participants were aged 35-44, one was aged 45-55, and one was aged 55-54. Two identified as female and three

identified as male. Four participants lived in urban areas and one lived in a rural area. Participants had been visiting the Park for an average of 21 years, described their connection to EINP as for work, recreation and research; and two participants identified as hunters.

Wildlife and Park Management Professional focus group participants consisted of people with significant education and experience in wildlife management in Alberta. Potentially because of this education and experience, their perceptions on acceptability were considerably different than other focus groups. As illustrated in Table 4, hunting by experienced big game hunters (34%) and by Indigenous peoples (31%) were rated the most highly ranked approaches in the ranking exercise, which no other focus group rated as highly.

Table 4. Acceptability of wildlife management methods for Wildlife and Park Management Professionals.

Wildlife and Park Management Professionals (n=5)		
Wildlife Management Method	Acceptability – Individual Ranking	Acceptability – Group Ranking
Capture and Relocate	100%	11%
Birth Control	60%	0%
Predator Reintroduction	80%	9%
Do Nothing	20%	0%
Harvest by Park Staff	100%	14%
Hunting by Indigenous Peoples	100%	31%
Hunting by Experienced Big Game Hunters	80%	34%

Note. Individual acceptability was measured using individual, private worksheets. The group ranking exercise illustrates the preferences of the group as a whole (i.e. /100%).

Participants discussed the Elk Herd Reduction Program at the Canadian Forces Base Suffield (Government of Alberta, 2015) and the deer, elk, and moose hunting programs in CFB Camp Wainwright at length as two case studies for how hunting has worked on federal lands.

The Suffield hunt is hyperabundant elk management hunt for both Indigenous hunters and non-Indigenous hunters on the Canadian Forces Base. The hunt is open to Indigenous and non-Indigenous for moose, elk, and deer. Camp Wainwright used to be a National Park for bison, Buffalo Park from 1908 to 1940, closed due to numerous managerial problems and bureaucratic incompetence (Brower, 2004).

Participants used these examples to compare and contrast one successful (Wainwright) and one not so successful (Suffield) approach to manage hyperabundant ungulates, and used these examples to discuss potential programs at EINP. As at Suffield, participants believed that Indigenous peoples should have the first right to hunt from a "fairness" point of view, and to honour Treaty 6 Territory, but that non-Indigenous hunters could be involved as well. One participant used an example from bison management in Hay-Zama, Alberta, where the unique hunt is used to manage the bison population between 400-600 individuals to control the herd expansion geographically, and attempt to control disease issues (Alberta Environment and Parks, n.d.). In the 2016/2017 hunting season, two-thirds (250) of the 375 tags were available to Indigenous peoples and one-third (125) tags were available to non-Indigenous (Alberta Environment and Parks, n.d.).

Participants suggested that hunting in EINP could be used as an innovative funding system to support the Park; one participant thought the Park was "starving" for funds to conduct regular operational activities such as paving roads. Despite the benefits associated with hunting, participants also raised significant concern about negative perceptions from the public in a large city such as Edmonton. One participant was concerned that the general public do not see hunting and conservation as compatible, and that a hunting program at EINP would have to be intensively managed with public communication, messaging, and engagement to demonstrate

need and rationale for the program. Most participants in this focus group believed that hunting would be acceptable if it was communicated clearly that the hunt was for management and conservation purposes, with benefits of sustenance.

Beaver Hills Initiative

There were ten participants at the Beaver Hills Initiative focus group. Two participants were aged 18-24, two were aged 25-34, two were aged 35-44, one was aged 45-54, and three were aged 55-64. Only one of the ten participants identified as male; the other nine identified as female. Two of the ten lived in rural areas and eight lived in urban areas. Participants had been visiting the Park for an average of 27 years; their primary connections to EINP included being part of the Beaver Hills Initiative, for recreation and work. One participant identified as a hunter.

As illustrated in Table 5, Beaver Hills Initiative participants had the most evenly distributed group rankings of the different approaches for addressing hyperabundant ungulate populations. They rated capture and relocate (24%) and predator reintroduction (23%) as the most acceptable, followed by birth control (17%) and harvest by Park staff (14%). Participants indicated that capture and relocate was acceptable because it provided the best opportunity to educate and engage the public, and they believed wildlife in EINP were an important genetic resource for repopulating bison[1] and elk herds in Canada and abroad. At present, the Park engages the public using tours of one of their bison handling facilities to demonstrate how capturing and relocating happens and to engage the public on the importance of the management herd (Parks Canada Agency, 2017d).

[1] Bison as a genetic resource is addressed in Chapter Five.

Table 5. Acceptability of wildlife management methods for the Beaver Hills Initiative.

	Beaver Hills Initiative (n=10)	
Wildlife Management Method	Acceptability – Individual Ranking	Acceptability – Group Ranking
Capture and Relocate	100%	24%
Birth Control	90%	17%
Predator Reintroduction	90%	23%
Do Nothing	10%	0%
Harvest by Park Staff	88.8%	17%
Hunting by Indigenous Peoples	77.7%	14%
Hunting by Experienced Big Game Hunters	44.4%	4%

Note. Individual acceptability was measured using individual, private worksheets. The group ranking exercise illustrates the preferences of the group as a whole (i.e. /100%).

Participants were concerned about how methods such as birth control and various forms of hunting and harvesting impacted the genetics of the herd because they believed these approaches would influence the process of natural selection. Overall, participants believed that the EINP Management should facilitate natural processes (e.g. ecological integrity), and believed predator reintroduction was a key component of that. Throughout the discussion, participants expressed that informing and engaging with the public was one of the most important aspects of any method for controlling hyperabundant wildlife, and essential to demonstrate the "big picture" of how EINP, wildlife, and predators fit within the Beaver Hills Biosphere Reserve. Participants reflected the mission of the Beaver Hills Initiative to have a living, working and playing landscape; one participant believed that hunting (in any capacity) could be part of the "playing" aspect, under conditions that reflected safe and local sustenance hunting.

Enoch Cree Nation

Two individuals from the Enoch Cree Nation participated in a group interview. No demographic information was gathered from them, but they were males. One of the participants identified as a hunter.

During the group interview, the two participants shared many stories from their own history and relationship with the land. These individuals emphasized the importance of working together with other First Nations, transparency and inclusivity from Federal Government, and the importance of using meat from animals to feed Indigenous and non-Indigenous people. Of the seven population management methods that were discussed, participants were in favour of hunting by Indigenous peoples, but emphasized that it should include all Nations in Treaty 6, and not only the Enoch Cree Nation. Hunting by Indigenous peoples was the primary focus of the conversation, but the two individuals had nuanced perspectives about the other methods. Capturing and relocating was viewed as negative and expensive because the Park is "moving animals against their will." Nico elaborated:

> When [bison] have adapted to their surrounding, their environment, and sending them to a total different country or different territory where they haven't taken the time to adapt. Which, as a species, any human being or animal or wildlife need time to adapt to their surrounding and sometimes you are giving them a culture shock at the same time an environmental shock by bringing them from a prairie to the mountains. Maybe it would be a little bit difficult on that particular species to be prosperous in their own way. (Enoch Cree Nation)

Birth control was viewed as unnatural because of the high level of human-intervention:

> We do not have a right as a species of the land to dictate the future of animals lives by putting them on unnatural hormones or anything to change; their direction in life is to mate. That is the process of mother nature. (Ben, Enoch Cree Nation)

Predator reintroduction was viewed as unsustainable because of implications for predators outside of the Park boundaries, "introducing a higher wolf population is going to affect other zones of wildlife" (Nico, Enoch Cree Nation). Doing nothing was viewed as the most natural, but not practical because of the understanding that the herds needed to be managed. Ben elaborated with:

> We cannot let mother nature take its full course because we are affecting too much now that we have. Once we have stuck our finger in the keyhole, it is stuck. Now we have to have wildlife management. Before we were in there, life, it took care of itself. You know, [now] we have no choice to do this. We put too much of this and too little of that and this and that and really; we should have just left things alone. (Ben, Enoch Cree Nation)

Participants from the Enoch Cree Nation did not see a need for opening hunting up to the public if there were enough Indigenous peoples from Treaty 6 able to conduct the needs of the population management. They believed that because EINP is within Treaty 6, Indigenous peoples should have primary access to the management hunt because hunting is part of traditional land uses of Indigenous peoples in the area:

> …If we start off with hunting with just Indigenous People and we cannot keep up. If they do it properly, like they go and get tags and that is only the place you can take it, by all means it is not going to hurt our feelings. We want to help [wildlife population management] in the end as well. It is not just well, 'it is on my traditional land, it should

> just be me'. Well, we might not be able to keep up [with the population control demand]. (Ben, Enoch Cree Nation)

Lastly, the two Enoch Cree Nation individuals advocated that the meat from surplus animals at EINP be donated to food banks, "in the city for homeless, not only First Nations, but all Albertans in general who are having a hard time" (Nico, Enoch Cree Nation).

Wildlife Management Method Acceptability

For the purpose of the study, I was interested to find out about the relative acceptability of the different wildlife management methods. The relative acceptability of methods and the unique circumstances under which management methods were believed to be acceptable or not acceptable was investigated using the discussions and the group ranking exercise at the end of the focus groups. The ranking exercise illustrates the relative acceptability of each focus group, by demonstrating how participants distributed their seven dots amongst the methods, when asked to place them on which management method(s) they believed were most acceptable. The level of acceptability is demonstrated through their collective preferences in Table 6.

Table 6. Group ranking exercise results.

	Adjacent Land Owners (n=3)	Wildlife and Park Management Professionals (n=5)	Friends of Elk Island Society (n=8)	Beaver Hills Initiative (n=10)
Capture and Relocate	57%	11%	34%	24%
Birth Control	0%	0%	2%	17%
Predator Reintroduction	0%	9%	34%	23%
Do Nothing	0%	0%	2%	0%
Harvest by Park Staff	43%	14%	16%	17%
Hunting by Indigenous Peoples	0%	31%	13%	14%
Hunting by Experienced Big Game Hunters	0%	34%	0%	4%

Note. The group ranking exercise illustrates the preferences of the group as a whole (i.e. /100%).

Capture and Relocate

Capture and relocate acceptability preferences for individuals in the focus groups were all rated as either acceptable or somewhat acceptable. In contrast, when focus groups had to make trade-offs between population control methods, the relative acceptability of capture and relocate was diminished; it was rated highest by Adjacent Land Owners (57%), followed by the Friends of Elk Island Society (34%), the Beaver Hills Initiative (24%), and rated the lowest by Wildlife and Park Management Professionals (11%). These results suggest that although participants viewed capture and relocate as acceptable individually, group preferences differed when they had to decide which was the best and most acceptable method compared to all of the others.

Capture and relocate was perceived by most participants as acceptable as this method could support broader conservation efforts (e.g. bison repopulation in Banff National Park), and be incorporated into interpretative programming in the Park (e.g. bison backstage tours). Some participants viewed capture and relocate as a sustainable method to manage for wildlife; "…what

I put down is best available methodology. You know, it is expensive, yes; but the results are sustainable and it makes the most sense" (Hugh, the Friends of Elk Island Society). Participants had adopted the view that wildlife, specifically bison at EINP, are a genetic resource for repopulating areas in Canada and abroad. One participant from the Adjacent Land Owners group and one from the Friends of Elk Island Society group each suggested that bison could be reintroduced in different parts of Alberta, "Yeah, you could reintroduce the wood bison to different spots in the province because they might do better in different areas" (Abe, the Friends of Elk Island Society). In contrast, a participant from the Friends who used to work at EINP stated, "There are a lot of bison that end up in abattoirs because we have not found homes for them, and I am talking about even mature bulls and cows and stuff, you know? They are auctioned off because we cannot find homes for them." (Dave, the Friends of Elk Island Society). This suggests that participants have different ideas and/or knowledge of the availability of land and resources for bison habitat with regard to the ecological carrying capacity and the social carrying capacity.

Participants in the Friends and Beaver Hills Initiative discussed the potential to use the method for public education and engagement. A Friends of Elk Island Society participant suggested:

> I think that is another point with the capture and relocate stuff is the opportunity to involve the public in it [while going through the process] and so you can use as an educational tool… A chance to be that close to an animal, even if it is a calf, they are still pretty big and pretty impressive and the idea that you are doing this to contribute to another ecological system and bring it back to what would be a natural state is huge. I think that outreach stuff is really important too. (Tim, the Friends of Elk Island Society)

Tim views the capture and relocate process as an opportunity to involve the public by inviting them in to participate moving them through handling facilities at the Park, in which members of the Friends of Elk Island Society have participated in the past. Virginia from the Beaver Hills Initiative echoed the Friends of Elk Island Society's comment with more support for capture and relocate because of the potential to educate and engage the public:

> I think [capture and relocate] is a better tool if you are trying to teach or inform on conservation principles in general. When you are sharing within a network. I just think there are more opportunities for public education and involvement in this one.

The comments suggest that education and engagement are believed to be an important component to wildlife management, and methods that support that objective are more acceptable.

Although capture and relocate was viewed positively overall, there was some concern about cost and animal welfare. Cost was mentioned in most focus groups, but as one participant explained, cost was irrelevant if it meant animals were being moved somewhere for conservation purposes. This perspective suggests that the existence and bequest value of elk and bison are high, demonstrated by assigned value to the importance of the animals for existing somewhere in the world. All stakeholders acknowledged that maintaining large herds of ungulates was time and labour intensive. One participant from the Wildlife and Park Management Professionals group indicated that auctioning animals and the sale of Minister's tags could be an innovative way to generate revenue to cover costs of wildlife management programs and be "…creative ways to generate money for conservation. So I am not opposed to that, but you are going to have to walk through a philosophical minefield, national park selling, whatever end they meet" (John, Wildlife and Park Management Professionals). Ministers' tags or "Alberta Minister's Special License" are

special license tags that are raffled for additional hunting tags for certain animals to raise funding from the sale of the auction and raffle permits for conservation projects.

Some participants in the focus groups and group interview had demonstrated knowledge about the method of capture and relocate, and regarded the process as sometimes stressful and undesirable for the animal. Some participants had participated in the capture and relocation process at the Park prior to the focus groups. Additionally, publicly available videos of the process and public tours of the facility may have contributed to their awareness of the practice. When asked about the different concerns about the capture and relocate method were, one participant explained, "Well it is stressful to the animal; potentially injure them. I know when we handled some of those gates, you would see blood along the walls, I know horns get knocked off once in a while" (Tim, the Friends of Elk Island Society).

In conclusion, almost all participants believed that capture and relocate was an acceptable method to control hyperabundant wildlife at EINP because of the ability to contribute to conservation and engage the public. Participants held nuanced views on how capturing and relocating animals can stress, harm or kill the animal.

Birth Control

Birth control was perceived negatively in discussions of all of the focus groups, as revealed by the results of the ranking exercise and discussions with Enoch Cree Nation in the group interview. Participants discussed negative elements such as limited effectiveness, invasive nature, cost, and implications for natural selection and subsequently for genetics of animals. Of the four focus groups and one group interview, participants in the Beaver Hills Initiative were the most supportive of birth control in the group ranking exercise because it is preventative and could be used in conjunction with another method. While birth control was framed in the focus

group presentation as female inoculation, participants in the Beaver Hills Initiative and Adjacent Land Owner focus groups discussed male castration as an alternative and viewed it as more effective because of lasting effects in comparison to female fertility control that would be effective temporarily; this claim has largely not been investigated nor supported in the literature (Hampton, Hyndman, Barnes, & Collins, 2015). Hampton et al. (2015) suggest that gonadectomy – also known as male castration "represents the least humane of the currently available fertility control techniques for wildlife" (p. 1061), and that remotely deliverable non-endocrine vaccines – a chemical injection to females, are the most humane fertility control methods available (p. 1061).

Participants across focus groups and group interview suggested that birth control would likely be perceived as an acceptable option to the public, because, as one participant stated, "it is so normalized in society" (Sarah, Wildlife and Park Management Professionals). Although birth control was perceived by participants to be a positive approach among the public, some participants cautioned that the public may not be aware of issues associated with it, such as the invasive nature and limited effectiveness for large populations (Boulanger, Curtis, Cooch, & DeNicola, 2012). One participant suggested using birth control may result in "a fatal solution" (John, Wildlife and Park Management Professionals), when it fails to provide the results needed to successfully control hyperabundant animals, and may have subsequent negative results in higher populations levels and increase degradation of the environment.

Discussions about the birth control approach emphasized participant's *wildlife rights* value orientation heavily through their shared views on the invasive nature, negative implications for natural selection and genetics, and ethical implications for "playing god". Sarah from the Wildlife and Park Management Professionals focus group said:

> It is expensive; it is hard to manage. I think it artificially changes your population outcome as well, in a way I do not know you always want because it changes who is breeding and when they are breeding… I do not think it is the best option, that is my feeling.

