Battle Over Black Bears: Investigating Perceptions of the Black Bear Hunting Referendums in Maine

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BATTLE OVER BLACK BEARS: INVESTIGATING PERCEPTIONS
OF THE BLACK BEAR HUNTING REFERENDUMS IN MAINE

By
Francesca A. Gundrum
B.A. Dartmouth College, 2017

A THESIS
Submitted in Partial Fulfillment of the
Requirements for the Degree of
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(in Wildlife Ecology)

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BATTLE OVER BLACK BEARS: INVESTIGATING PERCEPTIONS
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By Francesca A. Gundrum

Thesis Advisor: Dr. Carly Sponarski

An Abstract of the Thesis Presented
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Human dimensions of wildlife is an emerging discipline that seeks to understand the complex relationships between people, wildlife, and their conflicts and/or interactions (Decker, Riley, & Siemer, 2012). Human dimensions research utilizes several tested theoretical frameworks to investigate these complexities, such as cognitive hierarchy theory and wildlife value orientations (WVOs). Both of these theoretical frameworks were examined in this study, which investigated the content of news media during controversial American black bear (*Ursus americanus*) hunting referenda in Maine, and stakeholder perceptions of black bear management. Maine is the only state that allows hunters to take a black bear over bait, with hounds, and with traps (Gore, 2003; Morell, 2014). Due to perceptions that some or all of these harvest methods are cruel and unfair, Maine has endured two state-wide referendums that called on citizens to consider eliminating the three practices entirely (Gore, 2003; Morell, 2014). In 2004 and 2014, both referendums narrowly failed, thus stabilizing the legitimacy of current bear hunting practices (Maine Secretary of State, 2004; Maine Secretary of State, 2014). This complex debate has permeated and divided the state politically, ethically, and socially for decades. This study explored the nature of the debate via quantitative and qualitative research, and delivered several valuable findings that could help to mitigate future conflict amongst key stakeholders.
A quantitative content analysis (QCA) of news media surrounding Maine’s controversial bear hunting referendums was used to explore the presence of differing cognitions toward current bear management. Various stakeholder groups vocalized their opinions in news media before, during, and after both referendums. It is clear that media played an integral role in informing the public of this issue in Maine. The initial part of this study investigated the representation of different debate themes in public discourse. A total of 247 newspaper articles from Maine’s five major newspapers by distribution were analyzed surrounding the referendums. Cognitive hierarchy theory guided our analysis of attitudes, beliefs, and norms toward baiting, hounding, and trapping that were present in news media. Our results illustrated that those in favor of the referendums frequently expressed negative attitudes toward baiting, hounding, and trapping, while conversely those against the referendums argued that they believe Maine needs these methods to control the population and that these methods benefit humans. These findings guided our characterization of the debate and our conclusions regarding the future of black bear hunting policy. Through the exploration of the debate’s substance in news media, our research is an important step toward developing effective communication strategies amongst key stakeholders.

The second portion of this thesis used a phenomenological approach to explore how cognitions, wildlife value orientations, and differing perceptions about bear hunting practices in Maine ultimately characterize the issue and provide clarity when determining ways to mitigate future conflict amongst stakeholders. This study used combined online questionnaire and semi-structured interviews with key stakeholders within the debate to explore varying perceptions regarding bear management. Key stakeholders were identified from the QCA of news media and then asked to participate in an online questionnaire and semi-structured interview. These two
methods allowed us to investigate cognitions toward bear management and WVOs, as well as stakeholders’ motivations for being involved in shaping bear hunting policy, thoughts on the contentious nature of the debate, effects that the referenda processes had on their mental health and feelings of personal safety, and insights regarding strategies for developing bear hunting policy that is representative of all interest groups and in line with the best available science. Our results revealed the need for an extension of legitimacy and respect for collaboration amongst diverse stakeholders and possible practical changes to the black bear management plan in Maine. Ultimately, it is clear that a future bear hunting referendum would be detrimental to the integrity of the stakeholder community and would only divide stakeholder groups further.

This research contributes to human dimensions of black bear and game management literature. In this study, we supplied several potential approaches to developing a stakeholder community that is respectful, communicative, and capable of pursuing logical compromises in a future black bear management plan.
DEDICATION

To my Papa, Harry DiMarzo, a force of nature whose unwavering support has made me a better student, researcher, teacher, athlete, activist, daughter, granddaughter, sister, and friend. Nearly every phone call over the last two years, you have asked me if you could read my thesis yet. Finally, you can. Here it is, Papa.
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CHAPTER 1
INTRODUCTION

Introduction to Human Dimensions of Wildlife

Human dimensions of wildlife (HDW) is the study of “how humans value wildlife, how humans want wildlife to be managed, and how humans affect, or are affected by wildlife and wildlife management decisions” (Decker, Riley, & Siemer, 2012, p. 3). This research field analyzes the psychological relationships between humans and wildlife species and management (Decker et al., 2012). HDW research has primarily focused on utilizing large sample sizes to predict human values, attitudes, and behavioral intentions throughout various wildlife issues (Bath, 1991; Decker et al., 2012; Decker et al., 2010; Engel et al., 2016; Manfredo, 2008; Whittaker et al., 2006). Methods and results have the potential to support wildlife managers to understand and modify human behavior (Glikman et al., 2010; Jochum et al., 2013), thus improving decision-making (Berry et al., 2016) regarding conservation efforts and the potential reduction of human-wildlife conflicts. In time, it has become widely recognized that engaging with the human dimensions of conservation perspective is necessary in order to develop successful and resilient environmental actions and policies (Bennett et al., 2017).

In big game management studies, HDW research often focuses on the public’s and hunters’ attitudes toward different game species (Bowman et al., 2001; Gore et al., 2007; Spencer, Beausoleil, & Martorello, 2007; Zajac et al., 2012). HDW frequently uses cognitive hierarchy theory to frame many of the complex interactions, emotions, and behaviors that people exhibit toward different wildlife species (Spencer, Beausoleil, & Martorello, 2007; Vaske & Donnelly, 1999) (Figure 1.1).
Figure 1.1. Cognitive hierarchy theoretical framework (Vaske & Donnelly, 1999).

This theory was introduced to HDW by Fulton, Manfredo, and Lipscomb (1996) and acts as a model that links attitudes, beliefs, and values (Homer & Kahle, 1988; Manfredo, Teel, & Henry, 2009). This study will focus primarily on attitudes, beliefs, norms, and values. In the cognitive hierarchy framework, attitudes are defined as feeling states, beliefs are something an individual holds as true or factual, and norms are defined as prescriptive statements as to how wildlife should be managed, treated, or regarded (Houston, Bruskotter, & Fan, 2010; Manfredo, Teel, & Henry, 2009; Vaske & Donnelly, 1999). Attitudes, beliefs, and norms are all essential elements that weave into values, which are higher-order cognitions (Manfredo, Teel, & Henry, 2009). Values are limited in number, but are central to one’s personal motivations. Values often “represent the stable realm of cognitions and cultural learning” for an individual (Manfredo, Teel, & Henry, 2009, p. 410; Rokeach, 1973; Schwartz & Sagie, 2000).

Linked with cognitive hierarchy theory, wildlife value orientations (WVOs) are a common and practical approach to exploring the conflicts between stakeholders that arise during wildlife conservation management disputes (Manfredo, Teel, & Bright, 2003) (Figure 1.2).
Wildlife value orientations exist on a continuum between dominionistic and mutualistic viewpoints (Clark et al., 2017; Dayer, Stinchfield, & Manfredo, 2007; Manfredo, 2008). A domination wildlife value orientation reflects an individual’s view of a mastery, control, and dominance over wildlife (Clark et al., 2017; Dayer, Stinchfield, & Manfredo, 2007; Manfredo, 2008). Usually, the stronger one’s domination value, the stronger their positive cognitions toward consumptive recreation practices and prioritization of human rights over wildlife rights. Conversely, a mutualism value orientation reflects an individual’s view of shared rights between wildlife and humans and respected harmony with wildlife (Clark et al., 2017; Dayer, Stinchfield, & Manfredo, 2007; Manfredo, 2008). Typically, the stronger one’s mutualism value, the stronger their positive cognitions toward non-consumptive recreation practices and prioritization of wildlife rights as equal to human rights (Clark et al., 2017; Dayer, Stinchfield, & Manfredo, 2007; Manfredo, 2008).

This thesis utilizes a human dimensions approach to analyze the highly contentious battle over American black bear (*Ursus americanus*) hunting management that has divided the people of Maine for decades. Specifically, we utilize cognitive hierarchy theory and wildlife value orientations to explore the portrayal of stakeholders in news media and the types of relationships that different stakeholders hold with bears and with each other. These methods are described in greater detail in later chapters (Chapter 2 & 3).
History of Black Bear Management in Maine

Throughout the 18th century, early settlers of Maine quickly converted thousands of acres of forestland to farmland (MDIFW, 2017). As bear habitat diminished, farmer conflicts with bears increased substantially. In order to protect Maine’s farmers, the state allowed for an indefinite bounty on bears in 1770 (MDIFW, 2017). Tens of thousands of bears were harvested over the next two hundred years (MDIFW, 2017). By the beginning of the 20th century, bears had been eradicated from the majority of southern and coastal Maine regions (MDIFW, 2017). In the northern half of the state, farming was not as prevalent and thus bears remained relatively common (MDIFW, 2017). However, the public’s perceptions of black bears improved as agricultural land use declined, and thus black bear ranges slowly expanded throughout the 1950s (MDIFW, 2017). By 1985, 86% of Maine was occupied by black bears again (MDIFW, 2017). In 1969, bears were established as a game species and a more stringent management protocol was developed (MDIFW, 2017). A few years later, Maine began radio-collar research on bears as a part of their telemetry studies that have continued to this day (MDIFW, 2017). Before 1975, bear population estimates were calculated based on harvest statistics (MDIFW, 2017). As state biologists learned more about Maine’s bear population, it became clear that Maine was home to more bears than they had initially suspected (MDIFW, 2017). Currently, state biologists estimate that there are approximately 36,000 bears in Maine, and that the population is increasing each year (MDIFW, 2017).

While Maine’s history with black bears is complex and lengthy, black bears have been characterized as a symbol of Maine’s heritage as a state abounding with fierce wildlife and hearty outdoors-people. Bears are considered one of Maine’s four “Big Game” species—the list also includes deer, moose, and turkeys (MDIFW, 2017). Currently, Maine is the only state in the
nation that allows bear hunters to use bait, hounds, and traps (BHT) as many states have made one or more of these methods illegal due to public perceptions of wildlife cruelty (Morell, 2014; Gore, 2003). Specifically, these methods entail:

1. **Baiting** – habituating bears to a particular area using any animal, plant, or derivative thereof that is safe for bears to consume;
2. **Hounding** – utilizing packs of radio-collared hounds to pursue bears and provoke them to seek refuge in a tree; and
3. **Trapping** – setting either a cable trap (foot snare) or cage-type live trap near a bait site (MDIFW, 2017).

Maine is home to one of the largest black bear populations in the Lower 48 and approximately 85% of bears harvested in Maine are hunted over bait (MDIFW, 2017). While bear hunting via stalk and still hunting methods has a long history in Maine, hunting with bait, hounds, and traps is a newer addition to the hunting tradition (MDIFW, 2017). It was not until the late 1970s that legislation surrounding trapping and hounding was introduced (MDIFW, 2017). Today, the bear hunting season runs from late August until late November and is regulated by the Maine State Legislature. A hunter can still and stalk hunt at any point in the season, hunt over bait from late August to mid-September, hunt with dogs from early September to mid-October, and trap throughout September and October. If you are a resident of the state, a bear hunting permit and a bear trapping permit cost $27. If you are a non-resident, a bear hunting permit costs $74 and a bear trapping permit costs $67.
Today, most bear hunters are non-residents. Since 2005, the success rate for bear hunters has been 29% on average. The Maine Department of Inland Fisheries and Wildlife (MDIFW) has currently set annual target harvest numbers at around 3,000-4,000 individuals so as to “keep the population at a level consistent with healthy, productive bears that experience few human conflicts” (MDIFW, 2017, p. 22).

**Black Bear Population Concerns**

MDIFW’s bear monitoring research provides substantial evidence for recent black bear habitat expansion and changes in natural food availability (e.g., beech nuts) over time (MDIFW, 2017). Throughout North America, said changes have shifted black bear ranges further into the wildland urban interface (Baruch-Mordo et al., 2008; Don Carlos et al., 2009; Gore et al., 2005). Additionally, increases in human population and the availability of anthropogenic attractants (e.g., garbage, birdfeed) have ultimately led to a rise in human-bear conflicts (HBC) (Bowman et al., 2001; Don Carlos et al., 2009; Merkle, Krausman, & Booth, 2011). Furthermore, declining hunter participation could influence the black bear population and both the frequency and intensity of interactions with humans (MDIFW, 2017; MOGIS, 2014). Human-black bear interactions have also been shifting from primarily consumptive-based (e.g., hunting) to non-consumptive-based (e.g., unplanned interaction; wildlife viewing) (MDIFW, 2017; Organ & Fritzell, 2000). Across the United States, demographics and cultural attributes are shifting with immigration, urbanization, and vast differences between generations (Fleishman et al., 2011; Heberlein, 2012). These shifts may have the power to alter the way people think about wildlife, which in turn influences how the public perceives how a species should be managed (Manfredo, Teel, & Henry, 2009). While black bears are the most common predator in North America, attitudes toward black bears are generally positive. Often, they have been perceived as “highly
intelligent, and aesthetically appealing” (Campbell & Lancaster, 2010; Kellert, 1994, p. 46).

More negative perceptions of black bears arise with nuisance-like behavior (e.g., property damage) (Campbell & Lancaster, 2010; Morzillo, 2007).

The complex relationship between humans and black bears in Maine has immense implications on bear management strategies (i.e., urban versus rural) and their results, and adapting to these changes has become an immediate issue for wildlife managers (Baruch-Mordo, et al., 2011; Kretser, Curtis, & Knuth, 2009; MDIFW, 2017). A changing human and natural landscape has brought about intense debates over how we should interact with bears in this state. Some wholeheartedly believe that bears should be shielded from all hunting, while others believe hunting bears is a sacred element of Maine’s culture. This dichotomy of opinions toward black bear management is fueled by both an increasing bear and human population in Maine (MDIFW, 2017; US Census Bureau, 2017).

**Black Bear Hunting Referendums**

The public has weighed in on their opinions regarding the ethics of bear hunting through two ballot initiatives in 2004 and 2014. In 2004, a state-wide black bear hunting referendum was organized to determine whether or not practicing any of the three hunting methods should be considered a crime in Maine. Maine residents expressed varying cognitions in various media outlets toward specific bear hunting methods over the course of the referendum (Morrel, 2015). On November 2nd, the referendum (“Do you want to make it a crime to hunt bears with bait, traps or dogs, except to protect property, public safety or for research?”) narrowly failed; 53.08% voted “No”, and 46.92% voted “Yes” (Maine Secretary of State, 2004).

Over the next ten years, prominent political campaigns on both sides of the debate developed strategies for a future referendum vote. In 2014, the residents of Maine had an
opportunity to vote again on this BHT issue. In 2014, the question, slightly altered, was: “Do you want to ban the use of bait, dogs or traps in bear hunting except to protect property, public safety, or for research?”. During the campaign for this referendum, it was clear that those in favor of the ban were largely animal welfare advocates and non-hunters (e.g., Humane Society). Those not in favor of the ban were largely state government officials and the hunting community (e.g., MDIFW, Sportsman’s Alliance of Maine etc.). MDIFW recognizes that 95% of bears hunted in Maine are hunted over bait, with dogs, or with traps, thus the state agency maintained their position: opposed to the ban. MDIFW claims that they desire to maintain healthy and socially-acceptable bear population levels in the state, and thus had no choice but to oppose the referendum. On November 4th, 2014, the referendum was once again narrowly voted down; 53.41% voted “No”, and 46.59% voted “Yes” (Maine Secretary of State, 2014).

Stakeholders feel certain that a third referendum will be held at some point in the future. It is important to understand the various viewpoints of the voting public along with the advocacy groups involved in arguing for one side versus the other. Identifying the reasons behind the public’s polarized views of black bear hunting in Maine is a critical step toward increasing the public’s trust in MDIFW, adapting current black bear management strategies to meet public perception, and mitigating future HBCs.

**Research Objectives**

Within the context of HDW, the overarching research goal was to investigate stakeholder perceptions of black bear management in Maine. This research takes place within the social-science/policy interface concerning black bear hunting policy in Maine. This area has not yet been evaluated in the state. By social-science/policy interface we mean the relationships, communication tools and networks, and cooperation between the people and agencies behind the
black bear hunting debate. Future management planning may be hindered if stakeholders do not communicate, hold shared visions as constituents, and agree upon management objectives (Game et al., 2013). Through this research, we intend to assess the social factors impacting future black bear hunting policy decisions in Maine. Specifically, we hope to characterize institutional barriers and factors that will impact future black bear hunting policy in Maine via quantitative and qualitative methods. This research will provide deeper understanding to the conversation surrounding black bear management and theoretical insight and information that can be directly integrated into the management decision-making process. This will only aid in our understanding of the potential outcomes of a future referendum and help MDIFW to alter policy so that future referendums do not occur.

**Organization of Thesis**

This thesis is organized into four sections: the introduction, two manuscripts, and a conclusion chapter. The following are the abstracts for each of the manuscripts:

**Chapter 2** examined the presence of different cognitions via a quantitative content analysis of news (QCA) media surrounding Maine’s controversial bear hunting referendums. In Maine, there were two referendums (2004 and 2014) to ban baiting, hounding and trapping that narrowly failed. During the referendums, various stakeholder groups vocalized their opinions in news media. Media played an integral role in informing the public of this issue. The purpose of this study was to investigate the representation of themes of the debate in public discourse. We analyzed 247 newspaper articles about the referendums. Cognitive hierarchy theory guided our analysis of attitudes, beliefs, and norms toward baiting, hounding, and trapping. Results show that those in favor of the referendums frequently express negative attitudes toward baiting, hounding, and trapping, while conversely those against the referendums argue that they believe
Maine needs these methods to control the population and that these methods benefit humans. The results guide conclusions regarding the future of black bear hunting policy and is a critical step toward developing effective communication strategies amongst stakeholders.

