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**DISSERTATION**  
**WILDLIFE VALUE ORIENTATIONS:**  
**CONSTRUCT VALIDITY AND**  
**A QUALITATIVE APPROACH TO MEASURING DETERMINANTS**

**Submitted by**  
**Darla S. DeRuiter**  
**Natural Resource Recreation and Tourism**

**In partial fulfillment of the requirements**  
**For the Degree of Doctor of Philosophy**  
**Colorado State University**  
**Fort Collins, Colorado**  
**Spring 2002**

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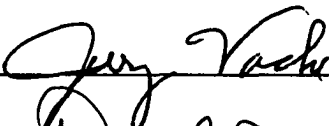
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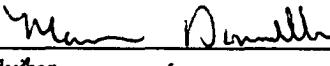
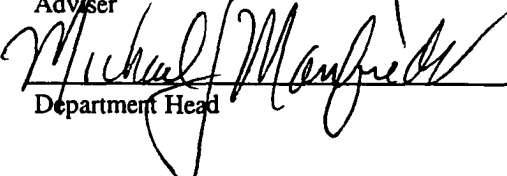
February 1, 2002

WE HEREBY RECOMMEND THAT THE DISSERTATION PREPARED  
UNDER OUR SUPERVISION BY DARLA S. DERUTER ENTITLED WILDLIFE  
VALUE ORIENTATIONS: CONSTRUCT VALIDITY AND A QUALITATIVE  
APPROACH TO MEASURING DETERMINANTS BE ACCEPTED AS FULFILLING  
IN PART REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

Committee on Graduate Work

  
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\_\_\_\_\_  
Adviser  
  
\_\_\_\_\_  
Department Head

**ABSTRACT OF DISSERTATION**  
**WILDLIFE VALUE ORIENTATIONS: CONSTRUCT VALIDITY AND A**  
**QUALITATIVE APPROACH TO MEASURING DETERMINANTS**

This dissertation reports the results from two related studies, one quantitative in nature and one qualitative. Both studies revolve around the values people hold toward wildlife. Chapter I introduces the concepts surrounding wildlife values, provides a literature review, theoretical and methodological background, and organizational information.

The first study, found in Chapter II, examines the construct validity of the wildlife value orientation scale. The predictive ability of a new, single-item measure was compared to the existing approach to measuring wildlife value orientations. A survey was administered which included both measures. After reliability of the scale was established, correlations, cluster analysis, and structural equation path models were conducted. Results show that the reliability of the existing scale is consistent with previous studies. The two measures were significantly correlated and had similar structure; however, the multi-item scale was more predictive of attitudes toward local wildlife issues than the single-item measure. While the new measure may prove to be

sufficient to replace the existing scales, further research is required, as well as refining that measure. Validity of the wildlife value orientation construct can be tentatively confirmed.

The second study (Chapter III), takes an exploratory approach to understanding the determinants of value orientations toward wildlife. Four major dimensions (socialization, experience, personal characteristics, and place) were explored through in-depth interviews with 18 participants. Results suggest that these dimensions are an appropriate way to organize the determinants of wildlife value orientations, but that the combination and importance of the various dimension components fluctuated markedly for different people in the study. Family members, particularly fathers, were important influences common to nearly all respondents. Place of upbringing (rural or urban) played a key role in shaping wildlife value orientations, as did cohort. For some, direct experiences with wildlife were critical. Religiosity and gender were very important to a few participants, but articulation of these influences may be difficult because they are so imbedded in a person's psyche.

The manuscript concludes with Chapter IV, which discusses the theoretical, psychometric, and applied implications of the studies. By synthesizing the results from both chapters, a program of future research is presented.

Darla Sue DeRuiter  
Natural Resource Recreation and Tourism Department  
Colorado State University  
Fort Collins, CO 80523  
Spring 2002

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Finally, my most sincere appreciation goes to my husband, who was there for me through every peak and valley of this process.

## DEDICATION

This body of work is dedicated to my wonderful parents, Jim and Billie DeRuiter, who provided the inspiration and opportunities to become enamored with wildlife, and to my beloved husband, Darrel Boyd Jury, with whom every wildlife encounter is extraordinary.



## TABLE OF CONTENTS

|                                                                                                                                                                            |             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>List of Tables and Figures</b>                                                                                                                                          | <b>viii</b> |
| <b><u>Chapter I: Dissertation Introduction</u></b>                                                                                                                         | <b>1</b>    |
| Introduction                                                                                                                                                               | 1           |
| Literature Review                                                                                                                                                          | 5           |
| Sampling Procedures and Methods                                                                                                                                            | 21          |
| Conclusion                                                                                                                                                                 | 23          |
| Literature Cited                                                                                                                                                           | 25          |
| <b><u>Chapter II, Journal Manuscript 1: Protection / Use Wildlife Value<br/>Orientations: Construct Validity and Application to Gunnison<br/>Basin Wildlife Issues</u></b> | <b>31</b>   |
| Abstract                                                                                                                                                                   | 31          |
| Introduction                                                                                                                                                               | 33          |
| Conceptual Foundations                                                                                                                                                     | 34          |
| Methods                                                                                                                                                                    | 42          |
| Analysis and Results                                                                                                                                                       | 44          |
| Discussion                                                                                                                                                                 | 48          |
| Literature Cited                                                                                                                                                           | 53          |
| <b><u>Chapter III, Journal Manuscript 2: A Qualitative Approach to Measuring<br/>Determinants of Wildlife Value Orientations</u></b>                                       | <b>57</b>   |
| Abstract                                                                                                                                                                   | 57          |
| Introduction                                                                                                                                                               | 59          |
| Conceptual Framework                                                                                                                                                       | 61          |
| Methods                                                                                                                                                                    | 70          |
| Results                                                                                                                                                                    | 73          |
| Discussion                                                                                                                                                                 | 87          |
| Literature Cited                                                                                                                                                           | 93          |
| <b><u>Chapter IV: Dissertation Conclusion</u></b>                                                                                                                          | <b>99</b>   |
| Integrating the Findings                                                                                                                                                   | 99          |
| Next Steps: Developing a Research Program                                                                                                                                  | 103         |
| Literature Cited                                                                                                                                                           | 108         |
| <b>Appendix A: Survey with Results</b>                                                                                                                                     | <b>110</b>  |
| <b>Appendix B: Interview Schedule</b>                                                                                                                                      | <b>121</b>  |
| <b>Appendix C: Pre-test Survey with Results</b>                                                                                                                            | <b>126</b>  |
| <b>Appendix D: Written Responses to Open-Ended Survey Question</b>                                                                                                         | <b>133</b>  |

## LIST OF TABLES AND FIGURES

### Chapter I

|                                                                                                                |       |
|----------------------------------------------------------------------------------------------------------------|-------|
| <u>Figure 1.1.</u> The Cognitive Hierarchy Model of Human Behavior                                             | 5     |
| <u>Table 1.1.</u> Summary of Wildlife Value Orientation Scales—The Evolution of the Use / Protection Continuum | 15-16 |
| <u>Table 1.2.</u> Classes Sampled for Data Collection                                                          | 22    |

### Chapter II

|                                                                                     |    |
|-------------------------------------------------------------------------------------|----|
| <u>Figure 2.1.</u> Predicting Attitudes Toward Sage Grouse Issue                    | 47 |
| <u>Figure 2.2.</u> Predicting Attitudes Toward Mule Deer Issue                      | 47 |
| <u>Figure 2.3.</u> Predicting Attitudes Toward Prairie Dog Issue                    | 47 |
| <u>Table 2.1.</u> Wildlife Value Orientation Scales: The Protection / Use Continuum | 38 |
| <u>Table 2.2.</u> Narrative Descriptions—Extreme Ends of Protection / Use Continuum | 40 |
| <u>Table 2.3.</u> Correlations between Single-Item Measure and Multi-Item Scales    | 45 |

### Chapter III

|                                                                                  |    |
|----------------------------------------------------------------------------------|----|
| <u>Figure 3.1.</u> Proposed Model of Determinants of Wildlife Value Orientations | 69 |
|----------------------------------------------------------------------------------|----|

## **CHAPTER I: Dissertation Introduction**

*“We do not understand ourselves yet and descend farther from heaven’s air if we forget how much the natural world means to us. Signals abound that the loss of life’s diversity endangers not just the body but the spirit.” E.O. Wilson, 1992*

### **Introduction**

Humans have the power to decide whether other species live or die. During the past two centuries, we have sent several species on the North American continent to the brink of extinction: the bison, gray wolf, bald eagle, desert tortoise, Florida panther, California condor, and grizzly bear, to name just a few of the most spectacular. The populations of some of these species are still small enough to make their perpetuation doubtful. Other species, such as the passenger pigeon, heath hen, Labrador duck, Carolina parakeet, and great auk did not manage to survive Euro-Americans’ idea of progress. Half the species known to have become extinct in all of recorded history were done away with in 20<sup>th</sup> Century alone (Zaslowsky & Watkins, 1994). These unsettling facts signify the necessity of understanding how humans value wildlife, which affects how wildlife and their habitat are managed, which in turn impacts species survival. This is an important issue, and as E.O. Wilson suggests, losing natural diversity may impact humans in more profound ways than we currently comprehend.

Wildlife in the United States is owned by the public and administered by state agencies responsible for all aspects of wildlife management, including providing

recreational opportunities such as hunting, fishing, and viewing; controlling conflicts between wildlife and humans, especially in urban interface zones; and developing and implementing species-specific and habitat management plans. While wildlife managers have traditionally relied upon biological research and professional judgment in their decision-making, increasingly they are considering public sentiment and input. Otherwise, managers risk non-compliance and public distrust of management regulations, policies, and actions.

For example, Montana wildlife officials failed to assess public opinion before the management decision was made to eradicate a portion of Yellowstone's bison herd due to fears of the spread of *brucellosis abortus* to domestic cattle (Wilkinson, 1997). This resulted in public disgust and outcry at the action, which for many people was reminiscent of the slaughter of the 19<sup>th</sup> Century. A proactive census of public opinion, combined with an educational campaign, may have prevented conflict from arising between Americans' values and wildlife managers' actions in the greater Yellowstone area.

A human dimensions approach to wildlife management strives to assist managers in making decisions that are responsive to the public, and therefore avoids conflicts like the bison issue just described. Human dimensions research works to infuse social information into wildlife management decisions by borrowing from several fields, including sociology, psychology, economics, and anthropology, but it is particularly linked to social psychological concepts such as attitudes, values, and norms (Manfredo, Vaske, & Decker 1995; Vaske, Donnelly, Williams, & Yonkers, 2001; Vaske & Donnelly, 1999; Whittaker, 1999). By gathering public opinion data through surveys or

other methods and involving public “stakeholder” groups in collaborative planning processes (Vaske, Fulton, & Manfredi, 2001), wildlife managers have better access to public perceptions. This understanding allows managers to augment their biological information and professional judgment with social data.

The need for a more comprehensive understanding of public sentiment regarding wildlife and wildlife management decisions will only increase with the growing pressures of human population, urban and rural development, and fragmentation of wildlife habitat. In the Gunnison Basin, for example, Colorado Division of Wildlife (CDOW) managers have been challenged by the public for their elk population counts and hunting license structure. Citizens formed a grassroots organization to oppose the wildlife managers’ decisions, and bumper stickers reading “Colorado Division of Wildlife: The Evil Empire” are seen around the area. Without adequate public participation and acceptance of management decisions, these conflicts will only become more common in the future. By providing managers with information that is not only descriptive in nature, but also theoretically and empirically sound, human dimensions researchers can help managers meet the challenges ahead.

### ***Dissertation Purpose***

This dissertation presents two journal manuscripts, an introductory chapter, and a concluding chapter, that expand upon an emerging focus on “wildlife value orientations” in the human dimensions literature. Basically, wildlife value orientations are “the pattern of direction and intensity among a set of basic beliefs regarding wildlife” (Fulton, Manfredi, & Lipscomb, 1996, p. 28). Data for the dissertation come from two sources:

1) a survey of Western State College students and employees exploring respondents' attitudes towards local wildlife issues, basic beliefs about wildlife, and what has influenced those attitudes and beliefs; and 2) qualitative data from extensive interviews with 18 randomly selected respondents from the earlier survey to assess determinants of wildlife value orientations.

The broad theoretical purpose of the dissertation is to first examine the psychometric properties of wildlife value orientation scales that have been applied in a number of studies, and then to explore what has influenced those values. The first paper will focus on the construct validity of the scales measuring wildlife value orientations, one element of a general social psychological model called the "cognitive hierarchy", in an attempt to continue the evolution and refinement of the construct and its measurement. The second paper attempts to identify determinants of wildlife value orientations, by reporting results from interviews that explored influences on participants' ideas about wildlife. This research also contributes to a larger, long-term goal of developing measurable variables that can be used in a generalizable theory of how people value wildlife populations and wildlife management actions (Manfredo, et al., 1995).

### ***Dissertation Organization***

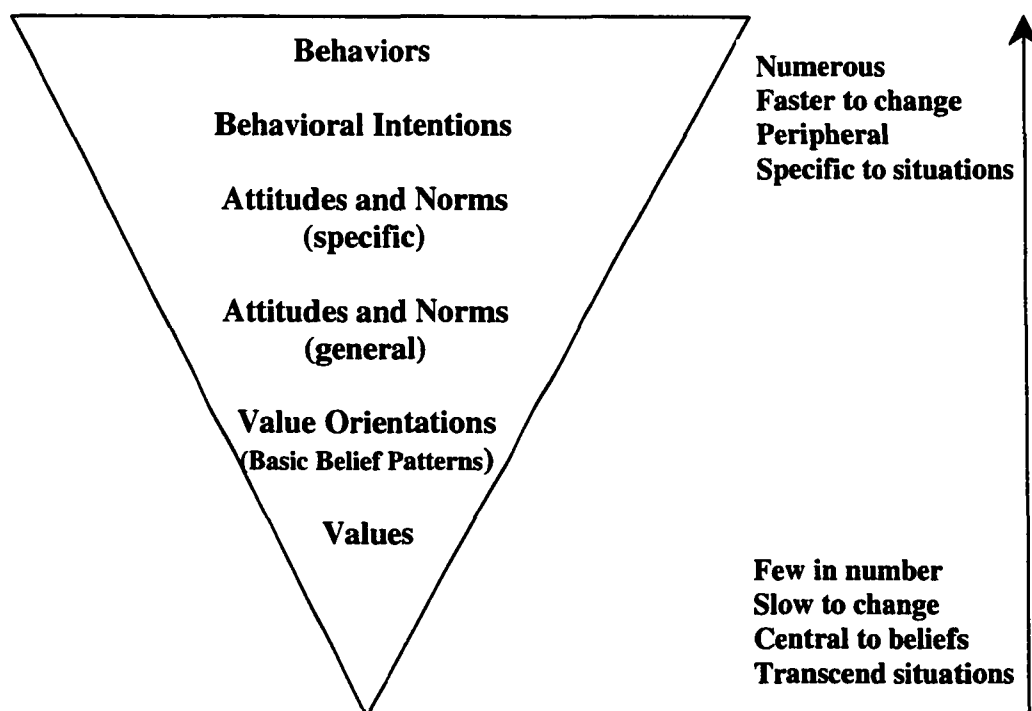
The dissertation includes two publication manuscripts that describe separate but related topics. These papers use complementary theoretical concepts, but are designed to stand alone. In order to help link the papers, two additional chapters are provided to tie the papers to a common conceptual theory. This introductory chapter establishes the conceptual foundation for the papers, providing expanded coverage of theoretical topics

that are inappropriate for concise journal publications. At the end of the dissertation, a concluding chapter summarizes the implications from the two papers, and suggests recommendations for future research. Literature cited is collected at the end of each chapter.

## **Literature Review**

### ***Cognitive Hierarchy***

In cognitive hierarchy theory, human behavior is generally considered to consist of a hierarchical progression based upon fundamental values, value orientations (i.e., the order and direction of basic beliefs), attitudes / norms, behavioral intentions and behaviors (Vaske & Donnelly, 1999; Fulton, et al., 1996; Homer & Kahle, 1988; Ajzen & Fishbein, 1980). These elements build upon each other, and have been represented conceptually as an inverted pyramid (Figure 1.1).



**Figure 1.1. The Cognitive Hierarchy Model of Human Behavior**

Source: Vaske & Donnelly (1999); adapted from Fulton, Manfredo, & Lipscomb (1996)

This general social psychological theory, the cognitive hierarchy, offers one approach to understanding values, attitudes and behaviors regarding wildlife (Fulton, et al., 1996; Tarrant, Bright & Cordell, 1997; Zinn, Manfredo, Vaske & Wittmann, 1998). It has also been used in a number of other natural resource contexts, including public support for prescribed fire policies (Manfredo, Fishbein, Haas & Watson, 1990), attitudes toward nutrition and natural foods (Homer & Kahle, 1988), and wildland preservation voting intentions (Vaske & Donnelly, 1999).

Results of this work suggest support for the cognitive hierarchy and research has consistently demonstrated the predictive ability of the model when variables are measured at corresponding levels of specificity (Whittaker, 1999; Zinn, et al. 1998). Starting with fundamental values, this chapter examines each component of the hierarchy.

### *Values*

Rokeach (1973) defines values as “an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence” (p. 5). As an element in the cognitive hierarchy, values are more abstract (Schwartz & Bilsky, 1987), absolute and universal than either beliefs or attitudes (Braithwaite & Law, 1985). If a person holds equality as a value, equality would be consistently reflected in their cognitions, affectations, and behaviors (Rokeach, 1973). Thus, values serve as a foundation for attitudes and beliefs (Kellert, 1980; Steinhoff, 1980).



Values are considered to be stable and enduring, although they may be re-prioritized in their importance as a person matures (Rokeach, 1973). Values transcend objects, situations, and issues (Feather, 1990; Rokeach, 1973; Schwartz, 1992). Thus, persons who hold politeness as a value would be polite in a crowded subway, when meeting a new acquaintance, and when speaking to a telephone solicitor.