Paul an Adjacent Land Owner also stressed that interfering with natural selection is not acceptable and the negative implications for how it changed genetics: "You know, you are interfering with natural selection, and you are not, not letting nature decide whose genes go on". Ethically, Nico from Enoch Cree Nation echoed Ben's concern for "playing God" if birth control was implemented:

> Like he said before with birth control, you are playing God. We do not have a right as a species of the land to dictate the future of animals' lives by putting them on unnatural hormones or anything to change. Their direction in life is to mate. That is the process of mother nature.

These views are consistent with the findings of Walter et al. (2010), who concluded that birth control was not viable method for free-ranging populations, but could be effective for maintaining small, closed populations (Rutberg et al., 2004). This raises the question of whether EINP's ungulates are free-ranging, or a small, closed population. EINP's 2010 State of the Park Report refers to the Park as a "closed (fenced) ecosystem" (Parks Canada Agency, 2010). Participants in focus groups and interviews had contrasting opinions on this issue. Some participants viewed hunting in EINP as unethical because of the *closed* nature of the populations of animals because the surrounding fence. While others viewed the animals as wild and natural compared to animals in other animal populations in Alberta:

> [Elk in EINP] grow up, live off the land, die on the land and [are never] seen by human eyes. So, that is the main difference. They are still quite wild, where as the elk in Jasper [National Park], you see the YouTube videos of people trying to ride them, trying to jump on them because they are so tame, but in the end that is a wild animal… That is the biggest difference between Jasper and Elk Island. (Ben)

Opposing views about the "wildness" and "naturalness" of EINP's ungulate populations suggest that stakeholder groups and Indigenous peoples hold different perceptions about what is wild or natural. The different perceptions of wildness and naturalness demonstrate that the enclosed population pose complex issues about how to address the hyperabundance issue. For example, participants discussed what constituted a "fair chase" for the hunting options, because of the perceived "tame" nature of the animals and the presence of the fence, inhibiting the ability for the animal to breach the fence to get away. This is addressed later in the discussion.

Birth control was viewed overwhelmingly as negatively by participants. Participants indicated that this method may be perceived by the general public as a good option because birth control is normalized in society as a safe and effective way for humans to prevent pregnancies and slow population growth. Additionally, it was viewed as costly, labour-intensive and invasive to the animal, which was deemed by participants as unacceptable.

Predator Reintroduction

Strong opposing views about predator reintroduction were evident in focus group discussions. Reintroducing predators to the EINP landscape was viewed positively, but after discussions it became clear that participants believed that the Park was too small: "I think it is good in some parks, like if you do not have, you know a large [human] population around the park it would work well, but I mean, that park is surrounded by acreages, just… It is not feasible,

I do not think" (Paul, Adjacent Land Owner). John from the Wildlife and Park Management Professionals group stated that:

> …Concerns are: you shouldn't look at the park as an isolated land base. They are not going to respect the fence or the boundary. Therefore, the whole thing is a discussion: Will predators fit in the Beaver Hills? And what will it take?

Participants from all focus groups demonstrated that they agreed the Park would end up managing the predator:

> Now you throw in wolves or anything else that you want to throw in there, you are still playing God in that, in that habitat and now the wolves might become the bigger species there. Now what are we going to do with wolves?" (Ben, Enoch Cree Nation)

Jim, an Adjacent Land Owner argued there is a risk for animals on farms around the Park:

> I wouldn't be in favour of that, mainly because you cannot control your predators and you do not know where they are going. And there are people out there [who] [have] other [domesticated] animals around that they could help themselves to it, quite regularly.

Nuanced discussions about safety surfaced, about people and wolves on trails, and small children who live surrounding the Park: "And little kids. We've seen where they have seen cougars watching children in yards. And we have had one or two cougar dens on either ends of us, ever since I can remember being out there" (Tracey, Adjacent Land Owner).

Without connectivity between the parks and protected areas, and surrounding areas, participants believed that sustaining predators on the landscape would be difficult because of the small land-base of EINP:

> Yeah, I would think with predator reintroduction, is trying to build the understanding that the landscape functions as a whole and that Elk Island is part of that, it has a role, and everything else does too. You can start to look at conservation areas and get more of those connected where there is a larger landscape in where these things can exist. (Loretta, Beaver Hills Initiative)

Despite the perceived problems of predator reintroduction, particularly wolves, participants from the Friends of Elk Island Society and Beaver Hills Initiative focus groups thought that ideally predators would be accepted and part of the landscape.

> I think it would be awesome if there was predator reintroduction in something like Elk Island because then we know they are coming in naturally, so it would hopefully be a starting off point for the public perception. Because that is the biggest barrier, is this perception of predators on the landscape and that is maybe, this could be a whole tipping point for actually having them naturally on the landscape. They are coming in from North Saskatchewan, coming in from the North, they are there, they just do not get a chance. If this is something that Elk Island promoted and it was specifically for conservation, wildlife management, [maybe] that is just wishful thinking… (Jane, Beaver Hills Initiative)

Tanya from the Beaver Hills Initiative believed that interpretation and explanation would be an effective way for the public to accept and embrace predators in the Beaver Hills area, acknowledging that predators would not honour political boundaries of core protected areas such as EINP:

> It is a whole education piece; I think for the public. I do not think the expectation is to keep them inside that fence but if the goal is this ecosystem balance and they would be the predator, I want the public to accept that. That they are going to be on the landscape.

Wolves on the EINP and Beaver Hills landscapes were viewed as a sign of a healthy ecosystem and thought to be positive. But some participants believed that in reality, wolves could not be reintroduced successfully without public acceptability and adjacent land owners' support. Some participants suggested that wolves would move in on their own, and it was a matter of responsible governing agencies taking on the responsibility of informing the public and improving the overall perception and image of predators on the Beaver Hills landscape.

In conclusion, predator reintroduction was viewed predominantly as a good thing in principle, but not appropriate for the land base of EINP or the surrounding area due to agricultural, industrial, and residential development. Predators on the landscape was viewed as a natural part of a functioning ecosystem, but politically was difficult to manage because participants believed they would not honour the boundaries of the Park.

Harvest by Park Staff

Next to capture and relocate, harvesting by Park staff was viewed as the second most acceptable option in the ranking exercise. Ungulate harvest by Park staff was most acceptable to the Adjacent Land Owners group (43%), followed by Beaver Hills Initiative (17%), the Friends of Elk Island Society (16%), and rated the lowest by Wildlife and Park Management Professionals (14%). The most prevalent concern for this method was how the meat from the harvested animals would be used. The next most prevalent was a concern for a perceived general negative public perception of staff executing animals. Most participants supported this method

because of a perceived professionalism from Park staff, and the opportunity to engage and inform the public on the ecological complexities of the Park.

The use of meat was a recurring theme throughout the focus groups and group interview, but was most predominant in discussions of harvesting by Park staff because how the meat would be dealt with was not evidently intuitive. One Adjacent Land Owner said:

> You know, they can harvest. What bothers me is what do they do with the animal after its harvest, because that is a waste, I mean that is a good animal that could feed people and that is why I am in favour of it. (Jim)

Tanya from the Beaver Hills Initiative also stated the use of meat should be clear and transparent to avoid suspicion from the public:

> I agree [that] the use of the meat has to be transparent, so what you are doing with it. Because then it could be seen [as], 'why are you using?', 'why do [others] get to use it and we do not?' You get into that, or you just leave it [on the landscape], but how do we know you are really just leaving it?

Some participants believed that Park staff are viewed positively by the public, and harvesting could damage that image: "…Park staff, they carry a certain noble-ism towards conservation and a lot of the general public are not that accepting of harvesting or hunting as a conservation technique… there would have to be a lot of openness about this tactic" (Tanya, Beaver Hills Initiative). One Beaver Hills Initiative participant suggested education could mediate damage to the image:

> I just think that there is some left-over baggage when staff are harvesting animals unless there is an increased education program explaining that is part of their job. I know in the

> past, it is sort of always kind of, they do not go out and kind of explain and announce and make it a real, "this is why we are harvesting". There is always something negative in the news about harvesting, [such as] the mechanisms of harvesting [e.g. using firearms]. So if there isn't a better way of educating the public around this... [Then] that is why I said somewhat unacceptable. But from an ecological perspective, it is probably a necessary [component]. (Jane, Beaver Hills Initiative)

Loretta elaborated:

> I would rather see harvesting by park staff and have it all over as an education component and maybe they do not use rifles, maybe they use some other means. How do they select the animals? That should be public, I think the public should understand that. Maybe they are just taking out old animals or maybe they are taking out, culling young ones? Like, what is the target and its not pretty to see, but I mean this is the landscape we are living in and I just, I think people going to Parks, National Parks, what have you, protected areas and assuming this is just the be all and end all of nature is, I do not think it is right. I think people need to understand what has to be done in order to try to have these healthy areas for our benefit. (Beaver Hills Initiative)

The need to be open and transparent to facilitate public understanding of the complexity of EINP's management context were revealed to be critical components of any method described by Wildlife and Park Management Professionals, Beaver Hills Initiative and the Friends of Elk Island Society focus groups. Several participants indicated it was important to communicate why animals had to be removed, how they were being removed, and what was being done with the meat from the animals. These participants indicated that if these components were

communicated effectively, it could increase public understanding and subsequently increase acceptance.

A few participants from the Friends of Elk Island Society focus group suggested that leaving the meat on the landscape would be an acceptable way to dispose of the carcasses. Tim discussed leaving the carcasses on the landscape so other animals could benefit, "So to me, they do not have to leave the park, you can shoot them and leave them". Tim furthered with, "So I do not think it is necessarily a bad thing to shoot the animal (e.g. bison or elk), maybe shoot the animal, shoot 40 in one go but to spread it out and put the carcasses out where animals can harvest them." Tim is suggesting that leaving some carcasses on the landscape is beneficial to the ecosystem for a host of reasons, such as calcium from bones for rodents, nutrient cycling, forage for carnivorous animals, etc. This view demonstrates that there are different ideas for the best use of the meat and carcasses from harvested animals and this may be based on participants' values and understanding of ecological processes.

In conclusion, the harvesting by Park staff approach highlighted the importance of being transparent about the use of meat and the development and communication of rationale for conducting population management in EINP. Participants held preferences for how animals should be killed, who killed the animals, and how the meat should be used that were nuanced and demonstrated a range of acceptable practices for each. This method provoked thought from participants that described the need for the Park to demonstrate why population control needed to be done, in addition to the use of the meat from the animals.

Hunting by Indigenous Peoples

Discussions among participants in the Friends of Elk Island Society, and the Beaver Hills Initiative suggested that it would be ideal for Indigenous hunting to be done in a controlled

manner, where the number of animals, the species, and the sex were regulated by a similar tag system that is operated by the Government of Alberta. Jane from the Beaver Hills Initiative said "I think it would be cool to see Aboriginal hunting in there but if it is not [controlled], if it doesn't have caveats around it, if it doesn't have controls around it, then it becomes dangerous." This perspective demonstrates that there is support if an Indigenous hunt is done in a specific manner that emphasizes standardized regulations.

Hunting by Indigenous People was viewed as a way to "assist with the reconciliation" (Robert, Beaver Hills Initiative) and believed to promote sustainable cultural practices:

> The point of allowing [an] Indigenous season to harvest is… about culture, right? It is a cultural thing. It is in order for them to sustain the culture that [Indigenous peoples] have that is dying. And that was a culture of, what is the word, not sustainability, a culture of you know, living off the land… I see it as a cultural issue more than anything else. (Hugh, the Friends of Elk Island Society)

Participants advocated that Indigenous peoples' hunting in EINP was a step forward and not necessarily a quick or permanent solution to either the overabundance issue or reconciliation efforts:

> I think one of the things that is advancing is Elk Island National Parks' relationship with Indigenous communities and opening the door for dialogue around something like [wildlife management]. I think the opportunity is there to say, 'we are considering this as management tool and seeking your input onto the program'. I do not think it has to be all or nothing sort of approach, and just build on that relationship. Whether it is open for ten days, or one hour, or a specific moment in time that they shoot one bison or whatever it

> might be… I think there is [an] opportunity to really keep a handle on the whole [wildlife management] program. (Salma, Beaver Hills Initiative)

Throughout the focus group discussions, some participants demonstrated that they did not see hunting by Indigenous peoples as much different than hunting by the public in terms of logistical or safety considerations:

> [I agree] if it can go towards reconciliation, because you are acknowledging the traditional use. But you [could] also control the safety [by] Park staff doing it and you could close half the park. [The Park could] say, 'ok, we're going to do a cull and Indigenous folks are going to come with use to do the harvesting part, while [Park staff are] going to control the actual hunt'. (Robert, Beaver Hills Initiative)

It mattered little who was doing the hunt, but most participants still wanted the Park to be closed to visitors if there was any kind of hunting to prevent any adverse incident from occurring. As well, these participants believed this would facilitate in public support.

Similar to harvesting by Park staff, participants discussed the importance of the appropriate use of meat from animals that are hunted. Nico from the Enoch Cree Nation described a food bank donation system on their reserve:

> I always thought that with our homeless population and low-income population in the City of Edmonton… Why [has] Elk Island never considered butchering their own meat for the overpopulation of any species of elk and bison? And allowing our food banks system to utilize that for low-income people. Our Nation, Enoch has a program where our food bank [partners with] our local hunters [who] go out and harvest moose and bring to our food bank and feed the people who have a hard time.

The two Individuals from the Enoch Cree Nation suggested that input from all Nations within Treaty 6 would promote inclusivity and fairness with regard to the wildlife management program:

> [There is a need for] allowing Nations throughout Treaty 6 Territories to have input on the harvesting of the animals for their communities also. Which, some are very low-income. It does not seem like it would require millions of dollars compared to transporting animals to a different territory against their will. (Ben, Enoch Cree Nation)

Ben and Nico believed it was important to include all nations in wildlife management at EINP:

> How am I supposed to talk for Chief Kurt Burnstick? How am I supposed to speak for Chief Willie Littlechilds' people? I cannot. I can only speak for my people and [other Nations] have to have their voice too. So I cannot go [to EINP] and be the prime representatives for Treaty 6 Territory to help with the depletion of the population of their buffalo. It has to be a group effort with the Nations… So the biggest thing is trying to reach out to a lot of the Nations and make it transparent. (Nico)

Ben continued: "As long as there [are] policies and procedures in place, to make it as fair as possible, then no one can go back at anyone." When asked why they believed every Nation should be involved, Nico responded that it was about morals:

> There was supposed to be no self-interest in [Enoch Cree Nation] ways. Right? That is the way it was supposed to be. There is no self-interest at this table. It is about the people as a whole and seven generations to come. Right, and that is the thing we are working hard to try and implement. That belief to our people, our young ones, our wives, our sisters, our aunties. To be able to create that life, [to] see that we can have that humility

> back as a people. Because First Nation people have been through a lot and I tell people that all the time: We have been through a lot. And it is still happening to this day with our fight and our advocacy for the land and the people. We are halfway there but we are still on the right path. There is not a lot of people who will have those same feelings, a lot of the times it is about something else, that is [what I mean] when I talk about that self-interest. (Nico)

Hunting by Indigenous People proved to be perceived as a complex, but appropriate way to address hyperabundant ungulates at EINP by almost all focus groups and the group interview (e.g. the Friends of Elk Island Society, Beaver Hills Initiative, Wildlife and Park Management Professionals, and the Enoch Cree Nation). Although it was viewed to be more positive than hunting by the public (because of the opportunity to be used as a reconciliation tool), participants acknowledged that safety concerns were important to consider for Indigenous and non-Indigenous hunting. Enoch Cree Nation individuals advocated for Indigenous hunting that included all Nations in Treaty 6 to facilitate an inclusive approach that improved relations between Nations and exuded fairness and equality.

Hunting by Experienced Big Game Hunters

Hunting by "experienced big game hunters" also referred to as non-Indigenous hunters, or public hunters stirred emotional responses from people. Participants across focus groups struggled with accepting the option because they could not support the hunter's objectives for participating were for trophy or sport. It seemed as though participants did not want to outwardly support hunting because it may be difficult to manage hunters' underlying motives for applying for a tag, and it went against participant's morals to have hunting for the purpose of trophy or

sport. This is important because it demonstrates that participants did not trust that all hunters would be honest in their intentions for hunting, and that without full control over motives, anything short of a motive for management or sustenance would be unacceptable. Further, hunting for trophy or sport should be kept out of EINP because, as Jane from the Beaver Hills Initiative stated, there are other places to hunt:

> …There are a lot more opportunities for hunting in general on our landscape. I do not think we need to have general hunting in Elk Island National Park because typically it is [motivated by] trophy [hunting]. I come from a long line of hunters and generally it is trying to keep the freezer full in the winter and we have two things hung on the wall and they were just a fluke. But, that, the trophy side or the outfitting side of things, I struggle with because that selects [ungulates] unfavorably if we are looking at wildlife management because you are removing big, large, fabulous males. So I am struggling with that one. I do not know if I can… I cannot support that one. I think if it is traditionally use of the land, it is part of the biosphere historically, and then [if] it is wildlife management specifically with Park staff, I can see those, I can support those. But, just opening it up for hunting in general, I struggle with that one, I do not think I can [support it]. (Jane, Beaver Hills Initiative)

"General hunting", was not a suggested method for the purpose of this focus group. Given this, it is not quite clear why some participants referred to it has "general hunting", when it was clearly communicated the purpose was for controlling overpopulated animals. The misunderstanding of the context of "hunting for a management purpose" as "general hunting" demonstrates that there may a larger belief that any hunting done by the general public is perceived as sport or trophy hunting despite efforts to communicate that it is for a specific purpose (e.g. population

management). This suggests that communications for this method would have to be very clear, and may involve continual efforts to combat misunderstanding and lack of accurate information with regard to purposed and rationale for management programs.