**Chapter 3** examined the widespread trend in shifting public values toward black bear management in Maine through a phenomenological approach. This approach utilized both quantitative online questionnaire data and qualitative semi-structured interview data with key stakeholders that were identified in the QCA of news media surrounding bear hunting referendums in 2004 and 2014 in Maine. This approach allowed us to investigate cognitions toward bear management and WVOs, as well as stakeholders’ motivations for being involved in shaping bear hunting policy, thoughts on the contentious nature of the debate, effects that the referenda processes had on their mental health and personal safety, and insights regarding strategies for developing bear hunting policy that is representative of all interest groups and in line with the best available science. Our results reveal the need for an extension of legitimacy and respect for collaboration amongst stakeholders and possible practical changes to the black bear management plan in Maine.

In **Chapter 4**, the relevance and application of this research is discussed. This chapter discusses the implications of this research in the field of human dimensions, management decisions, and applications. The potential for future research is also discussed. While future research questions are beyond the scope of this thesis, suggestions for how to advance human dimensions of wildlife research surrounding controversial wildlife management plans are provided.
Data Collection Tools

Three data collection tools were utilized in this study: quantitative content analysis, online questionnaire, and semi-structured interviews. This quantitative content analysis (QCA) attempts to characterize both the development and distribution of newspaper content and the presence of differing public perceptions of the referendums and BHT of bears in Maine. Print media played an integral role in informing the public of bear hunting policy issues in Maine, and should be further investigated given its powerful impacts on voting decisions and identifying themes in public discourse (Krippendorff, 2004). We approached addressing the presence of cognitive expressions throughout both samples of newspaper articles using quantitative content analysis, which is a research technique for systematically analyzing the manifest content of communication (Riffe, Lacy, & Fico, 2014). We intend to investigate the manifest content within the samples, and identify key word/phrase frequencies and relationships between them. This analysis is discussed in Chapter 2.

From the QCA, we were able to identify key stakeholders in the black bear hunting debate. The stakeholders that were identified in news media were asked to participate in the second portion of the study. Compliance in the second portion of the study involved a semi-structured interview (Appendix B) and an online questionnaire (Appendix C) inquiring about their perceptions of different bear hunting methods and management. The online questionnaire covered topics such as their interactions with bears in Maine, cognitions toward the bear population, cognitions toward bear hunting, trust in bear management agencies, and wildlife value orientations (Fulton, Manfredo, & Lipscomb, 1996; Houston, Bruskotter, & Fan, 2010). The interviews were 30 to 90 minutes in length and covered topics related to the strengths and weaknesses of specific bear management programs, the primary drivers of communicative
barriers between both sides of the debate, and their personal interactions with bears in Maine. We employed snowball sampling by asking the people who agreed to participate in interviews if they knew of anyone else we should consider including in the project (Singleton & Straits, 1999). In the questionnaire, basic demographic information was obtained. Participants were asked to report the year that they were born, and sex was categorical: (a) Female, (b) Male, or (c) Prefer not to say. Further details of the questionnaire and interview process are detailed in Chapter 3.
CHAPTER 2
COGNITIONS TOWARD BLACK BEAR HUNTING IN MAINE: A QUANTITATIVE CONTENT ANALYSIS OF THE PRINT NEWS MEDIA SURROUNDING HUNTING REFERENDUMS

Introduction

Habitat expansion and changes in natural food availability have shifted American black bear (*Ursus americanus*) ranges further into the wildland urban interface throughout North America (Baruch-Mordo et al., 2008; Don Carlos et al., 2009; Gore et al., 2005). In addition to these changes, increases in human population and availability of anthropogenic attractants (e.g., garbage, birdfeed) have ultimately lead to a rise in human-bear conflicts (HBC) (Bowman et al., 2001; Don Carlos et al., 2009; Merkle, Krausman, & Booth, 2011). An added dimension to HBC is declining hunter participation, which could influence the black bear population and the frequency and intensity of interactions with humans (MDIFW, 2017; Organ & Fritzell, 2000). While black bears are the most common predator in North America, attitudes toward black bears are generally positive as they have been perceived as “highly intelligent, and aesthetically appealing” (Campbell & Lancaster, 2010; Kellert, 1994, p. 46). Nuisance behavior and their role in property damage is generally where more negative perceptions of black bears arise (Campbell & Lancaster, 2010; Morzillo, 2007).

Maine is home to one of the largest black bear populations in the Lower 48 (MDIFW, 2017). Black bears are often characterized as a symbol of Maine’s heritage as a state abounding with wildlife. For some, this means that black bears should be protected from hunting. For others, it means that bears should be treated as a renewable resource. This dichotomy of opinions toward black bear management is fueled by both an increasing bear and human population in
Maine (MDIFW, 2017; US Census Bureau, 2017). Changing human and natural landscapes have immense implications for bear management strategies (i.e., urban versus rural) and their results, and adapting to these changes has become a serious issue for both state wildlife agencies and municipal governments in Maine (Baruch-Mordo et al., 2011; Kretser, Curtis, & Knuth, 2009; MDIFW, 2017).

Over the last twenty years, black bear management has become one of the more contentious and public political issues in Maine (Loker & Decker, 1995; Manfredo, Teel, & Henry, 2009; MDIFW, 2017). With a current population of approximately 36,000 bears, the Maine Department of Inland Fisheries and Wildlife (MDIFW) has currently set annual target harvest numbers at around 3,000-4,000 individuals so as to “keep the population at a level consistent with healthy, productive bears that experience few human conflicts” (MDIFW, 2017, p. 22). While still and stalk hunting methods are allowed, the three most widely used bear hunting methods are: baiting, hounding, and trapping (BHT). Specifically, these methods entail:

1. Baiting (B) – habituating bears to a particular area using any animal, plant, or derivative thereof that is safe for bears to consume;
2. Hounding (H) – utilizing packs of radio-collared hounds to pursue bears and provoke them to seek refuge in a tree; and
3. Trapping (T) – setting either a cable trap (foot snare) or cage-type live trap near a bait site.
Approximately 93% of bears are hunted in the state using one of these three methods (MDIFW, 2017). Maine is currently the only U.S. state that allows all three methods as others have moved beyond them due to perceptions of animal cruelty (Gore, 2003; Loker & Decker, 1995). Approximately 85% of bears harvested in Maine are hunted over bait—one of the hunting methods that the majority of U.S. states has made illegal (MDIFW, 2017).

**Black Bear Hunting Referendums in Maine**

The public has weighed in on their opinions regarding the ethics of bear hunting through two ballot initiatives—one in 2004 and another in 2014. In 2004, a state-wide black bear hunting referendum was voted on to determine whether or not existing hunting methods should be considered a crime in Maine. Over the course of this referendum, Maine residents shared different cognitions toward specific bear hunting methods (Morell, 2014). On November 2nd, 2004, the referendum (“Do you want to make it a **crime** to hunt bears with bait, traps or dogs, except to protect property, public safety or for research?”) narrowly failed; 53.08% voted “No”, and 46.92% voted “Yes” (Maine Secretary of State, 2004).

Over the next ten years, prominent political campaigns for and against black bear hunting using bait, hounds and, traps emerged to disseminate differing opinions and strategize for a future referendum vote. In 2014, the residents of Maine had an opportunity to vote again on this issue. The question, while slightly altered was: “Do you want to **ban** the use of bait, dogs or traps in bear hunting except to protect property, public safety, or for research?” (Maine Secretary of State, 2014). During the campaign for this referendum initiative, it was clear that those in favor of the ban were largely animal welfare advocates, non-hunters, and individuals who believed using BHT to be inhumane. Those against the ban were largely comprised of state government officials, hunting organizations, and the general hunting community. Recognizing
that nearly all bears hunted in Maine are hunted using one of the three contentious methods, MDIFW maintained their position in opposition to the ban in an attempt to maintain access to management tools that would keep a desired bear population level in the state; thus MDIFW immediately became a central target by organizations in favor of the ban. However, on November 4\(^{\text{th}}\), 2014, the referendum was once again narrowly voted down; 53.41% voted “No”, and 46.59% voted “Yes” (Maine Secretary of State, 2014).

Given the closeness of the vote, stakeholder groups on both sides are confident that a third referendum will be held in the future. In the meantime, it is important to explore the differing viewpoints of the voting public alongside stakeholders on both sides in order to understand cognitions surrounding current black bear hunting practices in Maine. Identifying the reasons behind the public’s differing views of black bear hunting in Maine is a critical step toward adapting current black bear management strategies to meet public perception and mitigate future HBCs.

**Research Motivations**

Print news media played an integral role in informing the public of bear hunting policy issues in Maine, and should be further investigated given its powerful impacts on voting decisions and identifying themes in public discourse (Krippendorff, 2004). To analyze the role of print media surrounding the 2004 and 2014 referendums, we used a quantitative content analysis (QCA) approach to examine major themes present in the black bear hunting debate. Traditionally, human dimensions research has focused on hunters’ attitudes toward different game species, including black bears (Bowman et al., 2001; Decker et al., 2012; ElHamzaoui et al, 1994; Gore et al., 2007; Spencer, Beausoleil, & Martorello, 2007; Zajac et al., 2012). Presently, demographics and cultural attributes in the US are changing rapidly with immigration,
urbanization, technology-enabled work patterns, and differences between generations (Fleishman et al., 2011; Heberlein, 2012). As mentioned, these shifts may change the way people think about wildlife, which in turn influences how the public perceives a species (animals or plant) should be managed (Manfredo, Teel, & Henry, 2009). One reflection of the shift in society’s use of wildlife resources is from primarily consumptive (e.g., hunting) based to non-consumptive (e.g., wildlife viewing) which is observed in human-black bear interactions (Manfredo, Teel, & Henry, 2009).

In light of these shifting relationships people have with wildlife, MDIFW is in a prime position to begin adaptively planning for black bear management in the state. The most recent Big Game Management Plan (2017) identifies strategies to help understand these major concerns as the following:

1. Periodically survey the public to determine levels of acceptance for human-bear conflicts and bear population size (High Priority)
2. Improve monitoring of number, type, and severity of human-bear conflicts to assess whether population is above social carrying capacity (High Priority)
3. Conduct a follow up survey of hunters to better understand why some hunters are not interested in hunting bears to help identify more effective strategies for increasing participation (High Priority)

It is evident that MDIFW desires to understand the nature of the bear hunting debate. Wildlife management plans are contingent on successful cooperation with the public and hunting community in Maine. This study will only help to further describe the nature of this debate.

**Importance of Cognitions Toward Bear Hunting**

This research takes place within the social-science/policy interface concerning black bear hunting legislation in Maine. By social-science/policy interface we mean the relationships,
communication tools and networks, and cooperation between the people and agencies behind the black bear hunting debate (Game, Kareiva, & Possingham, 2013; Kellert, 1994). This area, where public opinion meets policy, has not yet been evaluated in the literature for bear hunting in Maine. Future management planning may be hindered if management entities do not communicate, hold shared visions as constituents, agree upon management objectives, and understand the role of news media in wildlife conservation (Game, Kareiva, & Possingham, 2013; Kellert, 1994; Krippendorff, 2004). The severity of past policy disputes makes it clear that black bear hunting management in Maine can be characterized as a “wicked problem”: a problem that is “ill-defined”, with no clear “fi[x]”, and is too “complex and unstable to have solutions” (Buck, 2009, p. 172). Buck contends that state wildlife problems are especially wicked given that they vary so widely depending on the state’s ecology, history, culture, politics, and economics, and thus there is no nationwide template that is practical for all states to employ (Buck, 2009). In past big game management studies, HDW research often explores hunter, landowner, and resident cognitions toward different game species and their management (Bowman et al., 2001; Gore et al., 2007; Spencer, Beausoleil, & Martorello, 2007; Zajac et al., 2012). HDW frequently uses cognitive hierarchy theory to frame many of the complex interactions, emotions, and behaviors that people exhibit toward different wildlife species (Spencer, Beausoleil, & Martorello, 2007; Vaske & Donnelly, 1999). Through this quantitative content analysis, we intend to assess the potential social factors impacting future black bear hunting policy decisions in Maine by exploring the presence of different cognitions in print news media. We contend an evaluation of the interactions in news media among entities in the face of uncertainty may inform the processes by which management policies and actions are implemented.
The primary objectives of this study were to: (a) describe constructs of interest toward bear hunting methods and policy in Maine as indicated by cognitive expressions and stakeholder representation in news media, (b) determine if one referendum position was represented more than another, and (c) characterize institutional barriers and factors that will impact future black bear hunting policy in Maine.

**Methods**

**Quantitative Content Analysis**

Analyzing print media will aid in our understanding of the cognitions and identification of key stakeholders in the BHT debate. Presence of recurring attitudes, beliefs, and norms i.e., *cognitive expressions* of Maine residents toward the referendums and different harvest methods are essential to our exploration. Cognitive expressions were adapted from a content analysis exploring attitudes toward wolves in the United States and Canada, which employed a specific classification system to identify three categories of evaluative statements of cognitions toward wolves; Houston, Bruskotter, and Fan (2010) refer to attitudes, beliefs, and norms as *attitude expressions*, however, we decided to refer to these three constructs together as cognitive expressions (Houston, Bruskotter, & Fan, 2010). We approached addressing the presence of cognitive expressions throughout both samples utilizing quantitative content analysis, which is a research technique for systematically analyzing the manifest content of communication (Riffe, Lacy, & Fico, 2014). The goal of this research is to explore the manifest content within the samples, and identify key word/phrase frequencies and relationships between them. QCA helps to add context to the topic of interest as the words/phrases that appear most frequently are often those that reflect the most meaningful and important concerns within the communication genre (Riffe, Lacy, & Fico, 2014). This quantitative content analysis attempts to characterize both the
development and distribution of newspaper content and the presence of differing public perceptions of the referendums and BHT of bears in Maine.

**Data Collection**

Maine is home to upwards of 40 daily or weekly newspapers, ranging in circulation from several hundred to nearly 50,000 (Alliance for Audited Media, 2018). However, most of these newspapers are primarily accessed as physical paper documents; electronic and archival access is limited to high-circulation papers. Due to the lack of digitized content, we chose to focus our data collection efforts on five major local publications that were available in the ProQuest database Maine Newsstand. Maine Newsstand offers a full index to and full text coverage of the most prominent newspapers throughout the state: *Bangor Daily News* (Bangor), *Portland Press Herald* (Portland), *Kennebec Journal* (Augusta), *Morning Sentinel* (Waterville), *Sun Journal* (Lewiston), and the now-defunct *Maine Times* (Brewer) (Table 2.1):

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kennebec Journal</td>
<td>Augusta</td>
<td>6,278</td>
<td>Daily</td>
<td>2005-2015</td>
<td>0</td>
<td>32</td>
</tr>
<tr>
<td>Morning Sentinel</td>
<td>Waterville</td>
<td>11,299</td>
<td>Daily</td>
<td>2005-2015</td>
<td>0</td>
<td>31</td>
</tr>
<tr>
<td>Sun Journal</td>
<td>Lewiston</td>
<td>46,106</td>
<td>Daily</td>
<td>2006-2015</td>
<td>0</td>
<td>24</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>71</strong></td>
<td><strong>176</strong></td>
</tr>
</tbody>
</table>

*Data retrieved from Alliance for Audited Media’s Media Intelligence Center (2018)*

It is important to note that digital access to all five publications throughout both samples was not available. Only articles from the *Bangor Daily News* and *Portland Press Herald* are available through Maine Newsstand surrounding the 2004 referendum. Ideally, we would have access to all five major local publications, however the *Bangor Daily News* and *Portland Press*
Herald are by far the most circulated newspapers and typically produce the majority of newspaper articles amongst Maine’s most prominent newspapers. Articles surrounding the 2014 referendums are available in all five publications.

**Sampling procedure.** Newspaper articles were selected using a search phrase that isolated articles that were relevant both one year before and after the 2004 and 2014 referendums: (black AND bear*) AND hunt* AND (referend* OR ballot*). Refining the most relevant keyword search to capture articles about the referendums was an iterative process. We revised our search so that we were able to exclude articles that did not concern the bear hunting referendums (e.g., stories about the University of Maine’s black bear mascot or sports teams, stories mentioning African American voters or the “black vote”, etc.). The final keyword search yielded 71 articles surrounding the 2004 referendum, and 184 articles surrounding the 2014 referendum (Table 2.1). Any articles found to be irrelevant to the referendums within the sample were isolated and removed during coding; following this, 100% of articles surrounding the 2004 referendum were retained (N=71), and 95% of articles surrounding the 2014 referendum were retained (N=176) (Table 2.1).