Values are changeable between generations, but rarely within a generation (Inglehart, 1990), although society appears to undergo periods of rapid transition of values at times. Several scholars have proclaimed a major value shift is occurring in advanced industrial societies, from values based on tradition to tradition-defying values (Golebiowska, 1995), from materialist to post-materialist (Inglehart, 1990), and from authoritarian to libertarian (Flanagan & Lee, 1990, 1991) values. This shift is traced to social changes that affect individual behavior. For example, once the Cold War was no longer looming, fewer concerns about physical and national security were evident. Similarly, as the global economy was stable and growing during the 1990's, Americans had fewer concerns for improving and protecting economic well-being. Emphasis on belonging, self-expression, and quality of life seemed to define the values of those generations (Inglehart, 1990). The terrorist attacks of September 11, 2001 and the recent economic downturn emphasize the impacts that social change can have on individual behavior. Certainly those events will have remarkable impacts on values as concerns for physical and national security and well-being are again brought to the forefront.

Values are the most central component of a person's belief system and the foundation of an individual's views toward their environment. Values tend to be widely shared by all members of a culture, and thus are unlikely to account for much of the

variability in specific attitudes and behaviors (Vaske & Donnelly, 1999; Fulton, et al., 1996). Rather, such variability is influenced by other elements of the cognitive hierarchy, such as basic beliefs, which serve to strengthen and give meaning to fundamental values (Vaske & Donnelly, 1999; Fulton, et al., 1996). Patterns of these basic beliefs create value orientations (Fulton, et al., 1996).

### *Value Orientations*

Two individuals may hold the same first-order value “a world of beauty” (Schwartz, 1992), but the basic beliefs that this value leads to may be different for each person. For one individual, this value may lead to the basic belief that the highest manifestation of beauty is a mature, old growth forest, while for another individual, it may lead to the basic belief that beauty is best found in an architectural marvel like the Taj Mahal. Thus, basic beliefs provide order and meaning for values, and serve to orient them in a way that make basic beliefs consistent with fundamental values, but allows for individual differences within the cognitive structure (Fulton, et al., 1996). This ordering and meaning making is termed “value orientations” in the cognitive hierarchy model.

The notion of value orientations as an element of the cognitive hierarchy has been examined in several natural resource contexts. Value orientations toward wildlife, discussed in more detail below, have provided researchers and practitioners with insights into public perceptions of wildlife-related activities such as hunting, fishing, and viewing (Fulton, et al., 1996), urban wildlife management actions (Whittaker, 1999), urban wildlife species such as beaver and coyotes (Wittman, Vaske & Sikorowski, 1995),

trapping (Manfredo, Fulton, & Pierce, 1997), and mountain lion management (Zinn & Manfredo, 1996).

Value orientations toward more general issues related to the environment and wildland preservation were the focus of two papers by Vaske, Donnelly and colleagues (Vaske & Donnelly, 1999; Vaske, Donnelly, Williams & Jonker, 2001). A mediation model was tested to determine the predictive relationships between value orientations (anthropocentric / biocentric; explained later), attitudes toward wildlands preservation, and intentions to vote for wildland preservation. Results showed support for an anthropocentric / biocentric value orientation continuum, and attitudes fully mediated the relationship between value orientations and behavioral intentions (Vaske & Donnelly, 1999).

Homer and Kahle (1988) used a list of values adapted from Rokeach (1973) to examine the value-attitude-behavior hierarchy for nutrition and natural foods among grocery shoppers in the northwestern US. Attitudes again mediated between basic value orientations (individual, external, interpersonal) and behaviors (buying natural foods), and the cognitive hierarchy was supported. The analytic approach used by Homer and Kahle (1988)—factor analysis to distill the list of values into value orientations, structural equation path analysis to test the model, and multivariate discriminant analyses to examine the influences of specific values on attitudes—has been adapted frequently (e.g., Fulton, et al., 1996).

### *General Attitudes and Specific Attitudes*

The cognitive hierarchy suggests that cognitions are arranged in an ordered network from more abstract to more specific (Whittaker, 1999). General attitudes follow value orientations in the hierarchy and specific attitudes flow from general attitudes. An attitude is a mental state and must refer to some object such as wildlife or an activity like hunting (Vaske & Donnelly, 1999; Eagley & Chaiken, 1993). Attitudes represent an individual's consistent tendency to respond favorably or unfavorably toward that object (Vaske & Donnelly, 1999). Specific attitudes are higher order constructs on the cognitive hierarchy (see Figure 1.1) and thus are more easily changed than more general attitudes (Fulton, et al., 1996; Heberlein, 1981; Rokeach, 1979; Williams, 1979). For survey research, both kinds of attitudes toward an activity such as hunting can be measured—general attitudes (e.g., Overall, do you have a positive, negative or neutral attitude toward hunting?) and specific attitudes (e.g., I think mule deer populations are declining in Colorado because of hunting).

### *Behavioral Intentions and Behaviors*

Behaviors are the highest order construct on the cognitive hierarchy and therefore are the most numerous and easily changed of all the elements of the hierarchy. The Theory of Reasoned Action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) suggests that the most direct predictor of behavior is the intention to engage in that behavior. Thus, measuring a person's intention to support a ballot initiative by voting should provide an accurate estimate of whether that person would actually vote in support of the initiative.

According to the cognitive hierarchy, behavioral intentions are directly determined by specific attitudes toward the object. If attitudes are examined at a corresponding level of specificity with the behavior (e.g., asking about specific attitudes toward deer hunting and intentions to participate in deer hunting), the cognitive hierarchy predicts more accurately.

### ***Wildlife Value Orientations—Applications in the Literature***

Value orientations were first applied to wildlife by Fulton, Manfredo, and Lipscomb (1996) in their development of a measurement approach for the concept. More than 1,200 Coloradoans were polled to determine their basic wildlife beliefs along eight dimensions that were identified to reflect the major issues concerning wildlife in Colorado. The dimensions were wildlife use, wildlife rights, recreational wildlife experience, bequest and existence, hunting / anti-hunting, residential wildlife experience, wildlife education, and fishing / anti-fishing (Fulton, et al., 1996; see Table 1.1 on pp. 14-15). A total of 35 items were used to measure basic wildlife beliefs. A confirmatory factor analysis was conducted to test whether the eight *a priori* defined basic wildlife dimensions provided a good fit to the data collected for the study, and the internal consistency of each of the eight scales was assessed using reliability analysis. Results showed a moderate fit and high internal consistency among the items.

Once the confirmatory factor analysis was completed, exploratory factor analysis was conducted to identify similar groups of basic beliefs among the eight wildlife belief dimensions. Two groups of basic beliefs emerged through principal components analysis; these groups were named wildlife value orientation domains (Fulton, et al.,

1996). The two domains were wildlife benefits / existence (a combination of the wildlife education, recreation wildlife experience, bequest and existence, and residential wildlife experience dimensions) and wildlife rights / use (a combination of the hunting / anti-hunting, wildlife rights, fishing / anti-fishing, and wildlife use dimensions).

Finally, structural equation path analysis was used to test the cognitive hierarchy model. This model was used to test whether wildlife value orientations would be direct predictors of attitudes toward wildlife-related activities and indirect predictors of behavioral intentions to participate in those activities (with attitudes as the mediating variable). The model was confirmed on both counts—value orientations were direct predictors of respondents' attitudes toward hunting, fishing, and wildlife viewing, and those attitudes mediated the effects of value orientations on intentions to participate in those activities.

A similar analytic progression was used by other authors, including Zinn, Manfredo, Vaske and Wittman (1998), who examined the predictive relationships between wildlife value orientations, normative beliefs, and the acceptability of wildlife management actions. Manfredo, et al. (1997) used this same approach, albeit with a significantly reduced number of scale items, when examining voting behavior on Colorado's 1996 trapping ballot initiative. Whittaker (1999) used a slightly modified wildlife value orientation scale to test the cognitive hierarchy as it related to urban wildlife management actions in Anchorage, Alaska. Zinn and Manfredo (1996) used an abbreviated set of the wildlife use / protection scale items to study public views of mountain lion management along Colorado's Front Range.

All of these authors recommended future research focusing on expansion or improvement of the wildlife value orientation scale, as well as verifying the findings across a variety of species, situations, and management actions. Support for the structure and progression of the elements in the cognitive hierarchy was pervasive in all studies.

The value orientation scale for wildlife has been evolving as it receives more attention in the literature. Fulton, Manfredo, and Lipscomb (1996) developed three to seven items for each wildlife value orientation dimension in consultation with wildlife managers and planners from the CDOW. The scale was pre-tested and refined twice. Wittman, Vaske and Sikorowski (1995) used four scale items to measure the wildlife use dimension in their urban wildlife study. Zinn and Manfredo (1996) omitted the fishing / anti-fishing dimension from the wildlife use / protection continuum, and made wording modifications to several other scale items. Whittaker (1999) furthered the use / protection continuum through revisions to several scale items and the inclusion of a wildlife welfare dimension.

The development and major revisions to the wildlife value orientation scale are summarized Table 1.1, along with the scale items that were tested for the study here. By building on previous research, this study attempts to improve the efficacy and reliability of the scale and the constructs that it is founded upon. All the elements of the cognitive hierarchy were measured via a survey of Western State College of Colorado students, faculty, administration, and staff. Wildlife value orientations (basic beliefs) were measured through the scale that evolved from Fulton, et al. (1996). General attitudes toward wildlife activities (hunting, fishing, wildlife viewing) were measured, along with

specific attitudes towards wildlife issues local to the Gunnison Basin, and intentions to vote on those issues.

### ***Anthropocentric, Biocentric and Ecocentric Value Orientations***

Value orientations toward wildland preservation have been described as a continuum with anthropocentric beliefs at one end, and biocentric beliefs at the other (Vaske & Donnelly, 1999). An anthropocentric orientation represents a human-centered approach to the natural world (Kahn, 1999), focusing on human uses and benefits of natural commodities (e.g., timber, livestock forage, minerals) and amenities (e.g., views, recreation opportunities, spiritual renewal). This utilitarian philosophy has guided traditional forest and wildlife management since these disciplines surfaced (Leopold, 1949; Pinchot, 1910).

Some authors have suggested the emergence of a new management paradigm which is more environmentally oriented (Shindler, List & Steele, 1993; Dunlap & VanLiere, 1978). This new approach is more biocentric, or life centered. This term, however, requires consideration. A biocentric orientation focuses on life, particularly on the lives of individuals (Miller, 1999). Thus, this orientation may be used to describe an animal rights activist, who focuses on each individual, even at a cost to the larger population or species. For example, a biocentrist might object to a deer hunt designed to cull a herd that has overrun the habitat's ability to provide forage because individual deer would be exterminated. Thus, a biocentric environmental worldview would attribute equal consideration to an introduced or abundant species as it would to a native or endangered species (Eckersley, 1992).



**Table 1.1: Summary of Wildlife Value Orientation Scales—The Evolution of the Use / Protection Continuum**

| Fulton, Manfredo & Lipscomb (1996)                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                      | Whittaker (1999)       |                                                                                                                                                                                                                                                                                                                                                                                                      | DeRuiter—present study |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension                                                                                                                                                                | Questionnaire Items                                                                                                                                                                                                                                                                                                                                                                  | Dimension              | Questionnaire Items                                                                                                                                                                                                                                                                                                                                                                                  | Dimension              | Questionnaire Items                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Wildlife Use</b>                                                                                                                                                      | <p>Humans should manage wild animal populations so that humans benefit.</p> <p>The loss of some individual wild animals is acceptable if the population of animals is not jeopardized.</p> <p>It is important for humans to manage the populations of wild animals.</p> <p>If animal populations are not threatened, we should use wildlife to add to the quality of human life.</p> | <b>Wildlife Use</b>    | <p>Humans should manage wild animal populations so that humans benefit.</p> <p>It is acceptable for human use to cause the loss of some individual animals as long as populations are not jeopardized.</p> <p>It is important for humans to manage the populations of wild animals.</p> <p>If animal populations are not threatened, we should use wildlife to add to the quality of human life.</p> | <b>Wildlife Use</b>    | <p>Humans should manage wildlife populations so that humans benefit.</p> <p>It is acceptable for human use to cause the loss of some individual animals as long as wildlife populations are not jeopardized.</p> <p>It is important for humans to manage the populations of wild animals.</p> <p>If animal populations are not threatened, we should use wildlife to add to the quality of human life.</p>                                                       |
| <b>Wildlife Rights</b>                                                                                                                                                   | <p>The rights of wildlife are more important than human use of wildlife.</p> <p>Animals should have rights similar to the rights of humans.</p> <p>I object to hunting because it violates the rights of an individual animal to exist.</p>                                                                                                                                          | <b>Wildlife Rights</b> | <p>The rights of wildlife are more important than the rights of humans.</p> <p>Although wildlife may have certain rights, most needs that people have are more important than the rights of wildlife.</p> <p>The rights of people and the rights of wildlife are equally important. *</p> <p>The needs of people are always more important than any rights that wildlife may have.</p>               | <b>Wildlife Rights</b> | <p>The rights of wildlife are more important than human use of wildlife.</p> <p>Animals should have rights similar to the rights of humans.</p> <p>Although wildlife may have certain rights, most needs that people have are more important than the rights of wildlife.</p> <p>The rights of people and the rights of wildlife are equally important. *</p> <p><u>Sometimes it's OK to compromise the rights of people in order to protect wildlife. *</u></p> |
| <p><b>Key</b></p> <p>* Starred (*) items were reverse coded.</p> <p>Items in <b>bold</b> appear on the current survey.</p> <p>New scale items are <u>underlined</u>.</p> |                                                                                                                                                                                                                                                                                                                                                                                      |                        |                                                                                                                                                                                                                                                                                                                                                                                                      |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

Table 1.1, continued

| Fulton, Manfredo & Lipscomb (1996) |                                                                                                                                                                                                                                                                                                                                                                                                      | Whittaker (1999) |                                                                                                                                                                                                                                                                                                                                                                                                            | DeRuiter—present study |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimension                          | Questionnaire Items                                                                                                                                                                                                                                                                                                                                                                                  | Dimension        | Questionnaire Items                                                                                                                                                                                                                                                                                                                                                                                        | Dimension              | Questionnaire Items                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Hunting                            | <p>Hunting helps people appreciate natural processes.</p> <p>Hunting is cruel and inhumane to the animals. *</p> <p>Hunting makes people insensitive to suffering. *</p> <p>Hunting enables people to enjoy the outdoors in a positive manner.</p>                                                                                                                                                   | Hunting          | <p>Hunting helps people appreciate wildlife and natural processes.</p> <p>Hunting is cruel and inhumane to animals. *</p> <p>Hunting makes people insensitive to suffering. *</p> <p>Hunting helps people enjoy the outdoors in a positive way.</p> <p>In general, I think hunting is a safe outdoor activity.</p> <p>I would be offended or upset if I saw an animal killed or injured by a hunter. *</p> | Hunting                | <p>Hunting helps people appreciate wildlife and natural processes.</p> <p>Hunting is cruel and inhumane to animals. *</p> <p>Hunting makes people insensitive to suffering. *</p> <p>Hunting helps people enjoy the outdoors in a positive way.</p> <p><u>Hunting is a bad substitute for native predators and natural processes. *</u></p> <p><u>Hunting can have beneficial effects on wildlife populations and ecosystems.</u></p> |
| Fishing                            | <p>Catching fish for sport is cruel. *</p> <p>Anglers cause fish to suffer needlessly. *</p> <p>Catching and releasing fish is cruel and inhumane. *</p> <p>Fishing causes pain and suffering to the fish. *</p> <p>Anglers are insensitive to the pain and suffering they may cause to fish. *</p> <p>Catching fish for food is inhumane. *</p> <p>Fishing is cruel and inhumane to the fish. *</p> | Wildlife Welfare | <p>People should not treat wildlife in ways that may cause pain and suffering, regardless of how much we may benefit.</p> <p>If we can't minimize the pain and suffering caused to wildlife by an activity, then we should not allow that activity.</p>                                                                                                                                                    | Wildlife Protection    | <p><u>Protecting threatened or endangered species is important to me.</u></p> <p><u>The protection of wildlife populations or species is more important than keeping individual animals alive.</u></p> <p><u>Preserving wildlife habitat is one of the most important strategies available for wildlife protection.</u></p>                                                                                                           |

**Key:**

\* Starred (\*) items were reverse coded.  
Items in **bold** appear on the current survey.  
New scale items are underlined.

Alternately, an ecocentric orientation, or “home” centered approach, focuses on the ecosystem, habitat health and quality, and the entire web of living and non-living elements of the land. An ecocentric environmental worldview is holistic, devoted to preserving earth’s biodiversity and ecological integrity (Miller, 1999). Both biocentric and anthropocentric worldviews are atomistic, or individual centered, valuing only individual organisms (Eckersley, 1992). Ecocentric worldviews value populations, species, ecosystems, and the ecosphere *as well as* individual organisms (Eckersley, 1992).

Pre-test comments from this study lead to use of the term *ecocentric* rather than biocentric. On the pre-test survey, two descriptions representing hypothetical people were presented—one with an anthropocentric orientation, and another with a biocentric orientation (see pre-test in Appendix C). Of the total pre-test group (n=38), 32 respondents wrote comments when asked, “You might feel that neither of the descriptions fit you very well, or that something is missing from the descriptions. How else can you describe how you feel about wildlife to help us understand you better?” The following comments were qualifications mentioned by respondents who identified with the biocentric description. Most seemed to focus on the following part of the description: “[This person] may object to hunting and fishing because these activities violate the rights of individual animals or fish to exist. They feel that hunting and fishing activities are cruel, and cause needless pain and suffering.”

*There are situations that call for hunting due to the elimination of predators from many systems. Without hunting some populations would grow out of control and suffer greatly.*

*Hunting and fishing are not always considered bad or disloyal to the habitat. I do not object to hunting and fishing where wildlife is overpopulated in an area. It is*

*important to protect habitats but in some places there is too much wildlife for the habitat to handle.*

*I object to hunting and fishing, especially for game purposes, but in some cases feel that hunting may be needed in overpopulated situations where there are no natural predators because in that way, it benefits the wildlife.*

These comments suggest an ecocentric value orientation, which focuses on the health of the entire species and habitat, rather than the survival and rights of individuals (biocentric orientation). Thus, my Wildlife Value Orientation scale included a new dimension, Wildlife Protection, which attempted to capture this ecocentric orientation (see Table 1.1). Pre-test results also suggested one new scale item in the wildlife rights dimension (Sometimes it's OK to compromise the rights of people in order to protect wildlife), and two new scale items in the hunting dimension (Hunting is a bad substitute for native predators and natural processes; Hunting can have beneficial effects on wildlife populations and ecosystems).