While one participant expressed that there was abundant land to hunt outside of EINP, John from the Wildlife and Park Management Professionals group said:

> As a new hunter, if you live in the City of Edmonton, you have about a 0.00001% chance of getting an acre to hunt on in the County of Strathcona unless you have some grandfather or uncle. And even then there is probably some kind of test that you have to do. So you cannot get on the land base, right? And the available Crown lands are like tiny, tiny and it is like Michigan, you can see the guy in the other tree stand…

Roger believed to manage public acceptance, the Park would need to communicate the *objective* of the program, to control for hyperabundant populations, and ensure the public understood it was not for trophy hunting:

> As long as you take out trophy hunting and you succeed in some way [to] convince [the public] that hunting is not trophy hunting and all that, [then] you are going to get huge acceptance even from the people who are not hunting.

With this perspective in mind, participants in the Wildlife and Park Management Professionals focus group and a couple of participants in the Beaver Hills Initiative supported hunting in EINP to provide recreational opportunities for people in the Edmonton community:

> But if we go big picture, and that is what this Biosphere is meant to do. So what does it mean "living, working and playing"? Well, so what if the public hunting is the play part?

> You may not like it, but that's life, right? So that is part of the deal. (Loretta, Beaver Hills Initiative)

Overall, participants believed the public would not support hunting in EINP for the primary reason that it challenged what focus group participants thought the public think and believe are the purpose of National Parks. Luke, from the Wildlife and Park Management Professionals group explained where the opposition may root from:

> Hunting in a particular area to me – the ideological battle is not going to go away. That will be the biggest thing I think [the Park will] face, you know. To me, it seems wholly compatible with conservation and most people in the [wildlife and park management] field will tell you that. If people do not like it in particular areas, despite the fact that you can hunt in there without leaving a lot of legacy footprint, the hunters are not going to ask for trails, they are not going to ask for flat trails, they are not going to ask for gravel pads and campsites and all this type of stuff that leaves a legacy of recreation that other forms of recreation do. Hunting does not. [With] hunting, maybe there are some gut piles. There is no doubt in my mind that it does change ungulate behaviour, but there is an ecosystem cost to all forms of recreation. So when people say hunting is not compatible with a protected area, I think we need to meet that dead head on. It is the way you manage it.

Other participants believed that meeting the misconception between hunting and conservation "head on" could be through education:

> That is really important [for the Park] to get out there in the educational mix, when [they] talk about messaging. I know there is the use and respect [component], but [the Park

> could] also say that is happening, this is how [hunters] are, this is part of the culture of hunting or part of the ethic that we are looking at here. (Loretta, Beaver Hills Initiative)

One participant from the Beaver Hills Initiative thought there would be more harm in not "educating" the public:

> I think there is more harm in not educating [the public] and just, it is all rainbows and lollipops. Like, I think people need to understand, if we have got an area that is fenced in or not, like the Biosphere. There are actions that humans have to do in order to maintain, conserve or what have you. (Jane)

Education and communication to the public was viewed as an important component for all methods, including Indigenous hunting.

The perspectives of the two Enoch Cree Nation individuals on hunting by experienced big game hunters was different than those of other focus groups, and the discussion raised issues of rights to access. The Enoch Cree Nation individuals indicated that they did not see a need to extend invitations to hunt to the public if all Nations in Treaty 6 could work together to manage the ungulate populations. However, they indicated that they would be open to the inclusion of the public if the management need exceeded the capacity of Indigenous groups in Treaty 6:

> Our fight is for our people. So I believe that [Indigenous peoples] should have first dibs at it to help with wildlife management. And if it was up to me, that would be one step, [and] a good program would be something that would [be] reviewed [over time]. (Nico)

Ben continued:

> Hunting by the public is essentially: if we start off with hunting with just Indigenous people and we cannot keep up. If [Indigenous peoples] do it properly, like they go and get tags and [the Park] is only the place you can take it, by all means, [opening it to non-

> Indigenous people is] not going to hurt our feelings. We want to help in the end as well. It is not just well, 'it is on my traditional land, it should just be me'. Well, we might not be able to keep up. Like I was saying before, not all Nations will want to take a bison. Some Nations [may say] 'I do not even like it'. (Enoch Cree Nation)

In conclusion, hunting proved to be one of the most extensively discussed and contentious methods in the focus groups and group interview, demonstrating that the method is complex and challenging to work through. Discussions of lethal methods such as harvesting and hunting to control hyperabundant wildlife evoked emotional responses from participants that demonstrated either support for or against hunting. Participants discussed various implications of the method being used in regards to safety, rights to access, and general public perception for hunting and its specific use in EINP.

Doing Nothing

Doing nothing was viewed from two perspectives: as neglectful, and as the most natural option. Participants indicated that having a fenced park in a landscape of agriculture and industrial operations is "already doing something" because fences inhibit natural dispersion of animals. Tanya from the Beaver Hills Initiative suggested, "If the fence was gone, I think doing nothing could be an option then, because then you would have that natural flow of predators and genetics and places to disperse to". Jim, an Adjacent Land Owner suggested if the Park did nothing, animals could damage the landscape from over-browsing and in effect, diminish animal populations, "it is not acceptable, but it would be a choice to go. My problem would be that if they did nothing, nature looks after itself, they would die off, yes they would eat themselves out of food". Paul, another Adjacent Land Owner responded "Yeah, but it is not total nature". For

some, doing nothing would be a natural approach and for others, they viewed doing nothing as fundamentally careless in a closed and actively managed area.

There was a central understanding that, because we as humans have essentially taken over the role of Mother Nature, we as humans have to continue to manage the animals and the environment. Most participants had a strong understanding that the Park needs to manage the animals and the ecosystem because it is no longer "natural":

> We cannot let Mother Nature take its full course because we are affecting too much now. Once we have stuck our finger in the key hole, it is stuck. Now we have to have wildlife management, before, life took care of itself. You know, we have no choice to do this. We put too much of this and too little of that and this and that and really, we should have just left things alone and let it be because if the wolves brought the population down of the elk maybe there was a reason why that was going to effect mother earth. It was going to be greener, more green. [The land] has its own ecological balance that we effect. (Nico, Enoch Cree Nation)

EINP is faced with conveying a clear message that either confirms they are a closed, unnatural system, or that they operate through active management to mimic natural processes to the best of their ability.

Doing nothing as an option was ranked and discussed as unacceptable and the least favourable option. All participants held an understanding that active management of the ungulate herds at EINP was an important component to maintain ecological integrity at the Park. Although the Enoch Cree Nation individuals expressed that doing nothing as the way Mother Nature intended, they also recognized and supported that it was a neglectful method because we

(as in the public owners of National Parks) have a responsibility to manage the land since the Park had been created.

Conclusion

In conclusion, the acceptability of each of the seven management methods demonstrated to be complex and perceptions varied among focus groups, group interview participants and individuals within the groups. These conflicting perspectives emphasize the importance of the discussion component to the focus groups and group interview that were able to elicit deeper stories and meanings of why they felt the way they did regarding the seven methods. Throughout the discussions, themes emerged that highlight the most important components of people's perception. I now relate these themes in Chapter Five to the literature on perceptions of management approaches to control overabundant wildlife.

Chapter Five: Discussion

Introduction

Fulton et al. (1996) argue that while values are linked to attitudes and behaviours, as demonstrated by the cognitive hierarchy model (Home & Kahle, 1988), they are too broad to address context-specific areas, such as wildlife management. To address this, Fulton et al. (1996) offered a conceptual approach to evaluating value orientations that "serve to strengthen and give individual meaning" (p. 27) to the fundamental value (Bright et al., 2000) related to wildlife management. Wildlife value orientation scholars often use a quantitative approach to elicit and categorize public perceptions on specific wildlife management contexts and to use these as predictors of attitudes, which then may be used as predictors of behaviours. It is important to note that attitudes are often poor predictors of pro-environmental behaviour specifically, and as noted earlier, context is a more significant predicator of behaviour (Stern, 2000). This framework guided the current exploratory study to elicit attitudes to better understand stakeholder and Indigenous perceptions in context-specific scenarios about wildlife management methods. The current study provides a qualitative approach contribution to the literature by offering context-specific attitudes on actual and hypothetical management methods in EINP. Additionally, this study contributes to the literature that describes Indigenous perspectives about wildlife management. My findings reinforce the argument that acceptability is context-specific and is dependent on range of relative options presented at the time of stated preference.

It is important to note that the focus group and group interview protocols did not specifically ask people questions about their wildlife value orientations, basic beliefs, or fundamental values. However, discussions demonstrated attitudes that are consistent with five of Fulton et al.'s (1996) eight wildlife belief dimensions:

> *Wildlife Use* – philosophy regarding uses of wildlife for human benefits;
>
> *Wildlife Rights* – philosophy about the rights of wildlife;
>
> *Bequest and Existence* – importance of knowing that healthy populations of wildlife currently exist in [the area] and ensuring these populations for future generations;
>
> *Hunting/Anti-Hunting* – focused on whether hunting is a humane and positive activity; and
>
> *Wildlife Education* – importance of learning and teaching others about wildlife. (p. 29)

In the same study, Fulton et al. (1996) identified two wildlife value orientations: wildlife appreciation orientation and a protection-use orientation. These two orientations are more recently referred to as a mutualistic wildlife value orientation, in place of wildlife appreciation orientation, and a utilitarian wildlife value orientation, in place of protection-use orientation (Teel, Dayer, Manfredo, & Bright, 2005).

The following discussions draw on emergent themes from focus group and group interview transcripts. The themes are compared to basic wildlife belief dimensions and previously identified wildlife value orientations throughout this discussion to compare and contrast perceptions of the participants and the literature. Three themes emerged during thematic content analysis in Nvivo: *animal use and welfare*, *public perception and engagement,* and *conservation.* The discussion of themes is followed by practical implications and recommendations, project limitations and a conclusion; management recommendations are included in Chapter Six.

Animal Use and Animal Welfare

Use of Meat

One of the most discussed concerns from participants from all focus groups and the group interview regarded the use of the meat from hyperabundant animals. Several participants explicitly stated that it was important that the Park clearly communicate policies and procedures for the purpose of removal, and the use, transport, and disposal of harvested meat because otherwise, the public may perceive that Park staff were either "wasting it" (e.g. on the landscape), using it for their own benefit, or for other unclear/uncommunicated purposes. One participant viewed birth control as expensive and perceived it as a waste of time and resources if meat could be used for human benefit through harvesting and distribution. In contrast to the use of meat for human benefit, a few participants saw environmental benefit of leaving culled animal carcasses on the landscape to contribute to natural processes of decomposition and nutrient cycling. The different perceived benefits of meat demonstrate that participants held nuanced views about what made the use of meat ethical. Ethical concerns included numerous elements such as: means of death (e.g. rifles, rounded up and culled in a corral, bow and arrow), who is engaged in harvesting (e.g. Park staff, Indigenous, or non-Indigenous public), and who would benefit from the harvest (e.g. hunters, Indigenous peoples, food banks in Edmonton, food banks on Indigenous reserves). However, there appeared to be strong support for using the meat as food, similar to that found by Duda and Young (1996) and MacKay and Campbell (2004).

The prevalent attitude among participants for using meat as food for either individuals, or local food banks suggests a utilitarian wildlife value orientation. A utilitarian wildlife value orientation supports the use of wildlife for human benefit; this value-orientation typically reflects support for hunting (Manfredo, Teel, and Bright, 2003), but in the context of this study,

participants were primed with the intention for animal reduction for the purpose of overpopulation management and threat to ecological integrity. Participants were required to decide between management methods and had to choose the best methods relative to the others that were presented to them. Choosing relative acceptability therefore pushed individuals to demonstrate preferences among options, and suggests that discussions and perceptions were context-specific.

Most participants in each focus group used the importance of clear communication and ethical use of meat as a foundation to contest trophy hunting. Trophy hunting was strongly opposed by most participants across focus groups, which suggests that participants' definition of human benefit was with limitations. Participants demonstrated that hunting was acceptable if hunters' motive was for sustenance, supported by previous research (Duda & Young, 1996; MacKay & Campbell, 2004), and as a tool for Indigenous reconciliation. Additionally, previous research also supports a similar finding to my own that non-Indigenous citizens are more likely to view hunting as less acceptable if animals were hunted and used as trophies or for sport (Duda & Young, 1996; Campbell & MacKay, 2003) rather than meat for food. This demonstrates that the specific motives of hunters and the benefit the hunter would receive from the hunt was important to my study participants.

Hunting/Anti-Hunting

Loveridge, Reynolds, and Miner-Gulland (2007) suggest that there are two central issues that influence the acceptability of hunting: the extent the animal suffers, and the motivation of the hunter. These two topics were central to the discussions of hunting in our focus groups and group interview. Campbell and MacKay (2003) suggest that there are higher levels of support for hunting if it is used as a management tool, for food purposes, to maintain habitat, and/or to

control wildlife disease. Similarly, participants in the present study were more accepting if there was an opportunity to use the meat for food, and to preserve habitat. A new finding that contributes to previous scholarly knowledge is participants in the study were generally more accepting of Indigenous hunting over experienced big game hunting because of cultural traditions, and the opportunity to contribute to reconciliation.

Unlike Campbell and Mackay's (2003) study, the present study specifically asked participants to articulate support using hunting only as a management tool, and their study elicited general perceptions of hunting in Manitoba, Canada, that included other motives such as sport and poaching. This discrepancy in methodology suggests that levels of support may be dependent on the range of options presented to participants, as well as the context in which they are operating. It also highlights the importance of eliciting perceptions for context-specific scenarios where stakeholders can understand the history of the situation, and the advantages and disadvantages to humans and the ecosystem for each potential management action.

Campbell and Mackay (2009) argue that members of the public who are not polarized in opinions about hunting/anti-hunting believe that it is the responsibility of wildlife managers to communicate science-based rationales for hunting in order to counter misinformation and misconceptions. Participants in the present study echoed the importance of communicating the role of *any* management method, especially hunting because of the generally polarized views that our participants highlighted. Specifically, participants debated under what circumstances (e.g. mechanism) hunting would be perceived ethical by participants themselves and their perception of the general publics' perception.

Participants expressed that hunting with a rifle may be more humane than a bow and arrow, but a bow and arrow may be perceived to be more natural and better accepted by the

public. There were contrasting views about whether the mechanisms' (e.g. rifle or bow and arrow) effectiveness of killing an animal quickly and with limited suffering deemed it ethical. Therefore, the mechanism of killing an animal was important to the study participants, over and above how effective the management method was to reach the wildlife management goals to reduce bison numbers. For example, some participants believed that rifles were more humane because they can kill an animal more quickly, but others believed that Indigenous peoples with bow and arrows would be more acceptable because it is part of their traditional culture. This may be a misconception, as it assumed Indigenous peoples are not using rifles, and that non-Indigenous do not use bow and arrow to hunt. Wildlife and Park Management Professionals accurately suggested that archery could be the safer approach, but that they have significantly lower success rates than rifles (Langenau, 1986), even when both archers and rifle (wo)men are at the same level of aptitude and skill (Kilpatrick, LaBonte, & Seymour, 2002). This suggests that what is "ethical" is culturally bound.

In Canada, Indigenous and non-Indigenous people hunt with rifles and bow and arrows, and the community of hunters includes individuals with varying levels of experience. The unique views of what is perceived as ethical and humane highlights the variable public support for hunting, what are deemed to be acceptable objectives of hunting, who is doing the hunting and with what mechanisms in which to do so. Participants faced an additional layer of complexity when articulating their perceptions of hunting – hunting in a National Park. This discussion provoked emotional responses that went against idealized views of National Parks as sanctuaries for protected animals and the idea of management decisions that destroys them.

While it is apparent why there was negative reaction by some to the proposal of hunting in a National Park, hunting has been proven to be an effective tool for managing wildlife

(Williams, DeNicola, Almendinger, & Maddock, 2013) and contributes to conservation (Mahoney & Jackson, 2013). One participant defended hunting and conservation as two compatible components. This is exemplified in many cases (Lewis & Alpert, 1997; Child, 1995) where hunting is used a tool for conservation by sale of hunting tags and stamps (Organ et al., 2012) and provides economic incentives and funding mechanisms (Lindsey, Roulet, & Romanach, 2007) for land conservation. Hunting has also been used in Gros Morne National Park (The Global and Mail, 2015), Terra Nova National Park (CBC News, 2016), Cape Breton Highlands National Park (The Global and Mail, 2015), and Point Pelee National Park (CBC News, 2015) to address issues of hyperabundant wildlife.