**Coding Schema**

Throughout this study, we recorded standard descriptive information (e.g., publication data, article format) and measured: (1) the presence of cognitive expressions, (2) the representation of stakeholders, and (3) the representation of referendum positions. Houston, Bruskotter, and Fan (2010)’s content analysis methodology was adapted for this study because it utilized psychological constructs typically explored in human-wildlife conflict research. We coded for three specific constructs: (a) attitudes, defined as “evaluations or feeling states” such as “BHT is cruel” or “BHT is humane”; (b) beliefs, something an individual holds as true or
factual such as “BHT teaches bears to pursue human food” or “BHT stabilizes the bear population”; and (c) norms/judgements, defined as prescriptive statements as to how bear hunting should be managed, treated, or regarded (Houston, Bruskotter, & Fan, 2010; Vaske & Donnelly, 1999). Norms included phrases such as “voters should reject the referendum” or “BHT should be banned”. Amongst these three cognitions, we identified 13 different evaluative or prescriptive statements to code for in order to gather more in-depth understanding of the issue (Figure 2.1):
<table>
<thead>
<tr>
<th>Constructs of Interest</th>
<th>Concept Coded (Valence)</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Attitudes toward bear hunting</strong>&lt;br&gt;Direct evaluations of bear hunting</td>
<td>BHT is bad, detrimental (-)</td>
<td>BHT is cruel; unethical; unsporting</td>
</tr>
<tr>
<td></td>
<td>BHT is good, beneficial (+)</td>
<td>BHT is humane; ethical; sporting</td>
</tr>
<tr>
<td></td>
<td>Neutral toward BHT (?)</td>
<td>No attitude toward BHT</td>
</tr>
<tr>
<td></td>
<td>BHT does not benefit bears (-)</td>
<td>Bears self-regulate; learn to pursue human food; inflates population</td>
</tr>
<tr>
<td></td>
<td>BHT benefits bears (+)</td>
<td>BHT stabilizes the population; keeps bears in habitat</td>
</tr>
<tr>
<td><strong>Beliefs about bear hunting</strong>&lt;br&gt;Assertions of fact about bear hunting</td>
<td>Do not need BHT (-)</td>
<td>Can control bears with stalk/still hunting</td>
</tr>
<tr>
<td></td>
<td>Need BHT (+)</td>
<td>Can only control bears with BHT</td>
</tr>
<tr>
<td></td>
<td>BHT does not benefit humans (-)</td>
<td>BHT counters viewing opportunities; is a poor tradition; unrelated/increasing HBC</td>
</tr>
<tr>
<td></td>
<td>BHT benefits humans (+)</td>
<td>BHT is a celebrated tradition; financially important; funds conservation; mitigates HBC</td>
</tr>
<tr>
<td><strong>Norms about bear hunting</strong>&lt;br&gt;Prescriptive statements about bear hunting policy</td>
<td>Referendum should pass (-)</td>
<td>BHT should be banned; bears should be protected</td>
</tr>
<tr>
<td></td>
<td>Referendum should not pass (+)</td>
<td>BHT should be allowed; bears should be controlled</td>
</tr>
<tr>
<td></td>
<td>Bear hunting should be designed by public opinion (-)</td>
<td>Wildlife managers should design bear hunting rules based on public opinion</td>
</tr>
<tr>
<td></td>
<td>Bear hunting should be managed by professionals (+)</td>
<td>Wildlife managers should design bear hunting rules</td>
</tr>
</tbody>
</table>

**Figure 2.1.** Conceptual map of constructs and conceptual categories (i.e., cognitive expressions coded in analysis). Valence of coded concepts refers to positive or negative cognitions toward BHT (Adapted from Houston, Bruskotter, & Fan, 2010).
**Coding protocol.** Each article was coded for the presence of the constructs of interest, which are detailed above (Figure 2.1). If the construct appeared within the text, it was coded as an expression of that concept. Additionally, we coded for the presence of stakeholder representation. Identifying the presence of recurring stakeholders was adapted from a media analysis of Maine aquaculture coverage which employed a specific presence and absence system to identify source providers within newspaper articles (Duffy & Rickard, 2017). Frequent mentions of an individual or organization including explanations of their position, direct quotations, and/or paraphrased segments from said individual or organization signify an instance of stakeholder representation. The majority of newspaper articles quote or reference (either directly or via verbs of attribution) key stakeholders in the bear hunting debate; those that were utilized in either format were characterized as an instance of stakeholder representation. If a stakeholder was referenced at least once in three or more articles, they were included in the survey of overall source coverage. Sixteen stakeholder groups emerged from preliminary analysis (Table 2.2):
Table 2.2. Stakeholder representation.

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Example(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-Referendum Advocacy Group</td>
<td>Save Maine’s Bear Hunt</td>
</tr>
<tr>
<td>Columnist</td>
<td>Columnist; outdoor writer</td>
</tr>
<tr>
<td>Government Agency</td>
<td>MDIFW</td>
</tr>
<tr>
<td>Hunter</td>
<td>Hunter</td>
</tr>
<tr>
<td>Hunting Association</td>
<td>Sportsman’s Alliance of Maine (SAM)</td>
</tr>
<tr>
<td>Hunting Professional</td>
<td>Maine Guide</td>
</tr>
<tr>
<td>Hunting Service Provider</td>
<td>Outfitter; taxidermist</td>
</tr>
<tr>
<td>Indigenous Community</td>
<td>Tribe</td>
</tr>
<tr>
<td>Judicial System</td>
<td>Judge</td>
</tr>
<tr>
<td>Neutral Wildlife Organization</td>
<td>Maine Audubon Society</td>
</tr>
<tr>
<td>Newspaper</td>
<td>Reporter; news organization</td>
</tr>
<tr>
<td>Non-Expert</td>
<td>Uninformed Maine citizen; celebrity</td>
</tr>
<tr>
<td>Non-Hunter</td>
<td>Non-hunter (identified as such)</td>
</tr>
<tr>
<td>Politician</td>
<td>Governor; Senator; elected official</td>
</tr>
<tr>
<td>Pro-Referendum Advocacy Group</td>
<td>Mainers for Fair Bear Hunting</td>
</tr>
<tr>
<td>University</td>
<td>Professor</td>
</tr>
</tbody>
</table>

Finally, we coded for referendum position, including “In Favor”, “Opposed”, or “Neutral”. The article’s position was coded as “Neutral” if both sides were presented equally.

**Coder training and intercoder reliability.** Two coders, including the lead author of this article, coded news stories for cognitive expressions, stakeholder representation, and referendum position. We randomly selected 50 news stories outside of the study period (1995-2003, 2005-2013, and 2015-2018) to train coders and to test the reliability of the coding protocol (Appendix A). Accuracy rates above 80% are generally considered acceptable for content analyses (Krippendorff, 2004). We coded approximately 25 news stories per week, modifying the protocol to improve agreement. At the end of each week, we held discussions that explored coder disagreement, which enhanced our understanding of the boundaries of each code. Since some codes—such as the cognitive expressions—were more difficult to identify than others, this
process allowed for both coders to develop a coding protocol that was both accurate and inclusive. After two weeks, we reached 80% coding agreement.

We then conducted an intercoder reliability test using at least 10% of news stories from both the 2004 referendum (N=25) and 2014 referendum sample (N=25). Intercoder reliability was assessed using Krippendorff’s Alpha coefficient (Freelon, 2013; Krippendorff, 2004). All variables were at or approaching the minimum accepted value of 0.80.

**Data analysis.** To analyze news media collected throughout 2003-2005 and 2013-2015, the software program NVivo 12© was identified as an optimal program. NVivo 12© is a software program that allows qualitative data to be imported, transcribed, and coded (Bazeley & Jackson, 2013; Richards, 1999) while providing simple instructions to perform these tasks (Bazeley & Jackson, 2013; Welsh, 2002). The program removes set distribution between data and interpretation to provide common themes and patterns (Bazeley & Jackson, 2013; Richards, 1999; Welsh, 2002) within the differing views presented in news media. Our unit of analysis for this study was each individual newspaper article (Bazeley & Jackson, 2013). Frequency and cross-tabulation tests amongst the constructs of interest were examined as a starting point.

**Results**

**Demographic Information**

**Distribution over time.** The distribution of articles fluctuated throughout November 2\(^{nd}\), 2003-November 2\(^{nd}\), 2005 and November 4\(^{th}\), 2013-November 4\(^{th}\), 2015 (Figure 2.2). In the 2004 sample, coverage dramatically peaked at 16 articles (23%) in October, 2004. Similarly, in the 2014 sample, coverage peaked at 58 articles (33%) in October, 2014 (Figure 2.2). Additionally, in the 2014 sample there was a peak in coverage in February, which can most likely be attributed to the announcement that the referendum question had received enough signatures to be placed on the November ballot (Figure 2.2). For both referendums, coverage declined after November
and remained relatively low for the following months (Figure 2.2). It is clear that the abrupt spike in articles about the referendums can be attributed to the imminence of the referendums’ voting day.

**Figure 2.2.** Trends in 2004 and 2014 referendum coverage. Arrows indicate when referendum voting occurred.

**Distribution by newspaper.** The distribution of articles varied across the five different newspapers (Figure 2.3). In the 2004 sample, both the *Bangor Daily News* and *Portland Press Herald* contributed roughly 50% of news articles throughout the two-year collection window. In the 2014 sample, the *Bangor Daily News* (26%) and the *Portland Press Herald* (24%) contributed the most newspaper articles throughout the two-year collection window. The *Kennebec Journal* (18%) and *Morning Sentinel* (18%) contributed similarly, and were followed closely by the *Sun Journal* (14%). The overall difference in quantity is most likely due to the varying size and circulation of the five newspapers.
Figure 2.3. Referendum coverage by newspaper, 2004 and 2014.

**Distribution by format.** In the 2004 sample, the majority of articles were formatted as “Straight News” (55%), which are defined by the delivery of only essential information and use the “inverted pyramid format” (Duffy & Rickard, 2017, p. 11) (Figure 2.4). “Column” (24%) articles present a clear position of a newspaper or staff member and comprised roughly one quarter of the surveyed articles (Duffy & Rickard, 2017). “Feature” (11%) and “Opinion” (10%) articles made up roughly one fifth of the sample. “Feature” articles do not follow “traditional news format, provide considerable detail, often more than 500 words, and present a critical or appreciative tone”; “Opinion” articles can be defined as those that “present a clear position from a contributing author” (Duffy & Rickard, 2017, p. 11).

In 2014, “Straight News” (40%) pieces comprised less than half of the articles in the sample, while the fewest articles in the sample were “Column” (9%) and “Feature” (12%) pieces. Finally, “Opinion” (39%) articles represented more than one third of the sample, which was a dramatic increase from the 2004 sample (Figure 2.4):
Cognitive Expressions

**Attitudes.** The attitude that *bear hunting with bait, hounds, or traps* is good accounted for only 4% percent of all cognitive expressions, while the attitude that *bear hunting with bait, hounds or traps is bad* accounted for 14% (Figure 2.5). It is clear that “BHT is bad” was utilized almost twice as much (14%) as other negative expressions toward BHT, and that the argument that “BHT is good” was utilized far less (4%) than the beliefs and norms in favor of these methods.

**Beliefs.** The beliefs that *baiting, hounding, and trapping are needed to control the population* (15%), *have a positive effect on bears* (5%), and *have a positive effect on humans* (15%) together accounted for 35% of all cognitive expressions (Figure 2.5). It is clear that those that are in favor of these methods largely believe that they are critical to controlling the bear population and are important to hunters, the hunting industry, and HBC reduction. The beliefs
that *baiting, hounding, and trapping are not needed to control the population* (7%), *have a negative effect on bears* (8%), and *have a negative effect on humans* (7%) together accounted for 22% of all cognitive expressions (Figure 2.5). Those that are against BHT do not use beliefs in their arguments as much as those that are in favor BHT.

**Norms.** The norms that *bear hunting should be evaluated by wildlife managers* (10%) and *that the referendum should not pass* (7%) were utilized more than their negative counterparts (Figure 2.5). The norms that *bear hunting should be managed by public opinion* (4%) and *that the referendum should pass* (4%) made up only 8% of all cognitive expressions over the sampling period (Figure 2.5):

![Figure 2.5](image)

**Figure 2.5.** Percent coverage of cognitive expressions in 2004 and 2014 news media samples. “Positive” and “Negative” coverage refers to the valence toward specific cognitions.
Stakeholder Representation

Stakeholders that were characterized as in favor of the referendums appeared 220 times throughout both samples (Figure 2.6):

**Figure 2.6.** Frequency of stakeholder representation in 2004 and 2014 news media samples.
Representation from the “Pro-Referendum Advocacy Group” (73%) stakeholder group outpaced all others in the pro-referendum category. Stakeholders against the referendums appeared 745 times throughout both samples. Representation from both the “Government Agency” (27%) and “Hunter” (24%) stakeholder groups appeared more frequently than all others in the anti-referendum category. Neutral stakeholder groups appeared 155 times.

**Conceptually clustered matrix.** The spread of cognitive expressions throughout both samples are best characterized through specific references to certain stakeholder groups’ cognitions toward BHT and the bear hunting referendums. We used a *conceptually clustered matrix* (Miles, Huberman, & Saldaña, 2014) to depict the relationships and underlying themes between stakeholders and their cognitions—including quotations from or about each stakeholder group in order to represent said relationships. Conceptually clustered matrices organize different items and themes into specific columns and rows, which help to explore the connections between different concepts that are relevant to the subject (Miles, Huberman, & Saldaña, 2014). This conceptually clustered matrix divides stakeholder groups and specific examples of each groups’ representatives by their referendum position. Different cognitive expressions from both of the news media samples are then listed alongside each stakeholder group in order to display a diverse series of verbatim examples of cognitive expressions that were present in news media. Each example is preceded by a bolded word that represents a theme that captures the essence of each group’s larger ideals. These themes will be explored in the Discussion (Table 2.3):
Table 2.3. Conceptually Clustered Matrix.

<table>
<thead>
<tr>
<th>Referenda Position</th>
<th>Stakeholders</th>
<th>Theme(s): Cognitive Expressions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pro-Referendum</td>
<td>Advocacy Group: The Humane Society of the United States; Mainers for Fair Bear Hunting</td>
<td>Unethical: “‘Maine black bears are gentle, intelligent, shy, peaceful animals that deserve better treatment.’” (Kennebec Journal, 2014)</td>
</tr>
<tr>
<td></td>
<td>University, Non-Expert, &amp; Non-Hunter: Department; professor; uninformed Maine citizen; celebrity; non-hunter</td>
<td>Intuition: “…most Mainers do care about needless animal suffering, especially if it can be prevented.” (Kennebec Journal, 2014)</td>
</tr>
<tr>
<td>Opposed</td>
<td>Government Agency: Department of Inland Fisheries and Wildlife; Maine Warden Service</td>
<td>Ethical: “‘I adamantly believe that our management tools are the most effective and most humane things for black bears in the state of Maine.’” (Bangor Daily News, 2014)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Financial: “Camuso pleaded for voters to not hamstring the agency.” (Portland Press Herald, 2014)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Necessary &amp; Public Safety: “…Without the current hunting methods, black bear numbers will grow, and bears increasingly will forage in populated areas, creating public safety risks.” (Portland Press Herald, 2004)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Managers Know Best: “The Maine Department of Inland Fisheries and Wildlife is opposed to the ban, saying that bear management decisions should be made by wildlife professionals.” (Bangor Daily News, 2004)</td>
</tr>
<tr>
<td><strong>Neutral</strong></td>
<td><strong>Hunting Community &amp; Anti-Referendum Advocacy Group:</strong> <em>Hunter; Sportsman’s Alliance of Maine; Maine Guide; outfitter; Save Maine’s Bear Hunt</em></td>
<td><strong>Ethical:</strong> “’We need these methods to harvest animals with a good, clean, ethical shot.’” (Sun Journal, 2014)</td>
</tr>
<tr>
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</tr>
<tr>
<td><strong>Outdoor Columnists/Writers:</strong> <em>Maine Northwoods Sporting Journal; outdoor sports columns</em></td>
<td><strong>Ethical:</strong> “[These methods] are not cruel or unfair—unless you are among those who think that bears should be armed to have a fair chance.” (Morning Sentinel, 2014)</td>
<td>** Tradition:** “’…I do believe that we ought to fight to defend our outdoor heritage on the grounds that it is our heritage…’” (Bangor Daily News, 2004)</td>
</tr>
<tr>
<td><strong>Maine Politicians:</strong> <em>Senators; Governors; elected officials</em></td>
<td><strong>Neutral</strong></td>
<td><strong>Objectivity:</strong> “Maine Audubon… said it would not take a position on the referendum so it can ‘act as an objective information source.’” (Portland Press Herald, 2004)</td>
</tr>
</tbody>
</table>
Referendum Position

Given the extreme polarization of views on this issue, deciding whether or not each article was either in favor of the referendums, opposed to the referendums, or delivered a neutral depiction of the referendums was straightforward. A total of 58% of the articles were neutral toward the referendums, 18% were in favor, and 24% were opposed to the referendums (Figure 2.7). It is clear that most of the articles that were both in favor and opposed to the referendums were “Opinion” pieces (Figure 2.7). The majority of articles that delivered a neutral depiction of the referendums were “Straight News” articles, followed by “Feature” and “Column” pieces—only 1% of “Opinion” pieces were neutral (Figure 2.7):
Figure 2.7. Proportion of referendum position coverage (In Favor, Opposed, and Neutral) and proportion of article type (“Straight News”, “Column”, “Feature”, and “Opinion”) that was coded within each position for all articles in the 2004 and 2014 samples.

**Discussion**

This QCA revealed compelling parallels between the results of the actual referendums and the voices of those positioned at the center of the bear hunting debate in news media. While public discourse throughout both news media samples is relatively equally spread in terms of positive and negative cognitions toward BHT and referendum position, it is the specific cognitive expressions that are utilized more frequently as well as the vast difference in stakeholder representation which confirm the reality of the harsh dichotomous split between the groups. This
highly political issue encouraged the development of these opposing groups and highly disparate campaigns. What is clear is that both sides—those *In Favor* and those *Opposed* to the referenda—share the same goal of doing what is best for black bears, but the ways in which they desire to accomplish this goal are extremely different. As depicted in the conceptually clustered matrix (Table 2.3), six key themes regarding black bear management and BHT emerged amongst the stakeholder groups that are *In Favor* of both referendums: the *unethical* nature of BHT, general *intuition* that BHT are bad, BHT are *unnecessary* for controlling the population, BHT are *nonsensical*, general *uncertainty* about the referendums, and that the *public knows best* when it comes to deciding how wildlife should be treated (Table 2.3). Each of these themes illustrate the *In Favor* stakeholder groups’ general ethical concerns and uncertainty regarding the legitimacy of BHT as appropriate methods to hunt bears in Maine. These themes are essentially the antonyms of the six themes that were identified for the *Opposed* side: the *ethical* nature of BHT, the *financial* importance of BHT for bear conservation and the sustainability of the industry, BHT are *necessary* for controlling the population and improve *public safety* by mitigating HBCs, BHT are essential to the *tradition* of bear hunting, and that *managers know best* when it comes to deciding how wildlife should be treated (Table 2.3).