Through this study, a contribution to the literature may emerge: by refining and testing the wildlife value orientation scale, the effectiveness of that measure can improve. This is done in the first paper by examining the reliability and validity of the construct and making recommendations for refinement and additions to the scale. In the second paper, in-depth interviews were used to explore an area where little research has been done: the range of determinants for individuals' wildlife value orientations. Because of the lack of previous work in this area, a qualitative approach was taken to exploring the influences on people's value orientations toward wildlife.

## ***Qualitative Research***

Qualitative research aims to interpret and understand human experience through capturing an individual's point of view (Denzin & Lincoln, 1994). It tends toward rich, detailed descriptions of the social world—sometimes referred to as “thick descriptions” (Schwandt, 1994). Where quantitative research tends toward large, randomly selected sample sizes and impersonal, third-person prose, qualitative researchers seek out particular informants (often purposely selected), often have small *n*'s, and frequently have a writing style that is openly subjective and deeply personal (Morse, 1994).

One research situation where qualitative methods are deemed appropriate is when they are “used to uncover and understand what lies behind any phenomenon about which little is yet known” (Strauss & Corbin, 1994, p. 19). This is the case for the topic examined in the second paper: the antecedents of wildlife value orientations. *Grounded theory* is generated from or elaborated upon by qualitative data (Strauss & Corbin, 1994), making it ideal for relatively unexplored constructs. In other words, qualitative methods are inductive in nature, allowing meaning to emerge from data (Strauss & Corbin, 1994).

Interviews are a method of choice for grounded theory (Strauss & Corbin, 1994), and have been called “the art of science” (Fontana & Frey, 1994). A semi-structured interview format, where the interviewer asks each respondent a series of pre-established questions but allows for deviation and deeper probing, was selected for this study. For an effective interview to occur, rapport must be established through articulating clarity of purpose, through interviewer self-disclosure, and sincere listening (Lindlof, 1995). Being friendly, courteous, conversational, and unbiased is critical in putting the respondent at ease (Denzin & Lincoln, 1994).

For this study, two types of sampling approaches were used. *Maximum variety sampling* (Morse, 1994) was chosen in order to obtain a heterogeneous sample. Two types of data can then emerge: 1) case descriptions which document uniqueness and 2) patterns of commonalities that exist across participants (Patton, 1990). Additionally, *critical case sampling* was used to select critical cases that would have implications for other, less extreme, cases (Lindlof, 1995). For this study, a list of survey respondents that fell on either extreme end of the protection / use spectrum was created and the sample was narrowed based on selecting a variety of ages, academic disciplines, both sexes, etc.

Data analysis begins with transcribing the interview from cassette tape to an electronic file. This time consuming process should be recognized as an opportunity for analysis to begin. Since this study was not concerned with speech and vocalization mannerisms, transcriptions omitted details like pitch, amplitude, breaths, and pauses, unless they implied important meaning (Silverman, 1993). Laughter was documented in the transcripts.

Analyzing qualitative data is a continuous, cyclical (as opposed to linear) process (Lindlof, 1995). The data, invariably voluminous, must be reduced, both physically and conceptually, by sorting, categorizing, prioritizing and interrelating (Lindlof, 1995). Reading and re-reading transcripts; making notes, diagrams, and tables; and identifying key quotations that illuminate the constructs of interest were analytic techniques utilized here.

Qualitative research has been limited in the human dimensions of natural resources literature. Schroeder (1996) used qualitative methods to examine attachment to place for visitors to the Black River Area in the Ottawa National Forest in Michigan.

Patterson, Watson, Williams, and Roggenbuck (1998) used interview narratives to explore the quality of recreation experience at the Juniper Prairie Wilderness Area in the Ocala National Forest in Florida. Both of these studies were initiated by agency personnel's desires to better understand their visitors in order to improve management.

Conversely, environmental education research has used qualitative methods extensively to examine the influence of significant life experiences on environmental concern, awareness, and behavior. Commonly, methods consist of asking a purposive sample to write autobiographical statements discussing and / or lists summarizing the formative influences which led them to choose conservation work (Tanner, 1980), or affected their attitudes or concern toward the environment (Palmer, 1993).

The opportunity to integrate more qualitative research into human dimensions work is inviting. This study takes a necessarily exploratory approach to understanding value orientations toward wildlife by applying qualitative techniques. It is hoped that results will provide cursory understanding, at least, and encourage subsequent research efforts and theory development, at best.

### **Sampling Procedures and Methods**

***Journal Manuscript 1:*** Protection / Use Wildlife Value Orientations: Construct Validity and Application to Gunnison Basin Wildlife Issues

Data for this study, collected in the Fall semester, 2000, were obtained from surveys of individuals associated with Western State College of Colorado in Gunnison. Western is a small, liberal arts college located in south-central Colorado, with approximately 2400 students and 300 faculty and staff. The sample consisted of two segments:

1) Classroom visits were used to administer surveys to students. Through arrangements with the faculty, 24 courses in various departments across campus were selected for survey administration, and 582 surveys were obtained. The courses that were targeted are summarized in Table 1.2. No students contacted in classes refused to participate in the survey, although some were absent on the day of the classroom visit.

**Table 1.2. Classes Sampled for Data Collection**

| Course        | Course title                             | Date of visit<br>(2000) | Enrollment | Number of respondents |
|---------------|------------------------------------------|-------------------------|------------|-----------------------|
| BUAC 201      | Intro to Financial Accounting            | 8/28                    | 33         | 32                    |
| ART 324       | Art: Context & Criticism                 | 8/29                    | 21         | 21                    |
| BUAD 220      | Computer Applications in BUSIN           | 8/30                    | 47         | 45                    |
| BUAD 360      | Managerial Finance                       | 9/1                     | 28         | 28                    |
| BUAD 487      | Government Regulation of Business        | 8/28                    | 24         | 24                    |
| COTH 200      | Public Speaking and Advocacy             | 8/30                    | 27         | 25                    |
| COTH 315      | Theatre and Culture: Development         | 9/1                     | 18         | 18                    |
| ECON 202      | Microeconomics                           | 9/6                     | 37         | 36                    |
| EDUC 349      | Teaching Social Studies to Elementary    | 9/6                     | 15         | 15                    |
| ENVS 301      | Science, Technology and Environment      | 8/31                    | 17         | 17                    |
| KINS 321      | Methods of Coaching Football             | 9/8                     | 23         | 23                    |
| MATH 205      | Applied Math w/ Computer Implementations | 9/8                     | 30         | 27                    |
| PHYS 200      | General Physics I                        | 9/11                    | 14         | 14                    |
| POLS 217      | Intro to Public Policy                   | 8/31                    | 24         | 23                    |
| POLS 300      | Constitutional Law I                     | 9/5                     | 18         | 18                    |
| PSY 200       | Stat anal and Exper Methods Lab I        | 9/11                    | 20         | 19                    |
| PSY 258       | Introduction to Personality              | 9/11                    | 37         | 34                    |
| REC 333       | Ski Marketing and Public Relations       | 9/13                    | 18         | 17                    |
| REC 466       | Mgt of Recreation Facilities             | 9/7                     | 15         | 15                    |
| SCI 202       | Scientific Writing                       | 9/7                     | 27         | 26                    |
| SOC 320       | The Family                               | 9/5                     | 36         | 34                    |
| SOC 359       | Criminal Justice System                  | 9/13                    | 35         | 31                    |
| SOC 403       | Contemporary Theory                      | 9/15                    | 24         | 24                    |
| SPAN 255      | Immediate Spanish II                     | 9/12                    | 16         | 16                    |
| <b>TOTALS</b> |                                          |                         | <b>604</b> | <b>582</b>            |



- 2) All faculty, administration, and staff were sent a survey through campus mail, followed by a postcard reminder eight days later. Those who did not respond were sent replacement surveys fourteen days after the first mailing. Of the 297 surveys in the faculty and staff mailing, 190 were returned for a response rate of 64%.

Total sample size, including all responding students, faculty and staff, was 772.

### ***Journal Manuscript 2: A Qualitative Approach to Measuring Determinants of Wildlife Value Orientations***

Data for this study, collected Spring semester, 2001, were obtained from in-depth, semi-structured interviews with 18 people associated with Western State College of Colorado who had responded to the survey described above. To select a pool of potential participants from the survey respondents (N=772), a list was generated that included identifiable students and employees who had placed themselves at either extreme end of the spectrum or in the middle—"neither scenario describes me". This list was stratified to include variety in age, sex, discipline, etc., then nine student and nine employees were randomly chosen (see Chapter III for more detail on participants).

### **Conclusion**

In sum, this dissertation presents two related papers that generally address people's values toward wildlife. Journal Manuscript 1 (Chapter II) explores construct validity of the wildlife value orientation scale by comparing scale data with an alternative protection / use spectrum. Journal Manuscript 2 (Chapter III) reports results of in-depth interviews from an exploratory study of determinants of wildlife values, and presents a

preliminary model of wildlife value antecedents. Hopefully the reader will find that this work contributes to the growing body of literature surrounding wildlife value orientations.

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**CHAPTER II: Journal Manuscript 1**  
**Protection / Use Wildlife Value Orientations:**  
**Construct Validity and Application to Gunnison Basin Wildlife Issues**

**Abstract**

All across the American West, conflicts between wildlife, wildlife management, and humans are on the rise. This paper examines three contentious local wildlife management issues (Gunnison sage grouse decline, mule deer decline, and listing the Gunnison prairie dog as threatened or endangered) to address the construct validity of the multi-item wildlife value orientation scale (Fulton, Manfredo, & Lipscomb, 1996). The predictive ability of a single item measure, consisting of two opposing descriptions of hypothetical people, was compared to the multi-item approach to measuring wildlife value orientations. A survey was administered to a sample of students and employees at Western State College in Gunnison, Colorado. Correlations and cluster analysis were first used to compare the single-item and multiple item measures. Structural equation path models were then developed to further test validity of the wildlife value orientation construct. Results show the single-item measure was significantly correlated with each of the four multiple item scales and the correlation between the single-item measure and the combined scales was .70 (significant at  $p < 0.01$ ). Cluster analysis of the multi-item scales revealed two overall clusters (use/hunting and rights/welfare). The existing scales were better predictors of attitudes and behavioral intentions toward the local wildlife

issues than were the descriptions, but the pattern of direction and intensity was similar for both measures. While the single-item measure did not prove to be sufficient to replace the existing scales, suggestions for further research point toward refining that measure.

**Key words:** wildlife value orientation, single item indicators, multi-item indicators

## **Introduction**

Wildlife in the United States is owned by the public and administered by state agencies responsible for all aspects of wildlife management. While wildlife managers have traditionally relied upon biological research and professional judgment in their decision-making (Wittman, Vaske, Manfredo, & Zinn, 1998; Manfredo, Pierce, Fulton, Pate, & Gill, 1999), increasingly they are being forced to consider public sentiment and input (Zinn, Manfredo, Vaske, & Wittman, 1998). Otherwise, managers risk non-compliance and public distrust of management regulations, policies, and actions.

The social science approach to wildlife management known as “human dimensions of wildlife” (Manfredo, Vaske, & Decker, 1995) strives to assist managers in making decisions that are responsive to the public. By gathering public opinion data through surveys or other methods and involving public “stakeholder” groups in collaborative planning processes (Vaske, Fulton, & Manfredo, 2001), wildlife managers have better access to public perceptions. This understanding allows managers to augment biological information and professional judgment with social data.

The need for a more comprehensive understanding of public sentiment regarding wildlife and wildlife management decisions will only increase with the growing pressures of human population, development and fragmentation of wildlife habitat. Without adequate public participation and acceptance of management decisions, these conflicts will only become more common in the future. By providing managers with information

that is not only descriptive in nature, but also theoretically and empirically sound, human dimensions researchers can help managers meet the challenges ahead. Accurate measurement of the constructs of interest to managers is essential; thus, construct validity is the focus of this paper.

To improve understanding of human value orientations toward wildlife, it is important to analyze whether current survey research methods actually measure wildlife value orientations accurately. Thus, this paper examines the validity of the wildlife value orientation construct. This is accomplished by comparing two measures: 1) the multi-item scale (Fulton, et al., 1996) and 2) a single-item measure, both designed to gauge *wildlife protection* versus *wildlife use* value orientations. This study centers on three specific wildlife management issues in the Gunnison Basin: the decline of mule deer, the prospect of listing the Gunnison prairie dog as threatened or endangered, and the loss of habitat and accompanying population decline of Gunnison sage grouse. These issues are used as a foundation for examining the construct validity of the protection / use wildlife value orientation (Fulton, Manfredo, & Lipscomb, 1996) and the measurement of that construct.

## **Conceptual Foundations**

### ***Wildlife Value Orientations***

The cognitive hierarchy is a general social psychological theory that suggests human behavior results from a hierarchical progression of fundamental values, value orientations (i.e., the order and direction of basic beliefs), attitudes / norms, behavioral intentions and behaviors (Vaske & Donnelly, 1999; Fulton, et al., 1996; Homer & Kahle,

1988; Ajzen & Fishbein, 1980). These elements build upon each other, starting with the most fundamental element of the hierarchy, values. Values have been defined by Rokeach (1973) as “an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence” (p. 5). Values are the foundation of an individual’s views toward their environment, the most central component of a person’s belief system. They tend to be widely shared by all members of a culture, and thus are unlikely to account for much of the variability in specific attitudes and behaviors (Vaske & Donnelly, 1999). Rather, such variability is influenced by other elements of the cognitive hierarchy, such as basic beliefs, which serve to strengthen and give meaning to fundamental values (Vaske & Donnelly, 1999; Fulton, et al., 1996). Patterns of these basic beliefs create value orientations (Fulton, et al., 1996). Thus, value orientations are “proximate to the broader fundamental values” (Bright, Manfred, & Fulton, 2000, p. 220) and give meaning to those values as they are applied to a particular domain of interest.

For example, two individuals may hold the same first-order value “A world of beauty” (Schwartz & Bilsky, 1987), but the basic beliefs that this value leads to may be different for each person. For one individual, this value may lead to the basic belief that the highest manifestation of beauty is a soaring bald eagle or lumbering grizzly bear, while for another individual, it may lead to the basic belief that beauty is best found in an architectural marvel like the Taj Mahal. Thus, basic beliefs provide order and meaning for values, and serve to orient them in a way that makes basic beliefs consistent with fundamental values, but allows for individual differences within the cognitive structure

(Fulton, et al., 1996). Value orientations are the manifestation of patterns of basic beliefs.

Value orientations toward wildlife have provided researchers and practitioners with insights into public perceptions of wildlife-related activities such as hunting, fishing, and viewing (Fulton, et al., 1996), urban wildlife management actions (Whittaker, 1999; Wittman, Vaske & Sikorowski, 1995), trapping (Manfredo, Fulton, & Pierce, 1997), and mountain lion management (Zinn & Manfredo, 1996). Researchers first applied value orientations to wildlife by developing a measurement approach in the mid-1990s (Fulton, Pate, & Manfredo, 1995; Zinn & Manfredo, 1996; Fulton, et al., 1996; Wittman, et al., 1995; Manfredo, et al., 1997; Whittaker, 1999). Initially, a domain sampling approach was used to develop lists of items measuring each of three wildlife value orientations (wildlife use, wildlife rights, wildlife welfare; Fulton, et al., 1995), which were then condensed to 18 use statements, 13 rights statements, and 10 welfare statements. These items were operationalized via a telephone survey with a 7-point Likert scale from strongly agree to strongly disagree.

The scale was modified and adjusted in subsequent research. More than 1,200 Coloradoans were polled to determine their basic wildlife beliefs along eight dimensions: wildlife use, wildlife rights, recreational wildlife experience, bequest and existence, hunting / anti-hunting, residential wildlife experience, wildlife education, and fishing / anti-fishing (Fulton, et al., 1996). A total of 35 items were used to measure basic wildlife beliefs.

These basic belief scales were scrutinized to identify groupings through exploratory factor analysis. Two groups of basic beliefs emerged; these groups were

named wildlife value orientation domains (Fulton, et al., 1996). The two domains were wildlife benefits / existence (a combination of the wildlife education, recreation wildlife experience, bequest and existence, and residential wildlife experience dimensions) and wildlife rights / use (a combination of the hunting / anti-hunting, wildlife rights, fishing / anti-fishing, and wildlife use dimensions). For the purpose of this analysis, only the wildlife rights / use dimensions (which came to be known as the protection / use continuum) will be examined.

Variations on Fulton, et al.'s (1996) wildlife value orientation scale were used by other authors, including Wittman, Vaske, and Sikorowski (1995), who used four scale items to measure the wildlife use dimension in their urban wildlife study. Zinn and Manfredo (1996) omitted the fishing / anti-fishing dimension from the wildlife use / protection continuum, and made wording modifications to several other scale items to study public views of mountain lion management along Colorado's Front Range. Manfredo, et al. (1997) used a significantly condensed set of scale items (6 total: 1 use, 3 rights, 2 welfare) when examining voting behavior on Colorado's 1996 trapping ballot initiative. Whittaker (1999) made another set of revisions based on earlier results and face validity concerns: he included a wildlife welfare dimension and added new items to the wildlife rights and hunting dimensions to test the cognitive hierarchy as it related to urban wildlife management actions in Anchorage, Alaska. One aim of the present study was to replicate earlier studies by applying the protection / use scale to another management situation. Thus, with the exception of one dimension (fishing / anti-fishing), nearly all scale items from Fulton, et al. (1996) and Whittaker (1999) were used in the present study (see Table 2.1). Items that had been shown previously to negatively affect

reliability were omitted, and 3 items were added to the scale in order to include a more habitat-oriented perspective (Hunting is a bad substitute for native predators and natural processes; Hunting can have beneficial effects on wildlife populations and ecosystems; and, Sometimes it's OK to compromise the rights of people in order to protect wildlife).

All of these authors recommended future research focusing on expansion or improvement of the wildlife value orientation scale, as well as verifying the findings across a variety of species, situations, and management actions. Support for the structure and progression of the elements in the cognitive hierarchy was pervasive in all studies.