The present study demonstrated that there is a high level of nuance in individuals' attitudes of particular elements of the issue. Participants highlighted certain attitudes towards isolated elements such as "hunting in a National Park", "hunting in an enclosed area", "hunting for a management purpose", "hunting using rifles", "hunting using bow and arrow", "hunting bison or elk", "hunting for trophy", "hunting for sustenance", etc. At times during the focus groups and group interview, it was sometimes unclear in which context participants were speaking about (e.g. hunting by experienced big game hunters or hunting by Indigenous peoples) because the discussion flowed from one to another quickly without prompt or notice. This exemplifies that specific context is important to determine acceptability of management methods.

Acceptability was dependent on whether the method was ethical, which was described in specific circumstances by participants. For example, hunting would be perceived as ethical if animals were hunted for sustenance; using a bow and arrow instead of a rifle because it was perceived as natural, just and humane method; meat from harvested animals should be donated and consumed for human benefit instead of left on the landscape because that was perceived as

wasteful. These attitudes are in line with a utilitarian wildlife value orientation, where the needs of humans take priority over wildlife (Teel, et al., 2005). Wildlife managers should take cautionary approaches to these claims, by comparing public perceptions against empirical and cultural standards.

Fair Chase

Focus group participants discussed the concept of "fair hunt," also referred to as "fair chase". A fair chase, defined by the oldest hunter-conservation organization founded by Theodore Roosevelt in 1887, is "the ethical, sportsmanlike, and lawful pursuit and taking of any free-ranging wild, native North American big game animal in a manner that does not give the hunter an improper advantage over such animals" (Boone and Crockett Club, 2017, para. 1). Participants discussed whether or not the fence provided an "improper advantage" to hunting within the Park, either because animals could be cornered or because the fence contributed to the animals being less wild, tame or habituated.

Participants who discussed the relationship between the fence and it role to inhibit a fair chase further drew on personal examples and opinions on what the fence represented. John, from the Wildlife and Park Management Professionals group said:

> The other thing is in a fenced situation like Elk Island. Where is the concept, which is a fundamental one in [the] North American approach to wildlife management – where does *fair chase* come in, if you have a fence? So, the last thing you would want in introducing this hunt is a camo-clad bow hunter with a bull bison cornered against HWY 16 in the corner of a fence before he sticks it.

John was posing the question – is it a fair chase if there is a fence that inhibits the animal's ability to run away? Luke from the Wildlife and Park Management Professionals group suggested that despite the fence, the Park is large enough to be considered a fair chase:

> About the fences, to me it is, and maybe it is my background in having worked with a lot of fenced wildlife in other places – I think that's large enough that the traditional definition of fair chase, which is focused on the animal in this scenario, and our own sense of achievement. I think it is totally doable. The animals can certainly meet the definition of hunting in which they do have a fair chance of avoiding you, [because] it is a big enough area…

Luke continued:

> I mean lots of places in Alberta we hunt in industrialized landscapes; there are no fences but you are still hunting animals that are pushed up against highways or infrastructure or industrial infrastructure and that is affecting their ability to move or willingness to move. So I think the area is big enough that it is fenced but you can still work hard in there.

This perception was supported by Ben from the Enoch Cree Nation:

> In Jasper there, [elk] are super tame and you can touch them. In Elk Island, they tend to run and take off. The buffalo, if you keep a good distance they are pretty good but if you try and get too close to them they will still have that little bit of instinct left.

In contrast, Paul, an Adjacent Land Owner discussed how he did not perceive the animals at EINP to be wild or have natural instinct left. He regarded them as "pets":

> We walk daily basically. We got a 2 km walk to the highway, and I mean we can walk beside the fence and the moose is up against the fence, you go by them and they do not move and I am thinking if you allow hunting, it is just like shooting pets.

He continued: "No, no hunting by anybody. I disagree, it would be different if the animals weren't as tame as they are. There is a huge difference because the animals would not have a chance here" (Paul, Adjacent Land Owner).

The diverging views that surfaced about the animals "wildness" from the participants highlights an important issue for management, managing people's perceptions on whether they manage tame or wild animals as John from the Wildlife and Park Management Professionals said "…it has always been called The Ranch. But now it is really The Ranch." This need for managing perceptions reflects Peterson's (2014) argument that wildlife management agencies need to use identity frames that focus on impacts to biodiversity and humane treatment of animals to demonstrate an ethical hunting proposition, or any other form of lethal methods used to remove wildlife.

Public Perception and Public Engagement

Urban Population

Some participants throughout the focus groups mentioned that being close to a large urban center, Edmonton, contributed to the complexity of perceptions of wildlife management methods. Most participants believed that the general urban public would be largely supportive of birth control and capture and relocating, but be against any kind of lethal method, especially hunting.

Manfredo, Teel, and Dietsch (2016) demonstrated that the urbanization of North American communities is contributing to large-scale value orientation shift from domination to

mutualism. This suggests that as communities become more urbanized, people move from a utilitarian view of wildlife to one of living in harmony, protection, and conservation. Some participants believed that because EINP is within close proximity to Edmonton, the general public would be against hunting, a utilitarian-oriented activity, and in support of protection and conservation, a mutualism-oriented activity.

Participants who believed the general public would be against hunting expressed that there would be fewer anti-hunting perceptions if hunting was communicated primarily as a management tool and secondarily a food hunt, as an added benefit. Most participants believed trophy or sport hunting would be highly unacceptable in the eyes of the general public. It is important to note that trophy or sport hunting would unlikely be permitted in any National Park in Canada. While no participant voiced support for a trophy hunt, they used this argument to emphasize that the way in which the animal was hunted, handled or removed should be done in humane ways for it to be considered acceptable by themselves and the urban population.

The close proximity of EINP to an urban area also facilitates a large contingent of visitors to the Park. Several participants mentioned that the predator reintroduction method and all three lethal methods would conflict with high levels of human use throughout the seasons. This conflict took form primarily as a discussion regarding safety. This concern reflects Bright, Manfredo, and Fulton's (2000) findings that individuals who are more distanced from nature are more likely to express concern for safety, and as demonstrated as people become more urbanized, they may become more distance from nature (Manfredo, Teel, and Dietsch, 2016). In addition, one participant emphasized that the proximity in conjunction with the size of the Park contributed to the conflict, "Given how close we are to Edmonton and the size of the population that we could be opening that type of thing up to. I would say it is probably not appropriate for

the size of this park" (Jane, Beaver Hills Initiative). At present, there is no information available about wolf populations in and around EINP since the Alberta government approved six wolves to be culled in 2014 (The National Post, 2015) and presumed to now be absent (Wilkie, 2016).

Wildlife Education

One of the most prevalent themes in analysis was *education*. The term "educated" is used lightly here and not meant to be viewed as paternalistic, suggesting that the public or anyone is "uneducated"; rather that there may be a lack of awareness or misinformation about the content area. One reason for the participants' recommendation to educate the public may be because of the perception that the general urban public is disconnected from nature, thus participants feeling the need for the public to gain access to accurate information regarding the subject matter. While Manfredo, Teel, and Dietsch (2016) demonstrated a value shift from domination to mutualism as a result of modernization, this does not suggest a lack of information about nature and is not supported by the 2012 Canadian Nature Survey: "Eighty-one percent of Albertans were aware that biodiversity contributes to ecosystem services and provides life support and other important benefits to people" (Federal, Provincial and Territorial Governments of Canada, 2012, p. 66).

One participant from the present study noted that providing accurate information was a way to "sell the idea" of any of the methods:

> [Education] could go a long way to selling the idea of managed populations by bringing a cultural aspect into it. It could go over into some of the harvesting things that have to go on, as part of being – whether we like or not, we do have to manage it because we have managed it to the point of excluding predation and the natural environment that they would normally be in… a lot of that comes out of a lack of information, that sort of thing. (Carl, the Friends of Elk Island Society)

Virginia from the Beaver Hills Initiative discussed her belief that if the Park communicates a rationale for why it is doing one thing over another, it helps people understand:

> …Planning for the meat of the animals and involving the local community and that is getting, again, the biggest thing is you got to get people around you on board and you know, there is that big disconnect nowadays with people who think that their steak comes from the grocery store and you know, just that this is a similar process, not the same obviously, but yeah, I think education and being able to look at, not just the meat, but yeah, the whole land and how it works and even just discussing why we leave it [on the land] if it is a harvest… [People may ask] 'Why? Why are we wasting this meat?'… The reason [is]: [for the benefit of] different birds, and rodents, and scavengers [by recycling the nutrients].

"Educating the public" is a frequent recommendation in studies that discuss humans and wildlife management (Fix, Teel, Manfredo, & Boston, 2010; Manfredo, Zinn, Sikorowski, & Jones, 1998). One study proposes that preemptive education can increase acceptance of hunting as a management tool (LaBonte, Kilpatrick, & Barclay, 2013). Educating the public about wildlife and wildlife management denotes an exchange from agency to people, where the agency is successful in transmitting the information to the person and the person internalizes this new information to form an opinion. This perspective ignores that some people may not have an interest in forming an opinion about wildlife management or that there may not be mechanisms (e.g. lack of computer and internet access or skills, do not have social media, do not visit the Park, etc.) in place for them to access the information.

Rather than focus on bringing information to the public, I advocate that it is better to bring information about attitudes, perceptions and values to the wildlife managers and agencies,

who may be largely unaware of how the public and their stakeholders feel outside of skewed feedback mechanisms such as comment cards, general information email, or direct complaints or suggestions to Parks staff. By bringing stakeholder and public attitude and perception information to wildlife managers and agencies, it puts the onus of closing the gap of misinformation on the wildlife managers, and not on the public to learn about and become experts about wildlife management issues.

Participants discussed the need for EINP management to be "transparent" about their decision-making processes and their associated actions with that process. It is unclear that transparency and education are the same thing, but appeared to be used interchangeably. "Education" suggests that the agency actively engages individuals and groups on targeted messages, suggesting that this process is subjective in nature. Additionally, "education" implies a one-way delivery, not a dialogue of fostering awareness and support for wildlife management agencies and their stakeholders. In contrast, transparency suggests the agency is open and clear about their decision-making processes, suggesting this is more objective in nature. Therefore, the idea of transparency and education should be regarded as two separate, but related concepts. The Park should be communicating decision-making process transparently, and issues that involve complex decision-making can utilize education efforts as part of the decision-making process to increase understanding and awareness about how decision-making processes occur.

Wildlife management agencies are key players in managing public perception. which has been proved to be an important component of wildlife management, but typically wildlife management agencies in Canada have not engaged the public. It is important for management to critically think about ways in which it communicates information, engages stakeholders and Indigenous peoples and the objectives for doing so. Management should consider choice of

language when approaching communications, such as *education*, *interpretation, information*, *awareness*, *consultation*, *notifying, engaging*. Each term denotes a different level of "engagement" with the public, and each has subsequent possible levels of information that could be internalized and inform opinions and perceptions. Wildlife management agencies can use Arnstein's (1969) ladder of public participation to guide approaches to engagement. Use of language should be carefully considered when creating communication materials to ensure desired outcomes are achieved, reputations of agencies are maintained, and expectations from the public are managed.

For example, the term *consultation* implies that elicited concerns and ideas will be taken into account. Arnstein (1969) suggests that this method remains a "window-dressing ritual" (p. 219) if engagement is restricted to this level. Nevertheless, if wildlife management agencies seek to *consult* individuals, there is an expectation that ideas and concerns will be taken into account and that *how* they are taken into account is clearly articulated in some kind of report. Another example is *informing*, which denotes communicating information with little to no feedback opportunity for the receiving individuals. It is frequently used as a one-way flow of information, and individuals have little opportunity to influence any part of the planning process (Arnstein, 1969).

In summary, Fulton et al.'s (1996) wildlife education component demonstrated to be an important element to participant's values around wildlife in this study. The belief in wildlife education confirmed that learning and teaching others about wildlife is important to the participants of the study, which may be a reflection of the types of stakeholders who were engaged (i.e., park advocate group, wildlife and park management professionals, etc.), and not

necessarily a reflection of the greater Canadian urban population. Nevertheless, wildlife management agencies should acknowledge and act on this perception appropriately.

Conservation

Genetic Resource

Participants from all focus groups and the group interview raised concerns about how different approaches could influence natural selection and the genetics of the Park's animal populations. Participants from the Friends of Elk Island Society and Beaver Hills Initiative regarded the bison at EINP as an important genetic resource: "I was just going to say the ultimate goal, in addition to population management, or management of the ungulates would be that, my understanding, they are really seen as a genetic resource" (Tanya, Beaver Hills Initiative). Here, a distinction must be made that because EINP's bison populations are *disease-free,* does not necessarily mean that they are *genetically* valuable. EINP houses plains bison and wood bison, separated by the highway and fences to maintain the two distinct sub-populations for genetic purposes. The most genetically diverse population of wood bison are located in Wood Buffalo National Park and it maintaining genetically distinct sub-populations of wood bison is critical to the recovery of the species (Environment and Climate Change Canada, 2016b). Therefore, it is important to keep EINP's wood bison and plains bison populations separate for genetic purposes and to have disease-free herds, but genetics and disease-free labels should not be conflated.

EINP has played a key role in establishing the Wood Buffalo National Park herd and has been used to repopulate wood bison herds in Russia. In addition, they have sent plains bison recently to Banff National Park and the American Prairie Reserve in the United States. Therefore, the bison at EINP play a large role in establishing and repopulating bison herds, acting as an important resource for bison conservation in Canada and abroad.

Although participants did not speak to the two sub-species of bison, plains and wood, within the park, they did acknowledge implicitly that the species went to different places such as Russia (wood bison) and the United States (plains bison). Participants demonstrated that options such as birth control and harvesting or hunting without careful selection could interfere with natural selection of all species and thus, compromise the genetic integrity of the herds.

Natural Selection

Natural selection meant different things for different participants, and certain methods were viewed as acceptable forms of natural selection while others were viewed as unacceptable. Participants spoke about natural selection as either a way to harm natural selection and evolution of animals, or as advantageous because of the ability to select certain animals to be removed from the herds. Sarah from the Wildlife and Park Management Professionals believed that birth control "…artificially changes your population outcome as well, in a way I do not know you always want… Because it changes who is breeding and when they are breeding". Roger continued, "you are making selection; you are either who is going to breed and who is not going to breed, is not natural selection" (Wildlife and Park Management Professionals).

In contrast, some participants viewed the ability to select animals to be removed from herds as advantageous if it was for direct conservation efforts through capture and relocate: "I think that is a key component of this one is that you can be selective" (Salma, Beaver Hills Initiative). Tanya furthered with:

> And those things [capture and relocate] work, right, because you can select. What they can do is move young animals, like I said mostly females, you do not have a bunch of males, [and they] need females and young ones because they are more resilient, I think. They are smaller, easier to handle. (Beaver Hills Initiative)

Similarly, Dave from the Friends of Elk Island Society believed that capture and relocate was an acceptable method to influence natural selection:

> If you look at a map of all the contributions of bison for example that Elk Island has contributed around North America, there is not that many pure plains bison in North America. The majority have been contaminated with cattle genes or farmed or for meat, so they're different sizes and everything, [because they have been] selectively bred. So Elk Island has had a huge contribution to that.

To conclude, participants held a wide range of perceptions about natural selection that reflected their values about how wildlife should be managed and for what purpose. Perceptions that reflect values such as a mutualistic wildlife value orientation were demonstrated by notions that using a method such as birth control could change natural selection and evolution, and that was deemed unacceptable. In contrast, utilitarian wildlife value orientations were demonstrated by notions that having the ability to select animals for removal was advantageous.

Bequest and Existence Values

Adamowicz, Asafu-Adajaye, Boxall, & Phillips (1991) suggested that the total value of wildlife is determined by use and non-use value components. Use value components are more straightforward to determining value because of measurable market prices for both direct (e.g. consumptive/non-consumptive, recreational hunting, bird watching) and non-direct (e.g. seeing wildlife in zoos, movies, research dissemination) use of wildlife, while non-use values (e.g. existence value, bequest value, option value) are more difficult to measure (Adamowicz, Asafu-Adjaye, Boxall, & Phillips, 1991). Specifically, non-use values "are based on either potential future consumption or current satisfaction from the knowledge that wildlife exist" (p. 424).

Existence value is value that is assigned to wildlife for the purpose of existing, regardless if there is intention from a person to consume the resource, and bequest value is based on the "potential use of the resource by the individual's descendants" (p. 424).

Participants recognized that there were use and non-use values associated with the wildlife in EINP. A small proportion of discussions focused on use values, for example wildlife and park management professionals discussed direct use-values while discussing that animals could be hunted using Minister's tags to support conservation in EINP. The majority of discussions focused on non-use values such as the bequest and existence value of wildlife at EINP.