While the results of QCAs are inherently descriptive in nature, we believe that there may be underlying social mechanisms that are driving stakeholder divergence and communication obstacles. Throughout both news media samples, it is clear that there are elements of shame and disdain that are shared between the groups and are illustrated in the emergent themes. Leaders on both sides utilized language that suggests that they harness exceptional biases toward their stakeholder group(s). This highlights an essential principle of *Social Identity Theory* (SIT): people exhibit intergroup differentiation and discrimination in order to preserve their self-esteem.
SIT refers to a person’s understanding of belonging to a social category or group (Stets & Burke, 2000; Tajfel & Turner, 1986). According to SIT, once an individual feels a sense of belonging with a social group, an individual then finds negative attributes about those that are not within their group in order to enhance their own self-image (Stets & Burke, 2000; Tajfel & Turner, 1986). Group members are more prone to thinking that their own group is superior to other groups, and are often willing to utilize discrimination to defend their groups’ standing and/or policies (Mullen, Brown, & Smith, 1992). Throughout our analysis, it is apparent that those from the anti-referendum position use rhetoric that suggests that their commitment to hunting traditions in Maine fuels their contempt for those that are in favor of the referendums, whom they often characterize as “southerners” for their lack of experience with black bears and other wildlife in Maine. Those on the pro-referendum side use rhetoric that suggests that they characterize their opposition as “cruel” for their disregard and lack of sympathy for the treatment of bears in Maine. These stereotypes only ignite further tension and discourage the possibility for developing a stakeholder community moving forward (Stets & Burke, 2000; Tajfel & Turner, 1986). Additionally, the ways in which both sides are approaching the baiting, hounding, and trapping debate to begin with are vastly different. Those that are against BHT are largely arguing that it is bad, unfair, and unethical. Conversely, those in favor of BHT argue that they are necessary and good for people. Until both sides can adequately address the concerns from the other and thus recognize that the conversation must include a discussion that defines ethical wildlife management, it is doubtful that any compromise on this debate will be reached in the near future.
Conclusion

Throughout this QCA, an assessment of what kinds of information was communicated to the public directly ultimately guides conclusions regarding both the public’s perceptions of black bear hunting, different management programs, and major stakeholders, which will enhance our understanding of the relationship between mass media and controversial wildlife plans. In order to combat the wicked nature of this controversial state wildlife management issue, it is essential to develop a novel group of key stakeholders tasked with exploring opportunities for developing a black bear management plan that works for both Maine’s bears and its people. While both groups are passionately committed to bear conservation, their differing motivations and ideas for how best to promote the health of the bear population are wildly disparate and represent an institutional barrier to future bear hunting policy. It is apparent that these differing views inherently represent differing values, which make it exceptionally difficult for either side of the debate to communicate effectively let alone develop a community of respect and understanding.

A new approach to scientific decision-making warrants developing an extended peer community, or an extension of legitimacy and respect for collaboration with new stakeholders (Funtowicz & Ravetz, 1994). An extended peer community will only enhance dialogues surrounding the intersection of bear ecology and policy in practice (Funtowicz & Ravetz, 1994; Hernández-González & Corral, 2017). Such a group is an effective democratic element that works to include multiple perspectives and forms of knowing (Funtowicz & Ravetz, 1994) and will enhance bear hunting policy development in Maine. In order to build a collaborative extended peer community, third-party mediated discussions may be the only way for all groups to move forward in developing some sort of stakeholder community tasked with conjuring a bear management plan that works for all prominent bear management stakeholders in Maine.
(Funtowicz & Ravetz, 1994; Hernández-González & Corral, 2017). The continued exploration of the relationships between media and controversial management plans will only help to further inform wildlife managers on future bear hunting policy measures through the synthesis of public discourse and perspectives of Maine citizens.

**Limitations**

For future exploration of news media surrounding controversial wildlife management plans, including national news publications could yield a more robust series of findings. Additionally, utilizing a social statistics software to explore linear and co-occurrence trends of constructs of interest will only serve this study further. It is clear that the themes that emerged throughout the exploration of present cognitive expressions in news media warrant in-depth and dynamic qualitative analysis.
CHAPTER 3
ASSESSING STAKEHOLDER PERCEPTIONS OF BLACK BEAR MANAGEMENT IN MAINE

Introduction
Over the last half century, public values toward wildlife and wildlife management have shifted dramatically. Changes in values on a societal level are often the result of broad cultural and environmental factors (Manfredo, Teel, & Bright, 2003). Inglehart (1997) proposes that post-industrialized nations endure a shift in “need states”, where modernized societies become largely concerned with quality of life versus the urgency of basic necessities, such as food and shelter (Inglehart, 1997; Inglehart & Baker, 2000; Manfredo, Teel, & Bright, 2003). Wealthier and more educated generations of people living in modern societies engage with more post-materialist concerns (Ingleheart, 1997). Defending and protecting the rights of wildlife is a growing value orientation in contemporary society. An increasing emphasis on the ethical considerations of different wildlife-related activities has forced wildlife managers to consider alternatives to traditional wildlife management tools, such as hunting and fishing.

The laws that define wildlife policy are dictated by the Public Trust Doctrine. According to this common law, wildlife are “ownerless property managed in trust by the government for the greatest common good” (Manfredo et al., 2009, p. 143). The Public Trust Doctrine is fundamental to the North American conservation model, which according to Organ and Batcheller (2009), “is under siege” (Manfredo et al., 2009, p. 161). For nearly 150 years, the government has acted in line with public perceptions as trustees upholding this principle. With increasing affluence and advanced agricultural technology, wildlife management in the US is no longer strictly concerned with the preservation of necessary food supplies, but rather the
preservation of wildlife for cultural and spiritual purposes (Manfredo et al., 2009). Based on the Public Trust Doctrine, federal and state-level governments must be capable of adapting their wildlife management strategies to reflect and remain consistent with contemporary concerns (Manfredo et al., 2009; Manfredo, Teel, & Bright, 2003).

In the last half century, interest in consumptive recreation has been declining in outdoor culture and as a wildlife management tool (Organ & Fritzell, 2000). The acceptance of consumptive recreation as a means to manage growing wildlife populations has dwindled in the United States (Manfredo, Teel, & Bright, 2003; Organ & Fritzell, 2000). Younger generations are more interested in non-consumptive forms of recreation, and values toward wildlife management are shifting, which has encouraged wildlife management agencies to redefine their wildlife management strategies and priorities (Clark et al., 2017; Fleishman et al., 2011; Heberlein, 2012). The role of sportsmen and women as conservation stewards has been challenged under the guise of younger generations of outdoors-people (Vaske, Jacobs, & Sijistma, 2011). The most recent National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (FHWAR) reported that 103.7 million people participated in wildlife-associated recreation in 2016. At 83%, wildlife watchers made up the majority of wildlife-associated recreators, while sportspersons made up only 17% (FHWAR, 2016). Wildlife-recreation expenditures totaled to $156.9 billion dollars in 2016; $75.9 billion of said expenditures were by wildlife watchers and only $26.2 billion were by hunters. Given these findings, it is clear that the majority of people involved in wildlife-related recreation are participating in non-consumptive recreation; thus, an evaluation of the future direction of wildlife management and policy should be addressed. Not only is hunting culture declining, but Organ and Fritzell (2000) have also predicted a widespread shift away from hunting and fishing practices as management tools, and a
move toward more ethical approaches that laud ideologies that consider the rights of wildlife as similar to the rights of humans.

In North America, moose, deer, elk, bears, turkeys, and some big cats are among the most popular big-game species for sportsmen and women to hunt for sport and trophy. American black bears (*Ursus americanus*) in particular are a highly sought after big game species in the 28 states that have a harvest season (Gore, 2003). Depending on black bear population statistics, human population statistics, and consumptive recreation interest, long-term management goals for black bears vary from state-to-state (Gore, 2003). What is clear is that managing bears to mitigate human-bear conflicts and to ensure a stable, healthy population are essential to each states’ bear management mission (Gore, 2003). Since the early 1990s, concerns for the fairness and ethics of bear hunting have been addressed on the political front in nearly a dozen states across the country—the State of Maine is no different (Gore, 2003). In Maine, wildlife managers and policymakers are reconsidering the ethics of several different big game harvest methods (MDIFW, 2017). Changes to hunting season lengths, gear restrictions, protection of certain sexes, etc. reflect the widespread inclusion of the wellbeing of wildlife in hunting and fishing policy. In line with said changes, nearly every single state in the nation has banned certain black bear harvest methods due to public perceptions that certain methods are cruel and unfair—except for Maine (Gore, 2003).

**Bear Hunting in Maine**

Given widespread societal changes, it is no surprise that the debate over hunting black bears with bait, hounds, and traps is a contentious wildlife management issue in Maine. According to the Maine Department of Inland Fisheries and Wildlife (MDIFW), there are currently 36,000 bears in the state and the population is increasing (MDIFW, 2017).
Additionally, Maine’s human population is increasing and citizen demographics are diversifying greatly (Fleishman et al., 2011; Heberlein, 2012; US Census Bureau, 2017). As the human and natural landscape changes, the ways in which bears are managed in the state will have no choice but to change with it. Keeping up with these shifts has become a pertinent issue for both state wildlife agencies and municipal governments in Maine (Baruch-Mordo et al., 2011; Kretser, Curtis, & Knuth, 2009; MDIFW, 2017). The last twenty years of political unrest surrounding bear management have augmented the division of opposing cognitions and value orientations toward how people should interact with Maine’s black bears.

MDIFW has currently set annual target harvest numbers at around 3,000-4,000 individuals in order to “keep the population at a level consistent with healthy, productive bears that experience few human conflicts” (MDIFW, 2017, p. 22; MOGIS, 2014). While stalk and still hunting methods are legal in Maine, the most popular hunting methods are baiting, hounding, and trapping (BHT):

1. Baiting (B) – habituating bears to a particular area using any animal, plant, or derivative thereof that is safe for bears to consume;

2. Hounding (H) – utilizing packs of radio-collared hounds to pursue bears and provoke them to seek refuge in a tree; and

3. Trapping (T) – setting either a cable trap (foot snare) or cage-type live trap near a bait site.

Approximately 93% of bears are hunted in Maine using one of these three methods (MDIFW, 2017). Maine is currently the only U.S. state that allows all three methods as other states have changed their hunting laws due to public perceptions of wildlife cruelty (Gore, 2003; Morell, 2014). Approximately 85% of bears harvested in Maine are hunted over bait—one of the
hunting methods the majority of U.S. states have made illegal (Gore, 2003; MDIFW, 2017).

**Bear Hunting Referendums in Maine**

There have been two state-wide ballot initiatives to ban the use of baiting, hounding, and trapping to hunt Maine’s bears. The first referendum question was in 2004 and asked whether or not the state should make it a crime to hunt bears using bait, hounds, or traps. On November 2\textsuperscript{nd}, 2004, the referendum ("Do you want to make it a **crime** to hunt bears with bait, traps or dogs, except to protect property, public safety or for research?") narrowly failed; 53.08\% voted “No”, and 46.92\% voted “Yes” (Maine Secretary of State, 2004). Over the course of the referendum, the hunting community, government agencies, and animal welfare advocates vocalized their strong opinions toward BHT (Morrel, 2015). Those in favor of the referendum were largely animal welfare advocates and non-hunters, while MDIFW and the hunting community comprised those who were opposed to the referendum. MDIFW recognizes that nearly every bear that is hunted in Maine is hunted over bait, with dogs, or with traps. In an attempt to keep desired population levels, MDIFW opposed the ban. Despite the results of the 2004 referendum, both sides of the debate held firm in their positions and grew farther and farther from compromise over the next decade.

In 2014, a second referendum question was introduced after a prominent anti-BHT group called Mainers for Fair Bear Hunting submitted 80,000 signatures to Maine Secretary of State Matthew Dunlap (Maine State Legislature, 2014). While slightly altered from the 2004 referendum, the question was: "**Do you want to ban the use of bait, dogs or traps in bear hunting except to protect property, public safety, or for research?**" (Maine Secretary of State, 2014). The grueling campaign process took a financial and emotional toll on those involved on both sides of the debate, and the outcome was just as close as the first referendum. On November 4\textsuperscript{th}, 2014,
the referendum was once again narrowly voted down; 53.41% voted “No”, and 46.59% voted “Yes” (Maine Secretary of State, 2014).

Many stakeholders feel certain that a third referendum will be held in the future. It is important to explore the motivations for stakeholder involvement, inner complexities of the issue, cognitions, and value orientations that stakeholders on both sides of the debate hold toward black bear hunting in Maine. Identifying these elements could help policymakers ameliorate relationships between stakeholders. Formulating a stakeholder participation scheme that allows participants to work together rather than against each other will only help to minimize future conflict and support collaborative decision-making (Gore et al., 2006; Spencer, Beausoleil, & Martorello, 2007). It is essential that the future of black bear hunting policy is shaped with all stakeholders’ arguments in mind.

**Previous Bear Hunting Referenda Research in Maine**

In 2019, a quantitative content analysis (QCA) of Maine’s major news media outlets explored the presence of different cognitions toward the referendums and representation of stakeholders (Gundrum & Sponarski, in process). We employed *cognitive hierarchy theory* to explore cognitions toward BHT that were present in news media. This theory acts as a model that situates attitudes, beliefs, and values in order of influence (Homer & Kahle, 1988; Manfredo, Teel, & Henry, 2009). In the cognitive hierarchy framework, attitudes are defined as feeling states, beliefs are something an individual holds as true or factual, and norms are defined as prescriptive statements as to how bear hunting should be managed, treated, or regarded (Houston, Bruskotter, & Fan, 2010; Manfredo, Teel, & Henry, 2009; Vaske & Donnelly, 1999).

Our QCA of print news media found that those in favor of the referendums frequently express negative attitudes toward baiting, hounding, and trapping, while conversely those against
the referendums argue that they believe Maine needs these methods to control the population and that these methods benefit people (Gundrum & Sponarski, in process). Pro-referendum campaign groups, hunters, and government agencies appear more often than any other stakeholder group in news media (Gundrum & Sponarski, in process). Most articles were neutral toward the referendums, but more were written in opposition to the referendums than in favor (Gundrum & Sponarski, in process). These results guide our conclusions regarding the existence of varying cognitions held by different stakeholders toward black bear hunting and management programs in Maine, and is a critical step toward identifying communicative obstacles that will impede relationship-building between stakeholders.

We identified four central BHT belief dimensions from the content analysis: ecological, hunting practices, humans, and ethics. We also identified two central BHT norms: hunting management leadership and referendum position. These results encouraged us to pursue both quantitative questionnaire data and qualitative interview data with key stakeholders throughout the referendums. We explore these cognitions specifically in the questionnaire in order to explore the similarities between cognitive expressions and stakeholder position toward the referendum. Additionally, our findings will help to understand the similarities between stakeholder position and value orientations.

**Qualitative Research Methodology**

This research compares stakeholders’ cognitions toward bear hunting, variation in personal experiences with bear hunting and policy, and thoughts about how to engage in future policy development and improve stakeholder relationships. Based on previous research (Gundrum & Sponarski, in process), three distinct groups of stakeholders emerged from the news media content analysis research, which hold separate motivations for involvement, opinions
regarding the contentious nature of the debate, ideas surrounding strategies for the future, cognitions toward BHT, and wildlife value orientations: (1) members of the hunting community, (2) government officials, and (3) animal welfare advocates. It is important to note that there are some stakeholders that we included in this project that do not neatly fit within the confines of the stakeholder groups we identified in previous research. A couple of stakeholders are avid hunters who are in favor of the referendums and align themselves with the core values of multiple stakeholder groups. Other stakeholders are journalists that see the benefits and costs of BHT more clearly than others. While these viewpoints are valid and should be explored further, it is clear that the majority of stakeholders belong distinctly within one of the three groups identified above, and thus the majority of our qualitative analysis will explore the differences between these groups using a phenomenological research methodology.

Phenomenology “seeks to disclose and elucidate the phenomena of behaviors as they manifest themselves in their perceived immediacy” (Moustakas, 1994, p. 15). This approach allowed us to situate our participants’ different perspectives in order to determine the meaningful threads of their experiences and how they may or may not be similar to other participants’ experiences (Creswell & Poth, 2018). This methodological approach assumes that the individuals are the vehicles through which the essence of a phenomenon can be penetrated and characterized (Priest, 2002). At its core, utilizing a phenomenological approach to analyze interview data allowed us to extract the essences of participants’ lived experiences as a bear hunting policy stakeholder, which is in line with a larger goal of this research to unearth meaning behind the experiences of different stakeholders within the bear hunting debate in Maine (Creswell & Poth, 2018).
Quantitative Research Methodology

Attitudes, beliefs, and norms are all threads that weave into higher-order cognitions, such as value orientations (Manfredo, Teel, & Henry, 2009). Attitudes are often defined as feeling states, beliefs are something an individual holds as true or factual, and norms are defined as prescriptive statements as to how wildlife should be managed, treated, or regarded (Houston, Bruskotter, & Fan, 2010; Manfredo, Teel, & Henry, 2009; Vaske & Donnelly, 1999). Values are limited in number, but are central to one’s personal motivations as they “represent the stable realm of cognitions and cultural learning” for an individual (Manfredo, Teel, & Henry, 2009, p. 410; Rokeach, 1973; Schwartz & Sagle, 2000). While two people may have the same values, their value orientation may vastly differ. For example, two people may believe that we need to keep the bear population healthy (a value statement). One person may believe that means that we should not interfere with the bear population at all, and that hunting will only cause bears pain and could actually inflate the population. The other may believe that this means that we should hunt bears in order to keep them from starving and that killing bears actually keeps the population healthier than not. These two individuals hold the same value toward bear population health, but the attitudes, beliefs, and norms that comprise their motivations for holding this value are different.

