To Use or Not to Use: Understanding Public Support for Expanded Federal Wilderness Preservation Policies

JoAnne Delfino Wehner

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Reading Committee:

Dr. Stewart Tolnay, Chair

Dr. Jerald Herting

Dr. Kyle Crowder

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Abstract

To Use or Not to Use: Understanding Public Support for Expanded Wilderness Preservation Policies by the Federal Government

JoAnne Delfino Wehner

Chair of the Supervisory Committee:
Dr. Stewart Tolnay
Department of Sociology

Using the National Survey of Recreation and the Environment (NSRE) data, a nationally representative data set collected by the United States Forest Service, this research explores how socio-demographic, cultural, and environmental characteristics shape the likelihood of individual support for expanded wilderness preservation by the federal government. The continued preservation of wilderness largely depends on the significance and value that the American people attribute to it. However since the first public lands were set aside for preservation in the 1800's dramatic shifts have occurred not only in regards to what lands are worthy of preservation, but what Americans consider the appropriate role of the federal government in defining how such lands can and will be used. This dissertation addresses one aspect of this issue: what individual and community level factors shape individual attitudes towards wilderness preservation. My research suggests that despite the popular belief that individuals only support preservation when it comes at little or no personal cost, what actually drives such support stems from the base values and significance that individuals' attribute to such lands regardless of their personal experiences or economic circumstances.

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Chapter 1: Introduction

1.1 Introduction

The federal government has adopted many policies that determine how to use, manage, and protect the abundant natural resources found in the United States. Federal agencies such as the Department of Forestry, Department of Fish and Wildlife, the National Park Service, and the Environmental Protection Agency all implement policies designed to reconcile two conflicting objectives: the responsible use of natural resources versus their preservation (Lemons and Stout 1984-1985). These policies are controversial; the public is not in agreement as to which lands, animals, and resources are worthy of preservation and protection by the State (Runte 2010). From the flooding of the Hetch Hetchy River Valley to make a reservoir for San Francisco in the early 1900's (Runte 2010) to the protection of Spotted Owl habitat in the Pacific Northwest (Proctor 1998)—and, most recently, in the case of President Obama's decision to block the Keystone Pipeline—environmental policy requires a delicate balance among complex and often competing interests.

Theorists have suggested that it is a class of white, highly educated, middle-income males that drives political support for wilderness preservation (Cronon 1995; Walter and Kielcolt 1995). Some argue that since women, people of color, and lower-income individuals are less likely to visit wild areas, they therefore are less likely to advocate for wilderness preservation (Cronon 1995). This conclusion suggests that support for wilderness preservation is largely driven by the personal benefits that individuals derive from natural spaces. However, research suggests that despite the fact that women and minorities are less likely than white males to visit wilderness areas, they value wilderness preservation at similar rates (Johnson et al 2004). Also, research shows that individuals living in rural areas continue to support preservation even while fighting to retain access to mineral, grazing, timber, and water rights and the economic opportunities

those resources can provide their communities (Doremus and Tarlock 2008; Espeland 1998; Fitzgerald and Schwabach 1999; Proctor 1998; Freudenberg et al 1999). The individual and community characteristics as well as the personal values that determine individuals' opinions regarding wilderness preservation have not been fully explored. This dissertation will specify the role that individual socio-demographic characteristics, personal wilderness values, and community characteristics play in shaping public support for wilderness preservation within this country.

1.2 The History of Wilderness

Wilderness has long held cultural significance for Americans who romanticized the wild frontier of "the West" and its meaning in relation to national identity. Works by individuals such as Charles Russell, Henry Thoreau and John Muir have been suggested to shift Americans' perceptions of wilderness from a threatening place in need of taming to a place of wonder and spiritual peace (Nash 2001). With the settlement of the Western frontier in the 1800s and the end of the great buffalo herds came a rising concern regarding the end of wilderness in the United States. In essence "wilderness"-- generally defined as unsettled land -- took on a cultural and spiritual significance in American culture that has persisted into the present day (Nash 2001; Cronon 1995). Political figures such as President Theodore Roosevelt believed that wilderness was what made Americans culturally superior to Europeans: wild spaces gave American citizens with the freedom to choose an untrodden path and the opportunity to demonstrate strength and resolution (Nash 2001; Cronon 1995; Runte 2010). When President Theodore Roosevelt established the first U.S. National Park in 1872 – Yellowstone-- he did so in order to counteract what he perceived to be the nation's materialistic tendencies and because "no nation facing the unhealthy softening and relaxation of fiber that tends to accompany civilization can afford to neglect anything that will develop hardihood, resolution, and the scorn of discomfort and danger" (Roosevelt in Nash 2001: 151). The first National Park, then, was

founded with a dual preservation in mind: that of the wild land, but also that of the American character. This connection between wilderness and the American spirit would later inform political efforts to preserve U.S. lands in the form of National Forests and, more recently, in the form of our wilderness areas.

Since the establishment of Yellowstone and Yosemite, the politics surrounding land preservation and "wilderness" have changed. For the purposes of this dissertation, I assume that for most Americans the concepts of "wilderness" as well as "nature" exist as fairly abstract terms encompassing large areas of undeveloped land. There is an extensive literature that discusses the theoretical meaning of wilderness and nature among Americans, a debate that goes beyond the scope of this research. However it should be noted that under the Wilderness Act, Federal wilderness areas must meet a specific set of criteria before being designated as wilderness. The U.S. has a rich history of conservation—inspired first, perhaps, by John Muir in the mid 1800's--which writers have termed the "cult of wilderness." In his essay about the frontier, Frederick Turner emphasized the connection between living in the wilderness and the development of desirable American traits (Nash 2001). Today there are numerous nonprofit organizations with millions of members devoted to the preservation of public lands in general and of wilderness in particular. Two political perspectives characterize the debate over wilderness preservation in the United States: "no-use" and "wise-use." The "no-use" perspective encourages the Federal government to protect public lands from any and all use or management, in effect preserving such lands in their "natural state." In contrast, the "wise-use" approach encourages the federal government to protect public lands, but also to manage them so as to ensure that these lands continue to provide tangible benefits such as timber, minerals, game for hunting, and awe-inspiring landscapes. While the proponents of each perspective value wilderness, they fundamentally disagree about the relationship between humans and nature, and they also disagree as to the proper role of the state in balancing this relationship. Prior to 1964, the

primary legal designations of those lands intended for preservation were National Parks or National Monuments to be managed by the National Park Service (NPS). The land management goals of the NPS include both preservation and recreational use; these goals can compete with one another when these lands are managed in a way that encourages heavy visitation by the general public (Runte 2010; Lemons and Stout 1984-1985).

In response to this inherent conflict, the Federal Wilderness Act of 1964 served as a renegotiation of the balance between use and preservation on our public lands. This law required that lands designated as wilderness be protected from any and all human intervention. In particular, the Wilderness Act was "intended to make any alteration of wilderness conditions within the system illegal" (Nash 2001). Distinct from previous federal designations of public lands managed by the National Park Service or Department of Forestry, the Wilderness Act established into law a novel perspective that some American lands should be *protected* from use, and that the very value of such lands is dependent upon the lack of human intervention and management.

1.3 The Politics of Wilderness

The inherent conflict between wilderness preservation and resource management has been an issue of political struggle since the idea of creating National Parks was first introduced in the 1800's. When Theodore Roosevelt established Yellowstone, his vision of wilderness preservation was met with skepticism. Congress only agreed to set aside for preservation those lands that were generally deemed economically "worthless" (Runte 2010; Nash 2001). However, while the number of legal protections at the federal and state levels designed to protect public land has increased dramatically since the late 1800's (Runte 2010), political debate over such protections remains contentious. As recently as 2011, survey research revealed a widespread public perception that environmental regulations (e.g., restrictions on oil drilling in Alaska's Artic National Wildlife Refuge [ANWR]) are contributing to higher natural gas prices and

unemployment (Saad 2011). This finding suggests that for many Americans, support for environmental preservation may be related to one's economic situation. In fact some theorists suggest that environmental regulations are a luxury that should be set aside when the economy is strained. Under this policy, regulations that restrict certain industries due to environmental impacts would be eased in times of financial hardship with the aim of creating economic opportunities (Rich and Broder 2011).

The conflict between preservation and economic development is not easily resolved. Recent public opinion research shows that with rising gas prices and political uncertainty in the Middle East, a strong majority of Americans support increased U.S. oil drilling and exploration, and that at least 50 percent of Americans believe that oil drilling should be permitted in federally protected wildlife habitat in Alaska (Saad 2011). At the same time, a majority of Americans support the federal government's efforts at environmental protections and the preservation of the environment more generally (Smith et al 2000; Dunlap & Scarce 1991; Ellis and Thompson 1997) and wilderness preservation in particular (Scott 2004; Fitzgerald and Schwabach 1999). Research suggests that support for environmental protections is far from universal; rather, it is likely that such support varies significantly depending on the issue (Konisky et al 2008). Also, though there is significant public support for wilderness preservation in the abstract, public support for the expansion of federally designated wilderness areas in particular might be much less popular, given the political and economic conflicts surrounding such designations (Fitzgerald and Schwabach 1999; Cronon 1995; Fitzsimmons 1999).

What explains the conflicting finding that Americans both value nature and support federal interventions to protect and preserve our natural resources while also favoring policies that reduce or eliminate those protections? What factors shape how Americans feel about federal regulations of the environment? Do different types of people simply value the environment differently, or do Americans support expanded environmental protections only when those

protections have no perceived economic impacts? Studying differences in public support for expanded wilderness preservation offers the ideal opportunity to explore these complex and seemingly contradictory positions.

1.4 Overview of the Dissertation

Using the National Survey of Recreation and the Environment (NSRE) (USDA Forest Service 2006), I will examine how individual and contextual factors shape individuals' support for the expansion of wilderness preservation by the federal government. This analysis will allow me to answer four main research questions:

1. Is there significant variation in support for the expansion of federal policies designed to preserve nature/wilderness by socio-demographic characteristics? (i.e. race, gender, income, education)?
2. Are any observed socio-demographic gradients in support for expanded nature/wilderness preservation mediated by individuals' beliefs regarding the value of wilderness?
3. How do community-level factors (place of residence, proportion unemployed, and proportion employed in an extraction field) relate to individuals' support for the expansion of federal policies designed to preserve nature/wilderness, net of their own personal characteristics?
4. Finally, do community-level factors condition or moderate the relationships between personal characteristics and support for wildlife preservation?

In order to provide context for the entire dissertation, Chapter 2 provides a general overview of the relevant background and theory relating to my research questions. This includes an overview of the research relating to not only wilderness preservation in particular, but also environmentalism more generally.

Chapter 3 provides an in-depth description of the NSRE dataset, as well as the census data appended to the NSRE dataset using ZIP code identifiers. This chapter also provides an overview of the strengths and weaknesses of the NSRE and census data used for analysis, the basic demographics of the NSRE dataset, and the techniques used to derive measures of the

contextual variables utilized for this project. Finally, this chapter provides an overview of the analytic methodology utilized in each of the analytic chapters and describes how these methods are appropriate given the data and research questions.

Chapter 4, 5, and 6 of the dissertation will answer the research questions posed in this dissertation. Chapter 4 focuses on testing the effects of individual socio-demographic characteristics on support for expanded wilderness preservation. This chapter will focus on assessing the relationship between such individual characteristics as income, gender, education, and race on the likelihood of individuals supporting expanded wilderness preservation. Moving beyond the individual socio-demographic characteristics, Chapter 5 will focus on examining the relationship between measures of utilization wilderness values and inherent wilderness values and individuals' support for expanded wilderness preservation. The final analytic chapter, Chapter 6, tests whether contextual characteristics, either independently or in conjunction with individual characteristics, predict support for expanded wilderness preservation. Also in Chapter 6 I will test whether contextual characteristics serve as predictors of utilization and/or inherent wilderness values.

Finally, in Chapter 7 I will draw together the conclusions from each of my analytic chapters and describe how my findings contribute to the field more generally, and specifically how individual characteristics, values, and contextual characteristics interact with respect to support for wilderness preservation. I will be able to use these findings to draw more general conclusions regarding how individual attitudes and beliefs about preservation in the United States are determined.

1.5 Relevance/Contribution of the Project

This study is the first to draw generalizable conclusions regarding the effects of individual characteristics, values, or contextual characteristics in determining support for wilderness

preservation. The majority of research dealing with wilderness preservation issues utilize a qualitative approach, providing an in-depth analysis of specific political fights over preservation issues including water rights, hunting, and habitat protection, as well as survey research focused on specific geographic regions dealing with wilderness preservation issues (Dizard 1999; Proctor 1998; Doremus and Tarlock 2008; Lichter and Brown 2011; Hamilton et al 2010). While these projects provide valuable insights into the factors impacting individuals' beliefs and attitudes regarding preservation issues, their use of small geographic samples or case study methodology make their findings impossible to generalize to the larger United States population. Alternatively, this research utilizes the 2006 National Survey of Recreation and the Environment (NSRE), a nationwide, simple random sample, random-digit dialing telephone survey of households in all fifty states. Unlike other regional surveys, the NSRE is the only existing dataset available that collects a nationally representative sample of individuals" attitudes and values relating to wilderness and the environment. Moreover the NSRE includes zip code identifiers for the majority of its participants, allowing for an additional level of analysis examining whether contextual characteristics influence environmental attitudes.

Understanding the motivations behind individuals' level of support for specific environmental regulations will allow for a better understanding of why preservation policies are socially and politically contentious. This research provides the opportunity to clarify the mechanism through which individual and community characteristics influence public support for environmental preservation more generally. More simply, this research allows me to explore how individuals' characteristics, values, and circumstances shape and inform their opinions regarding environmental preservation, an issue of great significance considering the environmental, political, and economic consequences. Finally, this research will allow me to develop a conceptual foundation for understanding how demographic characteristics, environmental values, and contextual factors intersect to shape levels of support for the

expansion of federal policies designed to preserve nature/wilderness. Understanding the motivations that shape individuals' level of support for expanding environmental protections and how these individual differences are moderated by community characteristics is important for both policy makers and environmental organizations, especially if they hope to retain public support for preservation for generations in the future. Overall this analysis will explore how different demographic and community characteristics shape not only Americans attitudes towards preservation, but their values with regards to the significance of wilderness as well.

Chapter 2: Theory and Background

2.1 Introduction

To begin this research project, I will provide an overview of the previous research on wilderness preservation specifically, as well as environmental issues more generally. The United States has a long history of land preservation that began in 1872 with the establishment of the first National Park. Today, over 107 million acres of land have been set-aside as wilderness in 44 states. Despite this history of conservation, public support for such legislation is not universal. In fact, evidence suggests that support for land preservation policies is driven by a variety of factors such as demographic characteristics, differing values relating to wilderness, and contextual characteristics. This chapter provides an overview of the environmental preservation literature, examining each of these factors and how they might relate to individual attitudes towards wilderness preservation.

2.2. Socio-demographic Factors and Support for Expansion of Wilderness Designations

Disagreement over the expansion of federal wilderness preservation policies can be characterized as a conflict over how to determine the appropriate balance between federal protection of the environment and the economic well-being of a community. According to the New Environmental Paradigm (NEP) first introduced by Catton and Dunlap (1978), the finite amount of natural resources limits economic growth; this reality has significant consequences for stratification and other sociological phenomena. With a finite amount of natural resources such as oil or land, the government operates under the condition of managed scarcity, implementing policies that force interested parties to weigh economic choices related to those scarce resources. For instance, when regulations force an industry to adopt technologies that reduce pollution, businesses pass the costs of such technologies on to consumers. As another example, governments may levy higher taxes to discourage overconsumption of scarce natural

resources such as oil or water (Catton and Dunlap 1978; 46). To acknowledge the limitation of natural resources is to acknowledge the reality that past rates of economic growth are simply unsustainable given the depletion of these finite resources over time. However, despite the fact that they have traditionally benefited from the exploitation of natural resources, it is wealthy individuals who are most likely to visit wilderness spaces, and who are also the strongest proponents of preserving areas that contain the natural resources that individuals traditionally use for economic gain. This paradox, that the very class that has most benefited from the unregulated exploitation of the environment is now calling for its preservation, angers many less privileged groups who also wish to have the opportunity to increase their wealth by leveraging natural resources. In effect, arguments for conservation can be characterized as instances of the individuals limiting the economic opportunities available to the poor. Wealthy individuals, having already accumulated their wealth and established economic and political power through environmental exploitation, now have the luxury of pursuing policies that encourage environmental preservation.

However, at the individual level specifically, among Americans there exists some disagreement over the importance of land preservation. Authors such as Cronon (1995) have argued that the expansion of wilderness is largely supported by white, urban-dwelling, highly-educated, wealthy individuals whose financial resources allow them to influence politics and support their desire for additional wilderness areas for recreation (Cronon 1995; Walker and Kiecolt 1995). Since the earliest debates over the preservation of our public lands, members of the middle and upper classes have championed efforts by groups like the Sierra Club to fight for expansion of wilderness preservation in this country (Nash 2001; Runte 2010). Another disparity may be geographical: for example, when President Carter passed the Alaska National Interests Land Conservation Act in 1980 he designated over 28% of the state as wilderness, thus restricting the types of land use permitted in a significant portion of the state. One of the main arguments

against this designation came from critics who argued that individuals from the lower 48 states who had developed and exploited their own frontier for economic development hundreds of years ago were now robbing Alaskans of that same opportunity, wishing to preserve a wilderness that no longer existed in their own region. Therefore individuals living in states that offer few if any pristine wilderness areas wish to preserve wilderness in other states to capture an aesthetic that no longer exists where they live (Nash 2001). In many ways the level of support for wilderness preservation seems to be related to an individual's personal and community characteristics, whether income, field of work, or even their place of residence. These factors may serve to shape how certain groups might come to hold very distinct opinions regarding federal environmental preservation efforts.

An individual's willingness to support conservation policies may be related to one's perception that one's basic needs have been met. According to Inglehart's theory of Postmaterialism (1995), support for the environment is greatest in those countries where the basic material needs of the people, such as adequate food, clean water, or stable government, are being met. When a population's basic material needs are being met, there is a shift in the priorities of the population and a greater demand for governmental policies related to quality of life. These populations may begin to support policies that are more protective of the environment rather than supportive of economic growth and consumption. Inglehart's theory of Postmaterialism can be applied to individuals as well, and would help to explain why concern for the environment and wilderness preservation is more popular among the upper classes. Individuals in the middle and upper classes have greater human capital, are less concerned about their financial security, and therefore have the excess resources to devote to non-economic objectives such as wilderness preservation. In contrast, individuals with lower levels of education and income have fewer resources available to spend on concern for the environment, especially when environmental regulations and policy decisions are often blamed for increased costs of

consumer products such as gasoline. In fact, research looking at demographic differences within the population regarding a "willingness to pay" for wilderness preservation has found significant differences based on the individual's income and education levels. Studies find that those with higher incomes and more education report a greater willingness to pay for preservation at higher rates than their lower income, less educated counterparts (Elliot et al 1997; Pope and Jones 1990). Similarly, in their research on public demand for the preservation of environmental resources, Whitehead and Thompson (1993) found that, in part, individuals' perceived ability to pay for preservation efforts drives their support for such efforts, regardless of their actual ability to pay. Thus the economic costs associated with environmental protections do play an important role in shaping public demand and support for preservation.

Beyond differences in human capital, researchers have also explored whether there are racial differences with regards to preservation attitudes. Whites have been found to be significantly more likely to visit wilderness areas than their non-white peers (Johnson et al 2004). When asked why they do not visit wilderness, minority respondents generally report logistical concerns such as the expenses associated with travel and camping/recreational gear, rather than a lack of wilderness valuation (Johnson et al 2004). However, despite visiting wilderness areas less frequently than whites (Johnson et al 2004), non-whites report being more supportive of increased environmental spending (Elliot et al 1997) and environmental protections (Mohai 1990). Moreover, while there is evidence to suggest important differences in the underlying reasons or values that whites and non-whites hold regarding the environment more generally (Cordell et al 2002) and wilderness preservation in particular (Johnson et al 2004), it is unclear what drives these differences. For example, Cronon (1995) theorizes that socio-economic factors rather than cultural differences drive the observed differences in environmental attitudes between whites and minority populations in the United States. In contrast, Mohai (1990) suggests that minorities' disproportionate residence in areas impacted by pollution drives their

increased concern for environmental spending. A more thorough understanding of racial and ethnic differences in support for wilderness preservation policy is needed, as well as an exploration of the values and attitudes that drive that support independent of concern for pollution and/or environmental contamination. While researchers have argued that variation in attitudes towards public lands stem from cultural variation between groups and the meanings they attach to said lands (Kyle and Johnson 2008), Cronon (1995) makes a valuable point that perhaps those cultural difference in attitudes towards wilderness between whites and non-whites are actually the result of the economic differences between racial groups.

Finally, in the environmental literature, gender has also been associated with differential support for environmental preservation. Similar to race, research suggests that, despite the fact that women are significantly less likely to visit wilderness areas compared to men, they remain highly supportive of its preservation (Johnson et al 2004). This relationship has been theorized as resulting from gender differences in values, in particular women's greater propensity towards altruism. Research suggests that because women are generally more altruistic, socially responsible, and "other-oriented" than men, they also are more likely to believe, support, and act in more environmentally responsible ways (Dietz et al 2002; Zelezny at al 2000; Kalof et al 2002).

2.3 Wilderness Values as Determinants of Support for Expanded Wilderness Preservation

While many researchers have shown significant differences in attitudes towards preservation among socio-demographic groups, there have been less clear explanations as to why these differences exist. For example, while affluent white men generally make up the majority of visitors to wilderness areas in the United States, women and minorities report much higher rates of support for wilderness and environmental preservation (Johnson et al 2004; Elliot et al 1997; Mohai 1990). Moreover, those individuals with higher incomes and more education are

found to be more supportive of preservation than their less educated and lower incomes peers, even when asked directly about their willingness to pay for preservation (Elliot et al 1997; Pope and Jones 1990).

One possible explanation for this distinction in support for preservation by socio-demographic characteristics could be differences in the wilderness/environmental values held by various socio-economic groups. For example in political conflicts over wilderness designations, research suggest that the core issue being debated is the value that individuals' attribute to nature and the environment. In particular whether nature has inherent value, utilization value, or some combination of both (Dietz et al 2005). To believe that wilderness has inherent value is to believe that its significance functions independently of the potential material benefits it provides humans. Thus wilderness has intrinsic value for the aesthetic and moral/spiritual benefits it provides in addition to material ones. In contrast, utilization wilderness values are based on the belief that the value of nature or wilderness stems in part from how it can and does benefit humans materially (Xu and Bengston 1997).

Thus when various groups are embroiled in political conflicts over various environmental issues such as hunting (Dizard 1999), endangered species protections (Proctor 1998), wilderness preservation (Fitzgerald and Schwabach 1999), and federal protection of ecosystems (Fitzsimmons 1999) while it might appear that those with higher education levels and income are simply more supportive of preservation, what drives this support is their values as it relates to wilderness and the environment over all. For example, in their research, Dizard (1999), Fitzsimmons (1999), and Proctor (1998) all suggest that more highly educated individuals from middle/upper class backgrounds tend to view nature in more romantic, non-utilitarian terms compared to their less educated, less wealthy peers.

2.4 The Effects of Community Characteristics on Support for Wilderness Preservation

While numerous studies explore how individual characteristics or " who we are" motivates our feelings regarding the environment and its preservation, there is an equally important, yet underexplored, question of how where we live might also shape our level of concern for the environment. The literature suggests that the economic and social contexts within which individuals live can have a significant impact on social behaviors and beliefs regarding environmental policies (Elliot et al 1997; Hamilton et al 2010). Environmental regulations can impact entire communities, with industries such as mining, fishing, and logging often experiencing elimination or dramatic restrictions when public lands are set aside for wilderness preservation (Fitzgerald and Schwabach 1999; Fitzsimmons 1999). Given this reality, community characteristics likely serve as key determinants of individuals' opinions regarding expanded environmental regulations. For example, whether an individual lives within a rural or urban setting largely determines their daily interactions with nature, and therefore may shape his or her perceptions of what wilderness is and of its appropriate use (Cordell et al 2008; Dizard 1999).