Overall, participants agreed that having animals at EINP for the benefit of conservation was a good thing to do. This represents a mutualistic wildlife value orientation that reflects taking care of wildlife and no animal suffering. Throughout the focus groups, it was unclear whether moving animals for bison and elk conservation was for *human benefit* (e.g. people like knowing the animals exist) or for the *animal's benefit* (e.g. for the sake of their existence, individual lives, and species survival), thus suggesting that it may not be exclusively for one or the other. Many participants across the focus groups discussed the importance of keeping healthy populations of bison because they were seen as a valuable genetic resource and one of the only disease-free conservation herds readily available for relocation in North America. Paul an adjacent land owner said:

> [Capture and relocate] is the best system. It might be costly, but if you could put these animals in areas where these species no longer exist… that is quite acceptable to me. [It] may not be to everybody but to me. And it would be effective because you can also choose the best animals to go.

The benefits of animals existing outweighed the costs of having to maintain and move animals to other geographical areas, and also suggests there is tolerance among individuals for the benefits of animals' existence. Tracey, an adjacent land owner, said "I think the capture and relocate is the one that is going to be the most expensive but I tend to lean that way because I like to see the animals being moved someplace else." Tracey and others demonstrated the bequest and existence basic wildlife belief that supports the "importance of knowing that healthy populations of wildlife currently exist in [the area] and ensuring these populations for future generations" (Fulton et al., 1996, p. 29). Similarly, this finding supports preference for non-lethal method approaches to wildlife management (Reiter, Brunson, & Schmidt, 1999) and the importance of maintaining abundant wildlife in Alberta (Filion et al., 1989).

Discussions of conservation were latent throughout all of the focus groups and group interview and demonstrate a significant importance for wildlife management agencies contributions to conservation. Participants demonstrated that the meaning of conservation is complex but, overall participants were in support of wildlife conservation efforts and believed management actions contributing to wildlife conservation was a good thing to do. Elk Island is a National Park, and the participants' ideas about National Parks in Canada exudes an understanding of conservation as protecting and preserving natural and cultural heritage for present and future generations. This suggests that PCA mandates and messages are understood by the participants and that there is success in PCA's communication objectives. The themes previously presented are intended to highlight conflicting perceptions and provide a sense of where people sit on a spectrum of what conservation means to them.

Chapter Six: Recommendations and Conclusion

Practical Implications and Recommendations

At the time of writing, Elk Island National Park had conducted two public meetings for their proposed Hyperabundant Ungulate Management Plan. EINP proposed six options to the public that it was considering for controlling hyperabundant bison, elk, and moose populations: translocation (also known as capture and relocate), live sale to auction, direct sale to abattoir, population control by park staff, population control by Indigenous groups or public, and fence alteration. The results of this study have direct application to three of their proposed options: translocation, population control by park staff, and population control by Indigenous groups or public. Through my research process that, includes a literature review and results and discussion, a new understanding of stakeholder and Indigenous perspectives of wildlife management in Elk Island National Park's unique context has emerged.

I am proposing five recommendations (Table 7) that have emerged from various literature and policy, study results, and the Elk Island National Park 2010 Management Plan. I am proposing that the the Park establish a Stakeholder Advisory Committee, establish an Indigenous Advisory Committee, develop and implement a communication strategy specific to hyperabundant ungulate management, engage in multi-modal communication platforms to reach diverse audiences, develop and implement a communication strategy specific to the relationship between the Park and Indigenous groups, and use meaningful consultation practices engaging with Indigenous peoples and external stakeholders. The recommendations are provided as a table below with the recommendation, strategy, outcome, and documentation from where the recommendation is supported.

Table 7. Recommendations for Parks Canada Agency

Recommendation	Strategy	Outcome	Recommendation supported by
Recommendation 1. Establish a Stakeholder Advisory Committee.	- Establish a contingent of external stakeholders who have an identified position in relation to the Park (e.g. provincial government, non-profits, University researchers, adjacent land owners, etc.). - Parks Canada Agency invites representatives from stakeholder groups to participate in monthly or bi-monthly meetings regarding management activities, challenges, and opportunities to collaborate, and stakeholder representatives have opportunities to contribute meaningful expertise, concerns, and feedback. - Stakeholder representatives disseminate knowledge from meetings and provide a mechanism for two-way feedback from the larger stakeholder groups and Parks Canada Agency.	- Engaged stakeholder groups trust and support Park management and their decisions, by being able to contribute knowledge and perspectives in an ongoing dialogue. - Parks Canada Agency establishes allied trusted partnerships with outside organizations to support ongoing operations, research and ultimately remains relevant in evolving financial circumstances and public perceptions. - Stakeholders may have higher levels of support for Park management decisions if they are directly involved in transparent and on-going dialogue regarding activities and challenges.	- Literature; - Focus groups; - Elk Island National Park Management Plan 2010 (Key Strategy 2, Objective 4).
Recommendation 2. Establish an Indigenous Advisory Committee.	- Parks Canada Agency identifies Indigenous groups with prior and present relationships to land that is now Elk Island National Park; this may be Indigenous groups in geographic proximity to the Park. - Create an open and respectful mechanism for Park management and Indigenous groups to engage in meaningful dialogue (e.g. monthly meetings that address mutual topics of discussion).	- Indigenous groups contribute traditional ecological knowledge and perspectives on various management issues. - Indigenous groups and Parks Canada Agency establish and build strong, mutually beneficial working relationships that contribute to the Federal Government's commitment to reconciliation and demonstrate Indigenous engagement. - Create dialogue to explore the role of Indigenous peoples in Elk Island National	- Group interview; - Literature review; - Elk Island National Park Management Plan 2010 (Key Strategy 2, Objective 4).

		Park history and present management context.	

Table 7. Recommendations for Parks Canada Agency (continued)

Recommendation	Strategy	Outcome	Recommendation supported by
Recommendation 3. Develop a communications strategy specific to hyperabundant ungulate management.	- Utilize multi-modal communication platforms such as YouTube, Twitter, Facebook, videos, visual arts, performing arts, exhibits, interpretive panels, guided nature walks, school programming, etc. - The strategy should draw on expertise from communication specialists and ecological specialists in order to tailor messages that highlight important ecological components regarding hyperabundant ungulate management using sound communication expertise. - Partner with and draw from other successful management program communication strategies (e.g. other National Parks, cases in the United States that deal with hyperabundant elk and deer, etc.) – and communicate benefits of using specific methods, such as hunting.	- Messages reach diverse audiences in ways that are reflective of how people obtain nature-related information (e.g. "watching visual media); - Strategies include relevant ecological information that are presented through contemporary communication mechanisms – such as online, or modern interpretive approaches. - Establish and build a network of wildlife management agencies and researchers that are engaged in hyperabundant wildlife management to share resources, support, and research. - Public engaged by messaging may feel more informed about Elk Island National Park's management issues and subsequently, a higher level of advocacy and support for the Park in other management areas.	- Federal, Provincial and Territorial Governments of Canada (2012); - Literature; - Elk Island National Park Management Plan 2010 (Key Strategy 3, Objective 2 & 3).

Table 7. Recommendations for Parks Canada Agency (continued)

Recommendation	Strategy	Outcome	Recommendation supported by
Recommendation 4. Develop a strategy to communicate the relationship between Indigenous peoples and Parks Canada Agency.	- In conjunction with Indigenous groups, develop a strategy on how Parks Canada Agency and Indigenous groups can communicate the role of Indigenous peoples in the National Park system. - Highlight the National Park reserves—what they are, what the purpose of them are, and why it is important for Parks Canada Agency and Indigenous peoples to work together to conserve and protect ecologically and culturally significant lands in Canada. - Use innovative and creative interpretive tools (e.g. in-person, multi-media, oral and written stories, Elders in residence, Indigenous artist in residence, youth activities, onsite camps, ceremonies, etc.).	- Parks Canada Agency and Indigenous groups engage in meaningful dialogue about the story they wish to tell the public about their relationship. - The public gains an understanding of the history or Indigenous peoples and parks, and the role of Indigenous people in National Parks today. - The public may gain an understanding of why there is precedence of Indigenous hunting in various National Parks for hyperabundant ungulate management, and improve relationships and understanding between the Indigenous and non-Indigenous hunting communities.	- Elk Island National Park Management Plan 2010 (Key Strategy 3, Objective 4); - A handbook for Parks Canada employees on consulting and accommodation with Aboriginal Peoples (Parks Canada Agency, 2011b). - Focus groups; - News media (MacDonald, 2015).
Recommendation 5. Consult Indigenous peoples and stakeholders using meaningful consultation practices and principles.	- Preferably hire third-party trained consultants to engage in stakeholder consultation and Indigenous consultation activities. - If there is a need and desire for staff to carry out consultation practices – train staff in Internationally recognized public participation certifications (e.g. International Association for Public Participation (IAP2) and federally recognized Indigenous consultation training (e.g. Indigenous Corporate Training Inc.).	- Indigenous people are engaged in culturally sensitive and meaningful ways that are recognized as best practices nationally. - Indigenous peoples feel that their input is heard, valued, and used in respectful and meaningful ways. - Stakeholders are engaged in meaningful ways that are internationally standardized as best practices. - Stakeholders may feel adequately engaged and that their input is heard, valued, and used in respectful and meaningful ways, which can increase levels of support for management decisions.	- Literature; - A handbook for Parks Canada employees on consulting and accommodation with Aboriginal Peoples (Parks Canada Agency, 2011b). - IAP2.

Future Research

Future research should investigate general public perceptions of hunting in Canada, and separately, public perceptions of wildlife management methods in Canadian National Parks. The same study investigated through a quantitative lens with the general public could offer generalizable perceptions of wildlife management methods. There is opportunity for monitoring public acceptability and preferences with regard to wildlife management methods in longitudinal studies to contribute to Teel and Manfredo's (2009) work on temporal and regional differences in wildlife value orientations in a Canadian context. There is a need to investigate the comparative ethics of wildlife management methods and communicate how various methods rank in animal welfare standards. Lastly, there is opportunity to empirically test the effectiveness various educational/interpretive messaging and approaches for various audiences and stakeholders.

Conclusion

This study sought to elicit stakeholder and Indigenous perceptions of hypothetical wildlife management methods to control hyperabundant wildlife and posed two questions that are addressed in the next two sections. The study addressed each question in detail, beginning with demonstrating a high level of variability in acceptability of management methods for various reasons illustrated in Chapter Four. Participants perceptions of lethal methods were highlighted in Chapter Five with a thorough discussion of animal use and welfare in relation to lethal methods of wildlife management. Participants in the study discussed each method in detail and their perceptions supported previous studies in many ways, but also in new ways that may reflect a regional-specific (e.g. Alberta) Canadian and Indigenous perspective on the area of focus.

What is the range of acceptability for stakeholders and Indigenous peoples of various methods for managing hyperabundant ungulates in EINP?

There was strong acceptance for methods such as capture and relocate, and harvest by Park staff by the majority (three out of four) of the focus groups (e.g. Friends of Elk Island Society, Beaver Hills Initiative, Adjacent Land Owners). Participants indicated that capture and relocate was harmonious with conservation efforts, and Park staff were held in high regard as wildlife professionals capable of carrying out harvesting activities. Birth control was viewed as unnatural and invasive, and received a lower level of acceptance from participants across all focus groups and the group interview. Predator reintroduction was perceived to be problematic as people described predators as being highly mobile and that it would be unlikely for them to adhere to the boundaries of the Park; there was also concern that introduced predators could cause issues beyond the fence for adjacent land users. Doing nothing about hyper-abundant ungulates in the Park was viewed as neglectful and had the lowest levels of acceptance among all participants. Perceptions of hunting by Indigenous peoples were mixed: positive perceptions included using Indigenous hunting to support and foster reconciliation efforts, and to facilitate traditional cultural practices among Indigenous peoples. However, this was also viewed negatively because hunting by Indigenous and non-Indigenous people raised safety and ethical concern from some participants. Lastly, hunting by experienced big game hunters raised concerns because it was not clear whether hunting within a fenced park could be considered *fair chase*. Some participants believed that hunting in EINP was not fair chase because the animals were "like pets" and lacked wild instinct. Other participants believed that EINP was a fair chase because the animals lived in a confined wild place and experienced little human interaction. These opposing views demonstrate the complexities of individuals' perceptions that are context-

specific and not generalizable to areas that do not have fundamental characteristics such as confinement by a 2.2m fence, a lack of predators, and are designated as national parks.

Adjacent Land Owners were supportive of the capture and relocate approach and harvest of ungulates by Park staff; but were not supportive of any of the other methods. Adjacent Land Owners did not support any hunting within the Park because it was like shooting pets, a perspective that they formed after decades of living beside the Park. Wildlife and Park Management Professionals were supportive of using lethal methods to control wildlife populations by both Indigenous peoples and experienced big game hunters, and drew on Camp Wainwright, Alberta as an example of a successful hunt on federal lands (Camp Wainwright successfully manages wildlife populations through hunting allocations). Representatives from the Beaver Hills Initiative and the Friends of Elk Island Society were supportive of the capture and relocate approach and of predator reintroduction; they believed that having wolves on the landscape would facilitate a natural keystone species back on the landscape in the Beaver Hills Area. The Enoch Cree Nation indicated that they were in support of having Indigenous peoples carry out ungulate population management. They emphasized the need to include all Nations in Treaty 6 in order to facilitate an inclusive and transparent process.

What are the perceptions of using lethal methods such as harvesting and/or hunting to control hyperabundant ungulate populations?

Discussions about the use of lethal methods (i.e., harvest by Park staff, hunting by Indigenous peoples, and hunting by experienced big game hunters) revealed the complexity of the different perceptions that stakeholders have. Discussions among participants in all of the focus groups were consistent with two of the key concerns that have been identified in the hunting literature: the ethics of hunting (including the mechanisms used for hunting, such as

archery or firearms), and their effectiveness. Some participants believed that hunting with firearms was the most humane and effective way to kill wildlife, while other participants believed that archery was the most ethical because it is the most honest form of weapon to use, because it requires a high level of skill to use effectively. The discussions among participants demonstrated that context is important for forming and framing people's perceptions of ungulate population management methods and of the acceptability of lethal methods to manage wildlife. Participants were faced with a novel context: a national park that was fenced, the presence of *charismatic mega fauna* (e.g. bison), a lack of natural predators, mixed adjacent land-uses, high levels of use from visitors, and close proximity to a large urban area. Each of these elements contributed additional pieces of information for individuals to consider when determining acceptability and articulating their perceptions.

Perceptions about hunting appeared to be driven by participants' perceptions of hunters' motivations to hunt. Individuals in the focus groups brought up the term "trophy hunting" without being prompted; this suggests that the term hunting may evoke vivid ideas in people's minds, such as select cases of trophy hunting that have been highlighted in the media (e.g. the veterinarian who shot Cecil the lion). This is important because individuals were not asked about the acceptability of trophy hunting; individuals were asked about the acceptability of using hunting as a tool to manage for overpopulated wildlife that may have negative impacts on the natural environment within the Park. Participants indicated that if the motivation of the hunter (e.g. for food, for recreation, for social connection, for trophies) was consistent with their personal values, it would be acceptable, but not otherwise. Therefore, it is important to note that this study did not elicit explicit wildlife value orientations from participants, so there was no opportunity to evaluate their acceptance of a method against what their value orientation was.

Overall, the range of acceptability appeared to be predicated on an ethical and moral continuum that explicitly incorporated animal welfare, but also addressed the relationships between people and wildlife, people and parks, and the complexities of Indigenous peoples' future involvement in park management. These findings suggest that discussions about ethics and morality are important for wildlife management to consider, as well as understandings about the motivations for hunting, and a demonstrated need for increased park communications on the unique context of their closed ecosystem. For the most part, animal welfare appeared to be at the root of the discussions that took place, and demonstrated how ethics and motivations for managing animals and hunting animals are intimately related. Thus, it is important for Elk Island National Park managers to communicate the unique context of the park as a closed system with a lack of natural predators, and subsequent hyperabundant ungulate population. The consequences of not acting to address the hyperabundance of ungulate species within the Park (e.g. over-browsing causing ecological degradation and subsequent starvation of animals) also need to be communicated, with consideration of the many perspectives from stakeholder and Indigenous groups, and the general public.

I would not be true to this research without closing with my own perspectives. My remarks are influenced by my work experience, personal inquiries, academic research, and the voices I have heard. I agree with one participant from the focus groups who said that it was unacceptable for the Park to be in a crisis because they have been facing this issue for decades, "We cannot be at a crisis is what I'm saying. It is not acceptable to be at a crisis. You'll screw it up." (John, Wildlife and Park Management Professionals). EINP has been managing ungulates in the Park since the early 1900s. I believe that it is not acceptable to be at a time of crisis after a century because decisions that are made today will influence the next century of ungulate

management. I believe that the situation warrants careful thought, additional holistic research including historical, social, and natural science inquiry, and thoughtful, empirical consideration of all possible options to managing overpopulated wildlife, including comparative ethics of methods – through *ongoing* inquiry and discussion. This approach would entail the continuous involvement from many stakeholders and Indigenous groups, which I believe is the best way to move forward.