*Wildlife value orientations* (WVOs) are a useful and tested approach used to understand the conflicts between different stakeholders that arise during wildlife conservation management disputes (Manfredo, Teel, & Bright, 2003). Wildlife value orientations exist on a continuum between dominionistic and mutualistic views (Clark et al., 2017; Dayer, Stinchfield, & Manfredo, 2007; Manfredo, 2008). A domination wildlife value orientation reflects an individual’s view of a mastery, control, and dominance over wildlife (Clark et al., 2017; Dayer,
Stinchfield, & Manfredo, 2007; Manfredo, 2008). Typically, the stronger one’s domination value, the stronger their positive cognitions toward consumptive recreation practices and prioritization of human rights over wildlife rights. Conversely, a mutualism value orientation reflects an individual’s view of shared rights between wildlife and humans, and fierce synchrony with wildlife (Clark et al., 2017; Dayer, Stinchfield, & Manfredo, 2007; Manfredo, 2008). Typically, the stronger one’s mutualism value, the stronger their positive cognitions toward non-consumptive recreation practices and prioritization of wildlife rights as equal to human rights (Clark et al., 2017; Dayer, Stinchfield, & Manfredo, 2007; Manfredo, 2008). In addition to WVOs, cognitions that were observed in previous research were examined in the form of cognitive expressions toward BHT.

Research Questions

Qualitative Research.

1. What has motivated stakeholders to be involving in shaping bear hunting policy in Maine?
2. Why is the debate over hunting black bears with BHT so contentious in Maine?
3. How did the referenda processes affect stakeholders personally?
4. What are strategies for developing future bear hunting policy that is acceptable to all stakeholders?

Quantitative Research.

5. Will stakeholders in opposition to the referendums exhibit domination wildlife value orientations and positive cognitions toward baiting, hounding, and trapping?
6. Will stakeholders in favor of the referendums exhibit mutualism wildlife value orientations and negative cognitions toward baiting, hounding, and trapping?
Methods

This study employed: (a) semi-structured interviews with major stakeholders (government officials, interest group representatives, animal welfare advocates, etc.) involved in the black bear hunting debate in Maine and (b) an online questionnaire with the same stakeholders and their relevant colleagues and/or staff. This resulted in two types of data whereby the interview data is presented and analyzed as qualitative data and the questionnaire data is presented and analyzed as quantitative data.

Qualitative Interview Research

In this study, we utilize nonprobability sampling methodology to delve more deeply into the division between bear hunting management perceptions held by stakeholders (Baker et al., 2013; Dillman, Smyth, & Christian, 2014). Specifically, we employ link-tracing network sampling, which allows us to target the socially connected subpopulation of people who are working to maintain or alter bear hunting policy in Maine (Baker et al., 2013). These people were identified in previous news media analyses, and were asked to participate in this study if they were represented in five or more news articles (Gundrum & Sponarski, in process). Thirteen semi-structured interviews with key stakeholders were conducted throughout March and April of 2019. Compliance in our study involved a semi-structured interview and an online questionnaire inquiring about their perceptions of different bear hunting methods and management. This semi-structured interview approach allowed time to explore ideas and topics away from the set questions that were presented to the interviewees, and is a common technique utilized in phenomenological studies. In line with nonprobability sampling techniques, we used quota sampling, which allowed us to extrapolate what was shared in interviews with specific stakeholders as representative of the much larger groups that they are a part of (Morse, 1991). Participants were leaders in the previous two referendums and represented a diverse sample of
the three major stakeholder groups. Interviews ranged from 30-90 minutes in length and took place in locations that were convenient to the stakeholders. All but one interview was conducted face-to-face. We met one individual in an Irving Oil Café, another in a coffee shop along the coast, a sportsman’s show, over Skype, and in offices in Augusta, Portland, and Bangor. All interviews were recorded with the permission of the participant. During each interview, we jotted notes in addition to our recordings. Interviews were transcribed verbatim by Rev.com© and stored and analyzed using NVivo 11©. After each interview, we typed up notes and read through the initial interview transcripts provided by Rev.com©. Changes to the transcript from Rev.com© were made based on a comparison of the audio transcriptions and the transcribed documents to make sure the hard copy version of the interview transcripts were accurate. The audio transcripts were listened to 2-3 times each, in addition to editing the transcripts in order to get a better understanding of the participants’ opinions. After we were satisfied that the audio and transcripts matched, we moved into coding.

The interviews covered topics related to the strengths and weaknesses of the BHT of bears, their personal motivations for shaping hunting policy, how the referendums affected them personally, etc. (Appendix B). These questions were developed based on the results from the quantitative analysis of news media surrounding the bear hunting referendums (Gundrum & Sponarski, in process). In order to identify thematic patterns and concepts within interview transcripts, we explored this data through a specific phenomenological analysis technique commonly known as thematic content analysis. The interview topics unearthed larger commonalities across participants; interview transcripts underwent three iterations of In Vivo coding cycles in order to construct a universal description (Miles, Huberman, & Saldaña, 2014) of bear hunting policy perspectives in Maine.
To ensure trustworthiness, we kept a reflective journal throughout data collection and analysis in order to maintain researcher transparency, by incorporating our own opinions, thoughts, and feelings as an acknowledged part of the research process (Creswell & Poth, 2018; Miles, Huberman, & Saldaña, 2014; Ortlipp, 2008; Patton, 2015). Acknowledging the role of the researcher as instrument helped to enhance credibility and dependability (Creswell & Poth, 2018; Miles, Huberman, & Saldaña, 2014; Ortlipp, 2008; Patton, 2015). In the end, our interviewees included MDIFW government officials, hunters, hunting professionals, hunting association leadership, campaign directors, animal welfare advocates, outdoor columnists, and journalists.

**Quantitative Questionnaire Research**

In conjunction with the interviews, nonprobability sampling methodology was utilized to quantitatively explore latent wildlife value orientations and cognitive expressions of key stakeholders (Baker et al., 2013; Dillman, Smyth, & Christian, 2014). The online questionnaire covered topics such as their personal interactions with bears in Maine, cognitions toward the bear population, cognitions toward bear hunting, trust in bear management agencies, and wildlife value orientations (Fulton, Manfredo, & Lipscomb, 1996; Houston, Bruskotter, & Fan, 2010). The questionnaire sample was constructed of two groups: (1) key stakeholders that were interviewed and (2) their relevant colleagues and/or staff. The questionnaire was first distributed to people identified for the interviews; initial interviewees were asked if they would assist in the distribution of the questionnaire to other people in their stakeholder group. The second wave of questionnaires were distributed using *snowball sampling* which ensured that stakeholders involved in the bear referendums, who may not have been identified within the news media QCA, were included in the study (Singleton & Straits, 1999).
A total of 15 online questionnaire invitations were sent to key stakeholders in the first sample. For the second sample, 11 invitations were sent to the colleagues and/or staff of the stakeholders from the initial sample. Each participant that was selected to partake in the study was emailed a personal link to the questionnaire which was housed in Qualtrics 2019© software. The questionnaire was pre-tested prior using graduate students (Visser, Krosnick, & Lavrakas, 2000) and adjusted according to their feedback. Utilizing a modified Dillman (2014) method, the email included a cover letter explaining the purpose of the study and the individual’s personal link (Dillman, Smyth, & Christian, 2014). Reminder messages were emailed to non-respondents two weeks after the initial message; a second message was then emailed to those who had not responded two weeks after the reminder message. From the first sample, 12 questionnaires were completed; nine questionnaires were completed in the second sample. In total, 21 questionnaires were completed of the 26 questionnaires that were distributed for a 72% response rate.

While they were not explicitly queried in the questionnaire about their position toward the referendums, each respondent was tasked with selecting the stakeholder group(s) that they identify with. Any respondent that selected stakeholder groups that were in favor of the referendums (e.g., Pro-Referendum Advocacy Group, Non-Hunter, etc.), in opposition to the referendums (e.g., Anti-Referendum Advocacy Group, Hunter, MDIFW, etc.), or neutral toward the referendums (e.g., Newspaper) were classified as such. Each respondent was then categorized as “In Favor” (N=9), “Opposed” (N=9), or “Neutral” (N=3) toward the referendums.

**Measurement of Concepts.**

Wildlife Value Orientations. Value orientations were measured using a composite scale consisting of 14 items representing beliefs about human-wildlife relationships (Manfredo, Teel, & Bright, 2003; Fulton et al., 1996). A domination orientation was indicated by hunting and
appropriate uses of wildlife beliefs (Manfredo, Teel, & Bright, 2003). A mutualism orientation was indicated by caring and social affiliation beliefs about wildlife (Manfredo, Teel, & Bright, 2003). Respondents rated their level of agreement with belief items on a 5-point Likert scale ranging from -2 “strongly disagree” to +2 “strongly agree”.

Cognitions toward BHT. Cognitions were measured using cognitive expressions that were developed throughout the quantitative content analysis of news media (see Gundrum & Sponarski, in process). Respondents rated their level of agreement with belief items on a 5-point Likert scale ranging from -2 “strongly disagree” to +2 “strongly agree”.

Analysis.

We used the Statistical Package for the Social Sciences (SPSS) Version 24© to analyze our results. To address the first portion of our quantitative research questions, we used a principal component analysis of all wildlife value orientation items (Table 3.1). To identify similarities between stakeholder position and wildlife value orientation factors, a one-way analysis of variance (ANOVA) was performed (Table 3.2). We selected a one-way ANOVA in order to compare means between our different groups (Vaske, 2008). Our independent variable was stakeholder position, and our dependent variables were the wildlife value orientation items. In order to indicate where potential similarities occurred, we conducted a Tamhane post hoc analysis.

In order to address the second portion of our quantitative research questions—similarities between stakeholder position and cognitions—an ANOVA was performed (Table 3.3). Our independent variable was stakeholder position and our dependent variables were the cognitive expressions. In order to indicate where potential similarities occur, we conducted a Tamhane post hoc analysis.
Results

This section has been organized into six distinct portions that aim to evaluate our constructs and themes of interest that were initially determined during the development of the interview protocol and questionnaire: (1) motivations for personal involvement in bear hunting policy, (2) thoughts regarding why this issue is so contentious, (3) the personal toll associated with one’s involvement in shaping bear hunting policy, (4) strategies for shaping future bear hunting policy that benefits both bears and the people of Maine, (5) similarities between wildlife value orientations and stakeholder position, and (6) similarities between cognitions toward BHT and stakeholder position. Sections one, two, three, and four will pull directly from qualitative data while sections five and six will explore quantitative data. It is important to note that the animal welfare advocate stakeholder group be considered equal to the In Favor group depicted in the quantitative portion, and the hunting community and government official stakeholder groups should be considered equal to the Opposed group. We deliberately chose to analyze the specific stakeholder groups in our qualitative data in order to illustrate the nuances of different groups’ arguments for their referendum position; however, the quantitative data is more explicitly understood simply through referendum position.

Qualitative Interview Results

Motivations for Involvement. Throughout the interview process, it became clear that stakeholders’ motivations for their involvement in bear hunting stem from their commitment to the welfare of the bear population, and the integrity of the state’s core values and thus reputation. All of the thirteen interviewed stakeholders care for the wellbeing of black bears in Maine. As will be revealed in the following sections, how to care for bears in Maine differed depending on who was asked. Those that were interviewed from the hunting community stakeholder group felt
that hunting, a longstanding cultural tradition in Maine, was threatened by the bear hunting referendums. One interviewee from the hunting community stated that there is a fear by hunters that if bear hunting tactics were limited, that hunting will eventually become illegal:

For me, it’s more about the protection of outdoor traditions more generally speaking. I grew up as a kid that spent my summers at camp fishing and hunting and just being outside. That to me is something to cherish in the State of Maine. Even though I didn’t grow up and I’m not necessarily an avid bear hunter that tradition and the people that are involved in that tradition are pretty near and dear to my heart, and it seems like in a lot of these political battles we try to chip away at the opposition’s armor. (3/20/19, Hunting Community Member)

To this stakeholder and most of the other participants who represented the hunting community, banning BHT was chipping away at the strength of the hunting tradition in Maine. In line with these sentiments, the hunting community stakeholders shared their commitment to MDIFW biologists and leadership who they have “fought” alongside on this issue for decades. Government officials that were interviewed expressed their deep concern over the spread of misinformation about BHT and the bear management plan their agency had developed. One official shared how their commitment to serving the public is of course an immense part of their job, but often incredibly frustrating:

What has motivated me… well, I guess I would say what I’ve learned with controversial issues… is the fact that the public isn’t as informed. And I find that on any kind of issue that’s going on. And so I guess what motivates me is the opportunity to give people information to make an informed decision. It’s not our role to tell them how they should feel or what they should think, but to give them information. And that’s a hard thing to do. Because you have your own opinions and thoughts. But I guess that’s what motivates me, is you want people out there, having the knowledge, and not doing it based on a perception or a gut reaction. And maybe that’s just as frustrating, because it’s hard to motivate people. (4/11/19, Government Official)

This issue gets even more complicated as we introduce the final stakeholder group’s motivation for wanting to shape bear hunting policy: ethics. While the hunting community and government officials that comprise these two stakeholder groups believe that the tradition and
science they uphold trump alternatives to BHT, the animal welfare advocate group shares their emphatic ethical concerns with our current bear hunting practices:

[It’s] The level of cruelty… we pick our issues based on that, and the number of animals and facts and so forth. But, we can go into all the campaign slogans. It’s unnecessary for controlling population. We can say it’s unethical, which it is. It’s unsportsmanlike, which it is. But, the cruelty is the thing that drives it. (3/14/19, Animal Welfare Advocate)

**Thoughts on the Contentious Nature of the Debate.** Given that both referendums failed by such a small margin, it is fair to say that the black bear hunting debate in Maine is exceptionally complex. Each stakeholder group described bears with diction such as warm, cute, cuddly, sympathetic, and dog-like; some even introduced the fact that many of our favorite icons are bears, such as Yogi and Boo-Boo Bear. It is clear that all stakeholder groups acknowledge to varying degrees that bears are anthropomorphized, and thus it makes it difficult to imagine hunting something that looks so much like the family dog. One stakeholder shared that they think “people have anxiety about killing them… they kind of look like dogs, they use their hands like people, and they stand up like people.” This element makes seeking compromise all the more difficult as it encourages stakeholder groups to blame the suffering of bears on their opponents. Those *In Favor* of the referendums see those that are *Opposed* as violent and misguided individuals, while those *Opposed* see those *In Favor* as unwilling to acknowledge that their traditions are valuable to them and that they are responsible for keeping the bear population healthy. In addition to the anthropomorphism of bears there are a handful of other reasons that different stakeholder groups believe that this issue is so contentious.

Those that were interviewed within the hunting community shared that they feared for their freedoms. One hunter who has strayed from the core of their group expressed why they think this is:
Like I said before... whenever you get hunting with guns, anything like that, it’s like you’re saying, “Are you an American or are you a communist?” kinda. Because, right... there’s this knee jerk. It’s hard to have rational discussion about things that could be changed. We used to be able to spot a moose and shoot it the same day, can’t do that no more. Did hunting end? No. (3/12/19, Hunting Community Member)

This stakeholder brings up many arguments for why this issue is so contentious—many of which those from the core of the hunting community expressed: the feeling that who they are is up for debate. For many in this group, hunting and fishing has been a central part of their lives both recreationally and financially. They shared how difficult it was that those that—from their perspective—have never hunted themselves have the audacity and power to challenge their way of life. One stakeholder shared their perception of how quickly the referendums shifted how people viewed bear hunters:

All of a sudden, here comes this out-of-state group putting a question on the ballot that people from all over Maine, some of who’ve never seen a black bear, were going to vote on. If they voted and the question passed, these people were going to have to stop what they’ve been doing for decades, feeling they’re not doing anything wrong. They’re, for the most part, there’s bad apples in every barrel. For the most part, those hunters in Maine, who were hunting with hounds and trapping, were very ethical, followed all the regulations, were great conservationists. All of a sudden they were murderers. They were being told on TV. They were being told on the newspaper. They were being told on their main streets that they were murderers, that they were killing these animals for no reason. It was hurtful. That was the first thing that I was like, “Wow.” These methods are so ingrained in Maine tradition. They are regulated, that it’s wrong to call these people “murderers.” It’s wrong to say that these methods are inhumane. (4/5/19, Hunting Community Member)

In line with these sentiments, government officials shared again how it is their perception that people do not understand bear hunting in Maine. One government official pointed out that much of the science that grounds hunting as a wildlife management tool used to keep the population healthy sounds counterintuitive. This stakeholder then shared how difficult it can be to challenge what seems like common sense to many:

I think the biggest reason why it’s contentious is that most people don’t know anything about it. It’s easy to believe misrepresentation of what’s going on out there. It’s easier to
believe when you know nothing about it. Sounds logical. A lot of it sounds logical. When actually, the actual truth doesn’t always sound logical. Sometimes I feel like we’re fighting against that. People think it’s common sense. They think you don’t need to know anything about it to know it’s unfair, it’s unethical. You really have to experience it before you can … I feel like if you haven’t experienced it, then you can’t make a judgment on whether it’s ethical or not. Because what are you basing it on? You’re basing it on what someone told you, heresy, whether it’s true or not. (3/4/19, Government Official)

While the hunting community and government officials are certainly more aligned in their thoughts regarding the contentious nature of the bear hunting debate, it is clear that no matter if they never have or will hunt a bear in Maine, animal welfare advocates largely believe that BHT are cruel and problematic. All of the animal welfare advocates who participated shared their many concerns with the bear management science that MDIFW conducts. Each member of this group pointed to the growing bear population as evidence that BHT are not effective bear management tools. In regards to baiting, they raised their ecological and ethical concerns for using high-calorie human foods—such as donuts—to lure bears to bait sites. It is clear that animal welfare advocates are concerned that bears will become habituated to human food, that these bait foods have the potential to physiologically harm bears, and that they are inherently unsportsmanlike. They shared their opinions that hounding and trapping are exceptionally cruel, equating them to methods of torture. One In Favor stakeholder who has worked with veterinarians across the state shared their concerns about both of these methods:

Well, personally, I have always been against trapping in a big, bad way, and you will hear this talking point, but really, states don’t do it anymore, and it’s been embarrassing as someone who loves the wilderness and loves bears as much as I do to have our state participating in something that other states have said, “We’re just not going to do that anymore for recreation and sport.” That was a big thing for me… veterinarians expressed dismay at what they’ve had to do. They’ve had to put dogs back together again after being mauled by bears from the hounding. (3/12/19, Animal Welfare Advocate)

It is clear that all stakeholders feel different levels of concern or acceptance for baiting, hounding, and trapping separately. Many suggested addressing each of these methods separately
as this could allow for fruitful discussion and bear management policy development that is both effective and representative of all groups’ interests.