Similarly, the degree to which the local economy is dependent upon natural resources as a source of employment most likely shapes the perceptions of the local population regarding the environment as a source of production rather than preservation (Ranniko 1996). Finally, the socio-economic conditions of the local area have been found to be a significant determinant of the level of support for environmental regulations within a community (Lichter and Brown 2011). However, within rural communities there is a deep divide between a desire for increased economic development and growing concern for the environment. In many rural communities, the largest industries available to residents are dependent on the exploitation of natural

resources such as ore, timber, and oil. Therefore while rural residents might generally favor environmental preservation through government regulations, those regulations have significant costs to the economic health of communities with few alternative sources for economic development. It is this conflict that makes support for environmental preservation a more complex issue for those residents living in rural communities compared to their urban counterparts.

Individuals' characteristics and their daily experiences shape personal perceptions and feelings about environmental preservation and the significance of wilderness in particular. While there is no evidence of a significant difference between rural and urban residents in their general levels of concern for the environment, several studies have shown that rural residents are less supportive of environmental policies and regulations (Cordell et al 2008; Calvert 1979; Freudenburg 1991), and the expansion of wilderness areas in particular (Cordell et al 2003). Ranniko (1996) offers one explanation for this distinction, "the cultural background and daily life of conservationists is different from the population engaged in agriculture and forestry. For them, nature is not a production environment and they value different aspects of nature than those who earn their living from it"(69). When the environment functions as a place of "production" for those living in a community, the function and benefits of the natural environment would likely be more utilitarian, while those living in urban areas tend to romanticize and idealize nature and wilderness as a place to be preserved for aesthetic and recreational enjoyment (Cronon 1995).

This distinction between experiencing the natural environment as productive or as a location for recreation leads to distinct perspectives that can dramatically impact individual levels of support for expanded federal environmental preservation policies. In political fights over wilderness designations, those opposed often argue that such designations limit natural resource exploration and in turn the opportunities for developing and ultimately strengthening rural

economies that have few other economic growth opportunities available to them (Footer and VonLunen 1999; Lichter and Brown 2011).

It also seems likely that living in certain communities may serve to moderate the effects of various socio-economic as well as wilderness values in relation to support for preservation. For example, while research suggests that those with higher income and education levels are more supportive of preservation overall (Elliot et al 1997; Pope and Jones 1990; Whitehead and Thompson 1993), research by Hamilton et al (2010) found that those individuals living in communities that are economically or socially impacted by a particular environmental issue are more likely to support the option that most benefits their community. Therefore while in general high-income individuals and those with greater levels of education might be more supportive of preservation, I do not believe this relationship will be consistent across context. For example high income or highly educated individuals living in rural communities or communities where extraction industries employ a large proportion of workers would likely be less supportive of such policies than their urban peers or those living in communities with more service-based economies. A high earning individual living in a rural community may be financially dependent on the natural environment, or have friends and neighbors who are, making them less likely to support wilderness preservation policies that potentially have real financial consequences. Similarly for low-income individuals living in urban centers, the issue of wilderness preservation may seem inconsequential to their current as well as future economic success, making their support for wilderness preservation more abstract. However, similarly low-income individuals living in more rural locations might see preservation policies as an immediate threat to the current and future economic prospects of their community. Regarding attitudes towards preservation community context matters, with highly educated, high-income individuals living in more rural communities being more likely to reject preservation given its costs to the local economy. Thus rather than socioeconomic differences operating uniformly

across geographic locations, their impact may depend on the specific economic characteristics of their larger community. In fact, qualitative analysis of political debates over expanded wilderness designations in Utah find that the opposition forces are not necessarily *fighting* preservation so much as they are advocating for the economic opportunities that access to mineral, grazing, timber, and water rights provides their communities (Doremus and Tarlock 2008; Espeland 1998; Fitzgerald and Schwabach 1999). Thus not only will community characteristics directly shape support for wilderness preservation, but the impact of educational and income differentials will be reduced in communities that are directly impacted by preservation policies.

2.5 Summary

This research will allow me to develop a conceptual foundation for understanding how socio-demographic characteristics, environmental values, and contextual factors combine to influence the likelihood of support for the expansion of federal policies designed to preserve nature/wilderness. While wilderness as a concept enjoys consistent and widespread popularity among the population, there is little if any research that examines the complexity of this issue beyond individual demographic characteristics. This research project allows for a more multifaceted analysis of this issue, examining not only how individual characteristics shape public support for wilderness preservation, but also the effects of wilderness values and community characteristics as well. This project will allow for a better understanding of the relationship between these variables and those characteristics that best determine support for expanded wilderness preservation overall.

Chapter 3: Data and Methodology

3.1 Introduction

The issue of wilderness preservation holds importance for many Americans, but their positions and rationales vary. Some are concerned about the environment and its preservation, some are outdoor or wilderness/wildlife enthusiasts, some work in natural resource fields, and others simply like the idea of preserving wild places. In order to better understand what drives support for expanded federal wilderness preservation policies, this research project will address the following research questions:

1. Is there significant variation in support for the expansion of federal policies designed to preserve nature/wilderness by socio-demographic characteristics of the U.S. population (i.e., race, gender, income, education)?
2. Are any observed socio-demographic gradients in support for expanded nature/wilderness preservation mediated by individuals' beliefs regarding the value of wilderness?
3. How do community-level factors (place of residence, proportion unemployed, and field of employment) relate to individuals' support for the expansion of federal policies designed to preserve nature/wilderness, net of their own personal characteristics?
4. Do community-level factors condition or moderate the relationships between personal characteristics and support for wildlife preservation?

In order to answer these questions, I used the 2006 National Survey of Recreation and the Environment (NSRE), the only nationally representative dataset that addresses the issue of wilderness preservation. Utilizing a nationally representative dataset has distinct advantages for this research project. Because the majority of previous research examining both environmental attitudes more generally and wilderness attitudes in particular use small local or regional datasets for analysis, it is not appropriate to generalize findings to the larger United States population. In addition, because this dataset includes ZIP Code identifiers for the majority of the participants, I am able to append various 2000 Census data to the individual records. This

allows me to examine whether the contextual characteristics of geographic areas shape wilderness attitudes.

This chapter describes the NSRE dataset and discusses its strengths and weaknesses for answering my research questions. This chapter will also introduce the methods I used for the analysis described in chapters 4, 5, and 6.

3.2 National Survey of Recreation and the Environment

The National Survey of Recreation and Environment (NSRE) was first conducted in 1960, then again in 1965, 1970, 1972, 1977, 1982-1983, 1994-1995, 2000-2001, and 2006. However, only data for 2006 was available for use in this analysis. The 2006 dataset was collected between late Fall 2006 and October 2007 and was administered by the Human Dimensions Research Laboratory at the University of Tennessee-Knoxville. The NSRE is a nationwide, simple random sample, random-digit dialing telephone survey of households in all fifty states. The target individual for the interview was the member of the household 16 years or older who most recently had a birthday. This survey gathers information on various outdoor recreation and environmental topics, including outdoor recreation participation, environmental attitudes, natural resource values, attitudes toward natural resource management policies, and socio-demographics (Bowker et al 2006). The NSRE is the only existing dataset available that allows for the analysis of my research questions, providing demographic measures, wilderness value measures, as well as ZIP Code identifiers for the majority of participants. The NSRE dataset includes 1,462 cases and Table 3.2 shows the distribution of these cases among the nine U.S. Census Divisions, showing that in general the distribution of respondents within the NSRE dataset by region is fairly similar to the overall geographic distribution of Americans with no represented region differing more than 5% compared to the total US population.

Table 3.2.1: NSRE Distribution by Census Divisions

	Frequency	Percent of Total US Population - 18+ years old*
Division 1: New England	64 (4%)	5%
Division 2: Middle Atlantic	143 (10%)	14%
Division 3: East North Central	234 (16%)	16%
Division 4: West North Central	132 (9%)	7%
Division 5: South Atlantic	238 (16%)	19%
Division 6: East South Central	107 (7%)	6%
Division 7: West South Central	127 (9%)	11%
Division 8: Mountain	116 (8%)	6%
Division 9: Pacific	301 (21%)	16%
TOTAL PARTICIPANTS	1462 (100%)	100%

*2000 Census Data

3.2.1 Strengths and Weaknesses of the NSRE data set

There are several benefits to using the NSRE for this analysis. First, as mentioned previously, the NSRE is the only nationally representative dataset that measures public support for wilderness preservation among Americans; other surveys usually assess attitudes in specific geographic regions. Furthermore, as can be seen in Table 3.3, the NSRE data does appear to resemble the overall demographic distributions for the U.S. in 2006. While the NSRE age indictor is skewed more heavily in the 45-64-age range than the general population, this variable was mainly used as a control measure. However the NSRE dataset does have an overrepresentation of individuals with advanced degrees compared to the general US population (20% vs. 9.9%), an issue of some concern as well.

In addition to the strengths associated with its sampling methodology, the NSRE also has strengths related to scope: it measures attitudes towards the environment, attitudes and beliefs regarding the value of wilderness, and in particular the reasons that individuals value the preservation of wilderness. The NSRE also explores the possible values that Americans attribute

to wilderness preservation, allowing for a deeper understanding of the reasons why Americans value preservation. Many surveys assess only one or two of these categories; analyses based on those more limited surveys may gauge prevalence of some opinions or attitudes, but they are unable to answer questions about *why* Americans lay claim to certain opinions about the environment. The fact that the NSRE assesses *all* of these indicators enables a more thorough exploration of the mechanisms that drive support for wilderness preservation policy. Finally, the NSRE dataset includes a ZIP Code identifier for the majority of their survey respondents, a major strength that allows for the unique opportunity to examine not only what *demographic* factors shape public support for wilderness preservation, but also what contextual or *community-level* characteristics shape that support.

Table 3.3: Distribution of NSRE Compared to 2006 ACS Demographic Variables

	2006 NSRE Dataset	2006 American Community Survey
Gender		
Male	47%	49.2%
Female	53%	50.8%
Age groups		
18-24 years	4.4%	9.9%
25-44 years	27.3%	18%
45-64 years	46.9%	25.1%
65+ years	21.4%	12.4%
Race		
White	84%	80.1%
Non-White	13%	19.9%
Education		
High School graduate or less	28%	46.1%
Attended College	51%	44%
Completed Advanced/ Professional Degree	20%	9.9%

As with any data set, there are also notable weaknesses within the NSRE. The NSRE does not include many measures that have been shown in the literature to serve as predictors for environmental attitudes, including political affiliation, membership in environmental organizations, field of employment, and parental status. Furthermore, even though the survey includes a question about race/ethnicity, there is insufficient racial diversity within the sample to conduct an analysis of differences in support for expanded wilderness preservation among the many racial categories included in the survey. As a result, I am only able to compare non-Hispanic whites and others in my analysis. Also there is an overrepresentation of individuals with advanced degrees in the dataset compared to the general U.S. population (20% vs. 9.9%). Another weakness of the NSRE dataset is that a substantial proportion of the sample (22%) failed to respond to the income measure on the survey. In order to address this weakness while still analyzing income as separate dichotomous categorical variables, I created a sixth income category for those who failed to respond. This solution, while problematic, allows me to retain the cases that do not include a response to the income measure while offering me information about this specific group of people. For a full discussion of the strengths and weaknesses of this approach see the *Income Variable* subheading under Section 3.4.3.

3.3 NSRE Dependent Variable: Support for Expanded Wilderness Preservation

My dependent variable, *support for the expansion of federal policies designed to preserve nature/wilderness areas* was measured using the following survey question: "Do you think that the amount of land that Congress has designated as Wilderness so far is not enough, about the right amount, or too much?" The response categories are (1) "not enough"; (2) "about the right amount"; (3) "too much"; (8) "Don't know" and (9) "refused". Because I am interested in capturing the differences between those individuals who support *expanded* wilderness designations and those who do not, I created a dummy variable in which those individuals who support expanded wilderness areas (i.e. responded "not enough" are compared to those who did

not express support for expansion (i.e.: those who responded that the amount of wilderness is "about the right amount", "too much", or "don't know"). Table 3.3 shows the distribution of the transformed dependent variable. The dependent variable includes a total of 1442 responses, representing 99% of the original total sample; only 1% of respondents did not answer this particular question. The percentage of the sample that support expanded wilderness preservation is 51%.

Table 3.3: Distribution of Dependent Variable

"Do you think that the amount of land that Congress has designated as Wilderness so far is not enough, about the right amount, or too much?"

	N	%
Support expanded wilderness preservation	748	51%
Do not support expanded wilderness preservation	694	48%
Missing	20	1%
TOTAL PARTICIPANTS	1462	100%

3.4 NSRE Descriptives: Socio-economic Indicators

Table 3.4: Descriptive Statistics

	Mean	Standard Deviation	Min	Max
Age (0=15-39 years old, 1=40-49 years old, 2=50-69 years old, 3=70+ years old)	1.34	.99	0	3
Gender (1=female, 0=male)	.53	.50	0	1
Race (1= Non-Hispanic white, 0=other)	.84	.34	0	1
Education level: ≤ completed High School (1=yes)	.28	.45	0	1
Education Level: Attended Some College and/or graduated with BA/BS (1=yes)	.52	.50	0	1
Education level: Completed Graduate/Professional Degree (1=yes)	.20	.40	0	1
Income: Earns less than $25000 per year) (1=yes)	.14	.34	0	1
Income: Earns between $25,000 and $49,999 per year) (1=yes)	.20	.40	0	1
Income (Earns between $50,000 and $74,999 per year) (1=yes)	.16	.37	0	1
Income (Earns between $75,000 and $99,999 per year) (1=yes)	.11	.31	0	1
Income (Earns $100,000 or more per year) (1=yes)	.18	.38	0	1
Income (Non-response to income measure) (1=yes)	.22	.41	0	1

3.4.1 Gender Variable

Given that the NSRE data include a measure for gender, as well as a series of questions that measure environmental values, this dataset provides the opportunity to examine if women are, in fact, more likely to support wilderness preservation than men. I can also explore whether wilderness values differ depending on gender. For this analysis the gender variable was coded as a dummy variable, with male serving as the reference category and 1 representing female. Table 3.4.1 shows the distribution of the gender variable while Table 3.4 shows the mean (.53) and standard deviation (.50).

Table 3.4.1: Gender Distribution

	Freq
Female	772 (53%)
Male	685 (47%)
Missing	*5 (<1%)*
TOTAL PARTICIPANTS	1462 (100%)

3.4.2 Race Variable

While I had planned to compare across all of the racial/ethnic categories included in the NSRE, 84% of the survey respondents were white; the variation in race/ethnicity was therefore not sufficient to support comparisons among all of the racial groups represented in the dataset. Instead, I combined all non-white racial categories into one category "non-white," which would then comprise 13% of the total sample. Table 3.4.2 shows the distribution for the race variable included in my analysis. The mean for the dichotomous race variable used in my analysis was .87 with a standard deviation of .34(see Table 3.4).

Table 3.4.2: Race Distribution

	Freq
White	1226 (84%)
Non-White	190 (13%)
Missing	*46 (3%)*
TOTAL PARTICIPANTS	1462 (100%)

3.4.3 Income Variable

There is mixed evidence regarding the relationship between income and support for environmental preservation. For example, research by Calvert (1979), Pope and Jones (1990), and Whitehead and Thompson (1993) suggests that income is a significant predictor of support for various environmental issues including wilderness preservation. However, more recent research suggests that income is not as significant a predictor of environmental views as previously thought (Hamilton et al 2010). Including an income measure offers the opportunity to examine how individuals' socio-economic well-being determines their likelihood of supporting expanded wilderness preservation.

Table 3.4.1c below shows the descriptive statistics for the income variables utilized in this analysis. The original NSRE dataset included a categorical income measure ranging from individuals earning less than $25,000 per year (0) to individuals earning $100,000 or more per year (4), with those who failed to respond coded as missing. As shown in Table 3.4.3, there is a 22% rate of nonresponse for the income measure, which is much higher than for any of the other independent variables included in the analysis. Having such a large percentage of missing values for the income measure was problematic, especially given the likelihood that excluding these individuals from the analysis could potentially skew the results (Kim et al 2007). Since income would be analyzed as separate dichotomous variables, multiple imputation was incompatible with my analysis. Therefore, in order to preserve as much of the data as possible

without skewing results, I created a sixth dichotomous income variable for those who failed to respond to the income measure. The table below shows the distribution of the income variables separated into the six response categories.

Table 3.4.3: Income Distribution

		Freq
<$25,000		201 (14%)
$25,000-$49,999		288 (20%)
$50,000-$74,999		233 (16%)
$75,000-$99,999		160 (11%)
$100,000 or above		262 (18%)
	Missing	*318 (22%)*
TOTAL PARTICIPANTS		1462 (100%)

3.4.4 Education Variable

Research also suggests that education is related to environmental concern as well as pro-environmental behaviors. Individuals with greater levels of education are more likely to support increased environmental spending, are more willing to sacrifice financially for the purposes of preservation, and are more likely to join environmental organizations (Dietz et al 1998). Research examining wilderness designations in Utah suggests that individuals' willingness to pay for wilderness preservation is related to education level; those with more education reported a greater willingness to pay (Pope and Jones 1990). The original NSRE education measure was an ordinal variable separated into five categories: less than a high school degree (0), High School education (1), Some College (2), Earned a BA/BS (3), completed a graduate or professional degree (4). For the purposes of this analysis, education was split into three dichotomous categorical variables: those who had earned a high school degree or less, those who attended college (including those who had some college as well as those who graduated with a BA/BS), and those who had earned an advanced degree. Theoretically, the decision to combine

education categories, specifically the undergraduate education categories of those who have attended college and those who have graduated with a BA/BS was made for a number of reasons. First those who have attended college, regardless of whether they have finished their degree, have likely been exposed to similar innovative concepts and ideas compared to those who have only attended high school. Moreover there was no evidence in the literature to suggest any differences in the preservation attitudes of those with some college compared to those who have completed an undergraduate degree. This change allow me to compare larger, more distinct education categories than those included in the original NSRE measure, while maintaining the theoretical significance of these measures. The means and standard deviations for my education variables can be found in Table 3.4.

Table 3.4.4: Education Distribution

	Freq
Degree ≤ High School	404 (28%)
Attended College*	749 (51%)
Completed a MA/MS/Ph.D./Professional Degree	289 (20%)
Missing	*20 (1%)*
TOTAL PARTICIPANTS	1462 (100%)

**Includes individuals who have taken some college classes as well as those who have completed a BA/BS degree*

3.4.5 Control Variable: Age

Previous research has shown age to be negatively correlated with environmental attitudes as well as wilderness visitation (Bowker et al 2006; Johnson et al 2010; Elliott et al 1997; Dietz et al 1998). Generally it is found that there is less support for environmental spending and other issues relating to the environment among older Americans, making it likely that individuals who are in older cohorts are less likely to support expanded wilderness preservation compared to their younger peers.

The control variable for age was split into 4 dummy variables with the youngest age group (age 15-39) serving as the reference group for the analysis. For all equations estimated in this chapter I included respondent age as a control variable. I included a control for age partly because age has been identified as a significant predictor of environmental attitudes (Bowker et al 2006; Elliott et al 1997; Dietz et al 1998), but also because age differences in wilderness values in the NSRE data are correlated with age differences in some of the socio-economic variables of interest. Controlling for age reduces the likelihood that any relationship between the sociodemographic variable and wilderness attitudes was the result of spurious, confounding, or suppressor effects.

Table 3.4.5: Age Distribution

	Freq
15-39 years old	346 (24%)
40-49 years old	452 (31%)
50-69 years old	448 (31%)
70+ years old	194 (13%)
Missing	*22 (2%)*
TOTAL PARTICIPANTS	1462 (100%)

3.5 NSRE Descriptives: Inherent and Utilization Wilderness Value Measures

How people feel about nature and the environment can play an important role in determining their support for environmental policies. Understanding the relationship between social values and environmental concern has been the topic of numerous research projects seeking to better explain demographic differences in attitudes and behaviors relating to environmentalism. In order to explore whether individual beliefs and values regarding wilderness serve as the mechanism through which such variables as race, gender, income, and education are related to support for wilderness preservation, I consider the possible mediating effects of NSRE value

measures in Chapter 5. Table 3.5 shows the question from the NSRE that measures wilderness values.

Table 3.5.1: Value Measures from the NSRE

"Wilderness areas provide a variety of benefits for different people. For each benefit I read, please tell me whether it is extremely important, very important, moderately important, slightly important, or not important at all to you as a reason to preserve wilderness and primitive areas."
Preserving unique wild plants and animals
Protecting wildlife habitat
Protecting rare and endangered species
Protecting air quality
Protecting water quality
Future generations have wilderness area
Having option to visit wilderness area
Just knowing wilderness areas exist
Providing scenic beauty
Providing income for tourist industry
Providing recreation opportunities
Providing spiritual inspiration
Preserving natural areas for scientific study

In order to create wilderness benefit index measures I used exploratory factor analysis to determine the number of underlying factors that should be used. For the purposes of my analysis, I utilized the factor scores calculated by SPSS using the regression method. The factor scores operate as a statistical tool allowing for the reduction of the thirteen measures of wilderness benefits to two underlying constructs. Each construct is measured on a standardized scale with a mean of zero and standard deviation of 1, allowing for variation in the relationship between each of the variables and the underlying factors. Table 3.5.2 shows the Eigenvalues from the analysis, with two having eigenvalues over 1, suggesting that there are two underlying factors. As can be seen in Table 3.5.2, Factors 1 and 2 account for 49% and 9% of the total variance in all thirteen variables respectively.

Table 3.5.2: Eigenvalues for Factor Analysis

	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Component	Total	% Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.36	48.94	48.94	6.36	48.94	48.94
2	1.18	9.48	58.42	1.23	9.48	58.42
3		6.27	64.69			
4		5.73	70.42			
5		5.12	75.55			
6		4.16	79.70			
7		3.73	83.43			
8		3.52	86.96			
9		3.19	90.15			
10		2.97	93.12			
11		2.53	95.65			
12		2.43	98.08			
13		1.92	100			

Table 3.5.3: Rotated Component Matrix

	Component	
	1	2
wild283: Protecting water quality	.71	.16
wild284: Future generations have wilderness area	.71	.28
wild285: Providing recreation opportunities	.31	.70
wild286 Protecting wildlife habitat	.80	.18
wild287: Providing spiritual inspiration	.26	.73
wild288 :Preserving natural areas for scientific study	.50	.44
wild289: Preserving unique wild plants and animals	.82	.19
wild290: Having the option to visit wilderness area	.63	.36
wild291: Protecting air quality	.76	.17
wild292: Providing income for the tourist industry	-.02	.80
wild293: Protecting rare and endangered species	.80	.18
wild294: Providing scenic beauty	.55	.53
wild295: Just knowing wilderness areas exist	.60	.45

In Table 3.5.3 the rotated component matrix shows the factor loading for each of the value measures on the two factors. The factor for which each measure most strongly loaded is the factor that the measure represented. Based on these scores, I determined that the two wilderness value factors would be best characterized as *inherent wilderness values* and *utilization wilderness values*.

Table 3.5.4 shows the measures associated with each factor. *Inherent wilderness values* are those measures that indicate that an individual places value on an aspect of wilderness that is not derived from direct use or experience of wilderness; they value wilderness simply for "existing." In contrast, *utilization wilderness values* refer to benefits that individuals enjoy as a result of having access to wilderness areas (Cordell et al 2003), such as income, scientific discoveries, spiritual inspiration, and recreation opportunities. It is somewhat puzzling why "provides spiritual inspiration" loaded more heavily on the "utilization wilderness value" given

the close relationship in the literature between spirituality and inherent wilderness valuation. Despite this seeming problem with the data, these were the result of the factor analysis and therefore I did not make any attempts to alter these findings to more closely align with my expectations. Ultimately the measures included within each factor were based on the level of correlation between each variable and the two factors. This was most challenging for two responses: "provides scenic beauty" and "preserving natural areas for scientific study." These two responses were correlated with *both factors*; I decided to include each within the factor with which it was most strongly correlated, regardless of how small the difference. Both responses are therefore included within Factor 1, *inherent wilderness values*.