As it has been highlighted extensively in this study, EINP has faced a unique context. The Park is home to conservation herds of bison that contribute to the legacy of PCA and of Canada's role in re-establishing and protecting bison for the whole world. Further, it is the only fenced National Park in Canada, has no established natural predators (e.g. wolves), and is located adjacent to a multitude of land uses (e.g. industrial, agricultural, etc.). Therefore, I would suggest that using other parks and protected areas success may not be applicable to the context at EINP, and to use other Parks successes as rationale for decision-making should be approached cautiously. It should be acknowledged that making swift decisions to address perpetual challenges, may result in generations of problems.

For example, Waiser (2017) wrote of a human-wildlife conflict scenario in the 1950s at Prince Albert National Park. Abundant elk from inside the park were moving onto adjacent crop lands in over the winter to feed and reducing the amount of crop to harvest in the spring. Farmers complained to their Member of Parliament, John Diefenbaker, and swift action was taken to cull the herd to avoid "dangerous precedent" (Waiser, 2017, para. 12) for the Park to provide compensation for crop loss. After three days of culling the herd, local residents ask for the cull to be stopped and a more sustainable solution be considered, such as implementing a fence to prevent the animals from accessing the land. The cull continued that winter and the next, only to

be reflected on from a park warden as "monumental blunder… by someone completely ignorant of any conservation concepts" (Wasier, 2017, para. 22). This example highlights how swift decision-making can result in less desired circumstances.

I would argue that the issue is not exclusive to EINP, or Parks Canada Agency, or any wildlife management agency. I would argue this is a global issue. As the human population grows, and residential, industrial and resource development sprawls, wildlife is increasingly pushed out of the natural and historical ranges and into small isolated pockets of land. It becomes the responsibility of wildlife management agencies to deal with the residual effects of human encroachment and development, and therefore, wildlife managers should be equipping themselves with the skills and training in order to deal with wildlife *and* people. I believe wildlife managers hold increasing responsibility to meet the public more than halfway in leading the way to a future where humans and wildlife co-exist in our complicated world. I am aware and understand that this is quite a large undertaking, but believe it to be of utmost importance.

I want to make it clear that I am not suggesting the Park or any wildlife management agency manage by exclusively public opinion. I am suggesting it is imperative for agencies to seriously investigate and consider perceptions of stakeholders, Indigenous peoples, and the general public, in order for them to be well-informed about the public reception and compliance they can expect once management decisions are made. National Parks are managed in the interest of and for the people of Canada, therefore, their perceptions and opinions inherently matter. National Parks are held in public trust. Any plans that involve the removal of living animals require and deserve thorough communicated thought, consideration, and consultation from internal and external stakeholders in order for well-rounded, informed, and transparent decision-making to take place.

In addition to careful consideration regarding stakeholder, Indigenous people's, and the broader public audiences' perceptions and opinions, there is also a call to explore additional research for comparative ethics of management options. It would be useful and important to have empirical understandings that describe objective ethical standpoints of various methods that draw on expertise of animal welfare experts, such as veterinarians. Which wildlife management methods serve to produce the least amount of harm to wildlife? In what scenarios do animals feel the least fearful and stressed? How can this information be used to communicate rationale for wildlife management methods chosen to control hyperabundant ungulates? These questions may be challenging to address and may require multi-disciplinary involvement from different academic and applied areas of study and focus, but are imperative to developing a holistic understanding of wildlife management that would be applicable across jurisdictional and political boundaries to all agencies and organizations that are involved in wildlife management.

Elk Island National Park has proved to be a great success and a critical player for bison conservation globally, and a true legacy for Parks Canada Agency and Canada. The Park's contributions to conservation in Russia, the American Prairie Reserve, and most recently, a historic return of bison to the landscape of Banff National Park, among many, highlight the hard work and diligence of staff and management, and the actions of five local men and the Canadian Government in the early 1900s. The Park should be proud, remain strong and look to innovation moving into the next century as new challenges are faced with climate change, the spread of Chronic Wasting Disease, and the revitalized role of Indigenous peoples in Canada and its National Parks. My hat is off to you, Elk Island, and all the dedicated staff as you move into this exciting chapter in Canada's natural and cultural history.

References

Adamowicz, W. L., Asafu-Adjaye, J., Boxall, P. C., & Phillips, W. E. (1991). Components of the economic value of wildlife: An Alberta case study. *Canadian Field-Naturalist, 105*(3), 423-429.

Alberta Environment and Parks. (n.d.). 2016/2017 Hay-Zama Wood Bison Hunting Season – Fact Sheet. Retrieved from http://mywildalberta.com/hunting/game-species/documents/2016-17HayZamaWoodBisonHuntFS-Jun2016.pdf

Arnstein, S. R. (1969). A ladder of citizen participation. *Journal of The American Institute of Planners, 35*(4), 216.

Bath, A. J. (1998). The role of human dimensions in wildlife resource research in wildlife management. *Ursus*, *10,* 349-355.

Beaver Hills Initiative. (2017). Beaver Hills Biosphere. Retrieved from the Beaver Hills Initiative website: http://www.beaverhills.ca/conserve/biosphere-nomination/

Bennett, C. (2016). Speech Delivered at the United Nations Permanent Forum on Indigenous Issues, New York, May 10. Ottawa: Government of Canada. Retrieved from https://www.canada.ca/en/indigenous-northern-affairs/news/2016/05/speech-delivered-at-the-united-nations-permanent-forum-on-indigenous-issues-new-york-may-10-.html?=undefined&wbdisable=true

Bjerke, T., Vitterso, J. & Kaltenborn, B. P. (2000). Locus of control and attitudes toward large carnivores. *Psychological Reports, 86*(1), 37-46.

Boone and Crockett Club. (2017). Fair chase statement. Retrieved from https://www.boone-crockett.org/huntingEthics/ethics_fairchase.asp?area=huntingEthics

Boulanger, J. R., Curtis, P. D., Cooch, E. G., & DeNicola, A. J. (2012). Sterilization as an alternative deer control technique: a review. *Human-Wildlife Interactions, 6*(2), 273-282.

Brower, J. L. (2004). *Buffalo National park and the second demise of the plains bison in Canada, 1909-1940*. Masters thesis, University of Alberta, Edmonton, Alberta.

Brunner, R. D., Steelman, T. A., Coe-Juell, L., Cromey, C. M., Edwards, C. M., & Tucker, D. W. (2005). *Adaptive governance: Integrating science, policy, and decision making*. New York, NY: Columbia University Press.

Bruskotter, J. T., Vaske, J. J., & Schmidt, R. H. (2009). Social and cognitive correlates of Utah residents' acceptance of the lethal control of wolves. *Human Dimensions of Wildlife, 14*(2), 119-132. doi:10.1080/10871200802712571

Campbell, J. M., & Mackay, K. J. (2003). Attitudinal and normative influences on support for hunting as a wildlife management strategy. *Human Dimensions of Wildlife, 8*(3), 181-198.

Campbell, J. M., & Mackay, K. J. (2009). Communicating the role of hunting for wildlife management. *Human Dimensions of Wildlife, 14*(1), 21-36. doi:10.1080/10871200802545781

Canadian National Parks Act. (S.C. 2000, c. 32). Retrieved from the Justice Laws of Canada website: http://laws-lois.justice.gc.ca/eng/acts/N-14.01/

Canadian Wildlife Directors Committee. (2013). A report of the Canadian Wildlife Directors Committee's Workshop on the human dimensions of wildlife management. Report 2013: A. Retrieved from http://www.nabci-us.org/mtg_2013-08/CWDC%20Human%20Dimensions%20Workshop%20Report%202013.pdf

Cardinal, N. (2008, September 1). The question of Aboriginal harvesting in Canada's national parks. *Le Panoptique*. Retrieved from http://www.lepanoptique.net/sections/environnement/the-question-of-aboriginal-harvesting-in-canada%E2%80%99s-national-parks/

CBC News. (2015, January 9). 100 deer to be culled at Point Pelee National Park. CBC News. Retrieved from http://www.cbc.ca/news/canada/windsor/100-deer-to-be-culled-at-point-pelee-national-park-1.2894437

CBC News. (2016, January 7). Parks Canada expands moose cull in Terra Nova National Park. *CBC News.* Retrieved from http://www.cbc.ca/news/canada/newfoundland-labrador/moose-cull-terra-nova-1.3389957

Chase, L. C., Decker, D. J., & Lauber, T. B. (2004). Public participation in wildlife management: What do stakeholders want? *Society and Natural Resources, 17,* 629-639.

Chase, L. C., Siemer, W. F., & Decker, D. J. (2002). Designing stakeholder involvement strategies to resolve wildlife management controversies. *Wildlife Society Bulletin (1973-2006),* (3). 937.

Child, G. (1995). Wildlife and People: The Zimbabwean success. How the conflict between animals and people became progress for both. In G. Child (Eds.), *Hunting for Conservation* (pp. 180-209). Harare, Zimbabwe: Wisdom Foundation.

Cole, G. F. (1971). An ecological rationale for managing or not managing native ungulates in national parks. Prepared for The North American Wildlife Conference, Portland, Oregon, March 1971.

Commissioner of the Environment and Sustainable Development. (2013). 2013 Fall report of the Commissioner of the Environment and Sustainable Development. Retrieved from http://www.oag-bvg.gc.ca/internet/English/parl_cesd_201311_07_e_38677.html

Cooke, B. (2001). Participation: The new tyranny? New York: Zed Books.

Cordell, K. H., Hoover, A. P., Super, G. R., & Manning, C. H. (1999). Adding human dimensions to ecosystem-based management of natural resources. In K. H. Cordell, & J. C. Bergstrom (Eds.), *Integrating Social Sciences with Ecosystem Management – Human Dimensions in Assessment, Policy, and Management* (p. 1-13). United States: Sagamore Publishing.

Côté, S. D., Rooney, T. P., Tremblay, J., Dussault, C., & Waller, D. M. (2004). Ecological impacts of deer overabundance. *Annual Review of Ecology, Evolution, and Systematics, 113*.

Crosby, N., Kelly, J. M., & Schaefer, P. (1986). Citizens panels: A new approach to citizen participation. *Public Administration Review, 46*(2), 170-178.

Decker, D., Brown, R., & Siemer, W. (2001). *The human dimensions of wildlife management in North America*. Bethesda, Maryland: The Wildlife Society.

Decker, D. J., Forstchen, A. B., Pomeranz, E. F., Smith, C. A., Riley, S. J., Jacobson, C. A., Organ, J. F., & Batcheller, G. R. (2015). Stakeholder engagement in wildlife management: Does the public trust doctrine imply limits? *The Journal of Wildlife Management, 79*(2), 174-179.

Decker, D. J., Jacobson, C. A., & Brown, T. L. (2006). Situation-specific 'impact dependency' as a determinant of management acceptability: Insights from wolf and grizzly bear management in Alaska. *Wildlife Society Bulletin (1973-2006),* (2). 426.

Decker, D. J., Krueger, C. C., Bear, Jr., R. A., Knuth, B. A., & Richmond, M. E. (1996). From clients to stakeholders: A philosophical shift for fish and wildlife management. *Human Dimensions of Wildlife, 1,* 70-82.

Denizen, N. K., & Lincoln, Y. S. (2005). *The sage handbook of qualitative research*. (3rd ed). Thousand Oaks, CA: Sage.

Diefenbach, D. R., Palmer, W. L., & Shope, W. K. (1997). Attitudes of Pennsylvania sportsman towards managing white-tailed deer to protect the ecological integrity of forests. *Wildlife Society Bulletin (1973-2006), 25*(2), 244-251.

Donnelly, M. P., & Vaske, J. J. (1995). Predicting attitudes toward a proposed moose hunt. *Society and Natural Resources, 8*, 307-319.

Dubois, S., & Harshaw, H. W. (2013). Exploring "humane" dimensions of wildlife. *Human Dimensions of Wildlife, 8*, 1-19. DOI: 10.1080/10871209.2012.694014

Eaton, B. (2016). Friends of Elk Island Society annual general meeting. Presentation at the annual general meeting of the Friends of Elk Island Society, Elk Island National Park, Alberta.

Enck, J., Decker, D. J., Riley, S. J., Organ, J. F., Carpenter, L. H., & Siemer, W. F. (2006). Integrating ecological and human dimensions in adaptive management of wildlife-related impacts. *Wildlife Society Bulletin, 34*(3), 698-705.

Enoch Cree Nation. (2016a). About: Our history. Retrieved from http://enochnation.ca/about/our-history/

Enoch Cree Nation. (2016b). About: Our vision, mission, and values. Retrieved from http://enochnation.ca/about/our-vision-misson-values/

Environment and Climate Change Canada. (2016a). *2020 biodiversity goals & targets for Canada*. (Cat. No.: CW66-524/2016E-PDF). Retrieved from biodivcanada.ca: http://biodivcanada.ca/default.asp?lang=En&n=9B5793F6-1

Environment and Climate Change Canada. (2016b). Recovery strategy for the Wood Bison (Bison bison athabascae) in Canada [Proposed]. *Species at Risk Act* Recovery Strategy Series. Environment and Climate Change Canada. Ottawa. viii + 52 pp.

Federal, Provincial and Territorial Governments of Canada. (2014). 2012 Canadian nature survey: Awareness, participation, and expenditures in nature-based recreation, conservation, and subsistence activities. Ottawa, ON: Canadian Councils of Resource Ministers.

Filion, F. L., Duwors, E., Jacquemot, A., Bouchard, P., Boxall, P., Gray, P. A., & Reid, R. (1989). The importance of wildlife to Canadians in 1987: Highlights of a national survey. Canadian Wildlife Service, Environment Canada. Ottawa.

Fix, P. J., Teel, T. L., Manfredo, M. J., & Boston, S. S. (2010). Assessing public acceptance of wildlife management trade-offs: A case study of elk and vegetation management in Rocky Mountain National Park, Colorado. *Human Dimensions of Wildlife, 15*(6), 405-417. doi:10.1080/10871209.2010.503235

Foster, J. (1998). *Working for wildlife: The beginning of preservation in* Canada [2nd ed]. University of Toronto Press: Toronto, Ontario.

Friends of Elk Island Society. (n.d.). Friends of Elk Island Society. Retrieved from http://www.elkisland.ca/

Fulton, D. C., Manfredo, M. J., & Lipscomb, J. (1996). Wildlife value orientations: A conceptual and measurement approach. *Human Dimensions of Wildlife, 1,* 24-47.

The Globe and Mail. (2015, December 2). Cape Breton Highlands National Park resumes moose cull. The Globe and Mail. Retrieved from https://www.theglobeandmail.com/news/national/cape-breton-highlands-national-park-resumes-moose-cull/article27574396/

Government of Alberta. (2016). Chronic wasting disease (CWD) of elk and deer. Retrieved May 18, 2016, from http://www1.agric.gov.ab.ca/$Department/deptdocs.nsf/all/agdex3594

Government of Alberta. (2015). CFB Suffield elk hunt. Retrieved from http://www.mywildalberta.com/Hunting/GameSpecies/CFBSuffieldElkHunt.aspx

Hampton, J. O., Hyndman, T. H., Barnes, A., & Collins, T. (2015). Is wildlife fertility control always humane? *Animals (2076-2615), 5*(4), 1047-1071. doi:10.3390/ani5040398

Heberlein, T. A. (1985). Some observations on alternative mechanisms for public involvement: the hearing, public opinion poll, the workshop and the quasi-experiment. *Journal of Natural Resources,* 106.

Heffelfinger, J. R., Geist, V., & Wishart, W. (2013). The role of hunting in North American wildlife conservation. *International Journal of Environmental Studies*, *70*(3), 399–413.

Homer, P. M., & Kahle, L. R. (1988). A structural equation of the value-attitude-behaviour hierarchy. *Journal of Personality and Social Psychology, 54*(4), 638-646.

Indigenous and Northern Affairs Canada. (2017). Truth and Reconciliation Commission of Canada. Retrieved online from the Indigenous and Northern Affairs Canada website on July 28th, 2017 from https://www.aadnc-aandc.gc.ca/eng/1450124405592/1450124456123#chp1

Innes, J. E., & Booher, D. E. (2004). Reframing public participation: Strategies for the 21st century. *Planning Theory & Practice, 5*(4), 419-436.

Joseph, B. (2012). Why Aboriginal engagement isn't stakeholder engagement. Indigenous Corporate Training Inc. Retrieved from https://www.ictinc.ca/why-aboriginal-engagement-isnt-stakeholder-engagement

Kaltenborn, B., Bjerke, T., Nyahongo, J., & Williams, D. (n.d.). Animal preferences and acceptability of wildlife management actions around Serengeti National Park, Tanzania. *Biodiversity and Conservation, 15*(14), 4633-4649.