**Table 2.1. Wildlife Value Orientation Scales: The Protection / Use Continuum**

| <b>Dimension</b>        | <b>Survey Item</b>                                                                                                               |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>Wildlife Use</b>     | It is acceptable for human use to cause the loss of some individual animals as long as wildlife populations are not jeopardized. |
|                         | Humans should manage wildlife populations so that humans benefit.                                                                |
|                         | It is important for humans to manage the populations of wild animals.                                                            |
|                         | If animal populations are not threatened, we should use wildlife to add to the quality of human life.                            |
| <b>Wildlife Rights</b>  | The rights of wildlife are more important than human use of wildlife.                                                            |
|                         | I object to hunting because it violates the rights of an individual animal to exist.                                             |
|                         | Animals should have rights similar to the rights of humans.                                                                      |
|                         | Although wildlife may have certain rights, most needs that people have are more important than the rights of wildlife. *         |
|                         | The rights of people and the rights of wildlife are equally important.                                                           |
| <b>Hunting</b>          | Sometimes it's OK to compromise the rights of people in order to protect wildlife. **                                            |
|                         | Hunting helps people appreciate wildlife and natural processes.                                                                  |
|                         | Hunting is cruel and inhumane to animals. *                                                                                      |
|                         | Hunting makes people insensitive to suffering. *                                                                                 |
|                         | Hunting helps people enjoy the outdoors in a positive way.                                                                       |
|                         | Hunting is a bad substitute for native predators and natural processes. * **                                                     |
| <b>Wildlife Welfare</b> | Hunting can have beneficial effects on wildlife populations and ecosystems. **                                                   |
|                         | If we can't minimize the pain and suffering caused to wildlife by an activity, then we should not allow that activity.           |
|                         | People should not treat wildlife in ways that may cause pain and suffering, regardless of how much we may benefit.               |

**\* Starred (\*) items were reverse coded**

**\*\* New scale items**



Construct validity gets at the meaning of the scales created to measure wildlife value orientations (Kerlinger, 1986): it asks whether the artificial scale measures the “real” idea. Given that the wildlife value orientation scale developed by Fulton, et al. (1996) has been used in several studies, construct validity demands attention.

As the cognitive hierarchy suggests, individuals have basic beliefs about wildlife that are defined by a pattern of direction and intensity. These wildlife value orientations “provide consistency and organization among the broad spectrum of beliefs, attitudes, and behavior regarding wildlife” (Fulton, et al., 1996, p. 28). A question arises whether the current measures of wildlife value orientations are accurate, complete, and as efficient as possible: in other words, is the scale parsimonious? To test this question, an alternative, single-item measure was developed and administered in a written survey. The measure consisted of two descriptions of hypothetical people designed to represent polar opposite ends of the protection / use continuum (see Table 2.2), and respondents were asked to place themselves along the continuum. The survey also included the multiple item wildlife value orientation scale (protection / use continuum). To test for construct validity of the scale items used to construct the protection / use continuum, several types of analyses were used: correlations of the multiple-item and single-item measures, cluster analysis on the multi-item scales, and t-tests for parallelism between structural equation path models comparing the predictive abilities of the multi-item scales versus the single-item measure. Thus, this paper examines the following question: Do the multi-item scales accurately measure the protection / use dimension of wildlife value orientations?

**Table 2.2. Narrative Descriptions—Extreme Ends of Protection / Use Continuum**

| <b>Description 1—Use</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Description 2—Protection</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| This person believes that wildlife should be managed so that humans benefit. They feel that the importance of wildlife can be measured by their usefulness to human activities and experiences. They endorse and may participate in hunting and fishing, because of the quality these activities can add to human life. They may value wildlife for many human-centered purposes, including opportunities to view wildlife, hunt, or fish. They feel that these activities help people enjoy the outdoors and appreciate natural processes. They would not object to the destruction of “nuisance” wildlife. | This person believes that the protection of wildlife is more important than human use of wildlife, and that wildlife are valuable for their own sake. They may object to hunting and fishing because these activities violate the rights of individual animals or fish to exist. They feel that hunting and fishing activities are cruel, and cause needless pain and suffering. They place value on protecting habitats and entire species, and would object to destroying “nuisance” wildlife for human convenience. Overall, protecting wildlife would always have a higher priority than any human use of wildlife, including recreation or spiritual values. |

### ***Attitudes***

The cognitive hierarchy suggests that cognitions are arranged in an ordered network from more abstract to more specific (Fulton, et al., 1996). General attitudes follow value orientations on the hierarchy and specific attitudes flow from general attitudes. For example, a person may have general attitudes about hunting (e.g., they feel it is an inhumane and cruel activity), which will influence their specific attitudes about particular hunting practices (e.g., using bait for black bear hunting). Items measuring specific attitudes for three local wildlife issues were included on the survey instrument for this study in order to examine how well the wildlife value orientation measures predicted those specific attitudes through structural equation path modeling.

### ***Local wildlife issues—Background***

In order to test the predictive abilities of the multi-item scale and the single-item measure of wildlife value orientations, the survey included items measuring specific attitudes toward three local wildlife issues which were identified by wildlife specialists in the area.

### *Gunnison Sage Grouse*

Since the 1980's researchers became aware that the sage grouse in the Gunnison Basin (*Centrocercus minimus*) were unique from sage grouse found elsewhere in the United States. Researchers have proposed that the Gunnison sage grouse is a distinct species (Braun & Young, 1995; Young, et al., 2000). Because of low population numbers, there is potential for listing under the Endangered Species Act, which would undoubtedly have impacts on land management, agriculture, development, and management of other species (P. Jones, personal communication, April 21, 2000). The Colorado Wildlife Commission discontinued an experimental hunting season for Gunnison sage grouse, which was strictly limited and controlled, in June 2001 due to a continuing decline in numbers.

### *Mule Deer Decline*

As in other parts of the West, mule deer populations are declining around the Gunnison Basin. Although mule deer (*Odocoileus hemionus*) are a popular game species, causes of the decline are usually not linked to hunting. Instead, causes that have been discussed include increased predation, loss and fragmentation of habitat, and competition with an expanding elk population (CDOW, 1999). Economic and recreational impacts to the region are a concern related to this issue.

## *Gunnison Prairie Dog*

A unique species, the Gunnison prairie dog (*Cynomys gunnisoni*) may potentially be listed as threatened under the Endangered Species Act. The story of the prairie dog is a paradox of identity: they are considered a pest by some and an ecological keystone species by others (Stolzenburg, 2000). Within Gunnison city limits, citizens have an “obligation” to eliminate populations of prairie dogs. The local newspaper has covered stories and published letters of concern about development causing loss of individual prairie dogs and habitat (Taylor & Taylor, 2000).

## **Methods**

### ***Sample and data collection***

Data for this study, collected in the Fall 2000, were obtained from surveys of individuals associated with a small, liberal arts college located in the rural inter-mountain West. The institution has approximately 2400 students and 297 faculty and staff. The sample consisted of two segments:

- 1) Undergraduate students: Classroom visits were used to administer surveys to students. Students in 24 courses in various departments<sup>1</sup> across campus were surveyed, resulting in 582 student surveys. No students refused to participate in the survey (although some were absent from class), yielding a 100% response rate. Classes were selected based on discipline diversity, class level (fresh

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<sup>1</sup> Accounting, Art, Business, Communications, Economics, Education, Environmental Studies, Kinesiology, Math, Physics, Political Science, Psychology, Recreation, Sociology, and Spanish.

through senior-level classes), class size (larger classes were most efficient), and scheduling issues.

- 2) Employees: All faculty, administrators, and staff were sent a survey through campus mail, followed by a postcard reminder eight days later. Those who did not respond were sent replacement surveys fourteen days after the first mailing. Of the 297 surveys in the faculty and staff mailing, 190 were returned for a response rate of 64%.

Total sample size, including all responding students, faculty and staff, was 772.

## ***Measures***

### ***Narrative Descriptions***

In order to explore the construct validity of the wildlife value orientation scale (protection / use continuum), two narrative descriptions of the extreme ends of the continuum were developed (Table 2.2). Respondents were asked which description best captured their own feelings about wildlife, and responded on a 9-point continuum, ranging from “Description 1 describes me perfectly” (-4) to “Neither scenario describes me” (0) to “Description 2 describes me perfectly” (+4).

### ***Wildlife Value Orientation Scale***

A total of 18 scale items measuring four dimensions of the protection / use continuum were included in the survey (Table 2.1). The scale items closely replicated previously used scales. Respondents were asked to indicate how they felt about each scale item on a 7-point Likert scale (strongly agree to strongly disagree).

## *Attitudes*

Specific attitudes toward local wildlife issues were asked through the following questions: How do you feel about 1) Protecting Gunnison Sage Grouse regardless of impacts to ranching and hunting activities, 2) Taking management actions to control the decline of mule deer around Gunnison, and 3) Listing the Gunnison Prairie Dog as threatened or endangered. Responses were on 7-point Likert scales (extremely positive to extremely negative).

## **Analysis and Results**

Before the validity of the wildlife value orientation construct was examined, reliability of the multi-item scales was tested. Reliability coefficients for the four dimensions of the protection / use wildlife value orientation scale were .66 (use scale), .83 (rights), .69 (welfare), and .90 (hunting).

The fundamental approach to examining construct validity was to compare the existing scales with the proposed descriptions. First, simple correlations between the multi-item scale and the single-item measure of the protection / use wildlife value orientation were conducted. Correlations between the two measures (Table 2.3) are all in the expected direction (i.e., use & hunting dimensions negatively correlated with the single-item measure; rights & welfare dimensions positively correlated with the single-item measure), and all were significant at  $p < .001$ . Values that indicate especially high strength of association (over .60) include the correlations between the single-item measure and the *hunting* scale (-.62), and the single-item measure and the *rights* scale (.63).

**Table 2.3. Correlations between Single-item Measure and Multi-item Scales**

|             | Use Scale | Hunting Scale | Welfare Scale | Rights Scale |
|-------------|-----------|---------------|---------------|--------------|
| Single-item | -.58      | -.62          | .49           | .63          |

All correlations are significant at  $p < 0.001$

For each respondent, the 18 scale items were combined into one score which represents the protection / use continuum (scores were calculated if respondents answered at least 16 of the 18 items). Scale items were recoded on a 7-point continuum where -3 represents the strongest use orientation and +3 represents the strongest protection orientation. Scores from the multi-item scale were then correlated with scores from the single-item measure, resulting in a Pearson Correlation value of .70 ( $p < .01$ ). Thus, the two methods of measuring wildlife value orientations were significantly correlated.

To further compare the scales and descriptions, cluster analysis was used to examine the validity of the single-item measure. The single-item measure groups people by allowing survey respondents to place themselves along the protection / use spectrum. Cluster analysis grouped people based on their responses to a series of scale items (the wildlife value orientation scale). Thus, cluster analysis provides another way to look at correspondence of the two measures.

Cluster analysis classified 97.5% of the sample. Two clusters emerged when the four scales (use, rights, hunting, welfare) were cluster analyzed: a use/hunting cluster (44.8% of respondents), and a rights/welfare cluster (55.2% of respondents). The percent of respondents that fell into each cluster is consistent with results from the single-item measure: of those who placed themselves on one side of the spectrum or the other (i.e., they did not say that "Neither scenario fits me"), 42% placed themselves on the use end

of the spectrum, and 48% placed themselves on the protection end of the spectrum. These two distinct clusters correspond with the two descriptions in the single-item measure, suggesting that the protection / use dimension of wildlife value orientations falls along a spectrum with protection of wildlife and wildlife rights at one end, and wildlife use and hunting at the other end.

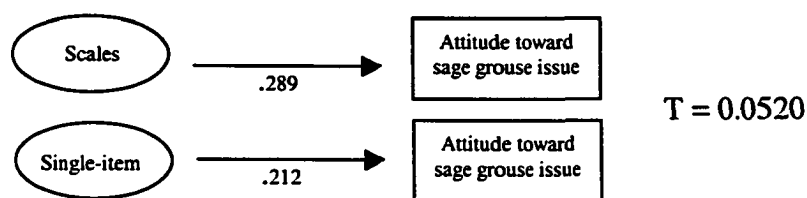
Finally, three pairs of structural equation path models were generated. Each pair contrasts the predictive ability of the two measures on the specific attitude measure for one of three local wildlife issues. A small sample t-test for parallelism was also calculated to compare the abilities of the single-item measure and the multi-item scale to predict specific attitudes toward the three wildlife issues.

The three pairs of simple path models are presented in Figures 2.1, 2.2, and 2.3. The percent of variance explained by the independent variable (single-item measure or multi-item scales) ranged between 7 and 30%. The measures did the best job predicting attitude toward listing the Gunnison prairie dog as threatened or endangered (adjusted  $R^2=.302$  for the multi-item scales; adjusted  $R^2=.258$  for the single-item measure). Attitudes toward taking management actions to slow the decline of mule deer populations was predicted similarly by the multi-item scales (adjusted  $R^2=.067$ ) and the single-item descriptions (adjusted  $R^2=.066$ ). Similar patterns of direction and intensity can be found in each pair of models, suggesting that the single-item measure does an adequate job of mimicking the scales. However, the percent of the variance explained, while significant for all paths ( $p<.001$ ), was lower for the single-item measure. The t-test results<sup>2</sup> are also

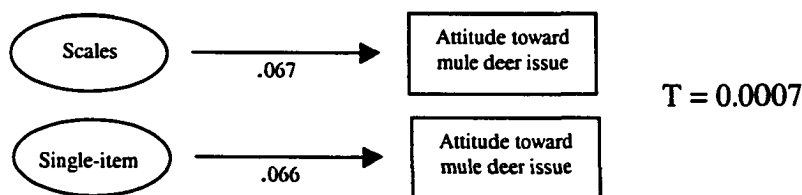
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$$^2 T = \frac{\hat{\beta}_{\text{single-item}} - \hat{\beta}_{\text{scale}}}{\text{Std. Dev.}_{\text{single-item}} - \text{Std. Dev.}_{\text{scale}}}$$

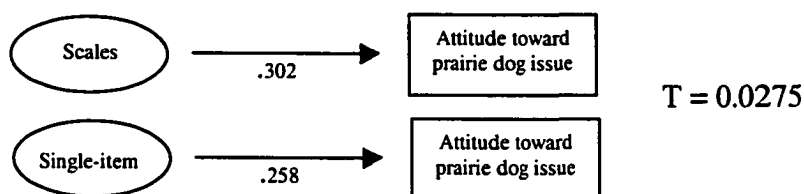




**Figure 2.1. Predicting Attitudes Toward Sage Grouse Issue**



**Figure 2.2. Predicting Attitudes Toward Mule Deer Issue**



**Figure 2.3. Predicting Attitudes Toward Prairie Dog Issue**

presented in Figures 2.1, 2.2, and 2.3. T-values were calculated to test for a significant difference in slope. These equations (which can be interpreted like any t-value, where a value of 2 or above is significant) all resulted in non-significant differences between the multi-item scales and single-item measure. In fact, the T-values were quite small in magnitude, suggesting the differences between the two measures did not even approach significance.

In summary, correlations, cluster analysis, path models, and t-tests indicate that the new, single-item measure of wildlife value orientations was similar to the multi-item scales based on the following evidence:

- 1) The multi-item scales and the single-item measure were significantly correlated in the expected direction;
- 2) Cluster analysis of the multi-item scales resulted in two distinct clusters that correspond with the two descriptions in the single-item measure;
- 3) A similar pattern of direction and intensity was found through regression analysis, where the multi-item scales and the single-item measure comparably predicted specific attitudes toward three local issues (although the single-item measure did not account for as much variance as the multi-item scales); and
- 4) Small-sample t-tests for parallelism resulted in non-significant differences between the multi-item scales and the single-item measure.

Thus, these four separate analyses support the construct validity of the wildlife value orientations scales.

## **Discussion**

Results show a significant correlation between the single-item and the multi-item measures of the protection / use continuum. The rights and hunting dimensions of the scales were more highly correlated with the single-item measure than the use and welfare dimensions, and the overall correlation between the multi-item scales and single-item measure was .70. Cluster analysis revealed a two-dimensional spectrum, with a rights/welfare cluster and a hunting/use cluster, similar to what the single-item measure assessed. Structural equation path models suggest that the multi-item scales and the single-item measure both explain a comparable proportion of the variance in attitude

toward specific local wildlife issues, with  $R^2$  values ranging from .066 to .302. The  $R^2$  values for the multi-item scale were consistently higher than the single-item measure, however, t-tests indicate that differences between the amount of variance explained by the two measures were not significant. All these analyses indicate that the wildlife value orientation construct is valid, which was the overarching aim of this paper.

These results may lead to the conclusion that the new method of measuring the protection / use dimension of wildlife value orientations based on two opposing descriptions provided a reasonable alternative to the extensive wildlife value orientation scale introduced by Fulton, et al. (1996) and refined in subsequent studies. However, it is premature to suggest that the single-item measure should fully replace the use of the scales in future studies. Rather, refining the single-item descriptions, and possibly adding additional ones, can supplement scale data. It is possible that, with fine-tuning, the single-item measure could provide data that are equivalent in predictive ability to the scales, and thus reduce survey length and the number of survey items required in future studies.

The scales have proven to provide reliable data, as reported by past studies, and as evidenced from examining Cronbach's alpha coefficients for this study. Continuing the efforts to refine and improve scale items and dimensions will likely increase this reliability. For example, adding items that represent an *ecocentric* viewpoint versus a *biocentric* viewpoint may improve reliability. A biocentric orientation focuses on life, particularly on the lives of individuals (Miller, 1999). This orientation may be used to describe an animal rights activist, who focuses on each individual, even at a cost to the larger population or species. For example, a biocentrist might object to a deer hunt

designed to cull a herd that has overrun the habitat's ability to provide forage because individual deer would be exterminated. Thus, a biocentric environmental worldview would attribute equal consideration to an introduced or abundant species as it would to a native or endangered species (Eckersley, 1992).

Alternately, an ecocentric orientation, or "home" centered approach, focuses on the ecosystem, habitat health and quality, and the entire web of living and non-living elements of the land. An ecocentric environmental worldview is holistic, devoted to preserving earth's biodiversity and ecological integrity (Miller, 1999). Both biocentric and anthropocentric worldviews are atomistic, or individual centered, valuing only individual organisms (Eckersley, 1992). Ecocentric worldviews value populations, species, ecosystems, and the ecosphere *as well as* individual organisms (Eckersley, 1992). Written comments on the survey suggest that many participants identify with an ecocentric perspective—they may support hunting in order to improve overall habitat conditions, for example.