Table 3.5.4: Two Wilderness Value Factors

Factor 1: Inherent Wilderness Values	• Just knowing that wilderness areas exists • Having the option to visit wilderness area in the future • Future generations have option to visit wilderness area • Protecting water quality • Protecting air quality • Protecting rare and endangered species • Protecting wildlife habitat • Preserving unique wild plants and animals • Providing scenic beauty • Preserving natural areas for scientific study
Factor 2: Utilization Wilderness Values	• Providing spiritual inspiration • Providing income for the tourist industry • Providing recreation opportunities

The responses categories for all variables above are (1) Extremely important (2) Very important (3) Moderately important (4) Slightly important (5) Not important at all (8) don't know (9) Refused

In order to ensure that these measures do actually serve as accurate measures of the identified overarching concepts, I conducted a test for internal reliability for both set of values using Cronbach's alpha. The alphas were high for factor 1: Inherent Wilderness Values --.91 (10 items) and moderate -- .63 for factor 2: Utilization Wilderness Values (3 items) (See Table 3.5.4)

Table 3.5.4: Descriptives of Inherent and Utilization Wilderness Values

	Factor 1: Inherent Wilderness Values	Factor 2: Utilization Wilderness Values
Mean	0	0
Standard Deviation	1	1
Cronbach's alpha	.91	.63

3.6 ZCTA (Zip Census Tabulation Areas) Data

Because the NSRE provides ZIP Code identifiers for its participants, I was able to append contextual variables measuring various community level factors to the NSRE data. Based on a review of the literature (see Chapter 2 for a full discussion), it is likely that various contextual characteristics can shape the likelihood that an individual supports expanded wilderness preservation. ZIP Code identifiers allowed for the exploration of the effects of three contextual variables on support for wilderness preservation: the proportion of residents employed in an extraction field, the proportion of residents in a rural area, and the proportion of residents who are unemployed. Conceptually, these contextual factors could shape support for wilderness preservation policy. For example, individuals living in rural communities that are highly dependent upon an extraction industry may be less supportive of expanded wilderness preservation given their dependence on natural resources for employment; they may also be more likely to have opportunities to build a relationship with the natural environment (Ranniko 1996). In this analysis I not only explore the additive effect of these community characteristics, but also how these contextual characteristics interact with individual characteristics. For example, I explore whether individuals' education or income levels might have differential effects on support for preservation depending on the degree to which an individual's community is highly dependent on extraction fields for employment, is largely rural, or has high rates of unemployment.

Table 3.6: Descriptive Statistics of Contextual Variables

	N	Missing	Min	Max	Mean	Std. Deviation
Proportion Employed in an Extraction Field	1393	69	.0	.27	.02	.04
Proportion Rural	1360	102	.0	1	.28	.37
Proportion Unemployed	1393	69	.0	.37	.05	.03

3.6.1 Contextual Variables Collected Using ZCTA Data

1345 separate ZIP Codes are represented within the NSRE dataset—83 cases had duplicate Zip Codes-- and I was able to append the various Census variables (see Table 3.6) to the NSRE dataset for the majority of cases (between 1393 – 1395 depending on the variable). Within the NSRE there were eleven instances in which three respondents from the same ZIP Code appear in the data set, and eighty-two instances where two respondents from the same ZIP Code appear in the data set. While having multiple respondents from the same ZIP code for 93 total cases has the potential to skew results due to correlated errors, these cases are a small proportion (6%) of the overall sample, making the risk minimal.

In order to calculate the contextual variable measures I utilized data from the 2000 Census using ZCTAs (Zip Census Tabulation Areas). The year 2000 was the first year that the US Census began using ZCTAs rather than ZIP Codes for these measures. ZCTAs and ZIP Codes are not identical; the Census created ZCTA codes by first taking the ZIP Code used for the majority of addresses within a Census unit at the time the data were being compiled, which makes it possible that in some cases the ZCTA and ZIP codes are distinct (http://mcdc2.missouri.edu/webrepts/geography/ZIP.resources.html). However, according to the Census Bureau, ZCTA and ZIP Code values are equivalent in 96% of cases (http://www.census.gov/geo/ZCTA/zctafaq.html). The NSRE dataset includes ZIP Code information for 1438 (98%) of respondents. Of the 1438 NSRE respondents who had ZIP Code identifiers, 1360 (95%) had at least one of the ZCTA measures available for analysis (see Table 3.6).

3.6.2 Proportion Employed in an Extraction Field

Conducting a quantitative analysis of the ways in which local contextual characteristics determine public support for expanded wilderness preservation provides a new and previously unexamined set of variables for exploration. Previous research suggests that the economic well-

being of rural communities has traditionally depended upon the cultivation of natural lands or on the use of natural resources through industries such as mining, timber, and agriculture (Ranniko 1996). Moreover, research by Dietz et al (1998) suggests that the degree to which members of a community use the environment for production activities serves to shape community members' feelings regarding environmentalism. Including a measure of the proportion of workers within an individual geographic area that are employed in a field that depends upon the extraction of natural resources provides a tool for testing this relationship. This measure was calculated using 2000 Census data for the total civilian population within a ZCTA over the age of 16 working in one of the following fields: agriculture, forestry, fishing and hunting, and mining. This number was then divided by the total employed civilian population over the age of 16 within the same ZCTA, providing the proportion of employed individuals who work in an extraction field. The variable for the proportion of residents employed in an extraction field has a mean of .021 and a standard deviation of .04(see Table 3.6).

3.6.3 Proportion Rural

Residents living in rural areas—whether or not their communities are economically dependent upon resource extraction—are generally less supportive of environmental issues (Calvert 1979; Jones and Dunlap 1992). Qualitative research suggests that for individuals living in more rural areas, nature and the environment are a more integral part of daily life, and rural residents are therefore more likely to think of the environment as a production resource (Ranniko 1996). In contrast, urban residents live their lives largely separated from nature, and are therefore more prone to romanticizing nature and wilderness. Urban residents are more likely to seek to preserve wilderness as a place of solace and recreation rather than as a resource for production (Cronon 1995). Whether this distinction holds for a nationally representative sample has not yet been verified.

Using data from the 2000 Census, the proportion of residents within a specific ZCTA/ZIP Code

who lived in a rural area was calculated by dividing the number of residents within the ZCTA living in a rural area by the total number of residents, both urban and rural, living within that geographic area. The US Census defines "rural" as the proportion of individuals living within a ZCTA area that is located outside of urbanized areas and urban clusters, which are defined as "core census block groups or blocks that have a population density of at least 1000 people per square mile and surrounding census blocks that have an overall population density of at least 500 people per square mile" (http://www.census.gov/geo/reference/ua/urban-rural-2000.html). Calculating the proportion rural for each ZIP Code allows for a more nuanced analysis of this distinction given recent discussions in the literature that the divide between urban and rural is less explicit today than in the past (Friedland 2002). The variable of proportion living in a rural area has a mean of .25 and a standard deviation of .37 (see Table 3.6).

3.6.4 Proportion Unemployed

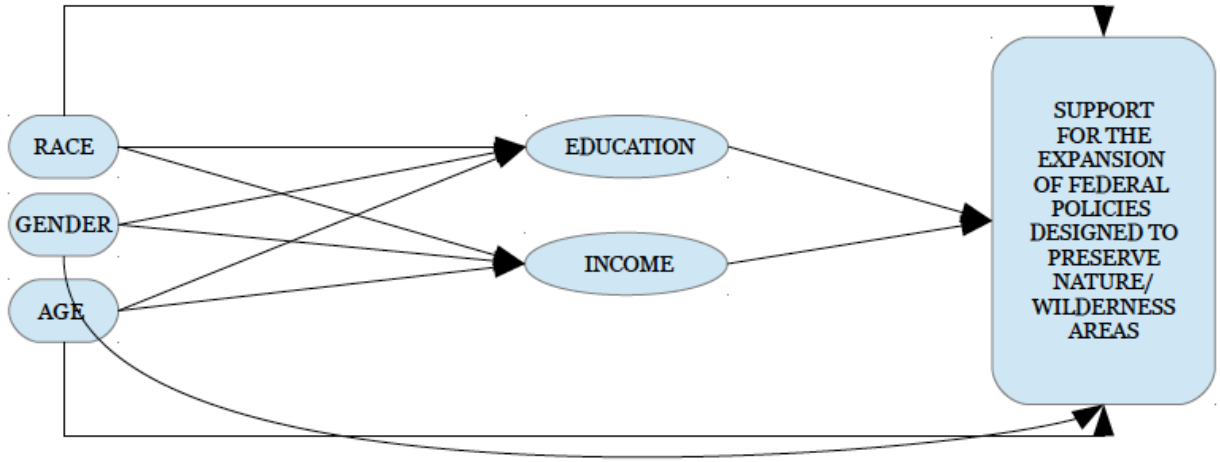
The final contextual variable included in my analysis is a measure of unemployment within the respondent's geographic area. The unemployment rate within an area serves as an indicator for the overall economic health of an area. The greater the level of unemployment, the less willing individuals within a community might be to preserve land when such a decision could cost them current and future economic opportunities. In areas with high unemployment rates, but where there is the potential for mining, oil drilling, or other extraction fields, it is more likely that residents will be supportive of an economic stimulus to their community, regardless of the potential environmental consequences. For instance, in the case of the Spotted Owl controversy in the Pacific Northwest, residents argued that preserving Spotted Owl habitat placed the wellbeing of an animal over the economic survival of families (Proctor 1998). This measure was calculated using 2000 Census data in which I calculated the ratio of the total unemployed to the combined total of the unemployed and employed populations within the same ZCTA The proportion unemployed measure has a mean of .05 and a standard deviation of .03 (see Table

3.6).

3.7 Methodology

Because the majority of my research questions examine those factors that best predict an individual's support for the expansion of wilderness preservation, a dichotomous variable, I use binary logistic regression analysis to test the majority of my hypotheses. Binary logistic regression modeling can be utilized to estimate the relationship between a set of predictor variables and the likelihood that an individual supports expanded wilderness preservation by the federal government (1) or not (0). In Chapter 6 several of my models also predict the likelihood that individuals will hold utilization and/or inherent wilderness values based on the continuous index value. For these models I use OLS regression, testing the effect of race, gender, age, education, and income on whether an individual supports the expansion of federal policies designed to preserve nature/wilderness areas.

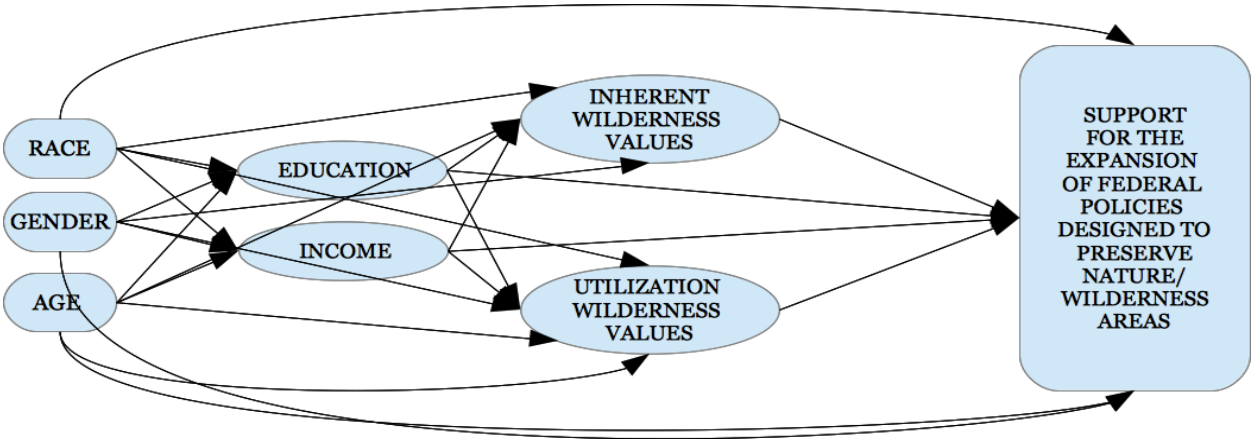
Figure 3.7.1 Chapter 4: Model 1



In Chapter 4 I test the first research question: "Is there significant variation in support for the expansion of federal policies designed to preserve nature/wilderness by socio-demographic characteristics of the U.S. population (i.e., race, income, education)?" (See Figure 3.7.1). The dependent variable in the analysis is the dichotomous "support for the expanded support for

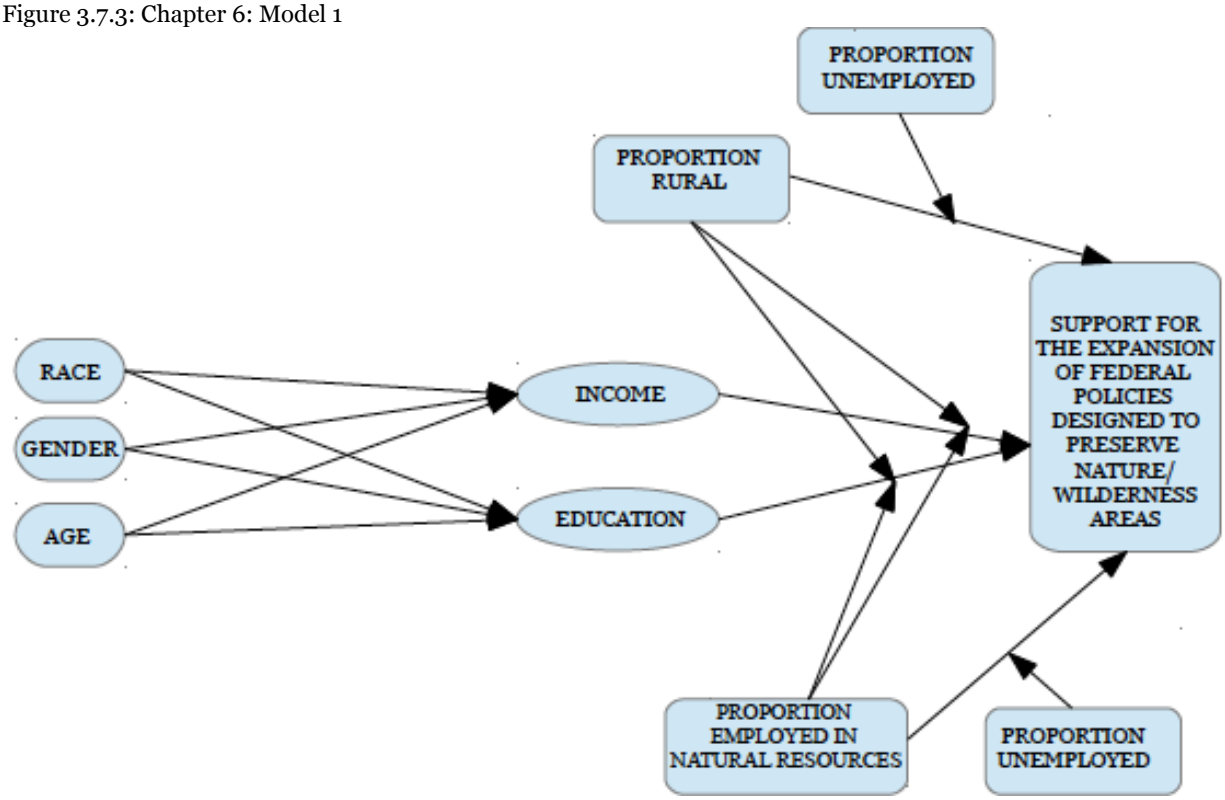
wilderness preservation" variable. The independent variables are measures of human capital (income and education) as well as gender and race. Age serves as the control variable within the model.

Figure 3.7.2: Chapter 5 Model 1



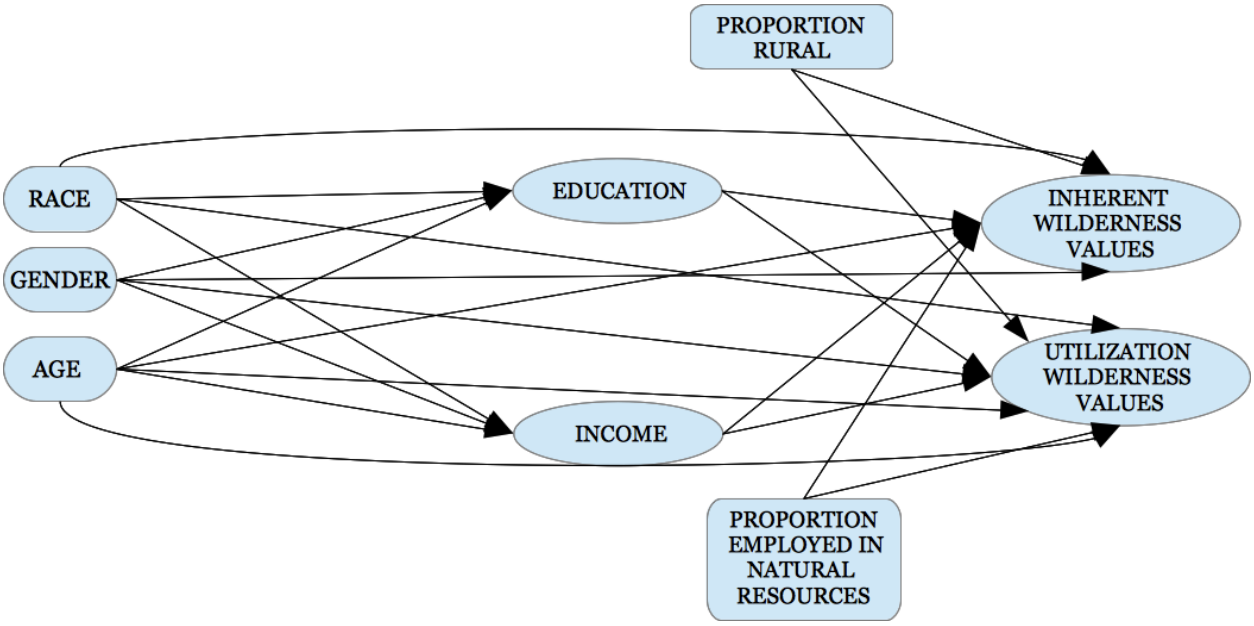
In Chapter 5 I answer the second research question: "Are any observed socio-demographic gradients in support for expanded nature/wilderness preservation mediated by individuals' beliefs regarding the value of wilderness?" (See Figure 3.7.2). Therefore I include measures of inherent and utilization wilderness values in the model, assessing whether the inclusion of these types of wilderness values mediate the relationship between gender, race, income, education, and support for the expansion of federal policies designed to preserve nature/wilderness areas.

Figure 3.7.3: Chapter 6: Model 1



Finally, in Chapter 6 I explore several contextual research questions. The first research question I address is: "How do community-level factors
(place of residence, proportion unemployed, and field of employment) relate to individuals' support for the expansion of federal policies designed to preserve nature/wilderness, net of personal characteristics?" I consider whether proportion rural and proportion employed in an extraction field within a respondent's geographic area serve as significant predictors of support for wilderness preservation, after controlling for age, race, income, education, and gender (Figure 3.7.3). Finally, I consider whether community characteristics moderate the effects of individual characteristics in predicting support for expanded wilderness preservation. This model will test whether the community-level characteristic of "proportion employed in an extraction field" and "proportion rural" moderate the effects of individual characteristics such as race, gender, and SES while controlling for age.

Figure 3.7.4: Chapter 6: Model 2



The final model (See Figure 3.7.4) explores how contextual variables interact with demographic predictors in determining whether individuals are more supportive of inherent or utilization wilderness values. Because the dependent variable in this final model is an index, an OLS model will be used. Similarly to Model 3, this model will examine how the geographic characteristics of the area in which an individual lives, such as whether they live in a predominantly rural area, or an area highly dependent upon an extraction industry, determines the likelihood that they hold utilization and/or inherent wilderness values.

Chapter 4: Individual Socio-demographic Characteristics and Support for Wilderness Preservation

4.1 Introduction

Who cares about wilderness preservation? Is support for the expansion of policy that protects wilderness uniform across the United States population or does support differ depending on various socio-demographic characteristics? This chapter will explore these questions.

Theorists interested in the issue of environmental preservation policies and wilderness preservation policies in particular have argued that white, affluent, highly-educated middle class males drive political support of wilderness preservation in this country (Cronon 1995; Walter and Kielcolt 1995). Because this specific population makes up the majority of wilderness visitors (McNeil and Fondren 2012) and because women, minorities, and lower-income individuals are less likely to visit wilderness, it has been suggested that they might care less about its preservation (Cronon 1995). However, while women and people of color do visit wilderness less frequently than white males, evidence suggests that there is no difference in their level of support for its preservation (Johnson et al 2000; 2004). Given these conflicting findings, this chapter explores whether significant socio-demographic variation exists among the United States population regarding support for expanded wilderness preservation.

4.2 Socio-demographic Factors and Support for the Expansion of Wilderness Designations

As with most political issues, the meaning of wilderness and reasons for its preservation are socially constructed. Theorists such as William Cronon (1995) and Rodrick Nash (2001) argue that wilderness itself is a uniquely American construct, born out of a national consciousness of what was lost when previously wild lands were developed. A majority of Americans therefore support legislation for National Parks and wilderness areas as a way to ensure that some areas are kept "natural" and "wild." These public spaces provide individuals a place to escape

civilization and reconnect with nature; the pride that individuals take in visiting these places may also be related to the connection between wilderness and the myth of the rugged frontier spirit that "built" the United States.

It is the Wilderness Act that legally establishes wilderness areas within the United States. The intention of this Act-- to preserve wilderness lands for future generations-- ensures that there will always be wilderness lands within our borders that remain largely untouched and unused. Thus, within the United States, policy decisions have defined certain lands as having value because they are untouched and undeveloped rather than because they have a quantified economic value.

4.2.1 Gender Differences

Researchers have examined possible gender differences relating to environmental issues including support for wilderness preservation. While research does show that women are much *less likely* to visit and therefore utilize wilderness areas than men, they are much *more likely* to support environmental preservation(Johnson et al 2004; McNeil and Fondren 2012; Dietz et al 2002). These gender distinctions in use as well as attitudes towards preservation have led some to argue that a woman's role as caregiver makes women more altruistic than men and, consequently, more likely to support policies that protect and preserve the environment for the good of all (Dietz et al 2002; Zelezny at al 2000; Kalof et al 2002). It is likely that women's greater propensity to support environmental preservation in general would carry over in regards to wilderness preservation in particular. Therefore I would expect that:

H1: Women are more likely than men to support expanded wilderness preservation.

4.2.2 Racial/Cultural Differences

Other researchers have explored whether different racial or ethnic groups in the United States have varying degrees of concern for the environment and preservation. Non-whites visit and

utilize wilderness areas at much lower rates than their white counterparts, which some assume might translate to minorities caring less about such areas (Cronon 1995; Walker and Kiecolt 1995). However, while minority respondents are less likely to visit wilderness areas compared to whites, the reasons for this discrepancy may be due to logistical factors rather than apathy (Johnson 2000; 2004). In fact there is little evidence to suggest a difference between whites and non-whites regarding overall attitudes towards preservation.

Researchers interested in these issues have found that important cultural differences exist between non-white immigrants and American born residents in relation to attitudes and beliefs regarding the environment (Mohai 1990; Parajuli 2000; Buijs 2009). For example there is evidence that individuals emigrating from 3rd World countries to First World Western countries favor more structured and developed landscapes and have a more functional image of nature (Buijs 2009). Compared to the native-born white population, immigrant groups display differing political attitudes regarding environmental issues (Mohai 1990). In fact theoretical work suggests that immigrants from less-developed nations have a completely different relationship with the land and wilderness compared to their counterparts in more-developed nations. For example, the idea of setting aside large areas of land for non-use is a uniquely Western concept largely extraordinary to individuals living in and emigrating from predominantly rural agricultural nations. Thus individuals from non-western countries have a different cultural relationship with nature and the environment, specifically regarding its use and significance (Parajuli 2000). While the limited number of immigrants included in the NSRE dataset makes it impossible to test the differences in support for wilderness preservation between native and foreign born American residents, perhaps cultural differences between white and non-white Americans can serve to test these ideas more generally. Therefore I purpose the following hypothesis:

H2: Non-Hispanic whites are more likely than others to support expanded wilderness preservation.