Kilpatrick, H. J., LaBonte, A. M., & Seymour, J. T. (2002). A shotgun-archery deer hunt in a residential community: Evaluation of hunt strategies and effectiveness. *Wildlife Society Bulletin*, 478-486.

King, C. S., Feltey, K. M., & Bridget O'Neill, S. (1998). The question of participation: Toward authentic public participation in public administration. *Public Administration Review, 54*(4). 317-326.

Koichi, K., Gordon, I. J., Sangha, K. K., & Cottrell, A. (2013). What determines the acceptability of wildlife control methods? A case of feral pig management in the Wet Tropics World Heritage Area, Australia [electronic resource]. *Human Dimensions of Wildlife, 18*(2), 97-108.

Kopas, P. (2007). *Taking the air: Ideas and change in Canada's National Parks*. UBC Press: Vancouver, British Columbia.

Koval, M. H., & Mertig, A. G. (2004). Attitudes of the Michigan public and wildlife agency personnel toward lethal wildlife management. *Wildlife Society Bulletin* (1973-2006), (1). 232.

LaBonte, A. M., Kilpatrick, H. J., & Barclay, J. S. (2013). Opinions about moose and moose management at the southern extent of moose range in Connecticut. *Alces,* 4983-98.

Langenau Jr, E. E. (1986). Factors associated with hunter retrieval of deer hit by arrows and shotgun slugs. *Leisure Sciences*, *8*(4), 417-438.

Lauber, T. B. & Knuth, B. A. (1998). Refining our vision of citizen participation: lessons from a moose reintroduction proposal. *Society and Natural Resources, 11,* 411-424.

Lee, K. N. (1993). Compass and gyroscope: Integrating science and politics for the environment. Washington, D.C.: Island Press.

Lewis, D. M., & Alpert, P. (1997). Trophy hunting and wildlife conservation in Zambia. *Conservation Biology, 11*: 59–68. doi:10.1046/j.1523-1739.1997.94389.x

Lindsey, P., Roulet, P., & Romañach, S. (2007). Economic and conservation significance of the trophy hunting industry in sub-Saharan Africa. *Biological Conservation, 134*(4), 455-469. doi:10.1016/j.biocon.2006.09.005

Lothian, W. F. (1987). A brief history of Canada's National Parks. Supply and Services: Ottawa.

Loveridge, A. J., Reynolds, J. C., & Milner-Gulland, E. J. (2007). Does sport hunting benefit conservation? *Key Topics in Conservation Biology*, *1*, 222.

MacDonald, P. (2015, November 12). What's really behind the Cape Breton moose cull protest? One reporter offers her views. *CBC News*. Retrieved from http://www.cbc.ca/news/canada/nova-scotia/moose-hunt-aptn-reporter-1.3316069

MacKay, K. J., & Campbell, J. M. (2004). An examination of attitudes toward hunting as a tourism product. *Tourism Management, 25*(5) 443-452.

Manfredo, M. J., Zinn, H. C., Sikorowski, L., & Jones, J. (1998). Public acceptance of mountain lion management: A case study of Denver, Colorado, and nearby foothills areas. *Wildlife Society Bulletin (1973-2006),* (4). 964.

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. doi:10.1111/cobi.12619

Markula, P. & Silk, M. (2011). *Qualitative research for physical culture*. Basingstoke, UK: Palgrave.

Marshall, C., & Rossman, G. B. (1999). *Designing qualitative research*. 3rd Ed. Thousand Oaks, CA: Sage Publications.

McNamee, K. (1993). From wild place to endangered spaces: A history of Canada's National Parks. In Dearden, P. & Rollins, R. (Eds.), *Parks and Protected Areas in Canada* (p. 15-44). Oxford University Press: Toronto, Ontario.

Mortimer-Sandilands, C. (2009). The cultural politics of ecological integrity: Nature and nation in Canada's national parks, 1885-2000. *International Journal of Canadian Studies*, (39/40), 161-189.

National Aboriginal Forestry Association. (2000). Aboriginal participation in forest management: Not just another stakeholder. Retrieved from the National Aboriginal Forestry Association website on July 28th, 2017 from http://www.nafaforestry.org/pdf/stakeholder.pdf

The National Post. (2015, January 24). Alberta approves killing six wolves in national park after 'cows ripped open from one end to the other'. *The National Post*. Retrieved from http://nationalpost.com/g00/news/canada/alberta-approves-killing-six-wolves-in-national-park-after-cows-ripped-open-from-one-end-to-the-other/wcm/bad8e3b6-6c2f-432a-9c24-45143bcdeccb?i10c.referrer=https%3A%2F%2Fwww.google.ca%2F

Organ, J.F., Geist, V., Mahoney, S.P., Williams, S., Krausman, P.R., Batcheller, G.R., Decker, T. A., Carmichael, R., Nanjappa, P., Regan, R. Medellin, R. A., Cantu, R., McCabe, R. E., Craven, S., Vecellio, G. M. & Decker, D. J. (2012). The North American model of wildlife conservation. The Wildlife Society technical review 12-04. The Wildlife Society, Bethesda, Maryland, USA.

Parks Canada Agency. (n.d.). Draft Hyperabundant Ungulate Management Plan. Elk Island National Park.

Parks Canada Agency. (2007). Management directive 4.4.11. Management of hyperabundant wildlife populations in Canada's national parks, December 2007 (replacing 4.4.11: Disposal of surplus wildlife dated September 1999). Parks Canada Agency, Ottawa, Ontario.

Parks Canada Agency. (2008). Point Pelee National Park of Canada: Middle Island conservation plan. Retrieved from: http://www.pc.gc.ca/en/pn-np/on/pelee/info/plan

Parks Canada Agency. (2010). State of the park report: Elk Island National Park [electronic resource]. (Cat. No.: R61-29/2010E-PDF).

Parks Canada Agency. (2011a). Elk Island National Park of Canada: Management plan 2011 [electronic resource]. (Cat. No.: R63-265/2011E-PDF). Retrieved from: http://www.pc.gc.ca/eng/pn-np/ab/elkisland/plan.aspx

Parks Canada Agency. (2011b). A handbook for Parks Canada employees on consulting and accommodation with Aboriginal peoples. Aboriginal Affairs Secretariat, Parks Canada. Retrieved July 9th from Indigenous and Northern Affairs Canada website: http://www.aadnc-aandc.gc.ca/eng/1100100014664/1100100014675

Parks Canada Agency. (2012). Elk Island National Park: Elk management. [online]. Retrieved from http://www.pc.gc.ca/eng/pn-np/ab/elkisland/natcul/elkisland-we.aspx

Parks Canada Agency. (2015a). About us: Parks Canada's mandate. Retrieved from http://www.pc.gc.ca/eng/agen/index.aspx

Parks Canada Agency. (2015b). Parks Canada attendance 2010-11 to 2014-15: National Parks, Park Reserves, & Marine Conservation Areas. Retrieved from the Parks Canada Agency website: http://www.pc.gc.ca/eng/docs/pc/attend/table3.aspx

Parks Canada Agency. (2017a). Elk Island National Park: Plains bison fact sheet. Retrieved from the Parks Canada Agency website: http://www.pc.gc.ca/en/pn-np/ab/elkisland/decouvrir-discover/bison-pl-info

Parks Canada Agency. (2017b). Map of Elk Island National Park. [Location map]. Retrieved from http://www.pc.gc.ca/en/pn-np/ab/elkisland/visit/~/media/39C21376103045A991E6141345833447.ashx

Parks Canada Agency. (2017c). Elk Island National Park: The chronology of Elk Island National Park. Retrieved from the Parks Canada Agency website: https://www.pc.gc.ca/en/pn-np/ab/elkisland/decouvrir-discover/chrono

Parks Canada Agency. (2017d). Elk Island National Park: Things to do, bison backstage tour. Retrieved from the Parks Canada Agency website: https://www.pc.gc.ca/en/pn-np/ab/elkisland/activ/activ18

Parks Canada Agency Act, Revised Statutes of Canada (1998, c. 31). Retrieved from the Justice Laws Website: http://laws-lois.justice.gc.ca/eng/acts/P-0.4/FullText.html

Patton, M. Q. (2002). *Qualitative research & evaluative methods*. (3rd ed). Thousand Oaks, CA: Sage Publications.

Peterson, M. N. (2014). How wildlife management agencies and hunting organizations frame ethical hunting in the United States. *Human Dimensions of Wildlife, 19*(6), 523-531. doi:10.1080/10871209.2014.928762

Reiter, D. K., Brunson, M. W., & Schmidt, R. H. (1999). Public attitudes toward wildlife damage management and policy. *Wildlife Society Bulletin (1973-2006),* (3). 746.

Riley, S. J., & Decker, D. J. (2000). Wildlife stakeholder acceptance capacity for cougars in Montana. *Wildlife Society Bulletin, 28,* 931-939.

Riley, S. J., Decker, D. J., Carpenter, L. H., Organ, J. F., Siemer, W. F., Maffield, G. F., & Parsons, G. (2002). The essence of wildlife management. *Wildlife Society Bulletin (1973-2006), 30*(2), 585-593.

Riley, S. R., Siemer, D. J., Decker, L. H., Carpenter, J. F., & Berchielli, L. T. (2003). Adaptive impact management: An integrative approach to wildlife management. *Human Dimensions of Wildlife, 8*, 81-95.

Rocky Mountain Elk Foundation. (n.d.). The North American wildlife conservation model. Retrieved from http://www.rmef.org/Conservation/HuntingIsConservation/NorthAmericanWildlifeConservationModel.aspx

Rowe, G., & Frewer, L. J. (2000). Public participation methods: A framework for evaluation. *Science, Technology, & Human Values, 25(*1), 3-29.

Schulte, D. House of Commons, Standing Committee on Environment and Sustainable Development. (2017). *Taking action today: Establishing protected areas for Canada's future*. Ottawa, Canada.

Shindler, B., & Cheek, K. A. (1999). Integrating citizens in adaptive management: A propositional analysis. *Conservation Ecology, 3*(1), 9. (online) URL: http://consecol.org/vol3/iss1/art9/

Sinclair, J. A., & Doelle, M. (2003). Using law as a tool to ensure meaningful public participation in environmental assessment. *Journal of Environmental Law and Practice, 12*(1), 27.

Stern, P. C. (2000). Toward a coherent theory of environmentally significant behavior. *Journal of Social Issues, 56*(3), 407-424.

Stewart, D. W., & Shamdasani, P. N. (2015). *Focus groups: Theory and practice*. (3rd ed). Thousand Oaks, CA: Sage Publications.

Stewart, J. P., & Sinclair, J. A. (2007). Meaningful public participation in environmental assessment: Perceptions from Canadian participants, proponents, and government. *Journal of Environmental Assessment Policy and Management, 9*(2), 161-183.

Stringer, L. C., Dougill, A. J., Fraser, E., Hubacek, K., Prell, C. & Reed, M. S. (2006). Unpacking "participation" in the adaptive management of social–ecological systems: a critical review. *Ecology and Society, 11(*2): 39. [online] URL: http://www.ecologyandsociety.org/vol11/iss2/art39/

Tanz, J. S., & Howard, A. F. (1991). Meaningful public participation in the planning and management of publicly owned forests. *The Forestry Chronicle, 67*(2), 125-130.

Teel, T. L., Dayer, A. A., Manfredo, M. J., & Bright, A. D. (2005). Regional results from the research project entitled "wildlife values in the west." (Project Rep. No. 58). Project report for the Western Association of Fish and Wildlife Agencies. Fort Collins, CO: Colorado State University, Human Dimensions in Natural Resources Unit.

Teel, T. L., Manfredo, M. J., Jensen, F. S., Buijs, A. E., Fischer, A., Riepe, C., Arlinghaus, R., & Jacobs, M. H. (2010). Understanding the cognitive basis for human-wildlife relationships as a key to successful protected-area management. *International Journal of Sociology, 40*(3), 104-123. DOI: 1.2753/IJS0020-7659400306

Todd, Z. (2017, June 12). Hunt, ship, slaughter or sell: Elk Island Park considers population control options. *CBC*. Retrieved from http://www.cbc.ca/news/canada/edmonton/elk-island-population-control-park-bison-moose-deer-1.4142628

Truth and Reconciliation Commission of Canada. (n.d.). *What is the TRC?* Retrieved online from the Truth and Reconciliation Commission of Canada website on July 28th, 2017 from http://www.trc.ca/websites/trcinstitution/index.php?p=10

UN General Assembly. (2007). *United Nations declaration on the rights of Indigenous Peoples: resolution/ adopted by the General Assembly*, 2 October 2007, A/RES/61/295, available at: http://www.refworld.org/docid/471355a82.html [accessed 29 July 2017]

Vaske, J. J., & Donnelly, M. P. (1999). A value-attitude-behaviour model predicting wildlife preservation voting intentions. *Society & Natural Resources, 12,* 523-537.

Walter, W. D., Hygnstrom, S. E., VerCauteren, K. C., Johnson, T. L., Lavelle, M. J., & Fischer, J. W. (2010). Management of damage by elk (Cervus elaphus) in North America: a review [electronic resource]. *Wildlife Research, 37*(8), 630-646.

Whittaker, D., Vaske, J. J., & Manfredo, M. J. (2006). Specificity and the cognitive hierarchy: value orientations and the acceptability of urban wildlife management actions. *Society & Natural Resources, 19*(6), 515-530. doi:10.1080/08941920600663912

Wilkie, J. (2016, June, 4). Elk Island wolf pack killed [Blog post]. Retrieved from http://www.wolfmatters.org/blog/elk-island-wolf-pack-killed

Williams, S. C., Denicola, A. J., Almendinger, T., & Maddock, J. (2013). Evaluation of organized hunting as a management technique for overabundant white-tailed deer in suburban landscapes. *Wildlife Society Bulletin*, *37*(1), 137-145.

Woodley, S. (2010). Ecological integrity and Canada's national parks. *The George Wright Forum, 27*(2), 151-160.

Vernon, M. E., & Clark, S. G. (2016). Addressing a persistent policy problem: The elk hunt in Grand Teton National Park, Wyoming. *Society & Natural Resources*, *29*(7), 836–851.

Zinn, H. C., Manfredo, M. J., Vaske, J. J., & Wittman, K. (1998). Using normative beliefs to determine the acceptability of wildlife management actions. *Society & Natural Resources, 11*(7), 649.

Appendix A: Ethics Notification of Approval

UNIVERSITY OF ALBERTA

RESEARCH ETHICS OFFICE

308 Campus Tower
Edmonton, AB, Canada T6G 1K8
Tel: 780.492.0459
Fax: 780.492.9429
www.reo.ualberta.ca

Notification of Approval

Date:	November 24, 2016
Study ID:	Pro00069163
Principal Investigator:	Chelsea Parent
Study Supervisor:	Howard Harshaw
Study Title:	Perceptions of wildlife management methods: Elk Island National Park, Alberta
Approval Expiry Date:	Thursday, November 23, 2017

Approved Consent Form:	Approval Date 11/24/2016	Approved Document Information and Consent Form_2016-11-01_FINAL.docx

Thank you for submitting the above study to the Research Ethics Board 1. Your application has been reviewed and approved on behalf of the committee.

A renewal report must be submitted next year prior to the expiry of this approval if your study still requires ethics approval. If you do not renew on or before the renewal expiry date, you will have to re-submit an ethics application.

Approval by the Research Ethics Board does not encompass authorization to access the staff, students, facilities or resources of local institutions for the purposes of the research.

Sincerely,

Anne Malena, PhD
Chair, Research Ethics Board 1

Note: This correspondence includes an electronic signature (validation and approval via an online system).

Appendix B: Information and Consent Forms

Information and Consent Form

Exploring the Perceptions of Ungulate Management Methods in Elk Island National Park, Alberta

Research Investigator:
Chelsea Parent
116 Street & 85 Avenue
University of Alberta
Edmonton, Alberta, T6G 2R3
cparent@ualberta.ca

Supervisor:
Dr. Howie Harshaw
2-130J Van Vliet Complex (University Hall)
Edmonton, Alberta, T6G 2H9
harshaw@ualberta.ca
(780) 492-6821

Background

You are being asked to be in this study because you have an identified connection to Elk Island National Park (EINP), Alberta or wildlife management. This study is for research that will support a Masters of Arts degree that uses the results.

Purpose

The purpose of this research is to explore public attitudes towards overpopulated wildlife management, specifically bison, elk and moose at EINP. We are examining the relative acceptability of various possible management methods to control overpopulated wildlife.

Understanding public attitudes and preferences towards various methods of population control has implications for how wildlife are managed. This information will improve scholarly understanding of Canadians attitudes and preferences for various methods of population control within the unique context of a national park and for an iconic species – bison.

The objectives of this research study are to:

1. Understand public attitudes and preferences toward management methods, with a focus on bison, elk, and moose.
2. Have members of the public evaluate, through a discussion, various methods for managing overpopulated animals that have been used in national parks.
3. Understand how various methods are perceived by the public in relation to one another.
4. Develop informed recommendations to wildlife management agencies to increase understanding of public perceptions.