**Stakeholder Distress and Safety Concerns.** As the topic of each stakeholder’s involvement in the referendum was discussed in the interviews, strong emotions were shared by each groups’ representatives. Interviewees on both sides of the issue shed tears and shared their anguish as they attempted to express their passion for their opinions and beliefs, and how the referenda processes introduced enormous stresses, pain, and fear into their lives. One interviewee shared that they felt as though they “had the weight of the world on [their] shoulders” and that they had never “fully recovered” from the traumatic referendum process. Many reported that they received death threats, and now feel the need to lock their doors even when their inside their homes. One interviewee was alerted when their license plate number and home address had been posted online; to this individual, it was a way to let people know “whoever wanted to come and get me, where I was”. The level of personal trauma that all stakeholders endured on this issue is immense. All stakeholders expressed that preventing another referendum would be beneficial to all parties’ physical safety and mental health.

**Strategies for the Future.** When interviewees were asked to contemplate strategies for future progress, at least one of the three central themes listed below arose in interviews with all thirteen stakeholders: (1) respect, (2) communication, and (3) compromise. One member of the hunting community summarizes all three of these themes succinctly in their response to the final interview question:

I think, I mean it just sounds kind of simplistic. It’s truly just communication and respect that we’re not enemies. We’re people who have different opinions. The ability for both groups to do what they want is found somewhere in the middle. (4/5/19, Hunting Community Member)

On both sides of the issue, some are eager to engage in this debate again and others think
that there is no way to move forward productively. Practical ways to implement the three themes identified will be explored in the Discussion.

**Quantitative Questionnaire Results**

**Wildlife Value Orientations and Stakeholder Position.** The principal component analysis of all wildlife value orientation items resulted in two factors (Table 3.1) with an eigenvalue greater than 1 and with all factor loadings at an acceptable level of .40 and above (Hair et al., 1998). These factors explained 65% of the total variance. Wildlife value orientations divided into two factors labeled: *Domination* and *Mutualism*. The tests of internal consistency (alpha > .60) for both factors indicated acceptable scale reliability (Bernard, 2000).
Table 3.1. Principal component analysis of wildlife value orientation items.

<table>
<thead>
<tr>
<th>Wildlife Value Orientation Items</th>
<th>Factor loadings1</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Humans should manage wildlife populations so that humans benefit.</td>
<td>.76</td>
<td></td>
</tr>
<tr>
<td>Wildlife should have rights similar to the rights of humans.</td>
<td>-.67</td>
<td>.46</td>
</tr>
<tr>
<td>We should strive for a world where there's an abundance of wildlife for hunting and fishing.</td>
<td>.83</td>
<td></td>
</tr>
<tr>
<td>I view all living things as part of one big family.</td>
<td>.66</td>
<td></td>
</tr>
<tr>
<td>Hunting does not respect the lives of wildlife.*</td>
<td>.89</td>
<td></td>
</tr>
<tr>
<td>I feel a strong emotional bond with wildlife.</td>
<td>-.79</td>
<td></td>
</tr>
<tr>
<td>The needs of humans should take priority over wildlife protection.</td>
<td>.63</td>
<td>-.41</td>
</tr>
<tr>
<td>I care about wildlife as much as I do about people.</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Wildlife are on earth primarily for people to use.</td>
<td>.57</td>
<td></td>
</tr>
<tr>
<td>Hunting wildlife is cruel and inhumane.*</td>
<td>.89</td>
<td></td>
</tr>
<tr>
<td>We should strive for a world where humans and wildlife can live side by side without fear.</td>
<td>.78</td>
<td></td>
</tr>
<tr>
<td>I value the sense of companionship I receive from wildlife.</td>
<td>-.46</td>
<td>.67</td>
</tr>
<tr>
<td>Wildlife are like my family and I want to protect them.</td>
<td>-.54</td>
<td>.67</td>
</tr>
<tr>
<td>People who want to hunt should the opportunity to do so.</td>
<td>.85</td>
<td></td>
</tr>
<tr>
<td>Eigenvalue</td>
<td>6.84</td>
<td>1.62</td>
</tr>
<tr>
<td>Cronbach’s Alpha</td>
<td>.90</td>
<td>.85</td>
</tr>
<tr>
<td>Percent (%) of total variance explained2</td>
<td>52.62</td>
<td>12.46</td>
</tr>
</tbody>
</table>

* Item was reverse coded prior to analysis.

1 Principal component factor analysis with Varimax rotation. Only factors with eigenvalues greater than 1 and items with factor loadings greater than .40 were retained in the final factor structure (Tabachnick & Fidell, 1996). Items coded on 5-point scales of -2 = strongly disagree to 2 = strongly agree.

2 Total cumulative percent (%) variance explained = 65.08%

The ANOVA that examined the similarities between stakeholder position and wildlife value orientation factors revealed significant differences between the In Favor, Opposed, and Neutral stakeholder groups (p < .001). The Tamhane post hoc test was used to analyze the location of said differences between these three groups (Table 3.2). All three positions were significantly different (p < .05). In Favor (M = 0.476), had the most positive mutualism value orientations followed by Neutral (M = .981) and Opposed (M = -0.056). Opposed (M = 0.762), had the most positive domination value orientations followed by Neutral (M = -.048) and In Favor (M = -0.887). Results show that people who are In Favor are more mutualistic than they are dominionistic, and vice versa for those that are Opposed.
Table 3.2. The results of the one-way ANOVA between the dependent variables mutualism and domination and the independent variable, stakeholder position toward the referendums.

<table>
<thead>
<tr>
<th>Wildlife Value Orientation</th>
<th>In Favor (M)</th>
<th>Opposed (M)</th>
<th>Neutral (M)</th>
<th>F value</th>
<th>p value</th>
<th>Eta²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mutualism</td>
<td>0.4762&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-0.9815&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-0.0556&lt;sup&gt;c&lt;/sup&gt;</td>
<td>18.10</td>
<td>&lt;0.001</td>
<td>.69</td>
</tr>
<tr>
<td>Domination</td>
<td>-0.8873&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.7619&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-0.0476&lt;sup&gt;ab&lt;/sup&gt;</td>
<td>12.75</td>
<td>&lt;0.001</td>
<td>.58</td>
</tr>
</tbody>
</table>

<sup>1</sup>Orientation is comprised of tested wildlife value orientation questions that are on a 5-point Likert-like scale from -2 strongly disagree to 2 strongly agree and were sorted after principal component factor analysis.

<sup>a,b,c</sup>The letter superscripts denote significant differences between means based on the Tamhane post hoc test.

**Cognitions and Stakeholder Position.** To address the second portion of our quantitative research questions—similarities between stakeholder position and cognitions—the ANOVA revealed that most of the relationships (N=23) between stakeholder position and cognitions were significant (p < .05). The Tamhane post hoc test was performed to identify the location of said differences between stakeholder position and cognitions (Table 3.3):
Table 3.3. The results of the one-way ANOVA between the dependent cognitive expression variables and the independent variable, stakeholder position toward the referendums.

<table>
<thead>
<tr>
<th>Cognitive Expressions</th>
<th>In Favor (M)</th>
<th>Opposed (M)</th>
<th>Neutral (M)</th>
<th>F value</th>
<th>p value</th>
<th>Eta²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ecological Beliefs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>... bear populations are self-regulating.</td>
<td>.33⁴</td>
<td>-1.56⁵</td>
<td>-.33ab⁶</td>
<td>13.43</td>
<td>&lt;.001</td>
<td>.59</td>
</tr>
<tr>
<td>... baiting bears creates nuisance bears.</td>
<td>.56⁴</td>
<td>-1.89b⁶</td>
<td>.33ab⁶</td>
<td>22.51</td>
<td>&lt;.001</td>
<td>.71</td>
</tr>
<tr>
<td>... bear hunting stabilizes the population.</td>
<td>-.67a⁷</td>
<td>.78b⁶</td>
<td>1.00b⁷</td>
<td>6.75</td>
<td>&lt;.01</td>
<td>.43</td>
</tr>
<tr>
<td><strong>Hunting Practice Beliefs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>... bears can be managed with stalk and still hunting.</td>
<td>.00a⁸</td>
<td>-1.33a⁸</td>
<td>-1.00a⁸</td>
<td>2.66</td>
<td>.097</td>
<td>.23</td>
</tr>
<tr>
<td>... baiting is necessary to control the population.</td>
<td>-1.89b⁥</td>
<td>1.11b⁥</td>
<td>-.33ab⁶</td>
<td>56.57</td>
<td>&lt;.001</td>
<td>.86</td>
</tr>
<tr>
<td>... hounding is necessary to control the population.</td>
<td>-1.78b⁦</td>
<td>.56b⁦</td>
<td>-1.67ce⁴</td>
<td>14.97</td>
<td>&lt;.001</td>
<td>.63</td>
</tr>
<tr>
<td>... trapping is necessary to control the population.</td>
<td>-1.78b⁦</td>
<td>.78b⁦</td>
<td>-1.67ce⁴</td>
<td>21.48</td>
<td>&lt;.001</td>
<td>.71</td>
</tr>
<tr>
<td>... the bear population is not managed well.</td>
<td>.33a⁹</td>
<td>-1.67ab⁹</td>
<td>-1.00ab⁹</td>
<td>6.85</td>
<td>&lt;.01</td>
<td>.43</td>
</tr>
<tr>
<td>... bear hunting hounds are often injured/neglected.</td>
<td>.78a⁹</td>
<td>-1.56b⁹</td>
<td>.00ab⁹</td>
<td>22.91</td>
<td>&lt;.001</td>
<td>.72</td>
</tr>
<tr>
<td><strong>Human Beliefs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>... bear hunting is a part of Maine's heritage.</td>
<td>.22a⁹</td>
<td>1.00a⁹</td>
<td>.67a⁹</td>
<td>2.66</td>
<td>.098</td>
<td>.24</td>
</tr>
<tr>
<td>... bear hunting reduces human conflicts with bears.</td>
<td>-.89⁴</td>
<td>.67⁥</td>
<td>-.33⁥</td>
<td>5.73</td>
<td>.012</td>
<td>.39</td>
</tr>
<tr>
<td>... bear hunting limits viewing opportunities.</td>
<td>.13⁴</td>
<td>-1.00⁴</td>
<td>-.33⁣</td>
<td>1.29</td>
<td>.300</td>
<td>.13</td>
</tr>
<tr>
<td>... bear hunting is bad for Maine's image.</td>
<td>.50⁴</td>
<td>-1.33⁣</td>
<td>-.33⁣</td>
<td>4.24</td>
<td>&lt;.004</td>
<td>.33</td>
</tr>
<tr>
<td>... a ban on bear hunting will hurt the industry.</td>
<td>.13⁣</td>
<td>.78⁣</td>
<td>1.00⁣</td>
<td>1.30</td>
<td>.297</td>
<td>.13</td>
</tr>
<tr>
<td>... a ban on bear hunting will hurt conservation efforts.</td>
<td>-1.00⁣</td>
<td>1.11⁣</td>
<td>.67⁣</td>
<td>14.45</td>
<td>&lt;.001</td>
<td>.63</td>
</tr>
<tr>
<td>... bear hunting is a bad tradition.</td>
<td>.13⁣</td>
<td>-2.00⁣</td>
<td>-1.00ab⁸</td>
<td>9.63</td>
<td>&lt;.01</td>
<td>.53</td>
</tr>
<tr>
<td>... a ban on bear hunting will not improve public safety.</td>
<td>.00a⁹</td>
<td>-.44a⁹</td>
<td>-.67a⁹</td>
<td>.32</td>
<td>.731</td>
<td>.04</td>
</tr>
<tr>
<td><strong>Ethics Beliefs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>... baiting, hounding, and trapping are “fair chase” methods.</td>
<td>-2.00a⁹</td>
<td>.67b⁶</td>
<td>-1.33ab⁶</td>
<td>23.54</td>
<td>&lt;.001</td>
<td>.72</td>
</tr>
<tr>
<td>... bear hunting is unethical.</td>
<td>.13⁣</td>
<td>-2.00⁣</td>
<td>-1.33⁣</td>
<td>14.29</td>
<td>&lt;.001</td>
<td>.62</td>
</tr>
<tr>
<td><strong>Management Norms</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>... all hunting methods should be allowed in Maine.</td>
<td>-1.22a⁹</td>
<td>.67b⁹</td>
<td>-1.67ac⁴</td>
<td>6.26</td>
<td>&lt;.01</td>
<td>.41</td>
</tr>
<tr>
<td>... bears should be protected from hunting in Maine.</td>
<td>-.50aⁿ</td>
<td>2.0⁸</td>
<td>-1.00⁸</td>
<td>5.18</td>
<td>&lt;.02</td>
<td>.38</td>
</tr>
<tr>
<td>... bear management decisions should be based on public opinion.</td>
<td>-.13⁸</td>
<td>-1.56⁸</td>
<td>-2.00⁸</td>
<td>6.67</td>
<td>&lt;.01</td>
<td>.44</td>
</tr>
<tr>
<td>... bear management decisions should be made by wildlife professionals.</td>
<td>.25a⁸</td>
<td>1.11b⁸</td>
<td>1.00⁸</td>
<td>6.51</td>
<td>&lt;.01</td>
<td>.43</td>
</tr>
</tbody>
</table>

¹ Cognitive expressions are on a 5-point Likert-like scale from -2 strongly disagree to 2 strongly agree.
²abc The letter superscripts denote significant differences between means based on the Tamhane post hoc test.

Of the five cognitive dimension groups, the mean responses for items included in Ecological Beliefs (N=3), Ethics Beliefs (N=2), and Management Norms (N=5) sections were significantly different (p < .01). One of the six comparisons explored in the Hunting Practice
Beliefs section (N=1) was not significant: *bears can be managed by stalk and still hunting.* 

*Opposed* (M = -1.33) and *Neutral* (M = -1.00) stakeholder groups negatively associated with this expression item more than *In Favor* (M = .00), however it is clear that there was no significant consensus on whether or not bears can actually be managed without BHT. In the Human Beliefs section, four of the eight comparisons in the section (N=4) were not significant: *bear hunting is a part of Maine’s heritage, bear hunting limits viewing opportunities, a ban on bear hunting will hurt the industry, and a ban on bear hunting will not improve public safety.* It is clear that some of the least understood variables at play in the bear hunting debate are also the expression items that are not significant and thus, elements of the debate that are not as fully formed as others. The majority of the items that are among the least utilized arguments within the debate are within the *Human Beliefs* cognitive dimension.

**Discussion**

A unifying thought held by all sides of this debate is that all stakeholders care about Maine’s black bears. All sides of the debate were motivated to rally and voice their opinions for what they believed to be right for bear management in Maine. The bear hunting debate has evolved over the years to include new and different perspectives from Maine citizens that hail from the New Hampshire border to the Canadian border; one stakeholder stated: “surely there is hope that all of us can enjoy each other’s company over a coffee one day”. The majority of stakeholders with ties to the hunting community felt motivated to be involved in this issue due to their commitment to the tradition of hunting and their belief that bear management should be left in MDIFW’s hands. Government officials exhibited a commitment to the vision of the agency’s black bear management plan and target what they believe as misinformation about bear hunting in Maine. While conversely, the majority of stakeholders with ties to animal welfare advocacy
groups felt motivated by the ethical questions surrounding wildlife cruelty. At its core, this debate is contentious because it is about the ethical treatment of black bears, and the argument has become personal for many. Whether In Favor, Neutral or Opposed, all three stakeholder groups acknowledged that black bears are charismatic megafauna, and thus it is easy for people of all backgrounds, interests, and value systems to feel an inherent and deep connection with bears in Maine. The vast differences in opinions are rooted in how people perceive black bears and bear management. Said differences are better understood by examining both the cognitive expressions and WVOs held by key stakeholders in this debate. Taking a closer look at what was revealed in the online questionnaire helps to clarify why this debate has been so contentious.