Social science researchers continually struggle with the measurement issue of balancing the length of surveys (and respondents' attention spans) with including items that measure the multiple facets of various constructs. This study introduced an alternate measure of the protection / use dimension of wildlife value orientations in the name of survey brevity, but found that more studies are needed to determine whether the single-item measure can safely substitute for the scales. Theoretically, the scales were again found to provide reliable data. Construct validity can be tentatively assumed through analyses presented here, but again, additional research is needed.

Regarding the local wildlife management issues, regression analysis indicates that the value orientation measures did a rather poor job accounting for the variability in the mule deer issue. The  $R^2$  values for both the multi-item scales and the single-item measure were low (.067 and .066, respectively). Explanations may lie in the confusion surrounding the issue (wildlife biologists have not clearly established the causes behind mule deer decline), or possibly in the wording of the variables measuring attitudes toward that local issue. A more likely explanation, however, lies in the level of survey item specificity: the multi-item scales and single-item measure are about wildlife in *general*, while the attitude items ask about *specific* wildlife issues. Past research has shown similar patterns—the predictive ability of measures decreases when items are not measured at corresponding levels of specificity.

Future research opportunities are abundant. As past studies have recommended, the protection / use construct should continue to be applied to a variety of settings, management situations, species, and issues. The scales should continue to receive attention and be operationalized in surveys. Refinement of the single-item measure, via the written comments provided by over 100 respondents in this study (see Appendix D), or through other methods, could strengthen the validity of that measure. Additional descriptions that further capture the public's varied perspectives on wildlife could also be helpful. For example, developing a description that includes hunting and fishing as an acceptable method of improving habitat and species health would accommodate a more ecocentric perspective. Additionally, the "nuisance" wording in the descriptions should be omitted, as it triggered strong negative responses from many of the survey respondents who provided written comment. Continued refinement of the multi-item scales would

also be beneficial. Improving and further developing a dimension that accommodates a more ecocentric perspective, something that is lacking in the current scale items, would likely improve validity.

This study supports the construct validity of the protection / use continuum of wildlife value orientations. Through a continuing effort to refine and advance the measure of these constructs, scientists may further comprehend the meaning behind them and research may better supplement management decisions.

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**CHAPTER III: Journal Manuscript 2**  
**A Qualitative Approach to Measuring Determinants of Wildlife Value Orientations**

**Abstract**

This study takes an exploratory approach to understanding the determinants of value orientations toward wildlife, thus expanding previous research in two ways: first, by qualitatively examining the determinants of values, including areas that have received little attention previously, such as gender and religiosity; and second, by exploring the determinants of a more specific area of value orientations, that is, those toward wildlife. Four major dimensions, socialization, experience, personal characteristics, and place, were explored as determinants of wildlife value orientations through in-depth interviews with 18 participants (9 students and 9 employees from a small liberal arts college in the rural Rocky Mountains). Results suggest that these dimensions are an appropriate way to organize the determinants of wildlife value orientations, but that the combination and importance of the various dimension components fluctuated markedly for different people in the study. Family members, particularly fathers, were important influences common to nearly all respondents. Place of upbringing (rural or urban) played a key role in shaping wildlife value orientations, as did cohort. For some, direct experiences with wildlife were critical. Religiosity and gender were not clearly verbalized as important determinants for most participants, but these influences may be subtle and ubiquitous enough to go unnoticed in people's reflections. For a few participants, however,

religiosity and gender were articulated as having important influences on their wildlife values. Those with anthropocentric orientations had different influences in some instances than those with ecocentric orientations, although these differences were not striking.

**Key words:** determinants of wildlife value orientations, qualitative research

## **Introduction**

As the human population worldwide becomes more urbanized, there can be no doubt that humans are more removed from the natural world and the wildlife that inhabits it than even a century ago. Urbanized populations may still have exposure to and concern for certain species, but practical, daily contact with nature and wildlife is certainly in decline (Kellert, 1996; Kahn, 1999). The loss of biodiversity worldwide suggests a need to understand how humans value our “wilder” neighbors. If certain species are not valued, they may receive little human concern, their habitat requirements ignored, and they may decline to rarity or extinction. Alternatively, human value of species may be the impetus behind those species’ survival.

Considerable research has focused on developing valid measures for wildlife value orientations and testing the cognitive hierarchy (e.g., Fulton, Manfredo, & Lipscomb, 1996; Homer & Kahle, 1988; Vaske & Donnelly, 1999). Recent work is turning toward examining the determinants of wildlife value orientations in order to expand understanding of the hierarchy (Vaske, Donnelly, Williams, & Jonker, 2001). This study undertakes an exploratory approach, using in-depth interviews to test a proposed model of determinants of wildlife value orientations.

Values and their antecedents have received extensive attention in the environmental and wilderness values literature (Dietz, Kalof, & Stern, 2001). The impact of significant life experiences has been a major topic of research in the field of

environmental education (Tanner, 1980; 1998; Palmer et al., 1998; Chawla, 1998). Results consistently indicate that positive experiences in natural settings, adult role models, education, and negative experiences (e.g., loss of childhood play area to development), influence environmental sensitivity and awareness.

In the field of human dimensions of natural resources, most research effort has focused on values as a predictive component of attitudes and behaviors (e.g., Fulton, et al., 1996; Zinn, Manfredo, Vaske, & Wittmann, 1998). While little attention has been given to the determinants of natural resource or wildlife values, a few studies have begun efforts in this area. Vaske, et al. (2001), for example, examined the influence of attachment to place and demographic variables on environmental value orientations. Manfredo and Zinn (1996) suggest that age and location of residence (rural vs. urban) may influence wildlife value orientations. Younger age groups and an increasingly urban population tended toward a more appreciative orientation (i.e., wildlife have their own rights), while their older counterparts and rural residents held more utilitarian values (i.e., wildlife are primarily for human use; Manfredo & Zinn, 1996).

The present study looks at the determinants of wildlife values. This research expands on previous work by qualitatively exploring determinants of values that have received little attention, and by focusing on the determinants of specific value orientations toward wildlife, as opposed to more general environmental values. Eighteen people with a variety of backgrounds were asked to describe their experiences, influences, and ideas about wildlife through in-depth interviews. It must be emphasized that this is a tentative exploration of a research area that has received little attention. The results presented may serve as a foundation for more studies in the same line of research.

## **Conceptual Framework**

Significant work has focused on articulating and measuring wildlife value orientations (e.g., Fulton, et al., 1996) and their influence on attitudes, norms, and behaviors. However, the antecedents to value orientations have been neglected, and are thus the focus of this research. By examining the influences on value orientations, a more complete understanding of the human value system may begin to take shape. Four general areas of wildlife value determinants emerged from a review of the values literature: 1) socialization determinants (i.e., family, other people, education, media); 2) experiential determinants (i.e., activities [childhood, adult, family's], encounters with wildlife); 3) personal characteristic determinants (i.e., religiosity, gender, cohort); and 4) place (i.e., places lived, special places).

### ***Socialization***

Parental influence on children's values and the transmission of those values has been extensively studied. Results typically suggest that parents are the most significant source for value transmission (Popenoe, 1998; Glass, Bengston, & Dunham, 1986; Dalhouse & Frideres, 1996). A number of qualitative studies have examined the determinants of environmental value orientations and attitudes, and parents are identified as the strongest socializing agents, although other close relatives may also have an influence (Chawla, 1998; Corcoran, 1999; Palmer, 1993; Tanner, 1980; Palmer, et al., 1998; Place, 2000).

Participants in those same studies frequently mentioned other important people, such as teachers, older friends, and adult peers as influences on their environmental value orientations. Educational experiences were also important self-described influences for participants (Palmer, 1993; Sward, 1999). The influence of the media (including television, books, periodicals, etc.) on environmental attitudes emerged as well (Corcoran, 1999; Palmer, 1993; Brothers, Fortner, & Mayer, 1991; Tanner, 1980; Place, 2000). No studies were identified that examined socializing influences on *wildlife* values, highlighting the need for work in this area.

### ***Experience***

Environmental education research has examined the influence of significant life experiences on environmental concern, awareness, and behavior (Tanner, 1980; Palmer, 1993). Frequent contact with natural areas, especially in childhood, and especially alone or with one other close friend was the most common influence on environmental values cited in numerous studies (see Chawla, 1998, for a review). The experience of witnessing the commercial development of a favorite habitat was also frequently mentioned as an important influence (Chawla, 1998).

Personal experience with wildlife may impact value orientations toward wildlife (Tarrant, Bright, & Cordell, 1997; Kellert, 1984). For example, children who participated in bird watching or hunting may have more concern for wildlife as adults than children who did not bird or hunt (Kellert, 1984). Tanner (1980) also noted childhood hunting, fishing, and bird watching as important influences on environmental values. However, during adulthood, hunting and fishing activities may lead to lower levels of



environmental appreciation than some other kinds of recreational activities. Jackson (1986) replicated earlier findings (Dunlap & Heffernan, 1975) showing that people involved in “appreciative” recreational activities (e.g., cross-country skiing, hiking) held stronger pro-environmental attitudes than those involved in “consumptive” activities (i.e., hunting, fishing) or “mechanized” activities (e.g., snowmobiling, trail biking).

Studies have shown that direct encounters with animals (especially wild animals; Shepard, 1996) may promote physiological health and emotional well-being (Kahn, 1999). In fact, it has been suggested that humans have an innate drive, termed biophilia, to affiliate with nature and wildlife (Wilson, 1984; Wilson & Kellert, 1993). Exposure to and experience with wildlife may enhance this tendency, and in turn, influence wildlife value orientations.

### ***Personal Characteristics***

#### ***Religiosity***

Natural surroundings provide spiritual fulfillment for many people (Horwitz, 1994). Only a few studies, however, have looked directly at how religiosity relates to values toward the natural world. Eckberg and Blocker (1989) found that a belief in the literal interpretation of the Bible was a crucial predictor of lower levels of environmental concern. Greeley (1993) confirmed those findings, and found that support for environmental spending correlates positively with a gracious (vs. callous) image of God and with being Catholic (vs. Protestant). In a study by Palmer (1993), religion was mentioned by a small percentage of respondents in an open-ended survey examining

influences on concern for the environment. It may comprise a small proportion, but the influence of religion is almost certainly quite important to those that mentioned it.

Regarding wildlife, the Bible reads in Genesis 1:26, "Let us make man in our image, after our likeness: and let them have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth." This biblical verse has been interpreted as a command for exploitation, and Lynn White (1967) argued that this Judeo-Christian heritage may be responsible for the current ecological crisis. This thesis needs further exploration (Greeley, 1993) before it can be verified or falsified, but human values influence the human relationship with the natural world, including wildlife. The effects of religiosity on wildlife value orientations have not been examined to a great degree, suggesting a need for further research in this area.

### *Sex and Gender*

Most of the values literature has looked at the relationship between sex (male / female) and values, as opposed to gender (masculinity, femininity, androgyny, undifferentiation; Bem, 1974). Schahn and Holzer (1990) found that men had higher levels of environmental knowledge, while women had higher levels of environmental concern, action, and commitment. Mohai's (1992) results suggested women show greater concern for the environment, but are less likely to be active in environmental organizations or work. Ozanne, Humphrey, and Smith (1999) argue this paradox exists only because of the criterion that Mohai used to measure proenvironmental behavior (involvement in environmental organizations or work). When green consumerism is used

as an alternate indicator, for example, women tended to be more environmentally active than men. Other studies have also shown modest effects for sex related to environmental concern (McDonald & Hara, 1994; Jones & Dunlap, 1992; McStay & Dunlap, 1983). Females were found to be more biocentric (i.e., nature has inherent values that may be more important than human use of nature) regarding forest values (Steel, List & Shindler, 1994) and environmental value orientations (Vaske, et al., 2001).

Values regarding the concern and responsibility for the well-being of others may be given higher priority by women (Beutel & Marini, 1995); similarly, self-transcendence (altruism) was ranked higher as a guiding life principle by women (Dietz, et al., 2001). These values may connect with concern for non-human others (i.e., wildlife), as well.

Only one study used some measure of gender to explore relationships between values and environmental behavior. Sia, Hungerford, and Tomera (1985) administered the Personal Attributes Questionnaire (PAQ; Spence & Helmreich, 1978) as part of a longer survey. The PAQ provides data for categorizing respondents into four gender role classifications, namely, androgynous, cross-typed, traditional, and undifferentiated. These gender role classifications were one of a set of predictor variables on responsible environmental behavior. Results showed that gender was not an important predictor of such behavior.

Unfortunately, a lack of evidence regarding the influence of gender on values prevents conclusive statements. Little work has been done focusing on the influence of gender on value orientations toward nature or wildlife. Previous studies suggest that sex may influence value orientations, but further research is necessary to gain greater insight into this topic.

## *Cohort*

Several scholars have proclaimed a major value shift is occurring in advanced industrial societies (Golebiowska, 1995; Inglehart, 1990; Flanagan & Lee, 1990; 1991) due to social changes such as the end of the Cold War. Emphasis on belonging, self-expression, and quality of life defines the values of current generations (Inglehart, 1990).

Cohort replacement (Traub & Dodder, 1988) may account for this growing generation gap to some degree because of distinct cohort experiences (Inglehart, 1990), as may rising education levels (Prothro & Grigg, 1960, as cited in Golebiowska, 1995; McClosky & Brill, 1983, as cited in Golebiowska, 1995; Inglehart, 1990), and economic and technological developments (Inglehart, 1990). Values taught today are qualitatively different from those of the recent past—from an emphasis on virtue, honesty, obedience, and purity to one of good self-concept, appreciation of differences, and regard for nature (Andrews, 1993).

With respect to cohort influences on environmental values, studies have shown higher levels of environmental concern among younger age groups (Buttel, 1979; Mohai & Twight, 1987; Jones & Dunlap, 1992). Research has shown that forest and ecosystem values are also changing (Bengston, 1993; Xu & Bengston, 1997) from an instrumental to intrinsic orientation. Younger generations tend to show a heightened reverence for nature and movement away from traditional religious values (Inglehart, 1990). This indicates that generational value shift is occurring, not only for social issues such as political tolerance (Golebiowska, 1995), political attitudes (Dalhouse & Frideres, 1996), and

religious ideology (Inglehart, 1990; Glass et al., 1986), but also for natural resource issues.

Much discussion has centered on whether this is an age effect, or truly a cohort effect. Higher degrees of concern among young people may be a response to increased attention to and awareness of the environment since the late 1960s. Mohai and Twight (1987) argue that higher levels of environmental concern is indeed a cohort effect, because concern does not covary with age like income and occupational prestige do. Increased environmental concern could continue to be manifest in future generations (Mohai & Twight, 1987; Steel, et al., 1994). For wildlife value orientations, in at least two studies, younger age groups tended to be more wildlife rights oriented than older age groups, who were more wildlife use oriented (Fulton et al., 1996; Manfredo & Zinn, 1996). More research focusing on cohort effects toward wildlife value orientations is needed.

### ***Place***

Place of residence (urban vs. rural) has been shown to impact environmental values. Residents of rural areas hold more utilitarian values related to the environment (Edgell & Nowell, 1989; Van Liere & Dunlap, 1980). Urban dwellers in Steel, et al.'s (1994) study held more biocentric forest value orientations, and were more environmentally concerned than rural residents (Mohai & Twight, 1987; Jones & Dunlap, 1992). While Edgell and Nowell (1989) and Klineberg, McKeever, and Rothenbach (1998) conclude that a lack of empirical evidence does not allow this statement to be

made with confidence, most studies that have examined this issue have shown that urban / rural residence may impact environmental values.

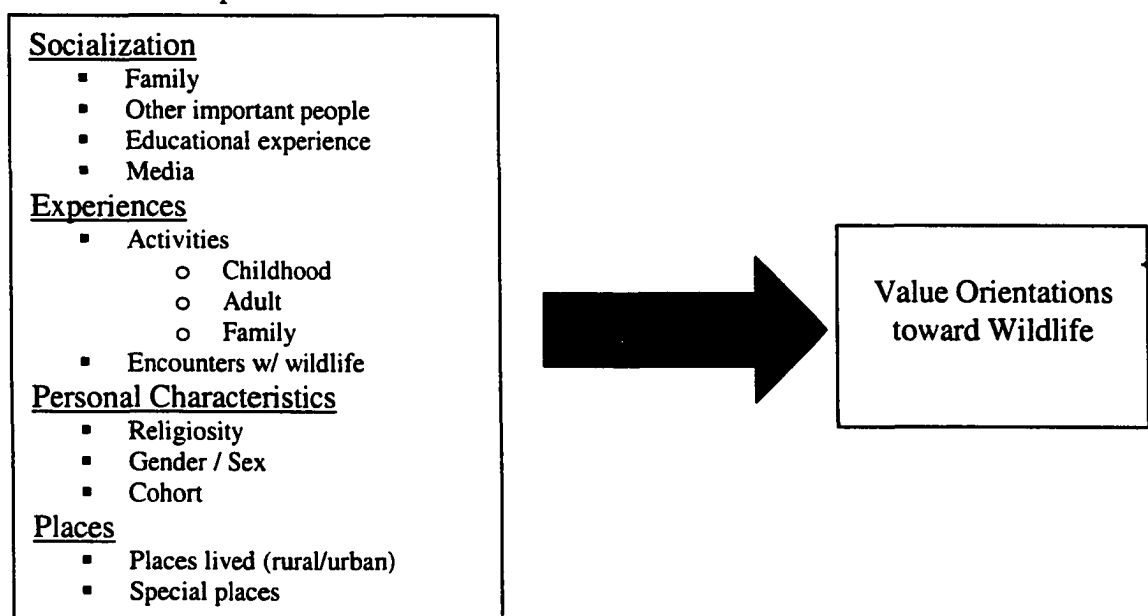
Special places can also influence people's values (Chawla, 1998). Having a meaningful interaction with a natural place, especially in childhood, may influence choice of an environmental studies major in college (Myers, 1997, cited in Chawla, 1998) and environmental interest in general (Chawla, 1998 provides a review of the research).

Vaske, et al. (2001) created an index measuring attachment to community and state as an influence on environmental value orientations. As predicted, those with greater attachment to place had more anthropocentric (i.e., human uses of nature are more important than nature's inherent values) environmental value orientations. This prediction was based on the reasoning that long-term residents are more accepting of traditional land-use practices and a working landscape, and newcomers see the landscape as a scenic backdrop to be protected.