Version: February 1, 2017

Study Procedures

You will be participating in one 1.5-hour interview that is being facilitated by Chelsea Parent. In addition, there will be a note taker present to record important points and physical dynamics of the interview. We ask that you share your perceptions, attitudes and preferences throughout the interview to help create a meaningful discussion about various wildlife management methods. The whole research project will be complete mid to late 2017.

Risks and Benefits

There are no foreseeable risks to you associated with the research. You are unlikely to experience any discomfort as a result of this research. Although participation in this research will not provide direct benefits to you, it is anticipated that the results of this research will help us to:

- Examine the differences in perceptions among the public towards management methods to better understand and characterize perspectives;
- Evaluate the level of support of a variety of methods applied to a variety of possible approaches in the EINP context; and
- Develop meaningful, evidence-based recommendations for wildlife management agencies about the public acceptability of population control measures.

Voluntary Participation

You are under no obligation to participate in this study. The participation is completely voluntary. Even if you agree to participate in this study, you can change your mind and withdraw at any time up.

Confidentiality and Anonymity

The intended uses of the research are for academic thesis, research articles, and presentations. You will not be personally identified in any of these. The raw data (*i.e.*, copies of transcripts, interview notes, and audio-recordings) **will not** be circulated beyond myself (Chelsea Parent) and my supervisor (Dr. Howie Harshaw), and will be stored in a locked cabinet in my supervisor's office for the duration of the study. We do not have plans to destroy the data, except for the audio recordings. We will keep the anonymous transcripts and interview notes. At no time will you be identified by name, initials, or other identifying characteristics in my responses in research reports or published documents. We may use the data we get from this study in future research, but if we do this it will have to be approved by the Research Ethics Board.

Results of the study will be made available to participants and to wildlife management agencies once it is complete through of Summary of Results Report. If you would like to have access to this document, please email me (cparent@ualberta.ca) before the completion of the study in August 2017.

Version: February 1, 2017

NOTE: Demographic information will be collected to allow us to better interpret the data from the interview sessions, such as age, gender, and where you live (rural or urban).

Permission to Audio Tape the Interview

The audiotapes used in this session will be stored in in a locked cabinet in my office for the duration of the study.

NOTE: If the participant agrees to be audio-taped during the interview, they must sign the signature line of the consent form which pertains to audio taping.

Further Information

The plan for this study has been reviewed for its adherence to ethical guidelines by a *Research Ethics Board* at the *University of Alberta*. For questions regarding participant rights and ethical conduct of research, contact the *Research Ethics Office* at **(780) 492-2615**.

Consent Statement

I have read this form and the research study has been explained to me. I have been given the opportunity to ask questions and my questions have been answered. If I have additional questions, I have been told whom to contact. I agree to participate in the research study described above and will receive a copy of this consent form. I will receive a copy of this consent form after I sign it.

_____ _____

Participant's Name (printed) and Signature Date

_____ _____

Name (printed) and Signature of Person Obtaining Consent Date

Consent to be audio recorded

_____ _____

Participant's Name (printed) and Signature Date

_____ _____

Name (printed) and Signature of Person Obtaining Consent Date

Version: February 1, 2017

Information and Consent Form

Exploring the Perceptions of Ungulate Management Methods in Elk Island National Park, Alberta

Research Investigator:

Chelsea Parent
116 Street & 85 Avenue
University of Alberta
Edmonton, Alberta, T6G 2R3
cparent@ualberta.ca

Supervisor:

Dr. Howie Harshaw
2-130J Van Vliet Complex (University Hall)
Edmonton, Alberta, T6G 2H9
harshaw@ualberta.ca
(780) 492-6821

Background

You are being asked to be in this study because you have an identified connection to Elk Island National Park (EINP), Alberta or wildlife management. This study is for research that will support a Masters of Arts degree that uses the results.

Purpose

The purpose of this research is to explore public attitudes towards overpopulated wildlife management, specifically bison, elk and moose at EINP. We are examining the relative acceptability of various possible management methods to control overpopulated wildlife.

Understanding public attitudes and preferences towards various methods of population control has implications for how wildlife are managed. This information will improve scholarly understanding of Canadians attitudes and preferences for various methods of population control within the unique context of a national park and for an iconic species – bison.

The objectives of this research study are to:

1. Understand public attitudes and preferences toward management methods, with a focus on bison, elk, and moose.
2. Have members of the public evaluate, through a discussion, various methods for managing overpopulated animals that have been used in national parks.
3. Understand how various methods are perceived by the public in relation to one another.
4. Develop informed recommendations to wildlife management agencies to increase understanding of public perceptions.

Version: November 17, 2016

Study Procedures

You will be participating in one of five, 2.5-hour focus groups that are being facilitated by Chelsea Parent. In addition, there will be a note taker present to record important points and physical dynamics of the group. We ask that you share your perceptions, attitudes and preferences throughout the focus group to help create a meaningful discussion about various wildlife management methods. The whole research project will be complete mid to late 2017.

Risks and Benefits

There are no foreseeable risks to you associated with the research. You are unlikely to experience any discomfort as a result of this research. Although participation in this research will not provide direct benefits to you, it is anticipated that the results of this research will help us to:

- Examine the differences in perceptions among the public towards management methods to better understand and characterize perspectives;
- Evaluate the level of support of a variety of methods applied to a variety of possible approaches in the EINP context; and
- Develop meaningful, evidence-based recommendations for wildlife management agencies about the public acceptability of population control measures.

Voluntary Participation

You are under no obligation to participate in this study. The participation is completely voluntary. Even if you agree to participate in this study, you can change your mind and withdraw at any time up until the beginning of the focus group. After that point, there will be no way to remove your input because we are not linking anyone to personal identifiers to the data and your contributions will be included in the recording of the focus group.

Confidentiality and Anonymity

The intended uses of the research are for academic thesis, research articles, and presentations. You will not be personally identified in any of these. The raw data (*i.e.*, copies of transcripts, focus group notes, and audio-recordings) **will not** be circulated beyond myself (Chelsea Parent) and my supervisor (Dr. Howie Harshaw), and will be stored in a locked cabinet in my supervisor's office for the duration of the study. We do not have plans to destroy the data, except for the audio recordings. We will keep the anonymous transcripts and focus group notes. At no time will you be identified by name, initials, or other identifying characteristics in my responses in research reports or published documents. We may use the data we get from this study in future research, but if we do this it will have to be approved by the Research Ethics Board.

Results of the study will be made available to participants and to wildlife management agencies once it is complete through of Summary of Results Report. If you would like to have access to

this document, please email me (cparent@ualberta.ca) before the completion of the study in August 2017.

NOTE: Demographic information will be collected to allow us to better interpret the data from the focus group sessions, such as age, gender, and where you live (rural or urban).

Permission to Audio Tape the Focus Group

The audiotapes used in this session will be stored in in a locked cabinet in my office for the duration of the study.

NOTE: If the participant agrees to be audio-taped during the focus group, they must sign the signature line of the consent form which pertains to audio taping.

Further Information

The plan for this study has been reviewed for its adherence to ethical guidelines by a *Research Ethics Board* at the *University of Alberta*. For questions regarding participant rights and ethical conduct of research, contact the *Research Ethics Office* at **(780) 492-2615**.

Consent Statement

I have read this form and the research study has been explained to me. I have been given the opportunity to ask questions and my questions have been answered. If I have additional questions, I have been told whom to contact. I agree to participate in the research study described above and will receive a copy of this consent form. I will receive a copy of this consent form after I sign it.

_____ _____

Participant's Name (printed) and Signature Date

_____ _____

Name (printed) and Signature of Person Obtaining Consent Date

Consent to be audio recorded

_____ _____

Participant's Name (printed) and Signature Date

_____ _____

Name (printed) and Signature of Person Obtaining Consent Date

Version: November 17, 2016

Appendix C: Focus Group Materials

Perceptions of Wildlife Management Methods Focus Group MATERIALS

UNIVERSITY OF ALBERTA

Agenda

- ⇒ Introduction to facilitators, focus group and ground rules (5 minutes)
- ⇒ Getting to know your connection (15 minutes)
- ⇒ Activity #1: Overview of management methods (20 minutes)
- ⇒ Writing exercise (10 minutes)
- ⇒ Break (10 minutes)
- ⇒ Activity #2: Discussion (60-70 minutes)
- ⇒ Wrap-up (10 minutes)

Folder Materials

- ⇒ Focus Group Overview and Ground Rules (1 page, this page, double-sided)
- ⇒ Information Sheet (1 page, double-sided)
  - o About this study and Map
- ⇒ Worksheets (5 pages, single-sided)
  - o Part a: Methods Worksheet (3 pages)
  - o Part b: Acceptability Worksheet (1 page)
  - o Demographic Worksheet (1 page)
- ⇒ 7 dot stickers

Facilitator

Chelsea Parent
MA Candidate
Faculty of Physical Education and Recreation
University of Alberta
Edmonton, Alberta, T6G 2H9
(587)986-3956
cparent@ualberta.ca

Version: November 30, 2016

Perceptions of Wildlife Management Methods Focus Group MATERIALS

UNIVERSITY OF ALBERTA

Focus Group Ground Rules

1. **Respect.** Please respect others opinions. There are no right or wrong answers to the questions I will ask. We want to hear what each of you think and it is ok to have different opinions. In fact, this is the most interesting information that can be used.
2. Please turn off your cellphones or turn them to silent. If you need to take a call, please leave the room so as to not disrupt the flow of discussion.
3. I might need to move the discussion along. Because we have limited time to get through each of the activities, it is important to stay on track. We may end up spending a lot of time on one topic, but not another based on how the discussion goes amongst everyone.
4. I would like to hear everyone contribute to the discussion, so I may ask people who have not spoken to contribute their thoughts and opinions. You are not being singled out, but you were chosen for a reason and your participation is very important!

Version: November 30, 2016

Perceptions of Wildlife Management Methods Focus Group MATERIALS UNIVERSITY OF ALBERTA

Information Sheet

About this study…

This project is exploring attitudes of the public about overpopulated wildlife management. We will focus on bison, elk, and moose in Elk Island National Park (EINP), Alberta. Our discussion examine the relative acceptability of a variety of possible management methods to deal with overpopulated populations.

Understanding public attitudes and preferences towards a variety of methods has implications for how animals are managed. The methods that are being looked at include: birth control, capture and relocate, predator reintroduction, harvesting by park staff, hunting by Indigenous Peoples, hunting by experienced big game hunters, and doing nothing. This information will improve our understanding of Canadians attitudes and preferences for the methods of population control within the unique context of a national park and for an iconic species – bison. Results of the study will be made available to focus group participants and wildlife management agencies once it is complete.

The objectives of the research study are to:

1. Understand public attitudes and preferences toward management methods, with a focus on bison, elk, and moose.
2. Have members of the public evaluate, through a discussion, various methods for managing overpopulated animals that have been used in national parks.
3. Understand how various methods are perceived by the public in relation to one another.
4. Develop informed recommendations to wildlife management agencies to increase understanding of public perceptions.

How will this information be used?

The focus group will help us to:

- Examine the differences in perceptions among the public towards management methods to better understand and characterize perspectives;
- Evaluate the level of support of a variety of methods applied to a variety of possible approaches in the EINP context; and
- Develop meaningful, evidence-based recommendations for wildlife management agencies about the public acceptability of population control measures.

Overall, the research findings from this study are intended to communicate the different perspectives and share them with wildlife management agencies. Additionally, the research findings will contribute to the academic body of knowledge about public perceptions of parks and protected areas in a Canadian context. Lastly, the research will contribute to a thesis for the completion of a Masters of Arts Degree at the University of Alberta and may be used for published journals and conferences presentations.

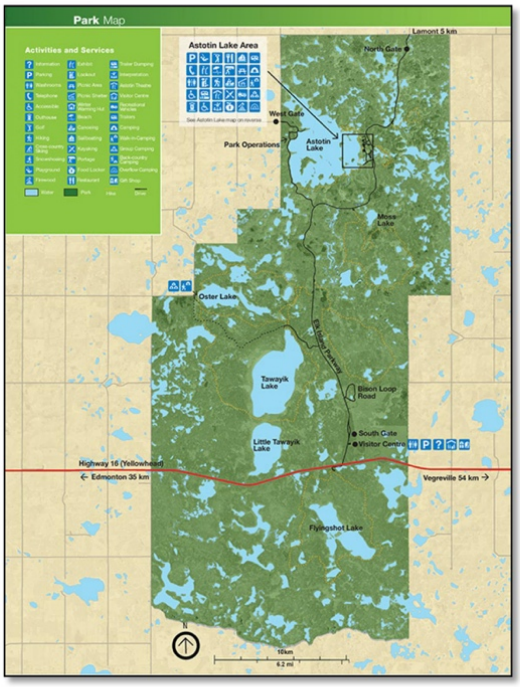
Version: November 30, 2016

Perceptions of Wildlife Management Methods Focus Group MATERIALS UNIVERSITY OF ALBERTA

Elk Island National Park, Alberta

EINP's Wildlife Management Context

The fence is imperative to keep disease-free herds for conservation efforts, as it prevents disease such as tuberculosis, brucellosis, and Chronic Wasting Disease. The Park actively manages herds of plains bison, wood bison, and elk through a process of "capture and relocate"; this includes baiting, trapping, testing, sorting, and transferring animals out of the Park. These animals primarily support conservation efforts (e.g., American Prairie Reserve and Transfer to Russia).



What is "overpopulated" wildlife?

The term "overpopulated" means there are too many animals in a given space for animals and their surrounding environment to be healthy. For example, too many bison can cause negative and irreversible damage to the natural environment by eating too much grass or compacting the soil.

Map retrieved from the Parks Canada Agency Website
(http://www.pc.gc.ca/eng/pn-np/ab/elkisland/visit/visit9/~/media/pn-np/ab/elkisland/k-p/Park%20Trail%20Map%20eng.ashx?w=576&h=762&as=1

Version: November 30, 2016

Perceptions of Wildlife Management Methods Focus Group MATERIALS UNIVERSITY OF ALBERTA

METHODS WORKSHEET

a) Take a few minutes to make notes or jot down ideas about each of the following methods for managing over-populated wildlife:

Predator reintroduction	
Do nothing	

Version: November 30, 2016

Perceptions of Wildlife Management Methods Focus Group MATERIALS UNIVERSITY OF ALBERTA

METHODS WORKSHEET

a) Take a few minutes to make notes or jot down ideas about each of the following methods for managing over-populated wildlife:

Harvesting by park staff	
Hunting by Indigenous Peoples	
Hunting by experienced big game hunters	

Version: November 30, 2016

Perceptions of Wildlife Management Methods Focus Group MATERIALS UNIVERSITY OF ALBERTA

ACCEPTABILITY WORKSHEET

b) Based on the information and discussion from today, please indicate whether you think a method is acceptable, neutral, or not acceptable. **Please circle only one.**

Capture and Relocate	*Acceptable* *Somewhat Acceptable* *Somewhat Unacceptable* *Unacceptable* *Not sure*
Birth Control	*Acceptable* *Somewhat Acceptable* *Somewhat Unacceptable* *Unacceptable* *Not sure*
Predator Reintroduction	*Acceptable* *Somewhat Acceptable* *Somewhat Unacceptable* *Un acceptable* *Not sure*
Do nothing	*Acceptable* *Somewhat Acceptable* *Somewhat Unacceptable* *Unacceptable* *Not sure*
Harvest by Park Staff	*Acceptable* *Somewhat Acceptable* *Somewhat Unacceptable* *Unacceptable* *Not sure*
Hunting by Indigenous Peoples	*Acceptable* *Somewhat Acceptable* *Somewhat Unacceptable* *Unacceptable* *Not sure*
Hunting by Experienced Big Game Hunters	*Acceptable* *Somewhat Acceptable* *Somewhat Unacceptable* *Unacceptable* *Not sure*

Version: November 30, 2016

Perceptions of Wildlife Management Methods Focus Group MATERIALS UNIVERSITY OF ALBERTA

DEMOGRAPHIC WORKSHEET

Please answer the following questions so we can better understand who the participants are in your focus group. I will be collecting **all of the worksheets** after the focus group.

How many years have you been visiting Elk Island National Park? ____ years

What is your primary connection to the Park (e.g. through an organized group or organization, work, recreation, no connection, etc.)? Please be specific.

How old are you (please check one)?

☐ 18-24 years ☐ 25-34 years ☐ 35-44 years
☐ 45-54 years ☐ 55-64 years ☐ 65 years or older
☐ Prefer not to answer

Are you (please check one):

☐ Female ☐ Male ☐ Other
☐ Prefer not to answer

Where do you live (please check one)?

☐ Rural Area ☐ Urban Area ☐ Prefer not to answer

Do you hunt (please check one)?

☐ Yes ☐ No

Version: November 30, 2016