However it has been argued that any differences observed between racial groups regarding environmental issues stem from socio-economic disparities between whites and non-whites rather than from race per se. For example, Cronon (1995) argues that economics largely determines wilderness use and enjoyment, making wilderness preservation mainly beneficial to wealthy white Americans who have the financial resources to purchase the equipment necessary and to incur the travel expenses associated with visiting wilderness. Given the lower average incomes, lower education levels, and lower wealth among African Americans and Hispanics compared to the non-Hispanic white population, I argue that any racial/ethnic differences in levels of support for expanded wilderness preservation will be largely attenuated when controls for human capital are included in the model. Therefore I propose the following hypothesis:

H3: Any differences between non- Hispanic whites and all other racial groups in support for expanded wilderness preservation are reduced, possibly to non-significance, when controlling for education and income.

4.2.3 Socio-economic Differences

Other research has focused on better determining whether socio-economic characteristics drive individual attitudes regarding the environment and wilderness preservation. For example, the idea of setting aside public lands for the purpose of keeping them pristine, untouched, and largely unused does signify, in many ways, the abundance of resources and immense wealth found within the United States. Writers have criticized the exportation of the American idea of wilderness and habitat preservation to many 3rd world agrarian societies that depend upon subsistence farming and whose members therefore cannot conform to an idea of preservation that requires a no-use approach by humans (Parajuli 2001).

Ingelhart's theory of Postmaterialism (1995) explains this disconnect; Ingelhart posits that it is only after a country's government is able to satisfy the basic needs of their citizenry such as clean water, adequate food, and political stability that the population begins calling for

improved quality of life. One demand intended to improve the quality of live of the citizenry would be for policies that encourage environmental preservation rather than increased consumption. Considering this theory in relation to socio-economic groups within the United States, it would seem that concern for the environment and wilderness preservation would be stronger among the more wealthy and highly educated who 1) have additional resources to offset the potential costs associated with increased environmental regulations and 2) have leisure time and discretionary income to devote to non-essential concerns such as wilderness preservation. There is also evidence to suggest that there is greater demand for preservation as well as a greater willingness to pay for such efforts among those with greater financial resources (Elliot et al 1997; Pope and Jones 1990; Whitehead and Thompson 1993). In contrast, individuals with lower levels of education and income have fewer economic resources and generally remain more concerned with their immediate economic survival than their more wealthy peers. In turn, their less-stable economic foundation would translate into less political support for environmental regulations and policy decisions that could be associated with higher costs for key consumer products such as gasoline (Saad 2011). In light of previous research and consistent with the theory of Postmaterialism I propose the following hypotheses:

> *H4: Individuals with higher levels of income and education are more likely to favor expanded wilderness preservation than individuals with lower incomes and levels of education*

4.3 Data and Methods

In order to test my hypotheses in this chapter I will use the 2006 NSRE dataset (see Chapter 3 for a full discussion), a nationwide, random-digit household survey administered to non-institutionalized individuals 16 years of age or older living in households in all fifty states. For this analysis I will be testing four models examining the relationship between various socio-demographic characteristics and support for expanded wilderness preservation by the federal government. The base model for my analysis examines the differences in support for expanded wilderness preservation by the federal government by race (non-Hispanic white versus other

racial/ethnic groups) and gender, controlling for age. In Models 2, 3, and 4 I include measures of income and education, first separately, then together, to examine the differing effects of racial, gender, and socio-economic characteristics in relation to support for wilderness preservation. I utilize logistic regression for my analysis because my dependent variable-- support for expanded wilderness preservation-- is measured as a dichotomous variable with those who support expansion coded as 1 and all others coded as 0.

Table 4.3: Chapter 4 Descriptive Statistics

Variable	N	Mean	SD
Dependent Variable: Support for the expansion of federal policies designed to preserve nature/wilderness areas (1=there should be more wilderness areas, 0=there are enough/too many wilderness areas/do not know)	1462	.52	.50
Female (1=yes, 0=no)	1457	.53	.50
Race (1= Non-Hispanic White, 0=Other)	1416	.87	.34
Age: 15-39 years*	1462	.24	.43
Age : 40-49 years old	1462	.31	.46
Age: 50-69 years old	1462	.31	.46
Age: 70+ years old	1462	.13	.34
Education: Completed High School or less	1442	.28	.45
Education: Attended College	1442	.51	.50
Education: Completed Graduate/Professional Degree	1442	.20	.40
Income: Earns less than $25,000 per year*	1462	.14	.34
Income: Earns between $25,000 and $49,999 per year	1462	.20	.40
Income: Earns between $50,000 and $74,999 per year	1462	.16	.37
Income: Earns between $75,000 and $99,999 per year	1462	.11	.31
Income: Earns $100,000 or more per year	1462	.18	.38
Income: Non-response to income measure	1462	.22	.41

*Serves as reference category

4.3.1 Dependent Variable

The dependent variable in my model measures *support for the expansion of federal policies designed to preserve nature/wilderness areas*. This variable represents whether or not individuals support *increased* or *expanded* efforts by the federal government to preserve more nature/wilderness areas in the United States. The survey question used to measure this variable reads as follows: "Do you think that the amount of land that Congress has designated as Wilderness so far is not enough, about the right amount, or too much?" Whether or not an individual supports the expansion of federal policies designed to preserve nature/wilderness area was therefore measured as whether a respondent's response to the survey question was "not enough" (coded as 1) or any of the other three response categories offered in the question:

"about the right amount", "too much", or "don't know" (coded as 0).

4.3.2 Independent Variables

For the three hypotheses I tested in this chapter the primary variables of interest are *gender, race, income*, and *education*. Gender and race were coded dichotomously. The gender variable is coded 0, 1, with "1" representing females and "0" males. The race variable is also coded 0, 1 with "1" representing non-Hispanic whites and "0" all others. Both income and education variables, while originally coded as categorical variables, were recoded for my analysis. Income was split into six dichotomous variables with the lowest income group (individuals earning <$25000 per year) serving as the reference category. Education was split into 3 dichotomous variables, with the lowest education level (≤ high school degree), serving as the reference category. See Table 4.3 for the descriptive information of all variables included in the models estimated for this chapter.

4.3.3 Control Variable: Age

For all equations estimated in this chapter I included respondent's age as a control variable. My control variable for age was split into 4 dummy variables with the youngest age group (age 15-39) serving as the reference group for the analysis. Age was included as a control variable because age differences in wilderness attitudes are correlated with age differences in some of the socio-economic variables of interest (see Table 4.4). Therefore age was included in all models in order to ensure that any relationship found between socio-demographic predictors and wilderness attitudes are not the result of confounding or suppressor effects.

4.4 Bivariate Correlation Results

Table 4.4.1 shows the correlation matrix, displaying the correlations among all variables included in the models for this chapter. The matrix includes the original continuous forms for the age, income, and education variables, however each of the variables is separated into multiple dichotomous variables for the regression analyses within the following chapters.

Because the correlation matrix serves as a initially assess my hypotheses, including the categorical rather than continuous versions of these variables would have been superfluous. As can be seen in this table, there does appear to be a positive and significant degree of correlation between gender and the dependent variable, showing that there is greater support for preservation among females. (*Wild*: support for expanded wilderness preservation), a finding that is consistent with Hypothesis 1. However there is not a significant correlation between race, income or education and wild, a finding that is inconsistent with Hypotheses 2, 3, and 4.

Table 4.4.1: Chapter 4 Bivariate Correlation Matrix

	Wild	Female	Age	Non-Hispanic White	Income	Education
Wild	1					
Female	.06*	1				
Age	-.13**	.07*	1			
Non-Hispanic White	-.02	-.02	.18**	1		
Income	.02	-.17**	-.09**	.06	1	
Education	.04	-.03	.09**	.01	.40**	1

*Denotes statistical significance at p<.05 level
**Denotes statistical significance at p<.01 level

Tables 4.4.2a – 4.4.2c include the mean values of the dependent variable, support for expanded wilderness preservation by the various age, income, and educational categories included in the data. In regards to age, it appears that in general the youngest age group (15-39 yrs) has the highest mean value of support, at .60 while the oldest age group (70+ years) has the lowest mean value of wilderness support at .40. Regarding income level, those earning between $75,000 and $99,999 have by far the highest mean value of support for expanded wilderness at .58. Finally in regards to educational differences, it does appear that those with advanced levels of education have higher mean values of support for expanded wilderness preservation (.57) compared to those with a High School degree or less who only have a mean value of .47.

Table 4.4.2a: Chapter 4 Mean Values of Support for Wilderness Preservation by Age

	Age (15-39 years)	Age(40-49 years)	Age (50-69 years)	Age (70+)
Wild	.60	.52	.50	.40

Table 4.4.2b: Chapter 4 Mean Values of Support for Wilderness Preservation by Income

	Income <$25K	Income $25K-$49999	Income $50K-$74999	Income $75K-$99999	Income $100K+	Income Non-response
Wild	.52	.51	.51	.58	.53	.49

Table 4.4.2c: Chapter 4 Mean Values of Support for Wilderness Preservation by Education

	Completed Less than High School	Attended College	Received an Advanced Degree
Wild	.47	.52	.57

4.5 Results for the Multivariate Analysis

In order to test the four hypotheses in this chapter, I used multivariate analysis to explore the relationship between socio-demographic variables and support for expanded wilderness preservation. Table 4.5 shows the results from the four logistic regression models that were estimated in this chapter. The most basic demographic model, Model 1, tested the relationship between gender and race and support for expanded wilderness preservation while controlling for age. This first model allows me to test my first two hypotheses, examining whether there are significant differences in support for expanded wilderness preservation by gender or race. The results offer support for H1, with women significantly more likely than men to support expanded wilderness preservation. Therefore it appears that women are significantly more likely than men to support preservation, despite the popular notion that their lower rates of visitation would naturally reduce their support for its expanded preservation (Johnson et al 2004). Since women use or visit wilderness areas less frequently than men, this finding offers evidence to suggest that support for wilderness preservation policy is driven by *more* than just use of the land.

Regarding H2, based on the race coefficients in Model 1, there is no significant difference between non-Hispanic whites and others regarding level of support for wilderness preservation, net of age and gender. Therefore despite theoretical arguments suggesting that there are fundamental differences in the perceptions and values of wilderness between whites and non-whites (Cronon 2005), this analysis finds no significant racial differences in support for wilderness preservation This finding supports earlier research by Johnson et al. (2004) that despite different rates of wilderness visitation, whites and non-whites appear to hold similar wilderness values. Note that because of the poor representation of non-whites in the NRSE, I was not able to make comparisons among different racial and ethnic groups. Therefore it is possible that wilderness values do vary by race—but this particular analysis finds that non-whites or Hispanics *in general* are not less likely to support wilderness preservation than non-Hispanic whites.

Table 4.5: Logistic Analysis of Demographic Predictors of Support for Expanded Wilderness Preservation

	Model 1	Model 2	Model 3	Model 4
Gender (1=female)	.24* (.11)	.25* (.11)	.27* (.11)	.26* (.11)
Race (1=Non-Hispanic White)	-.00 (.16)	.01 (.16)	-.01 (.16)	.01 (.17)
Age^				
40-.49 yrs	-.24 (.15)	-.24 (.15)	-.26 (.15)	-.24 (.15)
50-69 yrs	-.38* (.15)	-.38* (.15)	-.38* (.15)	-.38* (.15)
70+ yrs	-.77* (.19)	-.76* (.19)	-.74* (.19)	-.76* (.19)
Education^^			——	
Attended College	——	.22** (.13)	——	.23** (.13)
Graduate/Professional Degree	——	.47* (.16)	——	.48* (.17)
Income per year^^^				
$25,000-$49,999	——	——	-.08 (.19)	-.14 (.19)
$50,000-$74,999	——	——	-.09 (.20)	-.20 (.20)
$75,000-$99,999	——	——	.20 (.22)	.07 (.23)
$100,000+	——	——	.04 (.20)	-.13 (.21)
Non-response	——	——	*-.12 (-.19)*	-.18 (.19)
Constant	*.25 (.18)*	*.02 (.20)*	*.27 (.22)*	*.12 (.23)*

^Reference category is individuals' age 15-39 yrs
^^Reference category is HS education or less
^^^ Reference category is income less than $25,000/year
* Denotes statistical significance at $p < .05$ (two-tailed test)
** Denotes statistical significance at $p <$. 05 (one-tailed test

Next, Models 2, 3, and 4 include the socio-economic variables , allowing me to explore the effects of income and education in relation to support for expanded wilderness preservation. The coefficients found in Models 2, 3, and 4 in Table 4.5 show that while level of education serves as a significant predictor of support for expanded wilderness preservation, income level does not. According to this analysis, the more education an individual receives, the greater support for expanded wilderness preservation they are likely to hold. In order to more easily interpret the coefficients found in Table 4.5, I converted the two education coefficients from Model 4 --.22 for those who have attended college and .47 for those with an advanced degree-- into odds-ratios, which I was then able to convert into the increased odds of supporting expanded preservation. Therefore it appears that the odds of supporting expanded wilderness

preservation policies are 1.25 or 25% higher for individuals who have attended college compared to those with a high school diploma or less, net of the other variables in the analysis. Even more dramatically, the odds of supporting expanded wilderness preservation are 1.60 or 60% higher among individuals with an advanced or professional degree compared to those who have earned a high school diploma or less, controlling for all the other variables in the model. Because education, not income, serves as a significant predictor of support for expanded wilderness preservation, it appears that the higher earnings associated with higher education do not drive individual attitudes towards preservation. Rather, these findings suggest that some element of the educational process or experience operates as a mechanism through which individuals may develop a favorable attitude towards wilderness. The educational process appears to shape individual beliefs and perhaps values related to preservation, making more educated individuals more sympathetic to preservation. In regards to the race and gender variables, it appears that the inclusion of socio-economic indicators has no effect on the significance of such variables in regards to support for expanded wilderness preservation. In fact, when comparing the race coefficients in Model 1 to the coefficient in Model 4, inclusion of socio-economic variables has no effect on the non-significant effects of race within the models, further suggesting that independent of income and educational differences, racial differences do not drive attitudes wilderness preservation. In order to more easily interpret the coefficients found in Table 4.5, I took the anti-log of the gender coefficient from Model 4 (.24) getting a value of 1.28. I then completed the following analysis in order to calculate the percentage difference in the odds for females compared to males who support expanded wilderness preservation: 100*(1.28-1.0)=28 or ~28%. Therefore it appears that there is a 28% increase in the odds that females will support expanded wilderness preservation, net of age, income, and education. Regarding gender, when comparing the coefficients for females from Models 1 and Models 3 & 4 the inclusion of income and education to the models has little effect on the coefficients. Thus education and income do not mediate the effects of gender regarding support for expanded wilderness preservation. In fact the gender effects regarding support for expanded wilderness preservation remain fairly

consistent across all four models, suggesting that the differences between men and women concerning support for expanded wilderness preservation operates independently of socio-economic differences

4.6 Discussions and Conclusion

Based on the above analysis, age, gender and education were the only significant predictors of support for expanded wilderness preservation. While age was included primarily as a control variable, it was consistently significant and negatively correlated with support for expanded wilderness preservation, with those under the age of 40 much more likely to support expanded wilderness preservation compared to older Americans. Also, while this analysis found no significant racial differences in support for expanded wilderness preservation, gender—as well as education—was related to support for such preservation. Because education was consistently significant while income was not, it appears that the process of attending college (rather than the increased income associated with education) increases the likelihood that that an individual holds a favorable attitude towards wilderness preservation.

These findings, particularly that gender and education rather than income determines support for expanded wilderness preservation, suggest that perhaps personal values related to the environment drive preservation support. In regard to women, this research lends further support to earlier findings that suggest that overall women are more sympathetic towards environmental issues, in this case wilderness preservation (Dietz et al 2002; Zelezny at al 2000; Kalof et al 2002). The consistent strength of the gender coefficient as well as the lack of any significant racial differences regarding support for expanded wilderness preservation suggests that the fact that white males visit and utilize wilderness areas at greater rates does not mean they are naturally more supportive of its preservation (Cronon 1995; Walker and Kiecolt 1995). In fact, given that women visit and utilize wilderness areas at much lower rates than males (Johnson et al 2004; McNiel et al 2012), yet are significantly more likely to support its

preservation, suggests that support for increased preservation stems from the values attributed to wilderness rather than the degree to which an individual utilizes it. Contrary to the idea that support is largely driven by those who most benefit from preservation, it appears that it may be the values that certain individuals hold relating to wilderness that drives their support for its preservation.

Previous research has found that support for wilderness preservation is correlated with education and income (Elliot et al 1997; Pope and Jones 1990). This analysis adds nuance to these prior findings. No significant association between support for the expansion of wilderness preservation policy and income was found; however, it is important to note that previous research measured support for wilderness preservation by asking individuals if they would be *willing to pay* for such policy. The NSRE measures support for wilderness preservation without suggesting that respondents would have to pay out-of-pocket for such preservation. Therefore, this analysis suggests that economic concerns may put pressure on an individual's support for wilderness preservation, while many—regardless of income-- may support such preservation in theory, their support may wane is they are asked to contribute dollars to the cause. Because the NRSE does not assess willingness to pay, I am unable to validate or refute previous findings—but this analysis does suggest that beliefs about the benefits of wilderness preservation may be independent of income.

The significance of education in predicting support for expanded wilderness preservation may also provide further evidence of the importance of values and beliefs rather than wealth or personal interest in driving opinions about wilderness policy. Previous theoretical work has suggested that support for wilderness preservation is correlated with both education and income because those with higher levels of education are more likely to have higher incomes; therefore, it is suggested that income is the true driver of support for preservation policy (Elliot et al 1997; Whitehead and Thompson 1993). The results of this analysis contradict this finding; while education was a consistent predictor of support for wilderness preservation policy, income was

not. This finding therefore suggests that the benefits derived from increased levels of advanced education contribute to support for expanded wilderness preservation.

Rather than public support for wilderness preservation being driven by the economic circumstances of individuals (Elliot et al 1997; Whitehead and Thompson 1993), support may be driven by the experiences or the new ideas developed through college attendance rather than by the increased income gained with higher education. Perhaps rather than economic resources affording individuals the freedom to care about wilderness preservation, it is education that alters or encourages concern. For example, in many cases the decision to attend college delays an individual entering the paid workforce in favor of gaining increased skills and knowledge. Also, for many, attending college means leaving one's hometown to live in a new town, city, or state. This process exposes individuals to new people, new ideas, and new ways of seeing the world; it also introduces individuals to entirely new areas of study that might alter their perspective on the world, including the relationship between humans and their environment. These new experiences and perspectives might make individuals more thoughtful regarding policy in general and policy related to environmental preservation in particular. It is also possible that values and beliefs about the environment are disseminated through academic channels—that they are a part of a formal or informal curriculum.

In conclusion, this analysis demonstrates that some demographic and SES characteristics are associated with support for wilderness expansion policies. Women are more likely to support such policies, and those who have received more education are also more likely to support such policies. Other demographic characteristics were not associated with support for wilderness preservation policy: race did not make a difference, and neither did income. The fact that human capital in the form of race/ethnicity or income did not have an impact on an individual's support for wilderness preservation policy offers the opportunity to further explore the theory that beliefs and values—rather than race, gender, or economic circumstances-- shape support for wilderness protection. In the next chapter I will explore this issue by examining whether

differences in attitudes towards wilderness preservation are the result of gender and socio-economic differences in the valuation of wilderness.

Chapter 5: Wilderness Values as Determinants of Support for Expanded Wilderness Preservation

5.1 Introduction

Knowing that there are significant differences in support for expanded wilderness preservation based on both gender and education levels begs the question of what drives these differences? Much research suggests that what motivates individual attitudes regarding wilderness preservation are individual values and beliefs about the purpose of wilderness as well as its benefits. Whether it is case studies surrounding specific environmental conflicts (Dizard 1994; Proctor 1994) or more generalizable survey findings (Johnson 2004), individuals differ in support for preservation because the value that they associate with wilderness varies. In fact, researchers interested in environmental conflicts have argued that values are the driving force, operating as "relatively stable principles that help us make decisions when our preferences are in conflict"(Dietz et al 2005). This project does not examine how individuals feel about wilderness preservation in relation to a specific conflict. Rather, I ask whether value-based motivations might explain why some socio-demographic groups (e.g., women and the more educated) are more likely to support the expansion of wilderness preservation—in effect whether wilderness values mediate the effects of socio-demographic characteristics described in Chapter 4. Are the differences in support for wilderness preservation observed between men and women, or between those with different levels of education, the result of differences in the kinds of values these various groups attribute to wilderness?

5.2 Wilderness Values – Why Do They Matter?

To understand the role that values play in regards to individual support for expanded wilderness preservation requires understanding what motivates such public support more generally. Theorists interested in understanding the popularity of wilderness within the United States have suggested that much of the philosophical and political debate over wilderness preservation centers on the meaning of wilderness to Americans (Runte 2010; Nash 2001). Setting aside

certain public lands as wilderness for the express purpose of remaining unused and untouched, as is the case with wilderness designations, is fairly novel compared to the more traditional approach in which the value of land is determined by the material resources available for extraction from it (Runte 2010). Thus when considering the question of what drives support for wilderness preservation, the fundamental issue is: what is the value that people attribute to wild land?

To answer this question, theorists such as Cronon (1995) as well as Runte (2010), Dizard (1994) and Nash (2001) argue that Americans largely feel disconnected from nature in their daily lives—lives in which they are required to suppress their instincts in order to comply with notions of civility. As a result, the "natural" world is seen as the opposite to the "developed" world, and the "natural" world is aligned with the "true" self while the "developed" world is aligned with the "civilized" self. Americans therefore romanticize and humanize nature and wilderness as being more closely aligned with their true humanity. For many Americans the value of wilderness stems from what it symbolically represents and provides them: a place to reconnect with nature and the spirituality found within it. Thus, the values that individuals attribute (or do not attribute) to wilderness may be even more consistent predictors of the likelihood that an individual supports expanded wilderness preservation than sociodemographic characteristics.

Research does suggest that ideological differences regarding the appropriate use of nature and the environment might drive political conflicts regarding preservation policies in the United States. For example, some argue that highly educated, high income white males are more likely to report valuing wilderness because they are the group most likely to utilize such lands for recreation (Johnson et al 2004; Tarrant and Cordell 2002). Alternatively, evidence also suggests that support or opposition to various environmental issues relating to preservation stems from ideological differences and perceptions relating to nature and the appropriate relationship between humans and their environment. In effect when individuals and groups oppose or support preservation policies they are fighting over whether natural resources such as

deer, trees, land, or water exist as resources for humans to exploit or aspects of the environment that should be protected (Dizard 1999, Proctor 1998; Goodman and McCool 1999; Fitzsimmons 1999). Thus perhaps what drives political disputes over environmental policies, including wilderness preservation, are differences in perceptions and opinions over the appropriate relationship between humans, the government, and the environment.

5.2.1 "Utilization Wilderness Values" and "Inherent Wilderness Values" as Determinants of Support for Expanded Wilderness Preservation

Generally the literature suggests that there are two distinct types of wilderness values or ideologies that motivate attitudes towards preservation: valuing wilderness for the non-material personal or spiritual benefits it provides –what I am calling *inherent wilderness values* and valuing wilderness for the direct benefits it provides individuals as well as the larger community– what I am calling *utilization wilderness values*. Inherent wilderness values are aesthetic as well as ethical in nature; they support the idea that wilderness derives its value from simply existing in the world regardless of whether humans ever see, interact with, or use it (Dizard 1999; Dietz et al 2005). In contrast, utilization wilderness values are based on the perception that nature should benefit humans materially, such as through recreational use, serving as a material resource, or providing a place for spiritual inspiration (Xu and Bengston 1997; Dietz et al 2005). Whether individuals' value wilderness based on *inherent value* principles or on *utilization* principles could have a significant effect on their attitudes and overall support for expanded wilderness preservation. Understanding the issue of support for wilderness preservation requires understanding the value that individuals place on wilderness.