In summary, socialization, experiences, personal characteristics (religiosity, gender, and cohort), and place have been shown to influence general environmental value development. Most studies have looked at these more general values toward the environment, but little has been done to examine the determinants of a more specific aspect of environmental concern, i.e., values toward wildlife. This study explores how these broader concepts apply to specific value orientations toward wildlife by looking at the combination of influences on wildlife values and examining their relative importance. Thus, this research expands on value determinants that have received minimal attention (e.g., gender, religiosity), and also expands into more specific values toward *wildlife*.

### ***General model***

While most research has focused on the broader construct of environmental concern, the literature reviewed above indicates that some measurable variables may exist that could influence wildlife value orientations. Besides the major components discussed above, the literature has discussed cultural influences as possible determinants; however, culture was omitted from this study due to the cultural homogeneity of the sample. A general, exploratory model (Figure 3.1) was developed and tested through in-depth interviews. The model fundamentally suggests that there are a number of variables that influence wildlife value orientations, but due to limited previous work in this area, no prediction is made regarding the proportionate influence each variable may have. Interviews were used to explore the relative influence of the various components of the model. In other words, this study examines what emerges when people are asked to explain their background, interests, and influences with regard to wildlife value orientation development.



**Figure 3.1. Proposed Model of Determinants of Wildlife Value Orientations**

## **Methods**

Most past research on determinants of values has been limited in terms of the types of influences examined (e.g., demographic variables) as well as the scope of values examined (i.e., emphasizing general environmental values as opposed to more specific values like those toward wildlife). The lack of previous work in the area of determinants of wildlife values necessitated the use of a more qualitative approach, which is appropriate considering the exploratory nature of the research problem. Individuals have different experiences and different stories to tell, and that “experience is more appropriately viewed as an emergent narrative” (Patterson, Watson, Williams, & Roggenbuck, 1998, p. 427) than as something that could fit into a survey from researchers’ conceptions of what people are experiencing.

An interview schedule was developed based on the above model (Figure 3.1). A concerted effort was made to ask all participants each question in a consistent manner while allowing for individual forays into unanticipated areas of interest. The entire interview schedule may be found in Appendix B of the dissertation manuscript.

## ***Measures***

The interviews began with questions that were meant to help participants feel at ease—questions that were relatively easy and non-obtrusive—for example, “What kinds of activities do you participate in that are related to wildlife in any way?” For all questions, additional prompting / explanation was provided if necessary. Interviews



lasted from 25 to 85 minutes, with an average of 50 minutes required. Each participant was asked a total of 18 questions.

### *Determinants of Values Measures*

Each category of value determinants in the proposed model (Figure 3.1) was explored in the interviews. Questions were used to assess the influence of socialization, experience, personal characteristics, and place components. The socialization component included family influences, other important people (e.g., friends, teachers), educational experiences, and the influence of the media. Assessment of the experiential component included questions about childhood, adult, and family wildlife activities and memorable encounters with wildlife. Questions regarding personal characteristics examined religiosity, gender / sex, and cohort influences, and the place component explored places lived and special places (e.g., childhood escapes, or places returned to repeatedly). Finally, participants were asked if anything else was important in the development of their views towards wildlife, to capture anything missed in the rest of the interview.

### *Value Orientation Measure*

To measure wildlife value orientations, participants were asked to read two descriptions of hypothetical people who represent extreme ends of a spectrum of wildlife value orientations. The *anthropocentric* (use) end of the spectrum described a person who feels wildlife is for human use; endorses hunting, fishing, and wildlife viewing activities because of their value for humans; and would not object to the destruction of “nuisance” wildlife. The *biocentric* (protection) end of the spectrum described a person

who feels wildlife are valuable for their own sake, independent of their uses for humans; objects to hunting and fishing activities because they violate an animal's or fish's right to exist or may be cruel; and places wildlife protection over all human uses of wildlife. Participants were asked to place themselves along the spectrum, which ranged from -4 (anthropocentric scenario fits me perfectly) to +4 (biocentric scenario fits me perfectly). The center of the spectrum was 0 (neither scenario describes me).

### ***Sampling***

Participants were chosen from respondents (N=772) to a written survey (see Chapter II) of individuals associated with a small liberal arts college in the rural Rocky Mountains. The survey also included the spectrum with anthropocentric and biocentric descriptions described above. Survey respondents who had placed themselves at either extreme end of the spectrum or in the middle—"neither scenario describes me", were selected as potential interview participants. This is known as *critical case sampling* (Lindlof, 1995) where cases are selected that would have implications for other, less extreme, cases (i.e., survey respondents who placed themselves farther from the extreme ends of the spectrum).

The pool of eligible survey respondents was then stratified to include variety in age, sex, academic discipline, etc. Based on this strategy, nine students and nine employees were randomly chosen. Of the eighteen people solicited for interviews, all agreed to participate. Individuals were selected to obtain an equal distribution of people who placed themselves at either extreme end of the anthropocentric / biocentric spectrum and in the middle, resulting in six participants from each category. Individuals were also

selected to obtain an equal distribution of men and women, class level (for students), faculty and staff (for employees), and majors and disciplines. Fortunately, this led to a final sample that was also fairly balanced as far as region of upbringing, rural / urban character of places lived, and hunting / fishing background. This added to the breadth of input that could be obtained from a fairly limited sample of participants.

### ***Analysis***

The aim of qualitative analysis is to create an “organizing system that can be used to help determine what individual statements reveal about the phenomenon being studied” (Patterson, et al., 1998, p. 429). Exploring individual interviews by reading and re-reading the narrative with a forestructure in mind (i.e., the proposed model in Figure 3.1) leads to observations of patterns in the data. In addition to reading each person’s narrative, creating a transcript of all participants’ responses to each question provided a basis for deeper exploration of the parts of the model. By creating a matrix for each question, it was possible to summarize notes and observe trends by connecting ideas conceptually. Next, quotes were identified that illustrated trends in the data or unique perspectives of participants. These quotes were arranged with an accompanying narrative into a logical sequence based on the model.

### **Results**

While each individual had a different combination and intensity of factors that influence their ideas about wildlife, the data show some clear trends. Each component of the model played a role, sometimes more, sometimes less, but the combination of

variables creates a unique collage for each person's wildlife value orientations. Major themes that emerged from the data will be discussed and anecdotal evidence from the interviews will be used to demonstrate the influence of the various factors from the model.

### ***Determinants of Values Measures***

#### ***Socialization***

Family members contributed to wildlife value development in important ways for most interview participants. The questions about wildlife-related childhood and family activities typically led to descriptions of the influence of particular family members. In fact, when asked "Who or what most influenced your ideas about wildlife?", 12 out of 18 respondents mentioned their parents (one or the other; or both), and other family members (brothers, grandparents) garnered 8 mentions. Fathers particularly seemed to be a great source of influence, as evidenced by comments such as, "[My dad] introduced me to everything and taught me how to do everything that I know about hunting and fishing." Fathers were often cited as having shaped future interests or skills; for example, sitting in a deer blind with dad for hours shaped one respondent's wildlife observation skills. An older female attributed her current ideas about wildlife to a family history of hunting as an important food source. Along with this came an emphasis from her father on using the entire animal and not wasting.

Although mentioned much less than family members, teachers also provided important inspiration for concern about wildlife, as evidenced by the following quote:

Um, I would say [Professor X] has been one of the strongest influences on my life. I remember when we were talking about different types of species and I remember leaving his class feeling

just amazed, and I've got to do something, you leave with a sense of passion and a sense of fire under you, to protect whatever you can. So he's definitely been a major influence in my life.

#### Friends provided companionship for wildlife-related activities for some respondents:

Well, the friendships I have cultivated, most of those friendships are from work, they start, and then the outdoor activities, fishing, hunting, whatever, have turned into lifelong friends. And they might not even be in the valley anymore. But they're still, we're still avid outdoor participants, and we still get together 2 or 3 times a year, and still enjoy the outdoors and wildlife activities.

Overall, loved ones (family, friends, favorite teachers) seemed to emerge as one of the most important influences on participants' ideas about wildlife. Socialization also occurs during formal education opportunities, although the number of participants who discussed this kind of influence was much more limited than those who discussed particular people. One student said just being at this institution (in a mountainous setting with a great deal of public lands) for his education influenced his ideas about wildlife. Another student discussed how the focus of her education as an environmental studies minor has helped her start to include wildlife into her thought process, and increased her respect and appreciation for wildlife.

The final socialization component that emerged from the interview data is the media, including television, books and periodicals. When asked what influenced their participation in wildlife-related activities, 10 people mentioned TV programs, from hunting and fishing shows to Discovery Channel or *Crocodile Hunter*. Many of these comments indicated that television's effects were rather shallow, especially when compared with the effects of literature. Television programs were discussed as a form of light entertainment ("When I flip through the channels I'll stop to watch a program about wildlife"), while for some people, particular books had a life-changing effect (such as one person for whom the book "My Side of the Mountain" made him strive for an ideal of self-sufficiency, including efficient hunting skills and the ability to use every part of a

kill). Three people mentioned particular periodicals, like *National Geographic* and *National Wildlife*, and certain book titles or genres were also cited, such as fly-fishing literature. When compared to the comments about TV shows, written material elicited much more thoughtful and reflective observations. One employee discussed the classic books “Animal Farm” and “Watership Down”:

I seem to enjoy the idea that wildlife have more mental grasp than we give them credit for, and so I always like it when I read books that seem to enhance the beauty of wildlife, and kind of belittle the material world. I enjoy the fact that the animals take over the world. [laughs]. I think that just appeals to my sensitivities that they don't take over the world, they're kind of bulldozed over, I guess.

In summary, socializing agents such as family members and other important people elicited extensive comments regarding influences on participants' ideas about wildlife; loved ones seemed to have the most influence on wildlife values. Educational experiences were important for a few. While television programs about wildlife were viewed more as light entertainment, other media, such as books and periodicals, had more profound influences on some participants' ideas about wildlife.

### *Experiences*

As expected based on the literature, wildlife-related experiences seem to contribute to how wildlife value orientations are formed. The data suggested three categories of experiences as influencing wildlife value formation: extractive experiences (i.e., hunting and fishing), appreciative experiences (i.e., of wildlife's beauty or role in ecosystems), and negative or fear experiences.

Extractive Experiences—When asked about activities related to wildlife that influenced their ideas, hunting and fishing were the most frequently mentioned activities from childhood and the present. Many people discussed hunting and fishing as important

activities that family members participate(d) in, as well. In fact, 17 of 18 people (94%) discussed hunting activities as part of their lives and influences—eleven (61%) as childhood activities, seven (37%) as current activities, and 15 (83%) as activities that their parents, grandparents, or other close family members participate(d) in. While only one of the participants could be called an avid angler, and two others avid hunters, these activities seemed to have played an important role in many peoples' upbringings and families. One student comments:

There are hunters and fishers definitely in my immediate family. My brothers are all deer hunters, which takes part of a good two weeks out of the month, and then duck hunters, that sort of thing.

*Have they been doing that their whole life?*

Yeah, since elementary school. Grandparents got them involved in that, uncles, but I guess it's just my brothers, it's not my parents out of my immediate family that got into it. It's a tradition in the family. Every year. Same weekend.

For many participants, these experiences were cited as important influences on their value orientations toward wildlife. There was a strong emphasis on ethical hunting and fishing practices, accompanied by an appreciation for the food source and enjoyment that those activities provided.

Appreciative Experiences—Many interview participants readily described appreciative wildlife experiences when asked about activities, particular encounters, or species of concern or interest to them. Two expressed excitement at the prospect of encountering wildlife when in the outdoors:

Wildlife is all part of the outdoor experience. If there's no wildlife in the out of doors, people won't go into the out of doors. At least I wouldn't. Even if I'm out at Blue Mesa Reservoir skiing, to see an eagle flying around, or to see an eagle on the side of the road, that makes that trip much more memorable, imprint on my brain of memory.

I get excited when I see the grass on the ground [where] the elk have laid down in their beds. I mean, every time I see something in nature that kind of shows me there were animals sitting right where I am, it always excites me a little. It definitely is something that I'm always like a child about I guess.

Besides the question asking about the places people have lived, asking participants to describe a particular wildlife encounter garnered the lengthiest responses. The detailed descriptions were ripe with passion, thrill, and wonder. One student went to Australia to study abroad for a year, and she describes her first encounter with a wild kangaroo:

The first thing that came to mind was seeing a kangaroo in the wild for the first time. And just having it jump, or bounce, it's just wild to see 'em going through the bush like that. I had a perma-grin after seeing that.

Another participant described a memorable encounter with a black bear, which appeared as she was hiking with a small group of other girls in New Mexico. The bear charged at her, stopping within arm's reach as she stood singing as loud as she could. Her experience obviously resonates strongly with her to this day, as she used the following phrases to describe it: "a total epiphany" "I felt like one with that bear" "I understood it and it understood me, and we respected each other". For all these examples, encountering wildlife in a natural setting elicited excitement and appreciation.

Fear / Negative Experiences—For some respondents, wildlife elicited significant fear—fear of the unknown in one participant's case who feels she hasn't had many opportunities to encounter wildlife in a natural setting, or outright dread in the cases of two other participants. Those two female students both told stories of being "really scared", of snakes in one case, and of elk at dusk in another situation. The second student also told at length of her fear of bears, and her feelings when she saw one on campus the first day of her frosh year:

I saw a bear my first day here. Across the campus, I was really scared. [laughs]. Because I walked out of my dorm room and I am petrified of bears. And like, that's my worst fear. [laughs]. I saw the bear and said, "Oh my gosh." And then it ran, and I called my parents right away and I was like "I saw a bear."



Some participants discussed negative experiences, such as causing the death of a frog by throwing it on a resting snake. This employee was unprepared for the violence that ensued, and the guilt he felt for causing the death of the frog. However, the experience led to “a kind of morbid fascination with how animals hunt one another” and a great deal of curiosity about the contents of animals’ intestines. Another student’s description of her negative experience with the actions of some hunters demonstrates a the strong animal rights orientation, which was likely crystallized more through this experience:

I was walking out in front of Mail Boxes Etc. a couple weeks ago, and there were two sets of deer heads cut off from here, up [forehead up], so the antlers were there, and you could just see like half their eyebrows and the blood, and you could just smell the animals still, and it was just such a completely fresh kill, that it was upsetting, I felt completely nauseous. And then a couple days later I was having lunch at the Firebrand, and there was this pickup that pulled back, and it had a deer, shot, both it’s front and hind legs roped together, just laying upside down, right in front of Main Street! A restaurant, people were walking by. They just looked like complete senseless killings. To me it was just so horrifying, to just have ‘em laying like they had ‘em, you could just tell it was such a trophy for ‘em, it was such a prize to take this animal, and just slaughter it however way they chose to, and then to just lay it around, to not cover it up, and to have any type of respect for the animal, you know, that was a living soul. It just seemed so inhumane to me. Because you would never do that with a human body. You would just never leave something exposed like that.

In summary, extractive wildlife activities (hunting and fishing), while not an important part of most participants’ current recreational repertoire, were nonetheless a central influence for most people as the recreational activities of relatives and as the sources of family memories. An appreciation for the beauty of wildlife or for the special excitement that comes with encountering an animal in its natural environment was also an important part of participants’ experiences with wildlife. Lastly, fear or negative experiences with wildlife can have lasting effects on peoples’ ideas about wildlife. Taken as a whole, all these experiences, whether extractive, appreciative, or fearful/negative in nature, seem to act as important influences on people’s ideas toward wildlife.

### *Personal Characteristics*

Religiosity—When asked about the influences of religion, religious upbringing, or spirituality on their ideas about wildlife, responses varied from extreme brevity to lengthy introspections, and from thoughtful to scant interest in the question. One male employee's response bordered on the flippant ("No, not from my religious upbringing, no ... I don't think that Jesus Christ is out there in the river with me"), while a male student's response highlights an alternative interpretation of the question, as ethics is a cultural system separate from religion:

Not religious, so to speak, I'd say more if anything, just the ethics I was raised with, like don't poach, don't take it for granted, just things like that. But I think I got that more from my family and the way I was raised than any religious belief.

Several respondents discussed the importance of nature and wildlife for their spiritual development, at times revealing a sense of "nature as temple, wildlife as sacrament." These comments included phrases such as "If I'm ever in a tough situation, I don't think twice, I go to church, but it's not the square church, I go for a hike! Maybe if I was pondering a big problem, and a deer ran by or something, I'd probably think that was some sort of solution" or "I find most of my spirituality in wilderness [because] that's where I know wildlife exists". This last person also said how encountering a "bear or a moose or just anything functioning without me knowing about him or her" would "awaken a new spirituality for me, that the cycle of life would be a little bit more complete". These quotes suggest, as Inglehart (1990) and others have discussed, a shift away from traditional religious values centering around organized religion to tradition-defying values focused on nature as a source for spirituality. Two participants mentioned the relevance of Buddhism as reflecting on their lives by emphasizing the interrelatedness

of everything. Another discussed the release and perspective that comes (especially during hard times) when going for a drive in a natural setting, and encountering wildlife:

[My dad] was a state coalmine inspector the last 15 years. And after fatalities in a coal mine is when he would really go fishing. And that was where he found his release. Going up and down that stream. It helped him deal with the emotions of that. So it really wasn't a specific religion, it was just the peace that you find out there. And I find that same peace when I've had a difficult time. You know, just driving over Black Mesa has been a release for me. And frequently that release, again, is seeing deer, or a sage grouse. That animal that comes along and kind of puts things in perspective.

Of the total sample of participants, six discussed their Catholic upbringing and subsequent separation from the church, three indicated that they had no formal religious upbringing, seven didn't clearly state their religious background, and two discussed their still-devout Christian orientation. Interestingly, those last two both hold quite fundamentalist perspectives with a strong dominion-over-nature ethic, tempered with a humans-as-stewards view. Resources should be conserved because they add to humans' quality of life, according to this anthropocentric perspective:

I believe God has given [wildlife] to us for our use, and therefore it's not inherently wrong for a species to be used up. I think we should conserve our resources, because they do add to our enjoyment of life. But I don't think there's anything inherently, morally wrong with a species being used up. I think it's a natural course of things, as God designed it. Animals use the land, and as man increases, he uses more of what's available to be used, and therefore there's less wildlife.