Quantitative results revealed there is support for both research questions. It is clear that stakeholders that are Opposed to the referendums exhibit more positive cognitions toward baiting, hounding, and trapping than those that are In Favor. Additionally, it is evident that those that are Opposed to the referendums possess more dominionistic wildlife value orientations, and those that are In Favor of the referendums are more mutualistic. Many of the comparisons between stakeholder position and cognitions toward BHT and stakeholder position and WVO were significant. This is in line with previous research exploring WVOs of diverse stakeholder groups involved in wildlife management decision-making (Manfredo, Teel, & Bright, 2003; Teel, Manfredo, & Stinchfield, 2007). Our findings parallel previous studies examining WVOs of people with different demographic characteristics; hunters and rural populations often exhibit domination value orientations, while the general public and urban populations exhibit mutualistic value orientations (Gamborg & Jensen, 2016; Vaske, Jacobs, & Sijistma, 2011; Zinn, Manfredo, & Barro, 2002). Understanding how WVOs characterize the wants and needs of different stakeholder groups is critical knowledge that will only aid wildlife managers in mitigating future
conflict within complex wildlife management issues (Bright, Manfredo, & Fulton, 2000). By predicting likely responses of different stakeholder groups to certain management plans, wildlife managers can tailor the delivery of information and determine how to develop strategies for further collaboration. Taking a more in-depth look at the relationships between cognitions and stakeholder position that were not significant could highlight some of the least understood elements of the bear management conversation in Maine, and could highlight expressions of common ground. These elements include wildlife conservation concepts such as: management strategy, tradition, human-bear conflicts, potential viewing opportunities, and hunting industry threats.

In terms of management strategy, proponents of the status quo are those that believe that we cannot control the bear population without baiting, hounding, and trapping—baiting in particular. However, Maine has not always utilized these methods for hunting bears, thus there is a debate about whether or not it is possible to control the population with more traditional stalk and still hunting methods. Many argue that the woods of Maine are too thick to stalk and still hunt bears and baiting makes the process both easier for hunters and safer for bears. Of course, this is where we see a divergence of value orientations at play. There is not a single stakeholder that wishes suffering on any Maine bear. Of course, this value is shared, but the ways in which this value are met are differ depending on which side of the debate one is on. Those Opposed believe that baiting in particular is a way to obtain a clean shot at a bear and thus mitigates the suffering that would ensue had a bear been shot but not killed. Those In Favor think that luring bears with high-calorie sugary and fatty foods is not a fair way to hunt, and is thus cruel in nature.
Bear hunting is a tradition in Maine. However, the introduction of baiting, hounding, and trapping toward the mid-late 20th century has made some groups question what methods are included in “tradition”. It is apparent that there is not a clear consensus on whether or not these three methods can be considered a part of Maine’s centuries-old hunting heritage. The definition of heritage is ever-evolving, which means that BHT could inherently be a part of Maine’s hunting heritage to some, while others decide to avoid using these methods and including them in what they perceive to be Maine’s hunting heritage. Those Opposed to the referendums often discuss the need to preserve Maine’s heritage, yet when asked to confront whether or not they mean bear hunting generally or baiting, hounding, and trapping in the interviews, there was less clarity.

Whether or not a ban on BHT will impact the safety of the public is certainly a question with no direct answer. There have been a handful of bear attacks in Maine’s history, but none fatal. MDIFW is concerned about how more stringent bear hunting management could negatively impact the public’s safety. However, further investigation into the potential influences that bear management has on public safety is merited.

A more nuanced element of the debate is whether or not a bear viewing industry could be lucrative in Maine and potentially compete with the economic capacity of the bear hunting industry. Wildlife value orientations are shifting across the country and younger generations are becoming more interested in pursuing non-consumptive recreation versus consumptive recreation traditions (Fleishman et al., 2011; Heberlein, 2012). There is reason to believe that a bear viewing industry is possible, but more research into the feasibility of this industry is needed. In line with these questions, whether or not the elimination of baiting, hounding, and trapping would influence the bear hunting industry is more nuanced than it appears. From both our
interview and questionnaire data, it is clear that stakeholders that are *Opposed* to the referendums tend to claim that eliminating baiting will impact the industry more than the elimination of hounding and trapping. Only roughly 1/10\(^{th}\) of the population is hunted using hounds and traps, so it is difficult to claim that a ban on these two methods would hurt the industry as severely as banning all three would.

**Conclusion**

It is clear that more in-depth exploration is needed concerning black bear hunting management in Maine. Both sides of the bear hunting debate are adamant about protecting the health of the population and the livelihoods and safety of all Maine people. However, as our results illustrate, key stakeholders hold wildlife value orientations on either end of the continuum. This result indicates how difficult it will be to get both sides to agree. Reaching back to the three themes that emerged in our interviews—respect, communication, and compromise—there are practical steps that can be taken to develop these themes. All three stakeholder groups are hopeful that there is a path for improving communication, learning to respect diverse viewpoints, and seeking compromise, but this hopefulness exists on a spectrum. Some stakeholders shared their excitement for developing more substantial partnerships with those whose ideas and opinions they oppose, and others simply shared their pessimism that a future with collaborative bear management could exist in Maine at all. In order to curb this cynicism, moving forward, developing an *extended peer community*, or an extension of legitimacy and respect for the collaboration with stakeholders, will only augment elements of trust between both sides (Funtowicz & Ravetz, 1994; Hernández-González & Corral, 2017). An extended peer community will enhance dialogues surrounding the intersection of bear ecology and policy in practice (Funtowicz & Ravetz, 1994; Hernández-González & Corral, 2017). Such a group is an
effective democratic element that works to include multiple perspectives and forms of knowing (Funtowicz & Ravetz, 1994) and will enhance bear hunting policy development in Maine. In order to shed light on the essence of what values they do share, third-party mediated discussions between the groups are necessary. Keeping constant open dialogue amongst an inclusive and diverse collection of interest groups is essential. Learning to respect those that hold differing beliefs and values by improving communication channels is the beginning to shaping bear hunting policy that works for both bears and people. This will lead to discussions regarding compromises. As these discussions near, it is imperative that more scientific studies be conducted—especially on the practice of baiting, in order to ensure that baiting is not influencing the population negatively. Additionally, considering alternatives to artificial bait is important. Exploring whether or not more natural foods can be utilized as lures for bears could help alleviate some of the ethical concerns about this practice. Some stakeholders from the animal welfare advocate position recommended seeking a tax on goods that are associated with non-consumptive recreation (e.g., kayaks, binoculars, etc.) in order to ensure that all interest groups are financially supporting MDIFW, and thus their representatives have a concrete seat at the table. Finally, while this suggestion is the most controversial, it is worthwhile to pursue the effects that banning just hounding and trapping will have on both the bear population and Maine’s bear hunting economy. Only 1/10\(^{th}\) of the bear population is hunted via these methods (MDIFW, 2017), and it is apparent from our interview and questionnaire research that hounding and trapping are more controversial than baiting. Before these compromises though, developing a community of respect, trust, and understanding between stakeholders is essential to the future of effective bear hunting management in which constituent visions are shared.
CHAPTER 4
CONCLUSION

Introduction
This research project provides a multi-dimensional analysis of the debate surrounding the black bear hunting referendum events in Maine through a QCA of news media, and combined online questionnaire and semi-structured interviews with key stakeholders. The impacts of the referenda were extensive, spanning the realms of bear hunting management and the inclusion of societal input regarding the ethics of hunting bears over bait, with hounds, and with traps. This study should be considered exploratory and not a comprehensive portrayal of the referendums in all media outlets and/or of the relationships between key stakeholders within this controversial debate. As society continues to shift its values toward wildlife and wildlife management, it is important to mitigate conflict and recognize that all stakeholder opinions toward black bear hunting should be incorporated into black bear management planning. Based on our findings, it is clear that the bear hunting controversy in Maine can be classified as a “wicked problem”, and thus deserving of significant further research and attention in order to improve stakeholder relationships and develop bear hunting policy that is both effective and considerate of diverse inputs (Buck, 2009). This chapter includes the significance of the research in human dimensions of wildlife literature and the implications that this research has on bear management and human dimensions of consumptive recreation. Recommendations for future research, developing both an extended peer community amongst stakeholders, and suggestions for achieving political compromises are included in the final section (Funtowicz & Ravetz, 1994).
Significance of Research

This thesis on the human dimensions of bear management in Maine has relevance in the realms of academia, policy, and applied wildlife management plans. Firstly, this research contributes to growing human dimensions of black bear literature in North America (Bowman, 2001; Bowman et al., 2004; George et al., 2016; Heneghan & Morse, 2018; Johnson & Sciascia, 2013; Kretser, Curtis, & Knuth, 2009; Lancaster & Campbell, 2010; Morzillo et al., 2007; Organ & Ellingwood, 2000; Ryan, Edwards, & Duda, 2009; Stephens Williams et al., 2011; Zajac et al., 2012). It addresses recommendations for future human dimensions of game species exploration in order to develop comprehensive wildlife management plans that are in line with current societal value shifts (Baruch-Mordo et al., 2011; Campbell, 2013; Don Carlos et al., 2009; Eriksson, Sandström, & Ericsson, 2015; George et al., 2016; Lancaster & Campbell, 2010; Organ & Ellingwood, 2000; Spencer, Beausoleil, & Martorello, 2007; Teel, Krannich, & Schmidt, 2002; Treves & Karanth, 2003). Secondly, this thesis has utilized methods that incorporate stakeholder input into the bear management debate, and supports a future collaborative effort in designing bear management policies that are comprehensive and inclusive of differing opinions. This research highlights the significant differences in value orientations that exist amongst key stakeholders, which should enable the development of more effective wildlife management educational campaigns and a diverse stakeholder community. Finally, our recommendations for potential alterations to black bear management in Maine could be fruitful to wildlife managers moving forward. Our suggestions require the backing of ecological research to inform how realistic their implementation could be in Maine; nonetheless their consideration is critical to developing a bear management plan that considers all key stakeholders’ cognitions toward bear hunting.
**Research Implications**

The findings revealed the need for future human dimensions research regarding complex wildlife management issues in Maine. Human dimensions of black bears (Bowman, 2001; Bowman et al., 2004; Campbell, 2013; Eriksson, Sandström, & Ericsson, 2015; George et al., 2016; Heneghan & Morse, 2018; Johnson & Sciascia, 2013; Kretser, Curtis, & Knuth, 2009; Lancaster & Campbell, 2010; Morzillo et al., 2007; Organ & Ellingwood, 2000; Ryan, Edwards, & Duda, 2009; Stephens Williams et al., 2011; Teel, Krannich, & Schmidt, 2002.; Zajac et al., 2012), human-black bear conflicts and interactions (Don Carlos et al., 2009; Howe et al., 2010; Mazur, 2010; Merkle, Krausman, & Booth, 2011; Spencer, Beausoleil, & Martorello, 2007), and black bear education and media strategies (Dunn, Elwell, & Tunberg, 2008; Gore et al., 2006; Siemer, Decker, & Shanahan, 2007; Slagle et al., 2013) have been widely researched across North America. The QCA of news media surrounding the referendums illuminated that the debate over whether or not BHT should be banned in Maine is an ethical issue for some, and a financial and ecological issue for others. Our findings indicate that the arguments in the bear hunting debate are different from the perspective of an animal welfare advocate, a government official, or a member of the hunting community. The QCA revealed that in order for wildlife managers and policymakers to fully embrace all facets of a complex wildlife management issue, delving into the portrayal of the issue in different media platforms is a necessary initial component to further characterizing the nature of the debate.

The QCA and interviews also showcased the diversity of opinions stakeholders possess in this debate. Giving vocal stakeholders the opportunity to share their opinions and suggestions for future policy development is essential to establishing inclusive wildlife management plans. The online questionnaire revealed that key stakeholders are approaching the bear hunting debate from
different value orientations. Understanding the factors and cognitions that encourage different value orientations toward wildlife will help wildlife managers develop educational resources and public opportunities to include differing perspectives in wildlife management. The semi-structured interviews allowed stakeholders to share their unique stories in an open and confidential manner, which encouraged participants to share their emotions and opinions free from political judgement or consequence. This study has substantiated the need for future research and the development of a stakeholder community tasked with collectively integrating scientific, financial, and ethical information into bear hunting management in Maine. In the following section, three central recommendations are described for developing a communicative, respectful stakeholder community with the intention of seeking compromises on this issue: future research, building an extended peer community, and management plan compromises.

**Recommendations**

**Future Research**

Exploring other types of media surrounding the bear hunting debate whether through QCA or related methods would be fruitful given the declining nature of print news media as public source of information. Specifically, investigating social media content on various platforms e.g., Facebook, Twitter, etc. could help illuminate other popular opinions on the issue more comprehensively. As mentioned in Chapter 2, using social statistics software to explore linear and co-occurrence trends of constructs of interest over time will only serve future studies on this topic. The continued exploration of the relationships between media and controversial management plans will help to further inform wildlife managers on future bear hunting policy measures through the synthesis of public discourse and perspectives of Maine citizens.
In addition to more comprehensive media analysis, it is clear that there is a need to distribute a state-wide bear hunting perceptions survey—similar to the one designed for this project—incorporating questions from key stakeholders from both sides of the debate as members of the steering committee. In 2016, MDIFW commissioned Responsive Management to distribute a survey to Maine residents, landowners, and hunters regarding their opinions about big game species in Maine (Responsive Management, 2016). The majority of the surveyed sample responded with more positive than negative ratings of bear management in Maine (Responsive Management, 2016). However, the survey questions never explicitly asked for the participants’ opinions about each of the three bear harvest methods separately, thus this positive result may be somewhat misleading. In the future, a survey that clearly asks for participants’ ratings of baiting, hounding, and trapping separately will likely reveal some nuances in the results.

**Building an Extended Peer Community**

In order to develop a successful and socially acceptable bear management plan, engaging with public inputs and opinions is an essential element needed for developing wildlife management plans (Kellert, 1994; Ryan et al., 2009). Nourishing a community of respect and understanding amongst key stakeholders could alleviate future conflict and the possibility of a future bear hunting referendum in Maine. Third-party mediated discussions may be the only way for all stakeholder groups to move forward in developing some sort of extended peer community (Funtowicz & Ravetz, 1994; Hernández-González & Corral, 2017) around this debate.

**Management Plan Compromises**

Building upon the extended peer community recommendation, there may be some practical compromises in black bear management that wildlife managers may want to consider in
order to mitigate conflicts with stakeholders moving forward. Integrating four novel components to the bear management plan could potentially pacify some of the most controversial aspects of bear hunting in Maine. As mentioned above, ecological and biological studies are necessary to determine whether or not some of these suggestions are practical for Maine’s black bear population:

1. *Examining the effects of current baiting practices on bear health, ecology, and population dynamics.*

2. *Considering alternatives to processed foods for bait (e.g., pastries, etc.).* Possible examples include: meat (e.g., beaver), pumpkins, granola, etc.

3. *Implementing a tax on non-consumptive recreational goods (e.g., kayaks, binoculars, etc.) to ensure that all creators are contributing to the financial sustainability of MDIFW.*

4. *Examining the effects of eliminating hounding and trapping.*

   Through the examination of potential changes to black bear management in Maine, stakeholders from all sides of the debate will see that their opinions are taken seriously and will help MDIFW be on the cutting edge of black bear management. By taking the lead on modernizing black bear management, MDIFW may prevent a future referendum.
REFERENCES


Lancaster, B. L. & Campbell, M. (2010). Public attitudes toward black bears (Ursus americanus) and cougars (Puma concolor) on Vancouver Island. *Society & Animals, 18*(1), 40-57.


CODING MANUAL:
Cognitions Toward Black Bear Hunting in Maine: A Quantitative Content Analysis of the Print News Media Surrounding Hunting Referendums in 2004 and 2014

Fall 2018
University of Maine
Human Dimensions of Wildlife Conservation
Coders: Francesca Gundrum & Michael Buyaskas
Coding Protocol

This experimental coding protocol was developed to examine bear hunting news coverage surrounding the major bear hunting referendums in Maine. It uses articles from local newspapers obtained in Maine Newsstand through ProQuest.

SAMPLE

The following search terms were used to identify the Maine news samples between November 2, 2003-2005 and November 4, 2013-2015: (black AND bear*) AND hunt* AND (referend* OR ballot*)

CODING INSTRUCTIONS

Please read this protocol in its entirety to familiarize yourself with the variables you will identify and code as part of your responsibility in this study. In doing so, please carefully read each variable definition and description. This protocol should be re-read at the start of each coding session, and each session should last a maximum of three hours. As a coder, you should observe a ten-minute break after every hour of coding to help maintain focus and coding precision. However, never observe a break while in the process of coding an article.

After reviewing this protocol at the start of each session, proceed to coding. Each article should be read and coded in the order that it was received. To be a successful coder, first read an article in its entirety, and, on a second run through, code the articles for the four variables (cognitive expressions, stakeholder representation, hunting type, and referendum position) listed below. Repeat these steps for each article, and make certain that only one article is coded at a time. This will preserve attention to detail and allow each article to be viewed individually. Note: For cognitive expressions, code the entire sentence or paragraph—not just phrases or words. Code in the “Full Text” section only.

How to code in NVivo…

1. Highlight sentence/paragraph/word
2. Right click → Code
3. Select the code you want
4. Click “OK”
5. Save frequently!

Cognitive Expressions

A cognitive expression consists of an attitude, belief, or norm, which ultimately has the potential to reveal manifest content within articles. These expressions are guided by cognitive hierarchy theory—an essential theory to human dimensions of wildlife research. Articles may present more than one cognitive expression—all should be coded regardless of their prominence. See figure attached for guidance:

Attitudes

The focus is on direct evaluations or feeling states regarding bear hunting. Code for both attitudes that believe bear hunting is bad or good. See figure for specific examples.

Beliefs

The focus is something an individual, organization, etc. holds as true or factual about bear hunting or the bear hunting referendums. See figure for specific examples.
Norms (Judgements)

The focus is on prescriptive statements as to how bear hunting should be managed, treated, or regarded in Maine. See figure for specific examples.

Stakeholder Representation

Mentions with position explanations, direct quotations, and/or paraphrased segments from an individual, organization, etc. signify an instance of stakeholder representation. Articles may present more than one stakeholder representation, and all relevant stakeholder representations should be coded regardless of their prominence. See list for guidance:

Anti-Referendum Advocacy Group (e.g., Mainers for Fair Bear Hunting, etc.)