There is evidence to suggest that individuals who endorse utilization wilderness values generally support preservation and environmental spending by the government less than those individuals who endorse inherent wilderness values. For example, individuals who put a high value on forest timber and other extractive benefits have more anti-environmental attitudes than those who do not place such high value on forest utility (Tarrant and Cordell 2002).

Moreover, in their research examining the wilderness values held by immigrant populations, Buijs et al (2009) found that immigrants hold a more functional understanding of the relationship between humans and the environment compared to their native-born peers, and that immigrant populations generally favor wilderness for the material resources it provides. Therefore I would expect the following:

> *H5: Individuals who report a stronger endorsement of utilization wilderness values are less likely to support expanded wilderness preservation than those strongly endorsing inherent wilderness values.*

There is evidence to suggest that today there is growing popular support for wilderness. Research shows that, in general, Americans have come to value wilderness for its inherent "wildness" and "naturalness," wishing to protect wilderness from exploitation and development for business and/or personal utility (Cordell et al 2003). Whether or not an individual identifies with inherent wilderness values better determines their willingness to pay for wilderness preservation than whether they believe that they themselves will in fact benefit from such preservation directly (Pope et al 1990). Individuals who report high levels of connectivity with nature are also more likely to report high levels of environmental concern (Dutcher et al 2007). In combination, these findings suggest that individuals' endorsement of inherent wilderness values would be more supportive of expanded federal policies restricting the use of wilderness areas. Therefore I would expect the following:

> *H6: Individuals who report a stronger endorsement of inherent wilderness values are more likely to support expanded wilderness preservation than those endorsing utilization wilderness values*

Beyond the direct effects of wilderness values themselves, it is also possible that the socio-demographic differences found in Chapter 4 are mediated by differences in wilderness values held by various segments of the population. For example women are not only significantly more likely than men to support expanded wilderness preservation, they are also more sympathetic

than men to non-use, existence, and biocentric values of the environment (Tarrant and Cordell 2002; Johnson et al 2004). Therefore I would expect the following:

> *H7: Gender differences in support for wilderness preservation will be reduced or eliminated after variables representing the inherent wilderness values and utilization wilderness values are included in the model*

While I will assess whether race remains a non-significant predictor of support for expanded wilderness preservation when wilderness values are controlled for in the model, because race was not found to be a significant predictor in my model it will not be the focus of my analysis.

I will also explore how wilderness values might clarify the relationship between education and expanded support for wilderness preservation. For example, it has been argued that individuals with greater human capital (e.g. income, wealth, and education) are less concerned with their financial security and, therefore, have the excess resources to devote to non-economic objectives such as wilderness preservation. In contrast, individuals with lower levels of education and income have fewer resources available to spend on concern for the environment, especially when environmental regulations and policy decisions are often blamed for increased costs of consumer products such as gasoline (Saad 2011). In fact, individuals with higher levels of education are reportedly more willing to pay for preservation compared to their less educated peers (Elliot et al 1997; Pope and Jones 1990). Since in the present analysis education was found to be a significant predictor of support for expanded wilderness preservation while income was not, it is possible that the educational process shapes the values of individuals regarding wilderness preservation differently. Therefore I propose the following final hypothesis for this chapter:

> *H8: The relationships between education level and support for expanded wilderness preservation will be reduced in strength, or disappear entirely, when the strength of inherent and utilization wilderness values of nature are held constant.*

5.3 Data and Methods

In order to test hypotheses 5 through 8, I will use the 2006 NSRE dataset, a nationwide, random-digit household survey administered to non-institutionalized individuals 16 years of age or older living in households in all fifty states. For this analysis I will be testing three models in order to explore whether the relationships between my demographic predictors, specifically gender, education and age, and support for expanded wilderness preservation observed in the previous chapter are mediated by individuals' beliefs regarding the value of wilderness. The base model for my analysis, Model 1, is the final model from Chapter 4, which includes measures of demographic variables to examine the differences in support for expanded wilderness preservation by the federal government by race (non-Hispanic white versus other racial/ethnic groups), gender, income, and education controlling for age. Then in Models 2, 3, and 4 I include value measures, "inherent wilderness values" and "utilization wilderness values," first separately and then together to test the effects that the inclusion of values has on the dependent variable. I utilized logistic regression for this analysis because the dependent variable, support for expanded wilderness preservation, is measured as a dichotomous variable with those who support expansion coded as 1 and all others coded as 0.

Table 5.3: Chapter 5 Descriptive Statistics

Variable	N	Mean	SD	Min	Max
Dependent Variable: Support for the expansion of federal policies designed to preserve nature/wilderness areas (1=there should be more wilderness areas, 0=there are enough/too many wilderness areas/do not know)	1462	.52	.50	0	1
Female (1=yes, 0=no)	1457	.53	.50	0	1
Non-Hispanic White (1= Yes, 0=No/Other)	1416	.87	.34	0	1
Age: 15-39 years*	1462	.24	.43	0	1
Age: 40-49 years old	1462	.31	.46	0	1
Age: 50-69 years old	1462	.31	.46	0	1
Age: 70+ years old	1462	.13	.34	0	1
Education: Completed High School or less*	1442	.28	.45	0	1
Education: Attended College	1442	.52	.50	0	1
Education: Completed Graduate/Professional Degree	1442	.20	.40	0	1
Income: Earns less than $25,000 per year*	1462	.14	.34	0	1
Income: Earns between $25,000 and $49,999 per year	1462	.20	.40	0	1
Income: Earns between $50,000 and $74,999 per year	1462	.16	.37	0	1
Income: Earns between $75,000 and $99,999 per year	1462	.11	.31	0	1
Income: Earns $100,000 or more per year	1462	.18	.38	0	1
Income: Non-response to Income Measure	1462	.22	.41	0	1
Inherent Wilderness Values**	1384	0	1	-4.80	2.04
Utilization Wilderness Values**	1384	0	1	-5.00	2.32

*serves as reference category
**factor scores

5.3.1 Dependent Variable

The dependent variable in this model measures *support for the expansion of federal policies designed to preserve nature/wilderness areas*. This variable represents whether or not individuals support *increased* or *expanded* efforts by the federal government to preserve more nature/wilderness areas in the United States. See Chapter 4 for a complete definition.

5.3.2 Independent Variables

The primary variables of interest for this chapter are the *inherent wilderness values* variable and the *utilization wilderness values* variable. I am also interested in the *gender, income, race,* and *education* variables as well. As in Chapter 4 I included a control for age in my models given that it is generally accepted as significantly associated with environmental concerns (Bowker et al 2006; Johnson et al 2010; Elliott et al 1997; Dietz et al 1998) and since it was found to be correlated with my dependent variable within the NRSE dataset. Both of my value measures, "inherent wilderness values" and "utilization wilderness values" were created using factor scores based on the values measures included in the NSRE dataset. As was previously discussed in

Chapter 3, the measure for spirituality more heavily loaded on the utilization wilderness value factor, a somewhat confusing result given the deep connection between the concept of inherent wilderness values and spirituality. However in order to ensure consistency in the two measures I did not make any manual changes to alter the concepts that loaded onto the two factors. Table 5.3.2 shows the measures included in each value measure as was determined in the factor analysis.

Table 5.3.2 Wilderness Value Factors

Factor 1: Inherent Wilderness Values	• Just knowing that wilderness areas exists • Having the option to visit wilderness area in the future • Future generations have option to visit wilderness area • Protecting water quality • Protecting air quality • Protecting rare and endangered species • Protecting wildlife habitat • Preserving unique wild plants and animals • Providing scenic beauty • Preserving natural areas for scientific study
Factor 2: Utilization Wilderness Values	• Providing spiritual inspiration • Providing income for the tourist industry • Providing recreation opportunities

These scores are numerical values representing a respondent's score on the underlying factor represented (Factor 1: Inherent Wilderness Values and Factor 2: Utilization Wilderness Values) and allow for differential factor loadings for each variable. In order to ensure that these measures serve as consistent measures of the identified overarching concepts, I conducted a test for internal reliability for both set of values using Cronbach's alpha. The alphas were high for factor 1: Inherent Wilderness Values --.91 (10 items) and moderate -- .63 for factor 2: Utilization Wilderness Values (3 items). For a more detailed description regarding the creation of my wilderness value measures please see Chapter 3.

Gender and race variables were coded dichotomously in the analysis. Income was coded into five separate dichotomous variables based on the distribution of income among the respondents, with the lowest income category (≤$25000 per year) serving as the reference category and including a category for those who failed to respond to the income measure. The

final focal variable analyzed for this chapter, education, was coded into three separate dichotomous variables with the lowest education group, those with a high school degree or less, serving as the reference category. The control variable for age was split into four dichotomous variables with the youngest age group (age 15-39) serving as the comparison group for the analysis.

5.4 Bivariate Correlation Results

Table 5.4 shows the correlation matrix, displaying the correlation between the various variables included in the models for this chapter. As can be seen in the table below, there is a significant and positive correlation between the "utilization wilderness values" variable and my dependent variable "wild," which represents support for wilderness expansion policy. This finding is inconsistent with H5. I also found a significant and positive correlation between the "inherent wilderness values" variable and the dependent variable "wild," consistent with H6. Gender is significantly positively correlated with both the "inherent wilderness values" variable and the utilization variable, suggesting little support for H7. Finally, in relation to H8, education is significantly correlated with both utilization and inherent wilderness values in the expected directions. Increased levels of education are correlated with *increased* levels of inherent wilderness values and *decreased* levels of utilization ones.

Table 5.4: Bivariate Correlation Matrix

	Wild	Female	Age	Non-Hispanic White	Income	Education	Exist Value	Utilization Value
Wild	1							
Female	.06*	1						
Age	-.13**	.07*	1					
Non-Hispanic White	-.02	-.02	.18**	1				
Income	.02	-.17**	-.09**	.06	1			
Education	.04	-.00	.09**	.01	.40**	1		
Exist Value	.33**	.07*	-.11**	.00	.01**	.16**	1	
Utilization Value	.08**	.06*	.13**	-.02	-.10**	-.12**	.00	1

*Denotes statistical significance at p<.05 level
**Denotes statistical significance at p<.01 level

5.5 Results of Multivariate Analysis of Support for Wilderness Preservation

Table 5.5 shows the results of the logistic regression analysis to test the four hypotheses (H5-H8) from this chapter. Model 1 is a replicate of the final model estimated in Chapter 4, serving as the baseline for the analysis in this chapter. Models 2 and 3 demonstrate that the inclusion of inherent wilderness values (Model 2) and utilization wilderness values (Model 3) serve as significant predictors of increased support for expanded wilderness preservation. In order to more easily interpret the coefficients found in Table 5.5.1, I calculated the odds-ratio of the inherent and utilization wilderness coefficients found in Models 2 & 3. The odds-ratio for the inherent value coefficient is 2.06 and 1.25 for the utilization coefficient. I then completed the following analysis to calculate the percentage change in the odds of supporting increased preservation among individuals who identify with inherent wilderness values: 100*(2.06-1.0)= 106 or 106%. Thus there is a 106% increase in the odds of supporting expanded wilderness preservation among those individuals with hold some level of inherent wilderness values. In contrast, for those individuals' holding utilization wilderness values: 100*(1.25-1.0)=.25 thus an increase in inherent wilderness values increases in the odds an individual supports expanded wilderness preservation by 106%. Thus valuing wilderness for both inherent and utilization reasons does encourage increased support for wilderness preservation overall. However, the difference in the odds that an individual is supportive of increased wilderness preservation is much higher for those holding inherent wilderness values (106%) then those holding utilization wilderness values (25%).

Overall I found support for all four of my hypotheses suggesting that wilderness values-- inherent and utilization-- do appear to mediate the effects of demographic characteristics when predicting levels of support for expanded wilderness preservation. Hypotheses 5 & 6 were supported. Despite the finding that both those individuals endorsing inherent wilderness values

as well as those endorsing utilization wilderness values are more likely to support expanded wilderness preservation, however there is a stronger relationship between those individuals who endorse inherent wilderness values and support for expanded wilderness preservation than those endorsing utilization wilderness values. In Model 4, the coefficients for inherent wilderness values and utilization wilderness values are both significant and positive predictors of increased support for wilderness preservation. However the coefficient for inherent wilderness values (.74) is much larger than the coefficient for utilization wilderness values (.25), suggesting that in fact identifying with inherent wilderness values, when compared to utilization values, does increase the likelihood that an individual supports expanded wilderness preservation.

Table 5.5.1 Logistic Analyses of Utilization and Inherent Wilderness Values and Support for Expanded Wilderness Preservation

	Model 1	Model 2	Model 3	Model 4
Gender (1=female)	.26* (.11)	.18 (.12)	.24* (.12)	.17 (.12)
Race (1=Non-Hispanic White)	.01 (.17)	.08 (.180)	.13 (.17)	.12 (.18)
Age^				
40-.49 yrs	-.24 (.15)	-.37* (.16)	-.33* (.15)	-.45* (.16)
50-69 yrs	-.38* (.15)	-.41* (.16)	-.51* (.16)	-.53* (.17)
70+ yrs	-.76* (.19)	-.61* (.21)	-.91* (.21)	-.73* (.22)
Education^^				
Attended College	.23** (.13)	.15 (.14)	.30* (.14)	.20 (.15)
Graduate/Professional Degree	.48* (.17)	.14 (.19)	.53* (.18)	.22 (.19)
Income per year^^^				
Earns $25,000-$49,999	-.14 (.19)	-.10 (.20)	-.15 (.20)	-.10 (.21)
$50,000-$74,999	-.20 (.21)	-.16 (.22)	-.23 (.21)	-.17 (.22)
$75,000-$99,999	.07 (.23)	.11 (.25)	.06 (.24)	.11 (.25)
$100,000+	-.13 (.21)	-.15 (.22)	-.11 (.21)	-.11 (.22)
Non-response	-.18 (.19)	*-.05 (.21)*	-.12 (.20)	-.03 (.21)
Inherent Wilderness Values	___	.72* (.07)	___	.74* (.07)
Utilization Wilderness Values	___	___	.22* (.06)	.25* (.06)
Constant	*.12 (.23)*	*.20 (.25)*	*.06 (.24)*	*.20 (.25)*

^Reference category is individuals' age 15-39 yrs
^^Reference category is HS education or less
^^^ Reference category is income less than $25,000/year
* Denotes statistical significance at $p < .05$ (two-tailed test)
** Denotes statistical significance at $p <$ .05 (one-tailed test

Table 5.5.2: Results from KHB-Method

	Model 1: Base Model	Model 2: Inherent Wilderness Values	Model 3: Utilization Wilderness Values	Model 4: Inherent and Utilization Wilderness Values
Gender				
Total effect	.25*	.17	.22*	.15
Direct effect	.26*	.18	.24*	.17
Indirect effect	-.11	-.08	-.02	-.02
College				
Total effect	.24**	.14	.30*	.18
Direct effect	.23**	.15	.30*	.20
Indirect effects	.01	-.01	-.00	-.02
Graduate/Professional				
Total effect	.41*	.08	.44*	.14
Direct effect	.48*	.14	.53*	.22
Indirect effect	-.06	-.05	-.09	-.08

* indicates significance at the .05 level
** indicates significance at .1 level

Regarding H7, I utilized the KHB-method (Carlson et al 2012) -- see Table 5.5.2 -- to test for the mediating effects of inherent and utilization wilderness values on the relationship between gender and support for expanded wilderness preservation. This method allows me to overcome the problems with mediation in logit models by separating out the effects of the variables into their total as well as indirect and direct effects. Based on the total effects from Model 1, which does not include the value measures, gender is significantly correlated with support or expanded wilderness preservation. Moreover, when comparing the total gender effects from Model 2 in which only inherent wilderness values are included, to Models 3 and 4, which include existence wilderness values, it appears that when controlling specifically for the endorsement of inherent wilderness values, gender no longer has a significant total effect or direct effect on support for expanded wilderness values. Therefore women likely identify more with inherent wilderness values, which in turn drives their increased levels of support for wilderness preservation.

In regards to H8, Table 5.5.2 shows the results of my analysis using the KHB method. Similarly to the results relating to gender, based on the coefficients for the total effects of both the college and professional/graduate education variables, having higher levels of educations is significantly correlated with support for expanded wilderness preservation. The inclusion of inherent wilderness values (Model 2) rather than of the inclusion of utilization wilderness values (Model 3) does appear to mediate the effects of education on support for expanded wilderness preservation. These findings then suggest that when identification with inherent wilderness values is controlled for, education no longer serves as a significant predictor of support for expanded wilderness preservation. Therefore it appears that the mechanism through which education determines support for expanded wilderness preservation results from the communication of or the development of inherent wilderness values. Perhaps attending college or university exposes individuals to inherent wilderness values, or perhaps individuals who attend college or university are exposed to new ideas relating to preservation of the environment compared to the information received while in high school. As they did in the case of gender, it appears that inherent wilderness values mediate the effects of attending college on support for wilderness expansion policy.

This analysis determined that *values* drive certain populations' attitudes towards wilderness preservation, while the effects of socio-demographic characteristics such as gender and education operate *indirectly* through these values. To better understand this finding, it was necessary to run an analysis using the socio-demographic variables to predict support for inherent as well as utilization wilderness values. Table 5.6 shows the results of the OLS regression analysis predicting inherent and utilization wilderness values. I ran two separate regression models using the basic socio-demographic characteristics of gender, age, income, and education to predict inherent wilderness values (Model 1) as well as utilization wilderness values (Model 2) as a means to better clarify whether in fact there are significant differences in the

wilderness values held by men and women, as well as among those who have differing levels of education.

Table 5.5.3: Regression Analysis Predicting Wilderness Values: Inherent and Utilization

	Model 1: Inherent Values	Model 2: Utilization Values
Gender (1=female)	.16* (.05)	.08 (.05)
Non-Hispanic White (1=yes, 0=no/other)	.06 (.08)	-.13 (.08)
Age^		
40-.49 yrs	.11 (.07)	.27* (.07)
50-69 yrs	-.07 (.07)	.42* (.07)
70+ yrs	-.40* (.10)	.41* (.10)
Education^^		
Attended College	.19* (.07)	-.17* (.07)
Graduate/Professional Degree	.50* (.08)	-.28* (.08)
Income per year^^^		
Earns $25,000-$49,999	-.08 (.09)	-.01 (.09)
$50,000-$74,999	-.14 (.10)	.01 (.10)
$75,000-$99,999	-.05 (.11)	-.01 (.11)
$100,000+	-.00 (.10)	-.17* (.07)
Non-response	-.15 (.09)	-.09 (.09)
Constant	*-.22** *(.11)*	*.01* *(.11)*

^Reference category is individuals' age 15-39 yrs
^^Reference category is HS education or less
^^^ Reference category is income less than $25,000/year
* Denotes statistical significance at $p < .05$ (two-tailed test)
** Denotes statistical significance at $p <$ .05 (one-tailed test

Table 5.5.3 shows the results of the regression analysis using my socio-demographic variables to predict inherent and utilization wilderness values. As was expected, women are significantly more likely to identify with inherent wilderness values compared to men. However there is no significant gender difference in the endorsement of utilization wilderness values between men and women, suggesting that the difference between men and women's attitudes towards wilderness preservation stems from differences in the inherent values they associate with said

wilderness. Regarding education, individuals who have attended college and those who have attended graduate school are significantly more likely to identify with inherent wilderness values compared to their less educated peers, net of the other variables in the model. Also, the more education an individual has, the more likely they are to support inherent wilderness values (.50 for those who have attended graduate or professional school compared to .19 for those who have attended college as an undergraduate only). These findings suggest that increased education does appear to encourage a valuation of wilderness for those reasons related to the simple existence of wilderness, independent of any benefits it might provide to individuals.

Notably, older individuals (50+ years of age) had a significantly lower likelihood of endorsing inherent wilderness values compared to individuals under 30 years old. When compared to individuals under 40 years old, each category of older individuals was significantly more likely to endorse utilization wilderness values. Therefore it appears that a more utilization valuation of wilderness for the benefits it provides to humanity is most common among older age groups. There could be several reasons for this trend. First, the value of wilderness may take a different shape as individuals mature. Social milestones such as marriage, parenthood, and the loss of loved ones may inspire a more pragmatic or utilitarian value system. Alternatively, there also be cohort differences at play in relation to how individuals see the environment, with older individuals holding more humanist beliefs than younger Americans. Perhaps the younger cohorts have adopted more "environmentally friendly" attitudes overall, supporting the rights of nature and wilderness to exist independent of the needs/benefits to humans. Perhaps over time there will be a cohort shift, in which younger Americans, rather than becoming less supportive of preservation as they age, will continue to hold consistent values and beliefs in regards to the environment. Regardless of the drivers, this finding, as Cordell et al (2003) suggests that perhaps a shift will occur over time where more Americans will identify with inherent wilderness values and, in turn, be more supportive of wilderness preservation. Exploring

whether such a phenomenon is occurring requires an analysis of wilderness values over time, which goes beyond the scope of this dataset.

Overall, these findings suggest that the gender and education effects on support for wilderness preservation are mediated by wilderness values, with women and the higher educated associating distinct values with wilderness as well as being more favorable towards its preservation. Based on the models tested in this chapter, distinct differences in attitudes towards wilderness preservation exist between men and women as well as between those who have attended college and those who have not. Despite the fact that wilderness preservation values, regardless of the type, make individuals more supportive of policies that expand protected lands, valuing wilderness simply because it exists encourages preservation more so than valuing wilderness for the direct benefits it can provide. Believing that wilderness has value independent of the benefits it provides to humans appears to encourage greater support for preservation policy.

5.6 Discussion and Conclusion

In summary, wilderness values serve as an important component in determining how individuals' feel about expanded wilderness preservation. As might be expected, valuing wilderness makes individuals more supportive of its preservation. However, as was predicted, the *kind* of value that individuals ascribe to wilderness matters: endorsing inherent wilderness values increases the odds that an individual supports preservation more than an emphasis on the utilitarian value of nature.

Moreover, this analysis finds that inherent wilderness values in particular mediate the observed difference between men and women regarding support for expanded wilderness preservation. There is a significant difference between men and women not only in support for wilderness preservation, but in regards to their holding of inherent wilderness values as well. The above analysis shows that distinct gender difference in wilderness values drive differing levels of

support for its preservation. Consistent with earlier research (Tarrant and Cordell 2002; Johnson et al 2004) women appear to value wilderness less for the personal or economic benefits it may provide. My findings also support the idea that compared to men, women are more sympathetic to environmental issues irrespective of the personal benefits preservation might afford them (Dietz et al 2002; Zelezny at al 2000; Kalof et al 2002). Since previous research by Tarrant and Cordell (2002) as well as Johnson et al. (2004) suggests that women visit and use wild places less frequently than men do, perhaps the difference in the nature of the values that men and women tend to place on wilderness serve as more significant determinates of support for expanded preservation than use or visitation alone.

The process of attending college shapes individual valuation of wilderness as well. Because those with increased levels of education are more likely to endorse inherent wilderness values and support its preservation, perhaps something happens during college that encourages a less self-focused and more generalized valuation of nature and wilderness. Given that college students tend to have more liberal political ideologies (Laster 2010), it is not surprising that attending college also appears to encourage more sympathetic attitudes towards the preservation of wilderness by the federal government.

Given that the values individuals attribute to wilderness shape their attitudes towards its preservation, it is important to determine whether not only individual characteristics shape said values, but whether as previous research has suggested, contextual characteristics play a role as well (Owen at el 2010; Elliot et al 1997; Hamilton et al 2010). Perhaps an individual's larger community serves as an alternative factor in determining not only their attitudes towards preservation, but their wilderness values as well. Contextual variables such as unemployment rates, fields of employment in a particular region, and whether a community is urban or rural could all serve as the motivating factors that determine not only individuals" support for expanded wilderness, but differing wilderness values as well. I will address these issues in my final analytic chapter, Chapter 6.