Religion and spirituality both seem to be important influences on wildlife value orientations for some people, although seven of 18 respondents (39%) had no apparent interest in the question and gave very brief answers. Of those who did expand on the topic, non-traditional spiritual values of wildlife were much more common than traditional religious perspectives.

Sex and Gender—It is difficult to explore the impacts of gender (masculinity, femininity, etc.) on values toward wildlife, but participants provided several insightful

comments. The question used to assess the topic was, “Do you think being a man / woman affects your ideas about wildlife?” Overall, the women tended to recognize differences in values toward wildlife based on gender more than the men. For example, several women commented on the feminine quality of nurturing, which they feel creates a bond or greater compassion between woman and other creatures:

I definitely have a strong nurturing quality deep inside me, and when I see a mother and her baby, I wonder if a man understands it as well. Because it just seems so beautiful and so natural. And I even feel that animals would be more attracted to me than a lot of men. I think we’re just softer and possibly a lot less threatening in a lot of ways. So I definitely am happy to be a woman, and I think that wildlife appreciates it somehow. It’s like a man and a bull—there’s this testosterone fight.

I don’t see myself as trying to dominate an animal in any way. Ever. I could never see myself taking rage out against an animal. Women have a different nurturing instinct than men do, it’s probably more socially constructed, but there’s some type of extra nurturing gene that I think women have. As a woman I might have a little bit more compassion for animals, especially animals like monkeys that you can see so many human traits in. I just think the whole connection, the whole nurturing, the natural, that women are capable of producing life, and if you can see wildlife as like, not another form, but as life in itself, that you have to respect it.

However, some men also identified gender differences, like a male employee who discussed his sense that hunting and fishing were activities that were not taught to girls. He said, “Just the way they [parents he knows] talk and think about wildlife in general, I think that people generally think, this is boy stuff and this is girl stuff.” These comments reflect a greater emphasis on sex than gender, but get at sex roles, or the social construction of appropriate activities and behaviors for male and female members of society.

Men tended to provide a broader range of responses, from “women get more emotionally attached to animals” to “cultural expectations of men and women restrict all of us” to “it never crossed my mind”. Some men were quite hesitant to express their opinions on the topic due to concern for appearing to be sexist. Another man reacted to

an earlier interview question that asked about what activities he participates in that relate to wildlife:

I noticed when you asked, 'what is your interaction' I felt this urge to say I did something active. Then I realized, no I don't do anything active: I don't hunt, I don't fish, I don't raise these animals, I don't take pictures of them, I just want to go and sit and watch them! That's it! And I felt like, well that's not enough! And then I thought, well, why isn't it? And I think that's a guy thing; we're supposed to be doing something with them.

This idea that men are supposed to be agent, manipulator, controller, manager, while women are the nurturers, stay close to the fire, and have a greater aesthetic appreciation was mentioned by a number of people. What participants are often expressing are the roles impressed on people through society. While most use terms like 'men' and 'women' that describe sex, their discussion of sex roles gets at the deeper construct of gender.

Six participants (33%) focused their responses on activities such as hunting that were more common for men than women, five (28%) argued that differences due to sex or gender are non-existent, and six (33%) described attributes such as nurturing qualities, sensitivity to wildlife, and appreciation for beauty as more common among women than men. The range and diversity of answers demonstrate the widespread confusion about sex roles that is so often expressed through the popular media.

Cohort—Participants were asked about generational differences between themselves, their parents, and their grandparents. "Older" participants (employees) were also asked if they noticed differences with younger people. Older generations were viewed as having different approaches to and meanings of hunting, as they use the whole animal and see hunting as a means for getting food on the table, rather than a sport. Two participants suggested that wildlife equated game species for older generations, rather

than the entire suite of species that inhabit an ecosystem. The events and programs of the day provided significant influence for the older people in one participant's life, supporting a cohort view:

For me, I just know that my grandparents all reminded me of the Depression, and whether it was wildlife, whether it was the fact that you save your wheat and you make your own clothes, it just seems like the basics are just always the most important thing to remember, and um, even though in the Depression, they probably had to go out and hunt and kill their own animals, you know, FDR brought the National Forests and all of those conservation programs. I just think that in my view of history, it just seems like they probably have a little more excitement about conservation than we do. Because it gave people jobs, and I mean, just the whole package deal, probably.

Others discussed how older generations may have more appreciation and respect for wildlife, and are more in touch with nature. Conversely, a lack of understanding for ecological sciences among older generations was mentioned as a difference by some. Older generations were described as having "no sense of extinction" or loss of biodiversity.

The nine employees interviewed were asked about younger generations, as well. There was a sense that younger generations have a greater environmental consciousness and understanding. An employee mentioned his feeling that younger people have an automatic appreciation of nature and wildlife, along with a greater understanding:

There does seem to be a finer appreciation of the outdoors and wildlife than even people of my age, my generation. I see almost a "take it for granted" respect of the outdoors. Which is very pleasurable for me. They're not surprised by conservation topics or conservation ideas. I see a sense of respect, and a sense of growing up with ideas that are not necessarily new to them, that are probably still new to me. I'd say that there's an advantage that they're picking up, they're sensing more about nature and about the outdoors than I ever remember—at their age. So, by the time they're 18 or college age, they're pretty much accustomed to protection and conservation and appreciation. Very much less extraction, I think. Hoping.

Conversely, one employee discussed the futility or fatalism that he sensed from his teenage daughter and her friends, and a resultant self-centered attitude of "I want what's mine." Additionally, three people mentioned the greater emphasis among younger

people on extreme recreation activities and the indebtedness to gear that comes along with those activities:

I would assume, big assumption, but I would assume [hunting and fishing are] not as important to the current group of kids, as it was back in my father's age and when I grew up. All it [is now is] mountain biking, and mountain climbing and hiking. Maybe there's some generational thing, I'm not sure. Maybe they're just more fit than we are. [laughter].

From most of the people interviewed, there is a clear sense of generational differences, although as one person stated, all generations have a variety of people, the ones "that understand, and the ones ... that did not learn to take care of wildlife or anything else". Different views of hunting, dissimilar levels of ecological understanding, and varied interest in types of recreational activities were common themes of the disparity between older and younger generations. Opposing viewpoints on younger generations as apathetic, unconcerned, and hopeless, versus respectful, conservation-minded, and motivated to work for change were expressed.

### *Places*

Growing up and spending their formative years in a rural or urban setting seemed to contribute significantly to the amount and character of wildlife activities that people participated in during childhood and presently. Eight respondents (44%) were raised in rural settings, seven (39%) in urban settings, and three (17%) had a mixture of rural and urban childhood settings due to family relocation.

Those respondents who grew up in a suburban or urban setting tended to discuss trips to the zoo or museum, or for some, occasional escapes into adjacent open space, where urban wildlife such as raccoons and squirrels were encountered. One person who grew up in a suburb of a large metropolitan area explained his wildlife-related activities

during his childhood as “front yard / backyard kind of stuff”, where his “growing up activities were pretty concrete”—that is, surrounded by an urban environment.

When the urban childhood experience is compared to a more rural upbringing, clear differences emerge regarding wildlife experiences. Those who grew up in small towns, on farms, or “in the country” frequently mentioned solo forays into surrounding natural areas where they could encounter wildlife on its terms, as one student described:

All the time I was out jumping over sage brush, running around, hiking, camping all the time. So, I've always been out in the wilderness and with the animals. Cause all my life I've just loved to be outside—hiking, camping, running around, burning energy. And if I was in a city, I don't know what would happen but I'd just always loved to be outside.

Hunting activities were much more common for participants or their relatives when the family was located in a rural landscape. One participant, who grew up on a large farm in northeastern Colorado, contrasted urbanites that visit his county with locals. He felt the former are more wasteful in their hunting practices, as opposed to the behavior of locals who “take care of stuff and preserve it”.

Many interview participants spoke at length about places that held special meaning for them; particularly places from childhood. These memories typically centered around undeveloped lands adjacent to their childhood homes (usually in rural settings), where they would spend hours hiking or sitting alone. Several stories included wildlife, like a curious deer approaching to within a few meters, or watching small mammals or birds. One male employee shared that when he dies he wants his ashes spread at “this one spot that is so much in my mind. Because that's part of the place that meant so much to me.” Another person plans to return to his special area from childhood in the woods of Vermont to live because he “loved it so much” and “part of my heart's there”. While these types of comments were virtually non-existent for participants who



grew up in urban settings, they emerged as crucial influences on the development of wildlife values for those with rural backgrounds. This suggests that natural places were more accessible and important to those who grew up in rural settings.

## **Discussion**

This study used a qualitative approach to examine the influence of socialization, experiences, personal characteristics, and places on the development of wildlife value orientations. Results suggest that socializing agents, particularly family members, seemed to influence people's values toward wildlife more profoundly than any of the other components of the model, although all components were important in different proportions for each person.

Experiences from childhood, with family, and as adults, including encounters with wildlife, were also important influences for many participants. Those experiences seemed to fall into three categories: extractive, appreciative, and fear / negative. For many, direct personal experience with wildlife seemed to shape their current beliefs about wildlife. Those who participate(d) in hunting or were socialized in the culture of hunting tended toward an anthropocentric orientation toward wildlife, while those who cited great appreciation for the beauty, power, and/or uniqueness of wildlife tended toward an ecocentric orientation.

Overall, the personal characteristics religiosity and gender / sex did not emerge as powerfully as socialization and experiential components of the model. However, for a few people, these characteristics were a fundamental part of what determined their wildlife values. Religiosity was most significant for those that adhered to deeply held,

Biblically-based beliefs about human's role in the environment. Sex and gender garnered some interesting and insightful comments, but were not discussed as a profound influence on wildlife values by most participants in this study. While both religiosity and gender were not clearly verbalized as important determinants for most participants, these influences may be subtle and ubiquitous enough to go unnoticed in people's reflections. In other words, while people may not consciously think about or clearly articulate the influences of gender and religiosity, those components of the model surfaced in other parts of the interviews (e.g., when someone was discussing how only the men in the family hunted), suggesting a pervasive influence. In contrast, most people easily recognized and clearly articulated the influence of cohort effects, particularly regarding a sense of greater awareness of environmental issues and ecological principles for younger generations.

Second only to socialization influences were the places of one's upbringing as especially powerful determinants of one's value orientation toward wildlife. However, the direction those orientations took depended on other variables. Childhood residents of rural areas with strong familial hunting backgrounds tended toward a greater anthropocentric orientation, while those who spent significant time alone playing or contemplating in natural settings tended toward a strong ecocentric orientation. Urban backgrounds, conversely, shaped participants' value orientations toward unfamiliarity in some cases, or a more removed appreciation in others. More specifically, those with rural backgrounds that had a strong ecocentric orientation seemed to gain that appreciation from direct experience with wildlife, while those with urban backgrounds with a strong ecocentric orientation seemed to gain that appreciation from media sources

or negative experiences of loss of special childhood places. Urbanites tended toward appreciation for all species, not just those species they had direct experience with, because those experiences were quite limited due to their urban upbringing.

These results are consistent with results from the quantitative study presented in Chapter II. That study asked survey respondents to indicate the magnitude of influence (strong, moderate, slight, or none) of people, events, places, etc. on their ideas about wildlife. The categories with the highest number of respondents rating those influences as strong were *events or experiences in your life*, *father*, and *communities you've lived in* (61.0, 34.9, and 34.0%, respectively). Only 2.6, 6.5, and 15.1%, respectfully, of respondents indicated that these factors had no influence on their feelings about wildlife (see Appendix A). These same aspects arose from interviews (life experiences, parents [especially father], and places lived). Thus, the data presented in both papers suggest that these three components may have the most powerful influence over how wildlife value orientations develop and may be a useful starting point for further exploring the antecedents of wildlife value orientations.

It is interesting to examine the driving forces of influences on wildlife value orientations for participants who associated with the anthropocentric end of the spectrum and the ecocentric end of the spectrum. While the importance of socialization influences, for example, did not vary between the two groups, the kinds of activities they were socialized into were different. For instance, those with an ecocentric orientation tended to cite their fathers as important influences, just as those with anthropocentric orientations did, but that influence was channeled through activities such as birdwatching or hiking as opposed to hunting and fishing. Similarly, media sources influenced both

groups, but those with an ecocentric orientation discussed books more, while those with anthropocentric orientations more often discussed periodicals like *National Geographic* or television programs like Discovery Channel or Animal Planet.

For experiential influences, nearly all participants expressed a great deal of appreciation for particular species, but those with ecocentric orientations mentioned that “all species” were important to them more often. That group was also more likely to describe negative experiences related to wildlife, such as loss of habitat to development, than the anthropocentric group. Those with an ecocentric orientation described a spiritual connection to wildlife more frequently, while the anthropocentric group often showed a lack of interest in this topic, or expressed a strong dominion over nature attitude, in the case of one participant. All these differences between the anthropocentric and the ecocentric group are consistent with the descriptions in the spectrum; the former group tends toward utilitarian values of wildlife, while the latter group tends toward an appreciative and animal rights orientation.

Further research opportunities are abundant. The surface was just scratched in some areas, such as the effects of gender on wildlife value orientations. Results suggested that most participants can identify socializing agents and experiences that vary based on sex, but this area could be investigated much more thoroughly. Interviewing a broader population of people with more diverse backgrounds would also enrich what could be offered through the present study. The high number of participants with rural backgrounds reflects the type of people who are attracted to a small, rural college campus, but does not reflect the broader, highly urbanized, American public. Similarly, cultural diversity would vary more among the general public, making it possible to

examine the influence of culture on people's wildlife values. Additionally, incorporating other determinants that this study may have missed will help broaden understanding. While most participants did not identify anything else that might apply at the conclusion of the interviews, a few comments did emerge, including the desire to explore a more international wildlife perspective, values of domestic animals, and the influence of grassroots organizations and their issue campaigns on wildlife value orientations. Exploring these ideas may help illuminate the determinants of wildlife value orientations more clearly.

Qualitative research methods provide an interesting and unique approach to exploring the determinants of wildlife value orientations. The research presented here helps to illuminate influences on people's wildlife value orientations in their own words, without the sideboards of a predetermined survey that provides fixed response categories. Additional qualitative studies focusing on determinants that this study did not address at all (like culture) or did not examine in great depth (such as gender) would provide interesting direction for future research, as would additional broad-based interviews like the ones here, but with different populations. Using survey research in tandem with in-depth interviews can help round out understanding of the whole picture that illustrates people's values toward wildlife.

Understanding societal values is clearly critical for management to be effective (Gresswell & Liss, 1995). Wildlife management does not occur in a vacuum, and public acceptance of management actions is vital in order for those actions to be successful and for wildlife management agencies and agents to avoid controversy. Public acceptance of

management actions can occur if public values are understood and taken into consideration during decision-making.

Four major themes were proposed as determinants of wildlife value orientations and those themes emerged from the interviews: socialization, experiences, personal characteristics, and place. Quotes from informants help paint part of the picture of value orientations toward wildlife. As our social and physical climate changes around us, human values will certainly change as well—we are, at least in part, products of our environment, after all. One, five, or even fifty studies do not answer all the questions about how values are created, however, and further exploration is essential. Additional qualitative inquiry, as well as a continuation of the quantitative research program that is in place, will bring understanding of wildlife value orientations closer to fruition.

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## **CHAPTER IV: Dissertation Conclusion**

Taken together, the two preceding chapters suggest several broad conclusions about how wildlife management orientations are determined, how they can be measured by researchers, and what the information means for the management and conservation of wildlife. This final chapter reviews the dissertation's broader theoretical, psychometric, and applied implications, then concludes briefly with descriptions of research efforts that may offer additional understanding.

### **Integrating the Findings**

#### ***Theoretical Issues***

The most pertinent theoretical insights from this work stem from the qualitative research that examined the determinants of wildlife value orientations. Qualitative research can help provide the groundwork for building theoretical models of the antecedents of wildlife value orientations, but further efforts are essential. Following are some tentative conclusions that emerged from the qualitative study described in Chapter III.

Each individual undoubtedly has a distinct collage of influences in their lives that create the picture of their wildlife value orientations. The pieces of the collage may be bigger or smaller in their overall influence, be placed earlier or later in life, and may fade or brighten as a person matures. Regardless of the importance of each piece, they are all

there in some capacity for most people. These pieces include important people, experiences, places, and personal characteristics like cohort, gender and religion that are culturally influenced. By beginning to explore the relative importance of these components for a small group of participants, this study initiated a new approach to examining the determinants of wildlife value orientations.

The qualitative and quantitative study components presented in this dissertation offer opportunity for comparison. The survey included an item with a list of people, events, places, etc. that may have influenced respondents' ideas about wildlife, and asked them to indicate the magnitude of each influence (strong, moderate, slight, or none). Quantitative data proved to be consistent with results from the interviews: *events or experiences in your life*, *father*, and *communities you've lived in* had the highest number of respondents rating those influences as strong (61.0, 34.9, and 34.0%, respectively). Only 2.6, 6.5, and 15.1%, respectfully, of respondents indicated that these factors had no influence on their feelings about wildlife (see Appendix A). These same aspects arose from interviews and are discussed in Chapter III as "life experiences", "parents (especially father)", and "places lived". Thus, the data presented in both papers suggest that these three components may have the most powerful influence over how wildlife value orientations develop. Using these three categories as a starting point for empirically examining the antecedents of wildlife value orientations provides further research opportunities. Particularly instructive would be additional qualitative research that explores these three areas of influence in more depth, as well as further research that integrates these components into theoretical models to be tested through surveys or other quantitative investigations.

The quantitative study, which compared an existing multi-item scale measuring wildlife value orientations with a newly introduced, single-item measure, reconfirmed the reliability of the existing wildlife value orientation scale. A cursory look at the validity of the protection / use construct indicates that the measures are getting at the idea, but further development of the new descriptions or additional measures are needed. As the descriptions are improved, it may be possible to begin to test them in surveys where brevity is an important methodological consideration.