Columnist (e.g., outdoor writer)

Government Agency (e.g., Department of Inland Fisheries and Wildlife, etc.)

Hunter

Hunter Association (e.g., Sportsman’s Alliance of Maine, etc.)

Hunting Professional (e.g., Maine Guide, etc.)

Hunting Service Provider (Outfitter, lodge/camp owner, etc.)

Indigenous Community (Tribes, native people, etc.)

Judicial System (e.g., Judge, Maine State Legislature, etc.)

Neutral Wildlife Organization (e.g., Maine Audubon Society, etc.)

Newspaper (Bangor Daily News, reporter, etc.)

Non-Expert (e.g., Maine resident, etc.)

Non-Hunter

Politician (e.g., Senators, etc.)

Pro-Referendum Advocacy Group (e.g., Save Maine’s Bear Hunt, etc.)

University (Professor, department, etc.)

Hunting Type

Code for the presence of hunting types. Articles may present more than one hunting type, and all types should be coded regardless of their prominence.
Baiting (e.g., baiting, bait, bait site, etc.)
Hounding (e.g., hounding, hounds, dogs, etc.)
Trapping (e.g., trapping, trap, snare, etc.)
Other (e.g., still hunting, stalking, etc.)

Position

*Code for position last.* Mark if the article was overall *For*, *Against*, or *Neutral* on the referendum. If you are unsure about the article’s position, mark: *Unsure.*
<table>
<thead>
<tr>
<th>Constructs of Interest</th>
<th>Concept Coded (Valence)</th>
<th>Examples</th>
</tr>
</thead>
</table>
| **Attitudes towards bear hunting**
  Direct evaluations of bear hunting | BHT is bad, detrimental (-) | BHT is bad; cruel; harmful; unethical; unsporting; disrespectful |
| | BHT is good, beneficial (+) | BHT is good; humane; ethical; sporting; respectful |
| | Neutral about BHT (?) | No feeling toward BHT |
| **Beliefs about bear hunting**
  Assertions of fact about bear hunting | BHT does not benefit ecosystems and/or bears (-) | Bear baiting inflates bear population; teaches bears to pursue human food; influences forest ecosystems; bears may harm themselves (e.g. chew off limbs in traps); bear populations are self-regulating |
| | BHT benefits ecosystems and/or bears (+) | BHT stabilizes the population; stabilizes ecosystems; keeps bears in habitat |
| | Bears do not need to be hunted using bait, hounds, or traps (-) | Bears can be managed with stalk or still hunting methods (e.g. fair chase); hounds can be maimed/neglected in process; bears are not managed well |
| | Bears need to be hunted using bait, hounds, or traps (+) | Bears can only be controlled using all three available hunting methods; bears are managed well |
| | BHT does not benefit humans (-) | BHT counters viewing opportunities; bears are icons; is a poor tradition; unrelated/increasing HBC |
| | BHT benefits humans (+) | BHT is a celebrated tradition; financially important; funds conservation; mitigates HBC |
| **Judgements about bear hunting**
  Prescriptive statements about bear hunting policy | The bear hunting referendum should pass (-) | The referendum should pass; all hunting methods should be banned; bears should be protected; the public should vote for the referendum |
| | The bear hunting referendum should not pass (+) | The referendum should not pass; bears should be controlled; all hunting methods should be allowed; the public should not vote for the referendum |
| | Bear hunting should be designed based on public opinion (-) | Bear hunting laws should be crafted by the desires of the public; wildlife managers should design bear hunting rules based on public opinion |
| | Bear hunting should be managed by professional wildlife managers (+) | Bear hunting rightfully belongs within the purview of professional wildlife managers; should not be managed by public opinion |

**Figure A.1.** Cognitive expression examples for coders.
APPENDIX B: QCA INTERVIEW PROTOCOL

Semi-Structured Interview Protocol

1. How long have you lived in Maine?
   a. Where are you from?
   b. Where do you live currently?
   c. What year were you born?

2. Have you ever hunted black bears in Maine? If yes, do you currently? If no, why?
   a. Have you ever had a notable interaction with a black bear in Maine personally? If so, could you tell me about it?

3. How long did/have you work/ed in black bear hunting policy?
   a. How did you get into this line of work?
   b. What tasks do/did you perform?
   c. How would you describe your role during the 2004 referendum?
   d. How would you describe your role during the 2014 referendum? And how did your role differ, if it did?

4. Through my research examining news media content, I have identified major stakeholders who were asked by reporters to give comments on both referendums. For example, MDIFW, Save Maine’s Bear Hunt, and Mainers for Fair Bear Hunting.
   a. Which groups are/were you associated with that had stake in the referendums?
   b. Do you think the group(s) you are/were affiliated with were represented accurately in newspaper articles? If so, why or why not?

5. As you know, baiting, hounding, and trapping were grouped together in both referendum questions. If you could, would you have made any changes to the wording of the 2014 referendum: “Do you want to ban the use of bait, dogs or traps in bear hunting except to protect property, public safety, or for research?” – (they will be handed a piece of paper with the definition on it)
   a. If so, what changes would you have made? Why?
   b. What are your thoughts on baiting?
      1) There has been some discussion about baiting potentially inflating the bear population. How do you think this might influence the population if at all?
   c. What are your thoughts on hounding?
   d. What are your thoughts on trapping?

6. In your opinion, do you think that the referendums were the appropriate avenues to make management decisions concerning bear harvest? Why or why not?
   a. Based on information from MDIFW, it is clear that trapping and hounding are the least utilized bear harvest methods. Do you think the results of the referendums would have been different if the questions only included a ban of trapping and hounding and not all three?

7. What were some of arguments about bear hunting brought up during the referendums?
   a. What is your opinion about these arguments?

8. When you heard the results of the referendums, what were your initial thoughts?
a. Did you expect the result of the referendums? Why or why not?

9. Why do you think black bear hunting is such a contentious issue in Maine?
   a. Do you think one harvest method is more contentious than the others?
   b. Do you expect another black bear hunting referendum in the future?
      1) If so, do you expect to be involved in a future referendum?
   c. Given changing demographics of Maine citizens, what do you think the result of a future referendum would look like?

10. [Preface with info] What are your thoughts on legislative decisions on bear hunting that have taken place in other states across the country? (Colorado, New Jersey, etc.)
    a. How do these states’ bear populations and policies compare to Maine?
    b. How do you think these changes in policy have affected bear populations?
    c. How do you think these changes in policy have affected people?

11. Both referendums seemed contentious. If you are willing to share, how did this event affect you personally?
    a. Do you have any examples you would be able to share?

12. Moving forward, what do you think is the best way to effectively build relationships and improve communication between those that share different positions about bear hunting in Maine?

13. Is there anyone who has been involved previously or currently in bear hunting policy in Maine that you believe would be willing to speak with me?
    a. If so, who and why?
APPENDIX C: QUESTIONNAIRE

Investigating Perceptions of Black Bear Hunting Referendums in Maine

Developed by:
Francesca A. Gundrum
Dr. Carly C. Sponarski
INFORMED CONSENT FORM

You are invited to participate in a research project being conducted by Francesca Gundrum, a Master of Science graduate student, and Dr. Carly Sponarski, an Assistant Professor, of the Wildlife, Fisheries, and Conservation Biology Department at the University of Maine. The goal of this project is to learn about perceptions of bear management in Maine. You must be at least 18 years of age to participate.

What Will You Be Asked to Do?
If you decide to participate in this questionnaire, you will be asked to complete the questionnaire. It may take approximately 15 minutes to complete the questionnaire.

Risks
Aside from the time and inconvenience, there are no expected risks to individuals who participate in this research. Participation is voluntary, and you can choose to stop at any time. You may also choose to skip questions you do not wish to answer. Refusal to participate or withdraw from the project will involve no penalty.

Benefits
There will be no direct benefits to you. However, the research will result in a better understanding of the communication and decision-making structures associated with black bear hunting policy in Maine.

Confidentiality
We will take precautions to ensure that your confidentiality is maintained. We will create an identification key that connects your identity to a code number associated with your completed questionnaire. All questionnaire data and the identification key will be stored on a password-protected computer using software that provides additional security; the computer will be kept in the PI’s locked office. The investigators will be the only people with access to the questionnaire data and the identification key. Your name and other identifying information will not be reported in any publications. The questionnaire data will be kept indefinitely, but the identification key will be destroyed after two years.

Voluntary
Participation is voluntary. If you choose to take part in this study, you may stop at any time. You may skip any questions you do not wish to answer. Participating in the questionnaire implies consent to participate.

Contact Information
If you have any questions, please contact Francesca Gundrum at (518) 429-9830 or francesca.gundrum@maine.edu. You may also reach Dr. Sponarski at (207) 581-2909 or carly.cs@maine.edu. If you have any questions about your rights as a research participant, please contact the Office of Research Compliance, University of Maine, (207) 581-2657 (or e-mail umric@maine.edu).
Section A. In this section, you will be asked about your personal experiences with bears.

1. Please check any of the following experiences you have personally had with bears in Maine. Check all that apply.

   **I have...**
   - hunted a bear in Maine.
   - taken a bear hunting trip in Maine but did not find one.
   - taken a bear hunting trip in Maine but chose not to hunt one.
   - encountered a bear while out hunting another animal.
   - seen a bear in my neighborhood.
   - had bears get into garbage cans, birdfeeders, grills, livestock or pet foods in my yard.
   - taken trips specifically to view bears in Maine.
   - encountered a bear while hiking.
   - never seen a bear in Maine.

Section B. In this section, you will be asked about your beliefs about Maine's bear population.

1. In your opinion, in today’s bear population in Maine… Circle the number that best matches your response.

<table>
<thead>
<tr>
<th>Too Low</th>
<th>Low</th>
<th>About Right</th>
<th>High</th>
<th>Too High</th>
<th>Not Sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maine</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

2. In your opinion, how has the bear population changed in the last five years? Circle the number that best matches your response.

<table>
<thead>
<tr>
<th>Decreased Considerably</th>
<th>Decreased Slightly</th>
<th>No Change</th>
<th>Increased Slightly</th>
<th>Increased Considerably</th>
<th>Not Sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

3. To what extent do you agree or disagree with each of the following statements about bears in Maine? Circle one number for each statement.

   **I believe the bear population is increasing because of...**
<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Slightly Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Slightly Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>… bear hunting.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>… just bear baiting</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>… increase in habitat availability.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>… increase in natural food availability.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>… poor garbage management.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Section C. In this section, you will be asked about your beliefs toward bear hunting.

4. In general, do you think of bear hunting as: *Circle the number that best matches your response.*

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>Good</td>
</tr>
<tr>
<td>Harmful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>Beneficial</td>
</tr>
<tr>
<td>Negative</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td>Positive</td>
</tr>
</tbody>
</table>

5. How acceptable or unacceptable do you feel each of the following hunting methods are in Maine? *Circle the number that best matches your response.*

<table>
<thead>
<tr>
<th></th>
<th>Highly Unacceptable</th>
<th>Slightly Unacceptable</th>
<th>Neither Agree nor Disagree</th>
<th>Slightly Acceptable</th>
<th>Highly Acceptable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Still and stalk hunting bears</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Baiting bears</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Hounding bears</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Trapping bears</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>No hunting of bears</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

6. To what extent do you agree or disagree with each of the following statements about bear hunting in Maine? *Circle one number for each statement.*

<table>
<thead>
<tr>
<th>I believe …</th>
<th>Strongly Disagree</th>
<th>Slightly Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Slightly Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>… bear populations are self-regulating.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>… baiting bears creates nuisance bears.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>… bear hunting stabilizes the population.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>… baiting, hounding, and trapping are “fair chase” methods.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>… bears can be managed with just stalk or still hunting.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>… baiting is necessary to control the population.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>… hounding is necessary to control the population.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>… trapping is necessary to control the population.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>… the bear population is not managed well.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>… bear hunting hounds are often injured/neglected.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>… bear hunting is a part of Maine’s heritage.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
… bear hunting reduces human conflicts with bears.

… bear hunting limits viewing opportunities.

… bear hunting is bad for Maine’s image.

… a ban on bear hunting will hurt the industry.

… a ban on bear hunting will hurt conservation efforts.

… bear hunting is a bad tradition.

… a ban on bear hunting will not affect public safety.

… all hunting methods should be allowed in Maine.

… bears should be protected from hunting in Maine.

… bear management decisions should be based on public opinion.

… bear management decisions should be made by wildlife professionals.

… bear hunting is unethical.

---

Section D. In this section, you will be asked about your trust in Maine’s bear management scientists and policymakers.

7. To what extent do you agree or disagree with each of the following statements? Circle one number for each statement.

<table>
<thead>
<tr>
<th>I trust Maine’s bear management scientists and policymakers to…</th>
<th>Strongly Disagree</th>
<th>Slightly Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Slightly Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>… make good bear management decisions.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>… effectively manage the bear population.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>… provide truthful information about the bear population.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>… provide truthful information about bear management strategies.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>… provide adequate opportunities to listen to the public’s concerns about bear management.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
**Section E. In this section, you will be asked a set of questions about wildlife in general.**

8. The following statements reflect different beliefs people have about wildlife. Please indicate the extent to which you agree or disagree with each. Circle the number that best matches your response.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Slightly Disagree</th>
<th>Neither nor Agree</th>
<th>Slightly Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humans should manage wildlife populations so that humans benefit.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Wildlife should have rights similar to the rights of humans.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>We should strive for a world where there’s an abundance of wildlife for hunting and fishing.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I view all living things as part of one big family.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Hunting does not respect the lives of wildlife.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I feel a strong emotional bond with wildlife.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>The needs of humans should take priority over wildlife protection.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I care about wildlife as much as I do about people.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Wildlife are on earth primarily for people to use.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Hunting wildlife is cruel and inhumane.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>We should strive for a world where humans and wildlife can live side by side without fear.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>I value the sense of companionship I receive from animals.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Wildlife are like my family and I want to protect them.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>People who want to hunt should have the opportunity to do so.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

**Section F. In this final section, we would like to know a little about you.**

1. How many years have you lived in Maine? _____ years

2. Are you: Female Male Prefer Not To Say

3. What year were you born: _________

4. What is your income level?
   <$25,000
   $25,000-$34,999
   $35,000-$49,999

97
$50,000-$74,999
$75,000-$99,999
$100,000-$124,999
$125,000-$149,999
>$150,000

5. Have you ever participated in the following activities? *Check all that apply*
   - Hunting
   - Bear hunting
   - Wildlife viewing
   - None

6. How long have you worked to shape bear hunting policy? _____ years

7. Are you currently involved in shaping bear hunting policy?
   - Yes
   - No

8. Which stakeholder groups are/were you associated in Maine? *Check all that apply.*
   - Anti-Referendum Advocacy Group (e.g., Save Maine’s Bear Hunt, Maine Wildlife Conservation Council, etc.)
   - Government Agency (e.g., MDIFW, etc.)
   - Hunter
   - Hunter Association (e.g., Sportsman’s Alliance of Maine, etc.)
   - Hunting Professional (e.g., Maine Guide, etc.)
   - Hunting Service Provider (e.g., outfitter, taxidermist, etc.)
   - Indigenous Community (e.g., tribe, etc.)
   - Judicial System (e.g., lawyer, etc.)
   - Neutral Wildlife Organization (e.g., Maine Audubon Society)
   - Newspaper (e.g., journalist, news organization, etc.)
   - Non-Expert (e.g., uninformed about referendums, etc.)
   - Non-Hunter
   - Politician (e.g., elected official, etc.)
   - Pro-Referendum Advocacy Group (e.g., Mainers for Fair Bear Hunting, Humane Society, etc.)
   - University (e.g., professor, etc.)
   - Other _______________________
   - Other _______________________
   - Other _______________________

9. Where do you get your local news? *Check all that apply.*
   - Bangor Daily News
   - Northwoods Maine Sporting Journal
   - Portland Press Herald
   - Social Media (Specify: ____________)
   - Kennebec Journal, and/or
   - Other _______________________
   - Morning Sentinel, and/or
   - Other _______________________
   - Sun Journal

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10. How often was/were stakeholder group(s) that you were involved in during the referendums accurately represented in each of Maine’s major newspapers? *Circle the number that best matches your response.*

<table>
<thead>
<tr>
<th>Newspaper</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
<th>Always</th>
<th>Not Sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangor Daily News</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Portland Press Herald</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Augusta Kennebec Journal</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Waterville Morning Sentinel</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Lewiston Sun Journal</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

On behalf of the Human Dimensions of Wildlife Lab at the University of Maine, thank you again for expressing your opinion.

If you have any questions or comments about this questionnaire, please free free to email Francesca Gundrum at francesca.gundrum@maine.edu or Dr. Carly Sponarski at carly.cs@maine.edu.
BIOGRAPHY OF THE AUTHOR

Francesca Gundrum was born in Albany, New York on April 15, 1995. She was raised in Grafton, New York and graduated from Emma Willard School in 2013. She attended Dartmouth College and graduated in 2017 with a Bachelor’s degree in Environmental Studies. During her undergraduate career, she worked with the first all-female rhino APU in South Africa, the Black Mambas, where she researched the need for artificial waterhole provisioning in Kruger National Park. Alongside her incredible Divest Dartmouth campaign team, she was able to organize the largest climate rally in the history of New Hampshire. She worked as a photo identification research assistant with Allied Whale at the College of the Atlantic where she was tasked with photographing and cataloguing cetaceans in the Gulf of Maine. Following this position, she has worked as a naturalist for the Bar Harbor Whale Watch for the last several seasons—educating thousands of people about marine ecosystems and policy. She moved to Orono, Maine and entered the Human Dimensions of Wildlife Lab within the Wildlife Ecology graduate program at The University of Maine in the fall of 2017. Francesca is a candidate for the Master of Science degree in Wildlife Ecology from the University of Maine in August 2019.