Chapter 6: Contextual Characteristics as Determinants of Support for Expanded Wilderness Preservation

6.1 Introduction

In this chapter I examine how, net of personal characteristics, community-level factors relate to both individuals' wilderness values and support for the expansion of federal policies designed to preserve nature/wilderness. Earlier chapters identified the effects of gender and education on individuals' attitudes towards expanded wilderness preservation as well as the role of wilderness values in mediating those effects. However research suggests that individuals' economic and social contexts also play a role (Elliot et al 1997; Hamilton et al 2010). Compared to their urban counterparts, rural communities -- with the exception of those dependent on tourism -- are more likely to view nature as a productive environment rather than a beautiful landscape. Therefore, the daily lives of individuals living in rural communities are more integrated with and therefore often more dependent upon the natural environment. This in turn makes nature a source for productive resources such as mineral, timber, grazing lands, or tourist attractions in addition to beautiful scenery, a great hiking location, or a unique and precious landscape (Ranniko 1996).

Whether an individual resides in a rural or urban community likely shapes their perceptions of nature and wilderness. For many people living in rural communities, the largest sources of employment stem from industries based in the extraction of natural resources. Therefore it is not surprising that residents of such communities would have a more materialistic view of the natural environment. In contrast individuals living in areas where employment has little, if any, direct connection to natural resources, wilderness may be perceived of as a beautiful location to escape to for recreation and enjoyment (Proctor 1998; Lichter and Brown 2011; Hamilton et al 2010). Therefore while individuals living in rural areas might support preservation in the abstract, they often fight to retain access to mineral, grazing, timber, and water rights as well as the potential economic opportunities those resources might provide their communities

(Doremus and Tarlock 2008; Espeland 1998; Fitzgerald and Schwabach 1999; Proctor 1998; Freudenberg et al 1998). For urban city dwellers their livelihoods, and the livelihoods of their friends and neighbors are less likely to be directly contingent upon policy decisions relating to land preservation and they can in turn more unequivocally support preservation. Thus it is likely that the economic and social characteristic of the community in which an individual lives plays a significant role in determining their attitudes regarding wilderness preservation.

This chapter addresses my final research questions: "How do community-level factors relate to individuals' support for the expansion of federal policies designed to preserve nature/wilderness as well as their own wilderness values, net of their own personal characteristics?" and "Do community level factors condition or moderate the relationships between personal characteristics and support for wilderness preservation policies?." By appending data from the 2000 Census to the NSRE dataset using ZIP code identifiers, I am able to examine whether community level characteristics predict support for expanded wilderness preservation. Also I will explore whether community context has a conditioning effect, causing such variables as education, gender, or income to operate differently depending on the characteristics of the community in which an individual lives. Finally I will also explore whether community context shapes individuals' utilization or inherent wilderness values, a question that arose in the previous chapter.

6.2 The Effects of Community Characteristics on Support for Wilderness Preservation

Prior research suggests that contextual characteristics play an important role in shaping individuals' feelings regarding expanded wilderness preservation. In fact, numerous studies suggest that community characteristics serve as key determinants of individuals' opinions regarding expanded environmental regulations, however before the current study, no research had been conducted using a nationally representative dataset. My analysis focuses on three types of possible effects that contextual characteristics might have on support for expanded

wilderness preservation: (1) the direct effects of contextual characteristics (2) the interaction between individual level characteristics such as education and income and contextual characteristics and (3) the interaction between multiple contextual variables.

6.2.1 Direct Effects of Contextual Characteristics

Whether an individual lives in a predominantly rural or urban community is often cited as an important predictor of their attitudes and values regarding wilderness preservation. Unlike urban residents, individuals living in rural areas tend to live within closer proximity to undeveloped land and thus their daily lives are more integrated with nature. Also, rural residents appear to conceptualize nature in more productive terms, as they are more likely to rely on the environment for their economic survival (Ranniko 1996). When the environment functions as a place of "production" for those living in a community, the function and benefits of the environment would likely be viewed in more utilitarian ways. In contrast, individuals living in urban areas might romanticize and idealize nature, viewing wilderness as a place to be preserved for aesthetic recreational enjoyment (Cronon 1994; Ranniko 1996). Thus individuals' attitudes and values regarding wilderness might, in part, be a function of their community context.

This division between experiencing the natural environment as a productive or recreational and aesthetic setting leads to distinct perspectives that can impact individual levels of support for expanded federal environmental preservation policies. In political fights over wilderness designations, those opposed often argue that such designations limit natural resource exploration. This limits the opportunities for developing and ultimately strengthening rural economies that have few other revenue sources available that can provide similar levels of economic growth (Footer and VonLunen 1999; Lichter and Brown 2011). In many cases the decision to preserve land comes with either real or perceived economic and social costs to

individuals and communities (Proctor 1998, Freudenburg et al 1998). Therefore I would expect that:

> *H9: Residents of rural areas are less likely than urban residents to endorse expanded wilderness preservation policies*

For those living in rural communities, and in communities where a larger proportion of the population work in extraction fields, the value of wilderness may stem more from utilization and exploitation of the environment. As was discussed in Chapter 2, utilization wilderness values are associated with the direct benefits that individuals enjoy as a result of having access to wilderness areas such as revenue generation, spiritual inspiration, and recreational opportunities. In contrast, inherent values are defined as the value of wilderness stemming from its pure existence, regardless of the tangible or inspirational benefits it provides. Therefore in regards to wilderness values, I propose the following:

> *H10: Residents of rural communities are more likely than urban residents to endorse utilization wilderness values*
>
> *H11: Residents of rural communities are less likely than urban residents to endorse inherent wilderness values.*

Beyond the individual, community characteristics appear to shape individuals' perceptions of nature and wilderness, as individuals must balance the good of the community with their desire for preservation. Thus, while there is no evidence of a significant difference between rural and urban residents regarding general environmental concern, several studies have shown that rural residents are less supportive of environmental policies and regulations due to concern over possible job lose due to such policies (Cordell et al 2008; Calvert 1979; Freudenberg 1992 Cordell 2003). Therefore when it comes to support for expanded wilderness preservation, I would expect the following:

> *H12: Individuals living in communities with high levels of employment within an extraction field are less likely than individuals living in communities with less employment within extraction fields to support expanded wilderness preservation*

Also I would expect that those individuals living in communities where a larger proportion of the population are highly dependent on natural resource extraction for their livelihoods would identify more strongly with utilization rather than inherent wilderness values. Given this, I would expect the following:

> *H13: Individuals living in communities with higher levels of employment in extraction fields are more likely to endorse utilization wilderness values*
>
> *H14: Individuals living in communities with higher levels of employment in extraction fields are less likely to endorse inherent wilderness values*

6.2.2 Interaction Between Individual Level Characteristics (i.e. Education and Income) and Contextual Characteristics

Beyond simply expecting that contextual variables independently shape individuals' wilderness values or support for wilderness preservation the relationship between gender, race, education, and income and support for expanded wilderness preservation might also differ depending on contextual characteristics. As was discussed in Chapter 4, in political debates over the issue of wilderness preservation, some suggest that individuals of higher income and education levels are more likely to support wilderness preservation (Nash 2001; Runte 2010). However, individuals with similar educational and economic characteristics might hold differing attitudes towards wilderness preservation depending on geographic location. For example in urban communities as well as communities with low levels of dependence on extraction industries I would expect that for every additional year of education and/or increase in income there is an increase in support for expanded wilderness preservation. Alternatively in rural communities as well as those communities highly dependent on extraction industries, for every additional year of education or increase in income I would not expect an increase in support for expanded wilderness preservation.

Therefore the relationship between socio-demographic indicators such as income and education and wilderness values and support for wilderness expansion might be more complex than previously thought. Perhaps the effects of socio-economic characteristics such as income or

education on support for wilderness preservation, rather than static across geographic regions, actually differs depending on the larger economic and environmental characteristics of an individual's community. Cronon (1994) argues that the highly educated, high income individuals living in urban centers are the most adamant supporters of its preservation for solely recreational uses, and that these same individuals are also the most disconnected from nature and wilderness in their daily lives. In Chapter 3, it was theorized that individuals with greater financial resources are more supportive of expanded wilderness preservation because they have the excess resources that allow them to support setting aside lands for non-use. However, rather than assuming that income determines how an individual feels about wilderness preservation, it might be that income operates differently depending on the context in which individuals live. While there do appear to be significant differences based on individual income and education levels regarding attitudes towards wilderness preservation (Elliot et al 1997; Pope and Jones 1990), these findings do not take into account differences in the contextual characteristics of these individuals. For example low-income individuals living in urban centers would most likely have little if any concern regarding wilderness preservation, given that they do not live near such areas nor do they generally have the economic resources required to visit such areas. In contrast, for low-income individuals living in rural communities where the types of employment might be dependent on natural resource extraction, wilderness preservation might be a more salient issue of concern that impacts their own as well as their larger communities' economic health (Freudenberg et al 1998). In fact individuals living in communities impacted more strongly by a particular environmental issue are more likely to support whatever option most benefits themselves as well as their community (Hamilton et al 2010). Thus for high earning individuals living in urban centers, they are more likely to support wilderness preservation as a place to escape from their everyday lives living in a setting largely devoid of any "nature" (Cronon 1994), while similarly high earning individuals living in a rural area might be less likely to support expanded preservation because of their economic well being, as well as the economic well being of their community likely depends on natural resource extraction. Thus

despite sharing similar socioeconomic status, it is likely that such individuals' attitudes will diverge depending on the degree to which such policies have the potential to limit the economic development of their larger community. Therefore I expect the following:

> H15: *Socio-economic differences in attitudes toward expanded wilderness preservation are less pronounced in communities with a high level of economic dependence on extraction activities.*
>
> *H16: The impact of income on the likelihood of supporting expanded wilderness preservation is greater for those living in more rural communities*
>
> *H17: The impact of income on the likelihood of supporting expanded wilderness preservation is greater for those individuals living in communities with higher proportions of employment in extraction fields than those living in communities with lower proportions of employment in extraction fields .*

Similarly, I would expect the effects of education on support for expanded wilderness preservation to also differ depending on contextual characteristics. Individuals with higher levels of education have been found to display greater levels of environmental concern (Solcki 1998; Jones and Dunlap 1992). However given the importance of contextual variables in shaping environmental attitudes, it is unlikely that the effects of education are universal (Hamilton et al 2010). For example, in his research, Dizard (1999) finds that highly educated professionals working for the National Forest Service (NFS) clash with similarly educated citizens who do not agree with the NFS's mission to balance preservation with use on our public lands. This suggests that despite having similar education levels, context may matter regarding attitudes towards federal preservation policies. Therefore the effects of increased education on attitudes towards preservation will vary depending on whether an individual lives within a rural or urban community. Rural residents must balance their support for preservation with their consideration of how such policies might impact the economic health of their community overall. Therefore I would expect the following:

> *H18: The impact of education on the likelihood of supporting expanded wilderness preservation is greater in urban rather than rural communities.*

H19: The impact of education on the likelihood of supporting expanded wilderness preservation is greater for those living in communities with high levels of employment in extraction fields than for those living in communities largely independent of extraction fields for employment

6.2.3 Interaction between Multiple Contextual Variables

Moreover, perhaps the convergence of multiple features of an individual's community shapes perceptions regarding support for and valuation of wilderness preservation. For example, if an individual lives in a rural community also suffering from high levels of unemployment, it is likely that such individuals would be more favorable to any industry that might bring economic stability to their community, even if that industry requires the exploitation of natural resources. For example, as recently as 2011, survey research suggests that there exists a widespread public perception that environmental regulations (e.g., restrictions on oil drilling in Alaska's Artic National Wildlife Refuge [ANWR]) are contributing to higher natural gas prices and unemployment (Saad 2011). This finding suggests that for many Americans, support for environmental preservation may be a function of their economic circumstances. In fact it has been argued that economic regulations are a luxury that, when the economy is doing poorly, should be set aside in favor of increased oil drilling and the easing of regulations that restrict certain industries due to their environmental impact (Rich and Broder 2011). For example, while many inner city communities suffer from high unemployment, there is no reason to expect that these individuals have a strong opinion regarding federal wilderness preservation policies as it relates to their communities economic future. Thus I would not expect high levels of unemployment to function as a significant predictor of support for expanded wilderness preservation *except* in conjunction with the proportion of rurality of a community. Thus, for individuals living in rural communities surrounded by undeveloped land, it is more likely that they, seeing nature as more of a productive environment, would be more open to any industry that creates jobs and increases economic stability within their community (Ranniko 1996). Thus those rural communities experiencing high levels of unemployment, the promise that extraction

industries such as logging or oil production promise for revitalizing the local economy likely trumps any benefit of setting it aside for preservation. Therefore I expect the following:

> *H20: The rates of unemployment within a community will have a stronger impact on wilderness preservation attitudes in rural areas than in urban areas.*
>
> *H21: The rate of unemployment within a community will have a stronger impact on utilization wilderness values in rural areas than urban areas. Rural residents are more likely to endorse utilization wilderness values when their community is experiencing high levels of unemployment.*

Moreover, research suggests that in political debates over environmental regulations those opposed to such protections generally depend on the exploitation of natural resource for their livelihoods and see such policies as threatening their economic survival. For example in his qualitative work on the spotted owl, Proctor (1998) argues that support for wildlife preservation is largely determined by perceptions regarding the government's prioritization of nature preservation over the economic well being of its citizens. Moreover in qualitative analysis of political debates over preservation, opposition forces are not necessarily fighting preservation, but rather fighting to retain access to mineral, grazing, timber, and water rights and economic opportunities that such resources provide (Doremus and Tarlock 2008; Espeland 1998; Fitzgerald and Schwabach 1999). While it seems likely that communities where there are high proportions of individuals working in extractive fields would be less likely to support expanded wilderness preservation in general, it seems likely that when such communities are also experiencing high levels of unemployment, there would be even less support for such expanded preservation and higher rates of identification with more utilitarian valuations of wilderness. Therefore I would expect the following:

> *H22: Unemployment rates will have a stronger effect on individuals' attitudes towards wilderness preservation in communities highly dependent on extraction industries than in communities not highly dependent on extraction fields for employment.*
>
> *H23: Unemployment rates will have a stronger effect on utilization wilderness values in communities highly dependent on extraction industries than in communities not highly dependent on extraction fields for employment.*

6.3 Data and Methods

In order to test my hypotheses in this chapter I will utilize the 2006 NSRE dataset, a nationwide, random-digit household survey administered to non-institutionalized individuals 16 years of age or older living in households in all fifty states. Because the NSRE dataset provides ZIP code identifiers for the majority of survey respondents I was able to conduct an analysis of three contextual variables by appending 2000 Census data using ZCTAs (Zip Census Tabulation Areas) which the U.S. Census Bureau began using as an alternative to ZIP Codes in 2000 but that in most cases are identical to the ZIP code. My sample includes ZIP Code identifiers for 1,438 or 98% of cases, with 95% of my sample, or 1395 cases, having ZIP Codes equivalent to ZCTA codes utilized in my contextual analysis.

The three contextual variables I analyzed for this chapter, proportion unemployed, proportion employed in an extraction field, and proportion rural, were available from the US Census website (http://www.census.gov/geo/ZCTA/zctafaq.html). Within the NSRE there were eleven instances in which three respondents from the same ZIP Code appear in the data set, and eight instances where two respondents from the same ZIP Code appear in the data set. However because these cases are such a small portion of the overall sample (1.3%) there is a minimal likelihood of correlated errors skewing my results. While a hierarchical or multilevel modeling strategy was considered, it was inappropriate given the insufficient clustering of individuals within the same ZIP codes (i.e. only 1.3% of the sample). For a more detailed description of the Census data and the use of ZCTAs as equivalent to ZIP Codes see my full discussion in Chapter 3.

Table 6.3: Chapter 6 Descriptive Statistics

Variable	N	Mean	SD	Min	Max
Dependent Variable: *Support for the expansion of federal policies designed to preserve nature/wilderness areas* (1=there should be more wilderness areas, 0=there are enough/too many wilderness areas/do not know)	1462	.52	.50	0	1
Inherent Wilderness Values**	1384	-4.8	2.04	0	1
Utilization Wilderness Values**	1384	-5.00	2.32	0	1
Proportion Unemployed	1395	.05	.03	0	.37
Proportion Rural	1393	.28	.37	0	1
Proportion Employed in an Extraction Field	1395	.05	.04	0	.27

***Factor Scores*

6.3.1 Dependent Variables

In this section I tested the effects of contextual variables on three distinct dependent variables: support for the expansion of federal policies designed to preserve nature/wilderness areas, the endorsement of inherent wilderness values, and the endorsement of utilization wilderness values. As in previous chapters "*support for the expansion of federal policies designed to preserve nature/wilderness areas"* represents whether or not individuals' support *increased* or *expanded* efforts by the federal government to preserve more nature/wilderness areas in the United States. The survey question used to measure this variable reads as follows: "Do you think that the amount of land that Congress has designated as Wilderness so far is not enough, about the right amount, or too much?" Whether or not an individual supports the expansion of federal policies designed to preserve nature/wilderness area was therefore measured as whether a respondent's response to the survey question was "not enough" or the other three response categories offered in the question ("about the right amount", "too much", or "don't know"). As an expansion of my analysis from Chapter 5, this analysis includes both contextual and individual variables and considers whether these variables successfully predict both "inherent wilderness values" and "utilization wilderness values" (for a full description of the value variables see Chapter 3). Because both my "inherent wilderness value" and "utilization wilderness value" measures are coded as continuous variables, I will be using OLS to perform this portion of my analysis.

6.3.2. Independent Variables

As in Chapters 4 and 5, the base socio-demographic variables included are gender, race, income, and education. However the key independent variables included in this chapter are my three contextual variables: proportion rural, proportion employed in an extraction field, and proportion unemployed.

Proportion Rural

The measure for proportion rural was calculated using data from the 2000 Census. The US Census defines "rural" as the proportion of individuals living within a ZCTA area that is located outside of urbanized areas and urban clusters, which are defined as "core census block groups or blocks that have a population density of at least 1000 people per square mile and surrounding census blocks that have an overall population density of at least 500 people per square mile" (http://www.census.gov/geo/reference/ua/urban-rural-2000.html). Therefore I calculated the proportion rural within a specific ZCTA/ZIP Code by dividing the number of residents within the ZCTA living in a rural area by the total number of residents, urban and rural, living within that geographic area. The mean for the proportion rural is .28 with a standard deviation of .37.

Proportion Employed in an Extraction Field

The proportion employed in an extraction field was calculated using 2000 Census data for the total civilian population within a specific ZCTA over the age of 16. Extraction field employment was defined as jobs in agriculture, forestry, fishing and hunting, and mining. The total number of individuals working in one of these extraction fields was then divided by the total employed civilian population over the age of 16 within the same ZCTA, providing me with the proportion of employed individuals who work in an extraction field within that geographic area. The mean for this measure is .05 with a standard deviation of .03.

Proportion Unemployed

The measure for the proportion unemployed within a geographic area was calculated using data from the 2000 Census. I calculated the proportion unemployed within a specific ZCTA/ZIP code by dividing the total number of unemployed residents over the age of 16 within a ZIP code by the number of those total workers within the labor force in the same geographic area. The unemployment rate within an area serves as a good indicator for the overall economic health of an area, (i.e. low unemployment=healthy economy). Because the rate of unemployment within a community can be attributed to many factors, I only expect the level of unemployment within a community to impact support for wilderness preservation within rural areas and areas highly dependent on natural resource extraction fields for employment. For example individuals living in an urban center might also experience high levels of unemployment, however it is only when the economic health of a community might be helped or hindered by the passage of wilderness preservation policies that unemployment rates might have an impact on individuals' attitudes towards preservation. That being said, the mean value for the proportion unemployed is .05 with a mean of .03.

6.3.3 Interaction Terms

*Proportion Unemployed*Proportion Rural*

This combined predictor was created in order to explore the variable impact of unemployment on support for wilderness preservation in rural and urban areas.

Proportion Unemployed Proportion Employed in an Extraction Field*

This combined predictor was created to explore the variable impact of unemployment on support for wilderness preservation in relation to the level of dependence on extraction industries in a geographic area.

*Education level (3 categories) * Proportion Rural*

This combined predictor examines how the effect of education on the dependent variable differs depending on the degree to which an individual lives in a predominantly rural community. I believe that the effect of education level on support for expanded wilderness preservation largely depends on contextual characteristics, specifically whether an individual lives in a predominantly urban or rural environment. For those individuals with an advanced education living in urban settings, their daily-lived experience separate from nature likely makes them more supportive of preservation given their geographic distance from such areas. In contrast, for those similarly educated individuals living in more rural areas, their lived experiences are more integrated with the natural environment and it is therefore more likely that they interact with nature as a daily part of their lives and do not perceive of it as needing special protections.

*Income Level (6 categories) * Proportion Rural*

This combined predictor examines how the effect of income on the dependent variables differs depending on the rurality of an individual's community. The effect of income on support for expanded wilderness preservation depends on whether their community is predominantly rural or urban. For example a low-earning individual living in an urban metropolis might be indifferent to wilderness preservation, or support it in the abstract because it has no effect on their daily lives or employment opportunities. For a similarly low-income individual living in a rural community where extraction based industries such as mining or timber are the main source of employment in the area, supporting land preservation policies likely requires choosing to protect the land at the cost of potential future employment opportunities that land might provide.

*Education level (3 categories) * Proportion Employed in an Extraction Field*

This combined predictor examines how the effects of education on the dependent variable differs depending on the degree to which an individual's community relies on an extraction field

for employment. Again, I believe that the effects of education on support for wilderness preservation will differ depending on where an individual lives, specifically if their community significantly depends on extraction fields for employment. For example if an individual with an advanced degree lives in a community largely supported by service jobs, they might support expanded wilderness preservation because they enjoy having such areas available for recreation. In contrast a similarly educated individual living in a community that depends on an extraction field for employment such as mining or timber would likely value wilderness, but also recognize their potential to limit the economic growth of their community and therefore be less supportive of such policies.

Income level (6 levels) Proportion Employed in an Extraction Field*

The final interaction terms created for my analysis allow me to examine how the effect of income determines support for my dependent variable depending on the degree in which an individual lives in an area largely dependent on extraction fields for their economic stability. For example while an individual earning a good salary of say $75,000-$99,999 per year in a community where most people work in non-extraction industries, wilderness areas largely serve as a recreation location. However for an individual earning that same salary range, but living in a community largely reliant on an extraction field such as mining or timber collection their own livelihood and the livelihoods of their friends and neighbors might be threatened with increased restriction on land use such as wilderness preservation. Therefore those individuals with higher incomes living in communities highly dependent on extraction fields would be more concerned about the potentially negative effects of preservation policies on the local economy and would therefore be less supportive of such policies.

6.3.4 Control Variable: Age

As in previous chapters, the only control variable included in my analysis is for respondent age. My control variable for age was split into 4 dichotomous variables with the youngest age group (age 15-39) serving as the comparison group for the analysis.

6.4 Bivariate Correlation Results

Tables 6.4.1a-6.4.1d include the mean values of the contextual characteristic variables, separated by gender, age, income, and educational attainment. Based on the tables it appears there is little difference in the mean values of the contextual variables by gender. Regarding age, the variable that shows the greatest difference in mean values is proportion rural, with fairly similar mean values for all the age categories except for Age 50-69 who have a slightly higher mean value compared to their younger and older peers. In regards to income, it appears that individuals with lower income levels, and interestingly those who failed to respond, have the highest mean values of proportion living in a rural area. Finally regarding education and proportion rural it is not surprising that those with higher than a high school education have lower mean proportions of living in rural areas as well.

Table 6.4.1a: Mean Values of Contextual Characteristics by Gender

	Female	Male
Proportion Employed in an Extraction Field	.02	.02
Proportion Unemployed	.06	.05
Proportion Rural	.29	.28

Table 6.4.1b: Mean Values of Contextual Characteristics by Age

	Age (15-39 years)	Age (40-49 years)	Age (50-69 years)	Age (70+)
Proportion Employed in an Extraction Field	.02	.02	.02	.02
Proportion Unemployed	.06	.05	.05	.06
Proportion Rural	.27	.27	.32	.26

Table 6.4.1c: Mean Values of Contextual Characteristics by Income

	Income <$25K	Income $25K-$49999	Income $50K-$74999	Income $75K-$99999	Income $100K+	Income Non-response
Proportion Employed in an Extraction Field	.03	.02	.03	.02	.02	.02
Proportion Unemployed	.06	.06	.05	.05	.05	.05
Proportion Rural	.34	.34	.29	.23	.19	.29

Table 6.4.1d: Mean Values of Contextual Characteristics by Education

	Completed Less than High School	Attended College	Received an Advanced Degree
Proportion Employed in an Extraction Field	.03	.02	.01
Proportion Unemployed	.06	.05	.05
Proportion Rural	.39	.25	.20

Table 6.4.2 shows the correlation matrix, displaying the correlation between all the variables included in the models for this chapter. I chose to analyze the correlation matrix using the original categorical age, income, and education variables rather than the dichotomous versions included in my models. The correlation matrix is a tool for assessing the strength of my hypotheses only including these variables in their original form accomplishes that goal without the unnecessary complexity including the dichotomous version brings to the ease of interpretation of my table. As can be seen in this table, there does not appear to be a correlation between any of the contextual variables included in my analysis for this chapter and the key dependent variable, "wild" or support for expanded wilderness preservation. This suggests that perhaps there is no relationship between community characteristics such as proportion rural, proportion dependent on an extraction industry, and proportion unemployed and support for wilderness preservation. In relation to my hypotheses predicting individuals' identification with inherent and utilization wilderness values, I found a significant negative correlation between proportion rural, proportion employed in an extraction field, and proportion unemployed and the holding of inherent wilderness values, with those living in communities highly dependent on extraction industries more likely to hold utilization wilderness values. Thus there appears to be mixed support based on the correlation matrix regarding the relationship between community

characteristics and both wilderness values as well as support for expanded wilderness preservation.

Table 6.4.2: Chapter 6 Correlation Matrix

	Wild	Female	Age	Non-Hispanic White	Income	Education	Inherent Value	Utilization Value	Rural	Extract Industry	Unemployed
Wild	1										
Female	.06*	1									
Age	-.13*	.07*	1								
Non-Hispanic White	-.13**	.07*	.18**	1							
Income	.02	-.17**	-.09**	-.09**	1						
Education	.04	-.03	.09**	.09**	.40**	1					
Inherent Value	.33**	.07*	-.11**	-.11**	.09**	.16**	1				
Utilization Value	.08**	.06*	.13**	.13**	-.10**	-.12**	0	1			
Rural	-.05	.02	.02	.02	-.16**	-.20**	-.07*	.05	1		
Extract Industry	-.05	.01	.01	.01	-.11**	-.19**	-.08**	.07*	.52**	1	
Unemployed	-.01	.05*	-.02	-.02	-.16**	-.12**	-.04	.01	-.02	.18**	1

6.5 Results

Table 6.5.1 shows the results of my first models, testing whether community variables such as proportion rural and proportion employed in an extraction field have an effect on the likelihood that an individual will be supportive of expanded wilderness preservation. The inclusion of the proportion rural (Model 2) as well as proportion employed in an extraction field (Model 3) and both variables together (Model 4), while consistently negatively correlated with support for expanded wilderness preservation, the relationship was not significant at the .05 or .10 levels. Therefore I found no support for my hypotheses that contextual characteristics such as employment in an extraction industry and rurality shape individual support for expanded wilderness preservation (H9, H12, H15). Also because the coefficients for gender as well as education remained largely consistent in all these models, it appears that including contextual characteristics in my models does not reduce or limit the effects of gender or education in regards to levels of support for expanded wilderness preservation.

Table 6.5.1: Logistic Analysis of Contextual Variable Predictors of Support for Expanded Wilderness Preservation

	Base Model	Model 1	Model 2	Model 3
Constant	*.12*	*.08*	*.13*	*.08*
	(.23)	*(.25)*	*(.24)*	*(.25)*
Gender (1=female)	.26*	.29*	.28*	.29*
	(.11)	(.12)	(.11)	(.12)
Race (1=Non-Hispanic white)	.01	.12	.03	.12
	(.17)	(.17)	(.17)	(.17)
Age^				
40-49 yrs	-.24	-.23	-.21	-.23
	(.15)	(.15)	(.15)	(.15)
50-69 yrs	-.38*	-.37*	-.37*	-.37*
	(.15)	(.16)	(.15)	(.16)
70+ yrs	-.76*	-.80*	-.80*	-.79*
	(.19)	(.20)	(.20)	(.20)
Education^^				
Attended College	.23**	.24**	.24**	.24**
	(.13)	(.14)	(.14)	(.14)
Graduate/Professional Degree	.48*	.47*	.46*	.46*
	(.17)	(.18)	(.18)	(.18)
Income^^^				
Earns $25,000-$49,999	-.14	-.16	-.19	-.17
	(.19)	(.20)	(.20)	(.20)
Earns $50,000-$74,999	-.20	-.28	-.23	-.28
	(.21)	(.21)	(.21)	(.21)
Earns $75,000-$99,999	.07	.08	.13	.09
	(.23)	(.24)	(.24)	(.24)
Earns $100,000+	-.13	-.17	-.14	-.17
	(.21)	(.21)	(.21)	(.21)
Non-response	-.18	-.24	-.21	-.24
	(.19)	(.20)	(.20)	(.20)
Proportion Rural	___	-.19	___	-.17
		(.16)		(.18)
Proportion Employed in an Extraction Field	___	___	-1.68	-.37
			(1.48)	(1.76)

^Reference category is individuals' age 15-39 yrs
^^Reference category is HS education or less
^^^ Reference category is income less than $25,000/year
* Denotes statistical significance at $p < .05$ (two-tailed test)
** Denotes statistical significance at $p <$ .05 (one-tailed test

Tables 6.5.2a and 6.5.2b and 6.5.3 show the results from my analysis testing the hypotheses regarding the differing effects that income and education might have on preservation attitudes depending on contextual characteristics such as rurality and employment within extraction fields. Table 6.5.2a shows the results of my analysis testing the interaction between income categories depending on the proportion rural and the proportion employed in an extraction field (H16 and H17). First, while I expected that the effects of income level on support for expanded wilderness preservation would be weaker in more rural communities, the data do not support

this assumption. Similar to earlier findings, based on the coefficients for the income variables, there is no evidence to suggest that the effects of income or education on support for expanded wilderness preservation differs depending on the ruruality or dependence on extractive industries of an individual's community. In contrast, as can be seen in the coefficients for the interaction terms between income and proportion rural, while also not significant at the .05 and .1 levels, it does not appear that the effects of high income levels are weaker among those living in predominantly rural communities. Moreover I found no significant relationship between proportion employed in an extraction field, either independently or in conjunction with income levels. While not significant at the .05 or .1 levels, it does appear that as the proportion employed in an extractive field increases, the *negative effect* of higher income level increases. It does appear that the effects of high income on support for expanded wilderness preservation operates differently depending on the degree to which one's community depends on extractive fields for employment, though not enough to serve as a significant predictor in the models. Therefore, I have no evidence of a significant income-based effect on support for expanded wilderness preservation in any of the models tested in this chapter, a finding that remains consistent with my overall analysis within this dissertation. Controlling for the contextual characteristics of rurality and proportion employed in an extraction industry, there remains no statistically significant difference in attitudes towards wilderness preservation based on income level.

Table 6.5.2a: Logistic Analysis of the Interaction Effects between Income and Community Characteristics of Proportion Rural and Proportion Employed in an Extraction Field

	Base Model	Model 1	Model 2
Constant	*.08*	*.14*	*.00*
	(.25)	*(.28)*	*(.27)*
Gender (1=female)	.29*	.29*	.30*
	(.12)	(.12)	(.12)
Race (1=Non-Hispanic white)	.12	.11	.11
	(.17)	(.18)	(.18)
*Age^*			
40-49 yrs	-.23	-23	-.22
	(.15)	(.16)	(.16)
50-69 yrs	-.37*	-.38*	-.36*
	(.16)	(.16)	(.16)
70+ yrs	-.79*	-.79*	-.78*
	(.20)	(.20)	(.20)
*Education^^*			
Attended College	.24**	.24**	.25*
	(.14)	(.14)	(.14)
Graduate/Professional Degree	.46*	.47*	.46*
	(.18)	(.18)	(.18)
*Income^^^*			
Earns $25,000-$49,999	-.17	-.22	-.02
	(.20)	(.27)	(.24)
Earns $50,000-$74,999	-.28	-.27	-.24
	(.21)	(.27)	(.25)
Earns $75,000-$99,999	.09	.06	.31
	(.24)	(.30)	(.29)
Earns $100,000+	-.17	-.26	-.05
	(.21)	(.27)	(.25)
Non-response	-.24	-.35	-.26
	(.20)	(.26)	(.24)
Proportion Rural	-.17	-.31	-.18
	(.18)	(.41)	(.19)
Proportion Employed in an Extraction Field	-.37	-.29	2.25
	(1.8)	(1.77)	(3.80)
*Interaction Variables: Income * Proportion Rural^^^*			
Earns $25,000-$49,999 * Proportion Rural	___	.15	___
		(.51)	
Earns $50,000-$74,999 * Proportion Rural	___	-.04	___
		(.55)	
Earns $75,000-$99,999* Proportion Rural	___	.018	___
		(.66)	
Earns $100,000+ * Proportion Rural	___	.33	___
		(.58)	
Non-response * Proportion Rural	___	.32	___
		(.53)	
*Interaction Variables: Income * Proportion Employed in an Extraction Field ^^^*	___	___	___
Earns $25,000-$49,999 * Proportion Employed in an Extraction Field	___	___	-5.90
			(5.47)
Earns $50,000-$74,999 * Proportion Employed in an Extraction Field	___	___	-.94
			(4.80)
Earns $75,000-$99,999* Proportion Employed in an Extraction Field	___	___	-9.03
			(6.06)
Earns $100,000+ * Proportion Employed in an Extraction Field	___	___	-5.60
			(5.72)
Non-response * Proportion Employed in an Extraction Field	___	___	1.27
			(5.08)

^Reference category is individuals' age 15-39 yrs
^^Reference category is HS education or less
^^^ Reference category is income less than $25,000/year
* Denotes statistical significance at $p < .05$ (two-tailed test)
** Denotes statistical significance at $p <$. 05 (one-tailed test

Table 6.5.2b shows the results of the analysis testing whether the effects of education depend on community characteristics such as proportion rural and proportion employed in an extraction field. I had expected that for those living in communities with higher proportions of rurality as well as high levels of employment in extractive fields, the effects of education would be weaker in determining attitudes towards increased preservation. However my coefficients do not support this expectation as I found no support for either Hypotheses 18 or 19. In the base model both education measures were significant and positively correlated with support for expanded wilderness preservation. However in Models 1 and 2 the education coefficients while positive, were not significant at the .05 or .1 levels and do not serve as significant predictors of support for wilderness preservation overall. Therefore it appears that education, independent of community context, remains a significant predictor of increased support for expanded wilderness preservation, suggesting that the effects of increased education are uniform across the geographic characteristics included in my models.

Table 6.5.2b: Logistic Analysis of the Interaction Effects between Education and Community Characteristics of Proportion Rural and Proportion Employed in an Extraction Field

	Base Model	Model 1	Model 2
Constant	*.08* *(.25)*	*.15* *(.26)*	*.09* *(.25)*
Gender (1=female)	.29* (.12)	.29* (.12)	.29* (.12)
Race (1=Non-Hispanic white)	.11 (.17)	.12 (.17)	.12 (.17)
*Age^*			
40-49 yrs	-.23 (.15)	-.23 (.15)	-.24 (.16)
50-69 yrs	-.37* (.16)	-.37* (.16)	-.39 (.16)
70+ yrs	-.79* (.20)	-.79* (.20)	-.81 (.20)
*Education^^*			
Attended College	.24** (.14)	.12 (.18)	.22 (.17)
Graduate/Professional Degree	.46* (.18)	.43* (.23)	.58* (.21)
*Income^^^*			
Earns $25,000-$49,999	-.17 (.20)	-.15 (.20)	-.16 (.20)
Earns $50,000-$74,999	-.28 (.21)	-.27 (.21)	-.27 (.21)
Earns $75,000-$99,999	.09 (.24)	.09 (.24)	.08 (.24)
Earns $100,000+	-.17 (.21)	-.17 (.21)	-.18 (.21)
Non-response	-.24 (.20)	-.23 (.20)	-.25 (.20)
Proportion Rural	-.17 (.18)	-.36 (.28)	-.14 (.19)
Proportion Employed in an Extraction Field	-.37 (1.76)	-.44 (1.76)	-.48 (2.5)
*Interaction Variables: Education * Proportion Rural ^^^*			
Attended College * Proportion Rural	___	.394 (.35)	___
Received an Advanced Degree * Proportion Rural	___	-.02 (.48)	___
Interaction Variables: Education Proportion Employed in an Extraction Field ^^^*			
Attended college * Proportion Employed in an Extraction Field	___	___	1.33 (3.23)
Received an Advanced Degree * Proportion Employed in an Extraction Field	___	___	-7.31 (5.82)

^Reference category is individuals' age 15-39 yrs
^^Reference category is HS education or less
^^^ Reference category is income less than $25,000/year
* Denotes statistical significance at $p < .05$ (two-tailed test)
** Denotes statistical significance at $p <$. 05 (one-tailed test

Table 6.5.2c shows the results of the analysis testing whether the level of unemployment impacts the effects of proportion employed in an extraction field or the proportion rural on support for expanded wilderness preservation. The base model shows that initially none of the contextual variables serve as significant predictors of support for expanded wilderness preservation. However I was interested in the impact that living in a community with high levels of unemployment might have on those previously analyzed contextual variables (H20 and H22). I found no significant relationship between the economic health of an area that is predominantly rural or largely dependent on extraction fields for employment on the likelihood that an individual is favorable towards expanded wilderness preservation. I did find that living in a rural area that is suffering from a depressed economy is negatively correlated with support for expanded wilderness preservation, however the difference was not significant at the .05 or .1 levels. In contrast there was a positive correlation between those individuals living in a community with high levels of unemployment and highly dependent on extraction industries, although it was also not significant at the .05 or .1 levels. Perhaps the reason I found no significant relationship between these contextual variables and the level of unemployment in a community is because for individuals living in such areas it appears highly unlikely that the development of currently undeveloped "wilderness" would offer the hope of a revitalized economy, especially now with the shift away from coal and timber industries in the United States.

Table 6.5.2c: Logistic Analysis of the Interaction Effects between Community Characteristic Variables

	Base Model	Model 1	Model 2
Constant	*.08*	*.00*	*.08*
	(.28)	*(.29)*	*(.28)*
Gender (1=female)	.29*	.29*	.29*
	(.12)	(.12)	(.12)
Race (1=Non-Hispanic white)	.12	.13	.12
	(.18)	(.18)	(.18)
*Age^*			
40-49 yrs	-.23	-.22	-.23
	(.15)	(.15)	(.15)
50-69 yrs	-.37*	-.38*	-.37*
	(.16)	(.16)	(.16)
70+ yrs	-.79*	-.79*	-.79*
	(.20)	(.20)	(.20)
*Education^^*			
Attended College	.24**	.24**	.24**
	(.14)	(.14)	(.14)
Graduate/Professional Degree	.462*	.457*	.46*
	(.18)	(.18)	(.18)
*Income^^^*			
Earns $25,000-$49,999	-.17	-.17	-.17
	(.20)	(.20)	(.20)
Earns $50,000-$74,999	-.27	-.27	-.28
	(.21)	(.21)	(.21)
Earns $75,000-$99,999	.09	.09	.09
	(.24)	(.24)	(.24)
Earns $100,000+	-.17	-.17	-.17
	(.21)	(.21)	(.21)
Non-response	-.24	-.25	-.25
	(.20)	(.20)	(.20)
Proportion Rural	-.17	.13	-.20
	(.19)	(.30)	(.22)
Proportion Unemployed	.06	1.57	.20
	(1.77)	(2.17)	(1.78)
Proportion Employed in an Extraction Field	-.38	-.20	-.98
	(1.81)	(1.82)	(3.01)
Proportion Rural*Proportion Unemployed		-5.84	___
		(4.66)	
Proportion Employed in an Extraction Field* Proportion Unemployed	___	___	1.01
			(4.08)

^Reference category is individuals' age 15-39 yrs
^^Reference category is HS education or less
^^^ Reference category is income less than $25,000/year
* Denotes statistical significance at $p < .05$ (two-tailed test)
** Denotes statistical significance at $p <$. 05 (one-tailed test

Tables 6.5.3a and 6.5.3.b show the results of the analysis examining the relationship between my contextual variables and the likelihood that in individual holds utilization wilderness values. The analysis from Chapter 5 showed that holding utilization wilderness values is significantly and positively correlated with supporting expanded wilderness preservation. These findings

suggest that contrary to earlier research by (Ranniko 1996), attitudes towards preservation may not differ significantly based on contextual characteristics. As the results from my analysis show, none of the contextual characteristics or interaction terms between those characteristics were significant predictors of the likelihood that an individual holds utilization wilderness values (H10, H11, H13, H14, H21, and H23). While I did find that individuals living in communities highly dependent on extraction fields were significantly more likely to hold utilization wilderness values, net of the socio-demographic variables in the model (See Model 3), this relationship was not significant when proportion rural was also included in the model (Model 4). It does appear that while not statistically significant, there is a positive association between holding utilization wilderness values and living in rural, economically depressed communities as well as economically depressed communities that are highly dependent on extraction fields (See Table 6.5.3b). These findings suggest that for individuals living in a rural rather than urban area, nature may be perceived of in more practical, utilitarian terms (Ranniko 1996).

Similarly, Tables 6.5.4a and 6.5.4b show the results of the regression analyses predicting whether contextual characteristics serve as significant predictors of inherent wilderness values. There is no evidence to suggest that the contextual variables included in my models serve as significant predictors of inherent wilderness values. Therefore these findings suggest that overall individuals living in rural communities and communities where extraction industries are prevalent, regardless of the unemployment rate, do not value wilderness in terms of intangible benefits any more or less than the general population. While there is a significant negative relationship between the proportion of one's community employed in an extraction field and holding inherent wilderness values in Model 3, this relationship was not significant after running the complete model, Model 4, including proportion rural, and proportion working in an extraction industry. Therefore while there is a negative relationship between holding inherent

wilderness values and the proportion rural, this relationship is not significant at the .05 or .1 level. Regarding the coefficients for the proportion of one's community employed in an extraction field, it does appear that in Model 3 there is a significant positive relationship between proportion working in an extraction field and holding utilization values. However this finding does not carry over to the complete model where both the proportion rural and proportion working in an extraction field are included, suggesting that proportion working in an extraction field and proportion rural do not serve as significant predictors of utilization wilderness values overall.

Table 6.5.3a: Regression Analysis Predicting Individuals' Holding Utilization Wilderness Values

	Base Model	Model 1	Model 3	Model 4
Constant	*.01* *(.11)*	*-.03* *(.12)*	*-.02* *(.12)*	*-.04* *(.12)*
Gender (1=female)	.08 (.05)	.10 (.06)	.07 (.06)	.09** (.06)
Race (1=Non-Hispanic white)	-.13 (.08)	-.15 (.09)	-.16* (.08)	-.15** (.09)
Age^				
40-49 yrs	.27* (.07)	.30* (.07)	.29* (.07)	.30* (.07)
50-69 yrs	.42* (.07)	.45* (.08)	.44* (.08)	.44* (.08)
70+ yrs	.41* (.10)	.38* (.10)	.40* (.10)	.38* (.10)
Education^^				
Attended College	-.17* (.07)	-.15* (.07)	-.14* (.07)	-.14* (.07)
Graduate/Professional Degree	-.28 (.08)	-.24* (.09)	-.23* (.09)	-.23* (.09)
Income^^^				
Earns $25,000-$49,999	-.10 (.09)	-.01 (.10)	-.02 (.10)	-.00 (.10)
Earns $50,000-$74,999	.01 (.10)	-.02 (.10)	-.00 (.10)	-.02 (.10)
Earns $75,000-$99,999	-.01 (.11)	-.03 (.12)	-.03 (.11)	-.03 (.12)
Earns $100,000+	-.17* (.07)	-.21* (.10)	-.19** (.10)	-.21* (.104)
Non-response	-.09 (.09)	-.10 (.10)	-.08 (.10)	-.10 (.10)
Proportion Rural	___	.08 (.08)	___	.01 (.09)
Proportion Employed in an Extraction Field	___	___	1.34** (.72)	1.20 (.87)

^Reference category is individuals' age 15-39 yrs
^^Reference category is HS education or less
^^^ Reference category is income less than $25,000/year
* Denotes statistical significance at $p < .05$ (two-tailed test)
** Denotes statistical significance at $p <$ .05 (one-tailed test)

6.5.3b: Regression Analysis Predicting Individuals' Holding Utilization Wilderness Values Including Interactive Effects

	Base Model	Model 1	Model 2
Constant	*-.02*	*-.03*	*-.03*
	(.14)	*(.14)*	*(.14)*
Gender (1=female)	.10**	.09**	.09**
	(.06)	(.06)	(.06)
Race (1=Non-Hispanic White)	-.15	-.16	-.16
	(.09)	(.09)	(.09)
Age^			
40-49 yrs	.30*	.30*	.30*
	(.07)	(.07)	(.07)
50-69 yrs	.44*	.44*	.44*
	(.08)	(.08)	(.08)
70+ yrs	.38*	.38*	.38*
	(.10)	(.10)	(.10)
Education^^			
Attended College	-.14*	-.14	-.14
	(.07)	(.07)	(.07)
Graduate/Professional Degree	-.23*	-.23*	-.23*
	(.09)	(.09)	(.09)
Income^^^			
Earns $25,000-$49,999	-.00	-.01	-.01
	(.10)	(.10)	(.10)
Earns $50,000-$74,999	-.02	-.02	-.02
	(.10)	(.10)	(.10)
Earns $75,000-$99,999	-.03	-.04	-.04
	(.10)	(.12)	(.12)
Earns $100,000+	-.21	-.23	-.23
	(.10)	(.09)	(.09)
Non-response	-.10	-.10	-.10
	(.10)	(.10)	(.10)
Proportion Rural	.007	.06	.06
	(.10)	(.11)	(.11)
Proportion Unemployed	-.32	-.39	-.39
	(.88)	(.88)	(.88)
Proportion Employed in an Extraction Field	1.27	2.44	2.44
	(.09)	(1.56)	(1.56)
Proportion Rural*Proportion Unemployed		-1.88	___
		(2.05)	
Proportion Employed in an Extraction Field* Proportion Unemployed	___	___	-1.88
			(2.05)

^Reference category is individuals' age 15-39 yrs
^^Reference category is HS education or less
^^^ Reference category is income less than $25,000/year
* Denotes statistical significance at $p < .05$ (two-tailed test)
** Denotes statistical significance at $p <$ .05 (one-tailed test

6.5.4a: Regression Analysis Predicting Individuals' Holding Inherent Wilderness Values

	Base Model	Model 1	Model 3	Model 4
Constant	*-.22**	*-.17*	*-.16*	*-.16*
	(.11)	*(.12)*	*(.12)*	*(.12)*
Gender (1=female)	.16	.14*	.15*	.14*
	(.05)	(.06)	(.06)	(.06)
Race (1=Non-Hispanic white)	.06	.06	.05	.05
	(.08)	(.09)	(.08)	(.09)
*Age^*				
40-49 yrs	.11	.11	.13**	.12
	(.07)	(.07)	(.07)	(.07)
50-69 yrs	-.07	-.08	-.08	-.07
	(.07)	(.08)	(.07)	(.08)
70+ yrs	-.40*	-.42*	-.40*	-.42*
	(.10)	(.10)	(.10)	(.10)
*Education^^*				
Attended College	.19*	.19*	.18*	.19*
	(.07)	(.07)	(.07)	(.07)
Graduate/Professional Degree	.50*	.50*	.46*	.50*
	(.08)	(.09)	(.09)	(.09)
*Income^^^*				
Earns $25,000-$49,999	-.08	-.08	-.10	-.08
	(.09)	(.10)	(.10)	(.10)
Earns $50,000-$74,999	-.14	-.18**	-.16	-.17**
	(.10)	(.10)	(.10)	(.10)
Earns $75,000-$99,999	-.05	-.04	-.01	-.04
	(.11)	(.11)	(.11)	(.11)
Earns $100,000+	-.00	-.01	-.01	-.02
	(.10)	(.103)	(.101)	(.103)
Non-response	-.15	-.16*	-.14	-.16**
	(.09)	(.10)	(.10)	(.10)
Proportion Rural	___	-.08	___	-.03
		(.08)		(.09)
Proportion Employed in an Extraction Field	___	___	-1.18**	-.92
			(.71)	(.87)

^Reference category is individuals' age 15-39 yrs
^^Reference category is HS education or less
^^^ Reference category is income less than $25,000/year
* Denotes statistical significance at $p < .05$ (two-tailed test)
** Denotes statistical significance at $p <$. 05 (one-tailed test

Table 6.5.4b: Regression Analysis Predicting Individuals' Holding Inherent Wilderness Values Including Interactive Effects

	Base Model	Model 1	Model 2
Constant	*-.11* *(.14)*	*-.10* *(.14)*	*-.11* *(.14)*
Gender (1=female)	.14* (.06)	.14* (.06)	.14* (.06)
Race (1=Non-Hispanic white)	.043 (.09)	.042 (.09)	.042 (.09)
Age^			
40-49 yrs	.12 (.07)	.12 (.07)	.12 (.07)
50-69 yrs	-.07 (.08)	-.07 (.08)	-.07 (.08)
70+ yrs	-.42* (.10)	-.42* (.10)	-.42* (.10)
Education^^			
Attended College	.19* (.07)	.19* (.07)	.19* (.07)
Graduate/Professional Degree	.49* (.09)	.49* (.09)	.49* (.09)
Income^^^			
Earns $25,000-$49,999	-.09 (.10)	-.09 (.10)	-.08 (.10)
Earns $50,000-$74,999	-.18** (.10)	-.18** (.10)	-.179** (.10)
Earns $75,000-$99,999	-.05 (.12)	-.05 (.12)	-.05 (.12)
Earns $100,000+	-.02 (.10)	-.02 (.10)	-.02 (.10)
Earns Non-response	-.17** (.10)	-.17 (.10)	-.17** (.10)
Proportion Rural	-.04 (.09)	-.07 (.14)	-.03 (.11)
Proportion Unemployed	-.67 (.88)	-.83 (1.0)	-.68 (.88)
Proportion Employed in an Extraction Field	-.77 (.89)	-.79 (.90)	-.59 (1.55)
Proportion Rural*Proportion Unemployed	___	.65 (2.23)	___
Proportion Employed in an Extraction Field* Proportion Unemployed	___	___	-.28 (2.03)

^Reference category is individuals' age 15-39 yrs
^^Reference category is HS education or less
^^^ Reference category is income less than $25,000/year
* Denotes statistical significance at $p < .05$ (two-tailed test)
** Denotes statistical significance at $p <$. 05 (one-tailed test

Table 6.5.5 shows the results of my analysis of the numerous hypotheses tested in this chapter. Regarding the first set of hypotheses (H9-H13) I found no evidence to suggest that individuals living in rural areas, or areas highly dependent on extraction fields such as timber collection, fishing, or mining value wilderness differently or support its preservation at lower rates than the

general population. Furthermore there was also no evidence to support my hypotheses positing that the effects of individual characteristics such as income and education on support for expanded wilderness and wilderness values depend on the characteristics of an individual's community in regards to rurality and the dominance of extraction employment fields on support for wilderness preservation (H14-H17). My findings suggest that levels of support for expanded wilderness preservation among women and those with high levels of education do not change depending on their community context relating to proportion rural and proportion working in an extractive industry. The final set of hypotheses test whether the level of unemployment in their community alters the likelihood that individuals living in rural areas and areas highly dependent on extraction industries for employment will support expanded wilderness preservation and also whether it determine the types of wilderness values that individuals' hold (H18-H21). Overall the results relating to my hypotheses suggest that no direct relationship exists between contextual characteristics and either wilderness values or attitudes toward wilderness preservation.

Counter to my hypotheses, contextual characteristics do not appear to significantly determine attitudes towards wilderness policy or wilderness values, suggesting that economic motivations, either individually or communally, do not determine individuals' perceptions and valuation of wilderness. In fact because both education and gender are consistently significant in all of the models tested in this chapter, it appears that individual based motivations rather than community ones serve as the most significant determinates of wilderness attitudes.

Table 6.5.5: Hypotheses Outcomes for Chapter 6

	Result
H9: Residents of rural communities are less likely than urban residents to endorse expanded wilderness preservation policies.	No
H10: Residents of rural communities are more likely than urban residents to endorse utilization wilderness values	No
H11: Residents of rural communities are less likely than urban residents to endorse inherent wilderness values.	No
H12: Individuals living in communities with high levels of employment within extraction fields are less likely than individuals living in communities with less employment within extraction fields to support expanded wilderness preservation.	No
H13: Individuals living in communities with higher levels of employment in extraction fields are more likely to endorse utilization wilderness values.	No
H14: Individuals living in communities with higher levels of employment within an extraction field are less likely to endorse inherent wilderness values	No
H15: Socio-economic differences in attitudes toward expanded wilderness preservation are less pronounced in communities with a high level of economic dependence on *extraction fields.*	No
H16: The impact of income on the likelihood of supporting expanded wilderness preservation is greater for those living in more rural communities	No
H17: The impact of income on the likelihood of supporting expanded wilderness preservation is greater for those individuals living in communities with higher proportions of employment in extraction fields than those living in communities with lower proportions of employment in extraction fields.	No
H18: The impact of education on the likelihood of supporting expanded wilderness preservation is greater in urban rather than rural communities.	No
H19: The impact of education on the likelihood of supporting expanded wilderness preservation is greater for those living in communities with high levels of employment in extraction fields than for those living in communities largely independent of extraction fields for employment	No
H20: The rates of unemployment within a community will have a stronger impact on wilderness preservation attitudes in rural areas than in urban areas.	No
H21: The rate of unemployment within a community will have a stronger impact on utilization wilderness values in rural areas than urban areas. Rural residents are more likely to endorse utilization wilderness values when their community is experiencing high levels of unemployment	No
H22: Unemployment rates will have a stronger effect on individuals' attitudes towards wilderness preservation in communities highly dependent on extraction industries than in communities not highly dependent on extraction fields for employment	No
H23: Unemployment rates will have a stronger effect on utilization wilderness values in communities highly dependent on extraction industries than in communities not highly dependent on extraction fields for employment.	No

6.6. Conclusion

In conclusion, my findings provide no evidence that contextual variables such as proportion rural, and proportion employed in an extraction industry serve as significant predictors of an individual's beliefs regarding wilderness or support for its preservation. Furthermore I find no evidence that the impact of gender, education, or income operates any differently depending on the community characteristics in which an individual lives. Regardless of context, income and unemployment rates do not serve as significant predictors of whether or not an individual supports expanded wilderness preservation. Therefore evidence suggests that wilderness values, both inherent and utilization, operate as the primary mechanism determining individual

support for expanded wilderness preservation by the federal government. For example education serves as a significant predictor of individuals' wilderness values, utilization and inherent, as well as support for expanded wilderness preservation, regardless of context. Moreover the more highly educated are significantly more likely to hold inherent wilderness values and significantly less likely to hold utilization wilderness values. Therefore individuals' beliefs about and support for wilderness goes beyond simply a question of the economic characteristics of their larger community. This research shows no significant difference in the wilderness values and attitudes towards preservation between individuals living in rural communities, communities heavily dependent on extraction industries, and those living in such communities also experiencing depressed economics. This finding is consistent across all groups; there is no evidence that where you live matters when it comes to support for wilderness preservation or the values you associate with wilderness.

Given this finding that community characteristics, at least the ones I was able to include in my models, fail to serve as significant predictors of wilderness values, it appears that Americans attitudes towards preservation stem more from individual rather than community characteristics. While earlier case studies and regional research projects suggest that individuals living in communities economically dependent on extraction industries such as timber are much less supportive of federal interventions relating to preservation (Proctor 1998; Freudenberg et al 1998; Lichter and Brown 2011; Hamilton et al 2010), this research finds no such relationship at the national level. Instead my findings are consistent with earlier research suggesting that overall individuals in rural areas do not hold distinct wilderness values (Doremus and Tarlock 2008; Espeland 1998; Fitzgerald and Schwabach 1999; Proctor 1998; Freudenberg et al 1998). Perhaps when individuals are embroiled in an actual political conflict over federal preservation policies their attitudes are different, however this research suggests that in general the characteristics of an individual's community, in particular whether it is rural

or depends on such fields as timber and mining, regardless of the economic health of that community, does not determine their overall valuation of wilderness nor their attitudes towards its preservation (Doremus and Tarlock 2008; Espeland 1998; Fitzgerald and Schwabach 1999). Overall where an individual lives does not shape their valuation of wilderness nor their support for its preservation.

Chapter 7: Discussion and Conclusion

7.1 Review of Research Findings

This project was designed to utilize a generalizable national dataset in order to better specify the individual as well as community characteristics associated with increased support for expanded wilderness preservation among the United States population. Specifically, I answered four research questions related to support for the expansion of wilderness preservation:

1. Is there significant variation in support for the expansion of federal policies designed to preserve nature/wilderness by sociodemographic characteristics of the U.S. population (i.e., race, gender, income, education)?
2. Are any observed sociodemographic gradients in support for expanded nature/wilderness preservation mediated by individuals' beliefs regarding the value of wilderness?
3. How do community-level factors (place of residence, proportion unemployed, and field of employment) relate to individuals' support for the expansion of federal policies designed to preserve nature/wilderness, net of their own personal characteristics?
4. Do community-level factors condition or moderate the relationships between personal characteristics and support for wildlife preservation?

Regarding the first research question, significant variation based on both education level and gender does exist in relation to support for the expansion of federal policies designed to preserve wilderness. This variation was consistent throughout the dissertation, with women as well as the college educated consistently more supportive of wilderness preservation, regardless of whether other individual-level and community-level variables were included in the model. Regarding the second research question, the analyses revealed that wilderness values, specifically inherent wilderness values, do serve to mediate the gender and education based variation found in support for expanded wilderness preservation. Finally in reference to the final research questions, community-level characteristics have no direct effect on support for wilderness preservation, nor do they moderate the effect of socio-demographic predictors of support for expanded wilderness preservation.

Based on my findings I was able to determine that, at its core, individual differences in support for wilderness preservation stem from differences in the value individuals' attribute to that wilderness. In fact the most consistent differences I found regarding valuation of and support for wilderness preservation were between men and women as well as those who have attended college and those who have not. Regarding the gender difference, women are not only much more likely than men to support wilderness preservation, they are also more likely to value wilderness for its existence beyond any utilitarian benefits it might provide. This finding runs counter to the claims of several theorists and writers interested in preservation, particularly because based on visitation alone one would expect that men would be more supportive of wilderness (Cronon 1995; Walter and Kielcolt 1995). However, my research challenges this assumption, showing that despite their lower rates of visitation and utilization of wilderness areas, women are much more likely than their male peers to both value its existence and support its preservation. College attendance of any length of time, regardless of degree completion, also serves as a significant determinant of attitudes and values regarding wilderness. While any amount of time spent in college increases valuation of and support for preservation, my findings show that those who have advanced degrees show stronger levels of support for wilderness preservation when compared to those with a high school education than those who have some undergraduate education.

Finally, I found no evidence to suggest that community characteristics determine individuals' attitudes towards wilderness preservation, or cause them to value wilderness differently. These findings suggest that, in fact, attitudes towards wilderness preservation do not depend on whether an individual lives in a rural or urban community, or if their community depends on an extraction field for its economic well-being. While this research cannot explore how individuals living in communities directly affected by specific proposed wilderness preservation policies

might differ in their attitudes towards preservation, my findings suggest that, in general, contextual characteristics do not positively or negatively influence support.

7.2 Situating Findings in the Wilderness Literature (i.e., 'The Big Picture')

The ideology behind the legacy of land preservation within this country, theorized by both Rodrick Nash (2001) and Alfred Runte (2010), provides a possible explanation for why I found no variation by race, income, or any of the community level variables in regards to wilderness values and attitudes towards wilderness preservation. This ideology asserts a deeply enmeshed relationship between the American experience, identity and wilderness in this country. In his landmark book, Nash (2001) theorizes that our historical development fostered an intimate connection between American identity and wilderness. This connection between American identity and wilderness may help explain why there was no evidence that those individual economic circumstances such as income level or the industries most prevalent within their community shape attitudes towards wilderness. While I did find consistent gender and education level differences in support for wilderness preservation, my findings that variations in contextual as well as economic characteristics do not serve as significant predictors of individuals' attitudes towards wilderness preservation suggest that perhaps Americans do share a fundamental belief in and valuation of wilderness that transcends economic motivations.

Although the justifications for preservation have changed since the first National Park was created in 1872, commitment to wilderness preservation remains a strongly held American value. As Nash (1967) first suggested in his book Wilderness and the American Mind, while the laws have changed and political debates remain contentious, overall Americans support preserving wilderness, regardless of the shifting meaning of the term. Because the values individuals associate with wilderness inform individual attitudes towards its preservation, public attitudes towards preservation may be the result of social beliefs rather than scientific realities. Regardless of how wilderness is defined or whether it has any concrete benefit to the

health of our larger ecosystems, Americans value wilderness. For example, it might seem futile to set aside certain lands as wilderness knowing that someone could simply step across the border of that land and kill a protected animal, drive their car, or build their home. The fact that we preserve any land serves as a testament to the American commitment to ensuring a continued legacy of wild lands, a uniquely social commitment even if we now use 'hard science' to validate and support those designations. How we as a society define nature, define wilderness, and ultimately pass laws for determining those definitions may signify shifting values rather than shifting reality. Public lands such as Yosemite and Yellowstone have not changed much since they were first made National Parks, but our reasons and validation for protecting them have changed over time. While there are scientific reasons for preserving habitat, ultimately such decisions stem from what we as a society value and are willing to politically support.

In the United States, policies surrounding our public lands and the economic and social costs associated with policies regarding their appropriate use have long been publically debated. However, I hope my research has shown that when considering public attitudes towards environmental issues, personal and social values matter. Perhaps setting lands aside for preservation as wilderness is a fool's errand given we are applying human based definitions of what constitutes wilderness, as well as human valuation of the kinds of landscapes that deserve to be preserved. Wilderness is everything and nothing all at once. To say one area in Yosemite is wilderness while the land directly outside its border is not, is problematic yet unavoidable. Perhaps thinking about wilderness preservation in these terms - that some land should be preserved as wilderness and others should or cannot be preserved - is what allows Americans to so easily switch from supporting preservation in the abstract but, when the overall economy becomes less stable and prices of natural resources rise, preservation that actually requires some sacrifice in the comfort of individuals suddenly becomes less appealing (Saad 2011; Rich and

Broder 2011). This is what makes wilderness preservation an issue of sociological significance, how we as a society define nature, whether it be trees, lakes, waterfalls, or land, and which aspects of "nature" we wish to protect and which we do not, all have meaning and significance and define who we are as a society.

7.3 Theoretical Implications

This dissertation explores a wide range of literatures relating to environmental and wilderness preservation. Overall, I considered the role that various factors -including individual, contextual characteristics, and ultimately wilderness values - play in explaining individual attitudes towards wilderness preservation. This dissertation tested Ingelhart's (1995) theory of Postmaterialism. The Postmaterialism theory suggests that support for environmentalism is greatest among wealthy and politically stable individuals (as well as nations) who, unlike their less wealthy/politically stable peers, have the time and resources to devote their excess resources to preservation.

However, I found no support for this theory in my research, with none of my models showing income as a significant predictor of support for expanded wilderness preservation. This finding suggests that wealth does not drive individual attitudes towards preservation. In my original framework, I theorized that education would operate similarly to income as a measure of increased economic stability, given that those with higher education would likely have more money due to more stable and lucrative employment opportunities. However, unlike income, education was a consistent positive and significant predictor of support for expanded wilderness preservation in the numerous models I tested: those who have attended college and have advanced degrees are significantly more likely to support expanded wilderness preservation than those who never attended college. Based on these findings, I now believe that education functions independent of any economic motivations. Because education, rather than income, is a significant predictor it appears that it is neither wealth nor economic security, but rather

intangible ideas and beliefs fostered through education that increase support for preservation. Rather than income determining support, it is those individual characteristics including gender and education level that shapes values, which are the driving force behind support--or lack thereof--for expanded wilderness preservation.

Testing the Postmaterialism theory led to other important findings. It appears that support for expanded preservation requires that individuals value its existence completely independently of any potential direct benefits it may provide them as individuals. Perhaps it is, as researchers have suggested, women's greater tendency toward altruism that drives them to be more sympathetic to environmental issues and wilderness preservation in particular (Dietz et al 2002; Zelezny at al 2000; Kalof et al 2002). Because women do not utilize public lands for recreation as frequently as men, their reasons for preserving it are likely to be based less on selfish or utilitarian reasons. For those who have attended college, perhaps learning about nature and the environment through a more diverse curriculum than that offered in high school encourages a more universal approach to issues related to the environment and the importance of land preservation for humanity as a whole, regardless of any immediate costs and/or benefits such preservation might personally provide. Perhaps support for expanded preservation of wilderness comes from valuing such lands, most notably for their existence. Because other predictors such as rurality and proportion employed in an extraction industry were not significant in any of my models, deeply held beliefs and values relating to wilderness appear to encourage support for preservation, more so than the potential future personal or economic costs to their community that might result from such policies.

Similarly, the fact that college education shapes support for expanded wilderness preservation through increased inherent wilderness values, suggests that something about attending college may instill in individuals specific, humane types of wilderness values that those who have never attended college do not hold. There are several possible mechanisms through which college

attendance might encourage more selfless reasons for valuing wilderness. The process of attending college often requires that an individual leave their home (as well as hometown) and in turn they are exposed to new and often unfamiliar people, perspectives, and locations. Perhaps regardless of where they attend university, college exposes students to new ideas that alter their previous attitudes and beliefs relating to the environment. Alternatively, individuals who pursue higher education may simply be more intellectually curious and as a result may be enthusiastically pursuing new perspectives regarding many issues, including the environment and as a result of attending college are predisposed to believing the opinions of experts based on research. Perhaps advanced education exposes individuals to ideas that make them more sympathetic to preservation and it is these ideas that predispose them to holding inherent wilderness values, compared to those who do not attend college and who are never exposed to such ideas.

Finally, older Americans do not appear to value wilderness nor support its preservation as much as their younger counterparts. There are two potential explanations for this age difference: 1) an age effect in which, as individuals age they simply come to view wilderness differently and thus value it less or alternatively, or 2) a cohort effect in which older Americans specifically hold unique opinions regarding wilderness compared to their counterparts under 40 years of age. Unfortunately, these data do not allow me to determine which of these scenarios may be true. However, if multiple decades of data were to show a reduction in the correlation between age and decreased concern for wilderness preservation, then it could be suggested that a societal shift towards increased environmental concern has occurred.

7.4 Limitations and Future Research

While this research provides an important first step in identifying which characteristics best determine support for expanded wilderness preservation, many questions remain. The NSRE data provided me the opportunity to be the first to explore not only the role that individual-level

as well as community-level characteristics play in predicting wilderness attitudes and values. However, my analysis was unfortunately limited, as I was only provided access to the 2006 data. Having multiple waves of the NSRE data would have provided me with the opportunity to explore how attitudes towards wilderness preservation have changed over time, in particular whether support has shifted among various demographic groups. Having multiple waves of this survey would have provided for a richer understanding of the age effects on support for preservation and whether the differing levels of support based on age are the result of cohort effects. Future researchers could conduct a more thorough analysis of these issues by studying wilderness attitudes using multiple years of the NSRE data if available to test whether there has been a shift over time in not only the support for expanded wilderness preservation, but also the values that individuals hold regarding wilderness. A longitudinal study would allow for a deeper analysis of the questions examined in this project and allow researchers to better identify whether there has been a clear shift in support for preservation over time and, if so, which factors might have contributed to such a shift. In the future, as the NSRE dataset continues to be collected over decades, it will be possible to test the age effects on wilderness beliefs and whether Americans are, in fact, becoming more concerned about land preservation.

The demographic characteristics analyzed in this paper, while important indicators, are also limited. It would be advisable for the USDA Forest Service Southern Research Station, who administers the NSRE, to add survey measures for a number of variables that would better allow researchers to determine attitudes towards wilderness preservation, including: political affiliation, field of employment, religion, and parental status. Adding these, and other, measures to the NSRE would create a more comprehensive survey that would allow for a more detailed and inclusive analysis of the social determinates of support for wilderness preservation in the U.S.

Despite limitations, this project joins multiple strands of research aimed at identifying the social determinants of federal environmental policies. It therefore provides the first systematic analysis of the theories and ideas presented in both the qualitative and quantitative literatures relating to wilderness preservation. By utilizing the NSRE dataset and conducting my analysis at the individual as well as community level, I was able to develop a more complete model of how individual demographic characteristics, wilderness values, and community characteristics operate to shape individual attitudes regarding federal expansion of wilderness areas in the U.S. Using the nationally representative NSRE dataset with its unique measures and capability of ZIP Code identifiers enabled me to test the ideas presented in both the quantitative and qualitative literatures. For example, this project successfully explores the impact of contextual variables in relation to individual attitudes towards preservation, a consideration that several recent studies have argued is a necessary, but often overlooked, concern (Lichter and Brown 2011; Hamilton et al 2010). Furthermore, my findings provide the first generalizable research study to explore the interrelationships between individual and community characteristics as they relate to attitudes towards wilderness. While qualitative case studies have showed the complexities inherent in the application of environmental regulations within specific communities (Dizard 1999; Proctor 1998; Doremus and Tarlock 2008), this research allows for a more broad and generalizable understanding of public attitudes towards preservation overall.

7.5 Conclusion

This study has provided the first generalizable and complete analysis of those factors that best predict levels of support for expanded wilderness preservation among the U.S. population. In fact, the scope of my analysis is unlike any previous research project in that I systematically explored how individuals' demographic characteristics, wilderness values, and contextual characteristics operate to shape individuals' level of support for expanded wilderness preservation. Perhaps one of the greatest contributions of this research is that it expands on the

knowledge provided in the qualitative literature, systematically testing ideas raised in case studies by using a nationally representative dataset. As a result, I have been able to provide added support to the findings of these qualitative projects, showing that individual attitudes and perceptions regarding expanded wilderness preservation are largely informed by wilderness values (Dizard 1999; Proctor 1998; Doremus and Tarlock 2008). This research also shows that, in general, economic circumstances do not seem to predict individual attitudes towards the expanded preservation of wilderness. Neither community characteristics related to employment in an extractive industry, rurality, level of unemployment, or individuals' economic circumstances determine support for wilderness preservation or wilderness values, suggesting that our attitudes towards wilderness preservation go beyond a simple cost-benefit function.

Rather, my research shows that how people feel about preserving wilderness can serve as an important indicator of how Americans approach the relationship between humans and their environment. Beyond the protection and preservation of habitat, or ensuring we have clean air and water, our environmental laws and regulations play a significant role in determining what the physical landscape of the United States will look like for future generations. My findings challenge the assumption that public attitudes towards wilderness preservation are solely motivated by individuals' economic situations. Rather, this research shows that something deeper informs our beliefs regarding preservation and that perhaps the lack of variation in wilderness values and attitudes based on income and community characteristics indicates a uniquely intimate valuation of wilderness by Americans as a whole. The political explanations relating to wilderness preservation have shifted over time in this country, yet in general Americans continue to support federal preservation policies (Smith et al 2000; Dunlap & Scarce 1991; Ellis and Thompson 1997; Scott 2004; Goodman and McCool 1999). Rather than selfish and self-interested motivations driving attitudes towards preservation, attitudes are largely determined by the values that individuals attribute to such land.

This project provides the starting point for future research aiming to better understand the social determinates of public support for environmental issues more generally and preservation in particular. Rather than asking what makes issues such as wilderness, global warming, or the endangered species act sociological, we should be acknowledging the myriad of ways that social values determine how the public interprets as well as supports various environmental policies. While the hard sciences can best expand our knowledge of what variables threaten the health of our ecosystems, social science allows us to better understand the seemingly conflicting attitudes and beliefs that exist surrounding how we define nature, the environment, and what it actually represents to us as a nation.

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