### ***Methodological Issues***

Methodologically, the chapters offer at least two general conclusions with implications for further work, both of which emerge from Chapter II. First, the wildlife value orientation scale that has been used in several recent studies is a reliable measure of the wildlife protection / use orientation. These scales can thus be used in future studies with confidence. Second, a much abbreviated measure, a pair of descriptions of hypothetical people where respondents are asked to self-select their position on the wildlife protection / use spectrum, provided results consistent with, although less predictive than, the scale. This helps to prove the validity of the construct, while eliciting the need to empirically test this conclusion further. Wildlife value orientation scale reliability and validity has been a concern of other researchers (e.g., Whittaker, 1999). Additional studies in this area will help further validate the construct and test the reliability of the scale.

The descriptions introduced in this dissertation, with additional refinement, may prove to be valuable for future researchers. Pre-test comments from this study suggest a

need to differentiate between ecocentric and biocentric value orientations. Several participants expressed a focus on the health of entire species and habitats (ecocentric orientation) rather than the survival and rights of individuals (biocentric orientation). The revised Wildlife Value Orientation scale that was presented in Chapter II included a new dimension which attempted to capture this ecocentric orientation. However, this dimension was omitted from Chapter II, as results showed that the scale was unreliable. Development of additional scale items may begin to address that problem and capture this variation in orientations.

Through this study, a contribution to the literature may emerge: by refining and testing the wildlife value orientation scale, its effectiveness can improve. This is done in the first paper by examining the reliability and validity of the construct and making recommendations for refinement and additions to the scale. In the second paper, in-depth interviews were used to explore an area where little research has been done: the range of determinants for individuals' wildlife value orientations.

### ***Management Issues***

Results from survey items regarding specific beliefs about local wildlife management issues did not relate directly to content in the dissertation chapters, and thus was not reported. However, these data may prove useful for local wildlife managers as they struggle to resolve the dilemmas of Gunnison sage grouse, mule deer, and Gunnison prairie dog management. Basic frequencies from items about local issues are reported in Appendix A. Examining these results points to the problem that a significant portion of respondents did not feel familiar enough with the issues to express their opinion: items



with particularly high levels of respondents selecting “not sure” include “Gunnison sage grouse are declining around Gunnison because of hunting” (64.4%), “Mule deer are declining around Gunnison because of increased predator populations, especially coyotes and mountain lions” (55.1%), and “Mule deer are declining around Gunnison because of hunting” (42%). Respondents were more comfortable expressing their opinions on items that were less “fact based”, such as whether Gunnison sage grouse recovery should take precedence over ranching activities on public lands (58.5% agreed) or private lands (40.3% agreed). Gunnison prairie dogs elicited strong opinions for the item “The Gunnison prairie dog is important for the ecosystem” (61.9% agreed), but more split responses for “Gunnison prairie dogs are pests” (39.6% agreed, 48.7% disagreed), and especially “The current policy of removing Gunnison prairie dogs from the city limits should be maintained” (35% agreed, 36% disagreed).

These results suggest that management of species such as Gunnison sage grouse, mule deer, and Gunnison prairie dogs require careful consideration of public opinion. Through education efforts, wildlife managers may help clarify confusing aspects of the issues, and help the public realize the complexity of these management dilemmas.

### **Next Steps: Developing a Research Program**

The ability to answer certain questions is one characteristic of good research, but the ability to pose new questions and suggest new ways to examine them is perhaps of equal importance. In this spirit, the following final section briefly outlines a series of research efforts that extend the concepts and methods in the dissertation, focusing on the work necessary to advance theory and application.

The single-item measure of wildlife value orientations introduced in this study provides multiple opportunities for further research. First, as the sample in this study was fairly homogenous in several dimensions (i.e., cultural diversity, attraction to a rural community and small institution of higher education), it would be interesting to administer the single-item measure to a broader group of people. Results from a more urban population may differ. Second, this study focused solely on the protection / use orientation. Creating single-item measures for the wildlife benefits / existence orientation, and possibly other orientations such as a spirituality dimension (Whittaker, 1999) would be of interest. Both the use and protection perspectives suggest a view of nature as static and humans separate from it. It could be possible that a third dimension, viewing nature as dynamic and humans as inextricably linked to nature would be a useful theoretical expansion, as would incorporating an ecocentric perspective into a description. Further, five categories of people emerged from the interview data, and it would be useful to develop descriptions from those templates and test them for validity. Those categories suggest sets of basic beliefs, or value orientations, toward wildlife, and could be labeled appreciators, sportsmen, unfamiliar, worshipers, and utilitarians. Each will be explained here briefly.

1. Appreciators: Six people of the 18 interviewed expressed great appreciation for the beauty of wildlife. Their experiences with wildlife focused on non-extractive activities, interest in watching wildlife, and a desire to control humans (particularly human population), rather than controlling or managing wildlife as intensively as is current practice. Creating wildlife refuges where humans were not allowed and concentrating human population centers were common themes among this group. One

person suggested we try a “couple of hundred year experiment” where wildlife is allowed to function without human intervention.

2. Sportsmen: Five people embrace a sportsman’s ethic. Their experiences with wildlife focused on hunting and fishing, and they expressed support for current wildlife management practices, with an emphasis on managing wildlife to retain healthy wildlife population levels so that hunting and fishing could continue. These folks tended to have a practical bent toward wildlife, and, like the first prototype, a great appreciation for wildlife species, particularly game species.

3. Unfamiliars: All indications suggest three people were quite unfamiliar with wildlife and wildlife management, and their activities and experiences significantly limited. All three grew up in urban settings and family activities involving wildlife were few. They expressed minimal interest in wildlife issues, and often seemed to misunderstand or misinterpret interview questions. One suggested reducing our control of wildlife, but wondered if that would lead to a situation where there would be “millions of animals everywhere and it would be, like, chaos.”

4. Worshippers: Two people expressed great adoration for wildlife. Their experiences with wildlife tended toward life-changing experiences and high levels of connection with particular species. A concern for individuals of the population was common among the worshipers, as was distaste for hunting, which was considered too disrespectful of individual animals. (These views represent a biocentric perspective nicely). Neither had a great deal of practical experience with or exposure to wildlife, but both expressed a desire to have more encounters. They tended to elevate the capacities of wildlife species above human capacities (e.g., they are smarter than us, they have spirits,

they are the purest form of life). Both were closely involved with domestic animals during childhood. When asked about management, both indicated a need for a higher level of habitat protection and concern for the loss of habitat due to development.

5. Utilitarians: Two people expressed a strong utilitarian approach to wildlife. A strong religious faith was a key component of human's relationship with wildlife (the term "steward" was used by both). Their views on wildlife management tended to authorize the status quo, with great support for manipulation of game species for hunting and fishing purposes. Both expressed the anthropocentric sentiment that God gave humans the earth and wildlife to take care of and use.

Developing these prototypes into wildlife value orientation measures, and examining whether people feel comfortable self-identifying in these categories could complement the existing wildlife value orientation scales (i.e., protection / use and wildlife benefits / existence). Additional categories or revisions of the above prototypes that could more accurately capture people's orientations could also prove useful. Further, additional qualitative research could explore these prototypes in more detail.

Another major area for further research stems from testing the cognitive hierarchy for different settings, species, management dilemmas, and samples. Using abbreviated sets of basic belief scale items could lead to a more parsimonious scale. More studies that explore the predictive ability of the single-item measure could further understanding of the cognitive hierarchy.

Finally, more qualitative research in the human dimensions of natural resources area could help broaden scholars' understanding of the complex nature of the human relationship to the natural world. Qualitative data related to specific wildlife

management issues could also provide useful information for managers, so that wildlife decisions and education efforts are consistent with public sentiment. These data can supplement biological data, which must not be compromised. As little qualitative data has been undertaken in this field, understanding can only be enhanced through more studies in this paradigm.

For this writer, the qualitative study was more informing than the quantitative study due to my lack of direct experience with this research approach, and the depth to which it is possible to go regarding wildlife values and their determinants. However, the qualitative research approach offers challenges in interpretation, as the researcher is intimately engaged with the participants and subjectivity is impossible to avoid (true for quantitative methods as well, but to a lesser degree). The qualitative / quantitative dilemma only reinforces the importance of using a balanced research approach; taking the best from each style, and understanding the limitations of each, as well. The studies reported in this dissertation simply underscore the value and detriments of each; neither should be relied upon completely, nor should either be sacrificed.

## **LITERATURE CITED**

**Whittaker, D. (1999). The value-basis of support for urban wildlife management actions. Unpublished Dissertation, Colorado State University, Fort Collins.**

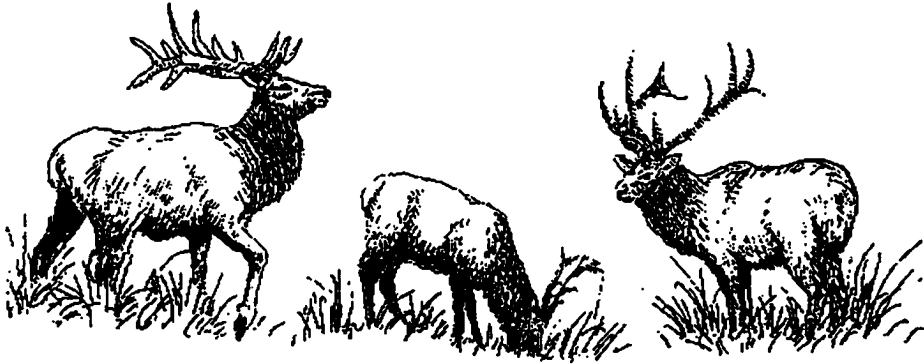


**APPENDIX A:**  
**Survey with Results**  
**(presented in percentages)**  
**Sample size = 772**



# Personal Meanings of Wildlife Survey

*Employee cover page*



**Please continue only if you have read, agreed to, and signed the Informed Consent form on the previous page.**

The purpose of this survey is to learn more about what wildlife means to Western State College employees. Your answers should reflect your opinions and feelings. There are no right or wrong answers.

Your opinions are important to us. We want to hear from *everyone* who receives this questionnaire, not just people with strong opinions about wildlife.

*All your answers will be kept strictly confidential.* Please help us by answering every question with the answer that is most true for *you*.

**Thank you so much for being willing to participate.**

**Colorado State University**

Darla S. DeRuiter, Doctoral Candidate

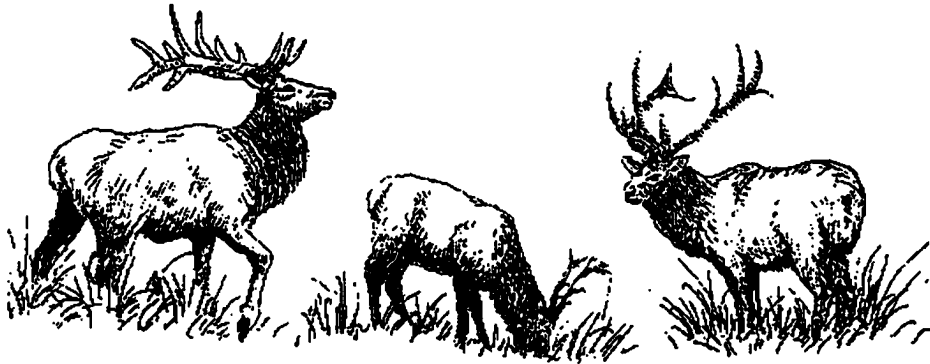
Human Dimensions Unit

Department of Natural Resource Recreation and Tourism

Fort Collins, Colorado 80524

# Personal Meanings of Wildlife Survey

Student cover page



**Please continue only if you have read, agreed to, and signed the Informed Consent form on the previous page.**

The purpose of this survey is to learn more about what wildlife means to Western State College students. Your answers should reflect your opinions and feelings. There are no right or wrong answers.

Your opinions are important to us. We want to hear from *everyone* who receives this questionnaire, not just people with strong opinions about wildlife.

*All your answers will be kept strictly confidential.* Please help us by answering every question with the answer that is most true for *you*.

**Thank you so much for being willing to participate.**

**Colorado State University**

Darla S. DeRuiter, Doctoral Candidate

Human Dimensions Unit

Department of Natural Resource Recreation and Tourism

Fort Collins, Colorado 80524

**Part I: The ways people feel about wildlife varies greatly. Below are some descriptions of hypothetical people. Please read through them and answer the questions below.**

### **Description 1**

This person believes that wildlife should be managed so that humans benefit. They feel that the importance of wildlife can be measured by their usefulness to human activities and experiences. They endorse and may participate in hunting and fishing, because of the quality these activities can add to human life. They may value wildlife for many human-centered purposes, including opportunities to view wildlife, hunt, or fish. They feel that these activities help people enjoy the outdoors and appreciate natural processes. They would not object to the destruction of "nuisance" wildlife.

### **Description 2**

This person believes that the protection of wildlife is more important than human use of wildlife, and that wildlife are valuable for their own sake. They may object to hunting and fishing because these activities violate the rights of individual animals or fish to exist. They feel that hunting and fishing activities are cruel, and cause needless pain and suffering. They place value on protecting habitats and entire species, and would object to destroying "nuisance" wildlife for human convenience. Overall, protecting wildlife would always have a higher priority than any human use of wildlife, including recreation or spiritual values.

**Which of the above descriptions best capture most of your friends' feelings about wildlife? Circle only one number on the 1-9 scale.**

| <i>Description 1</i>              |                                    |                                  |                                  | <i>Neutral</i>                        | <i>Description 2</i>             |                                  |                                    |                                   |
|-----------------------------------|------------------------------------|----------------------------------|----------------------------------|---------------------------------------|----------------------------------|----------------------------------|------------------------------------|-----------------------------------|
| #1 describes my friends perfectly | #1 describes my friends quite well | #1 describes my friends somewhat | #1 describes my friends a little | Neither scenario describes my friends | #2 describes my friends a little | #2 describes my friends somewhat | #2 describes my friends quite well | #2 describes my friends perfectly |
| 6.4                               | 20.7                               | 19.3                             | 9.5                              | 11.1                                  | 6.9                              | 13.6                             | 8.7                                | 3.6                               |

**Which of the above descriptions best capture your own feelings about wildlife? Circle only one number on the 1-9 scale.**

| <i>Description 1</i>      |                            |                          |                          | <i>Neutral</i>                | <i>Description 2</i>     |                          |                            |                           |
|---------------------------|----------------------------|--------------------------|--------------------------|-------------------------------|--------------------------|--------------------------|----------------------------|---------------------------|
| #1 describes me perfectly | #1 describes me quite well | #1 describes me somewhat | #1 describes me a little | Neither scenario describes me | #2 describes me a little | #2 describes me somewhat | #2 describes me quite well | #2 describes me perfectly |
| 7.8                       | 13.7                       | 11.7                     | 9.1                      | 12.3                          | 6.5                      | 12.9                     | 17.0                       | 8.2                       |

You might feel that neither of the descriptions fit you very well, or that something is missing from the descriptions. How else can you describe how you feel about wildlife to help us understand you better?

[see Appendix D]

**Part II:** Lots of people and events may have influenced your feelings about wildlife while you were growing up or more recently. Please indicate how much each of the categories below has **influenced your feelings** about wildlife. If a category does not apply to you, leave it blank. *Check the box that best represents your feelings.*

|                                          | Strongly<br>influenced my<br>feelings about<br>wildlife | Moderately<br>influenced my<br>feelings about<br>wildlife | Slightly<br>influenced my<br>feelings about<br>wildlife | No influence<br>on my feelings<br>about wildlife |
|------------------------------------------|---------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------------|--------------------------------------------------|
| Family members                           |                                                         |                                                           |                                                         |                                                  |
| Mother                                   | 19.9                                                    | 31.0                                                      | 25.3                                                    | 20.6                                             |
| Father                                   | 34.9                                                    | 29.6                                                      | 17.7                                                    | 6.5                                              |
| Grandparents                             | 14.4                                                    | 20.3                                                      | 24.4                                                    | 35.8                                             |
| Siblings                                 | 12.1                                                    | 20.1                                                      | 24.0                                                    | 36.4                                             |
| Spouse / partner                         | 11.6                                                    | 16.0                                                      | 14.0                                                    | 30.6                                             |
| Other family members                     | 8.7                                                     | 18.2                                                      | 19.4                                                    | 33.2                                             |
| Friends / peers                          | 20.8                                                    | 38.2                                                      | 26.9                                                    | 11.0                                             |
| School / teachers / courses taken        | 23.8                                                    | 29.6                                                      | 24.2                                                    | 18.7                                             |
| Events or experiences in your life       | 61.0                                                    | 26.5                                                      | 8.1                                                     | 2.6                                              |
| Your cultural / ethnic background        | 13.0                                                    | 22.1                                                      | 22.7                                                    | 36.8                                             |
| Communities you've lived in              | 34.0                                                    | 30.4                                                      | 17.5                                                    | 15.1                                             |
| Books / magazines                        | 17.3                                                    | 29.0                                                      | 28.6                                                    | 21.7                                             |
| Employment / jobs you've held            | 12.5                                                    | 17.9                                                      | 21.0                                                    | 43.4                                             |
| Television programs / movies             | 12.7                                                    | 26.9                                                      | 36.2                                                    | 20.3                                             |
| Religious beliefs / religious upbringing | 5.3                                                     | 13.6                                                      | 16.9                                                    | 54.8                                             |
| Other _____                              | 4.4                                                     | 0.6                                                       | 0.5                                                     | 0.1                                              |

**Part III:** This section asks how you feel about some specific, local wildlife issues for the Gunnison Basin. You may be familiar with some of these issues, and others may be new to you. Please indicate the extent to which you agree or disagree with each of the statements. (*Circle the number that best represents your own response.*)

|                                                                                                                                                                   | Strongly agree | Moderately agree | Slightly agree | Not sure | Slightly disagree | Moderately disagree | Strongly disagree |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------------|----------------|----------|-------------------|---------------------|-------------------|
| The Gunnison Sage Grouse's habitat requirements should have a higher priority than local ranchers' rights to graze on <u>public</u> lands where Sage Grouse live. | 20.6           | 23.1             | 14.8           | 20.2     | 9.6               | 6.1                 | 5.4               |
| Local ranchers should not have to accommodate Gunnison Sage Grouse habitat requirements on their <u>private</u> land.                                             | 11.1           | 14.9             | 14.3           | 14.7     | 18.4              | 14.2                | 12.4              |
| Gunnison Sage Grouse are declining around Gunnison because of hunting.                                                                                            | 3.0            | 6.7              | 6.7            | 64.4     | 4.7               | 7.4                 | 7.0               |
| Mule deer are declining around Gunnison because of increased predator populations, especially coyotes and mountain lions.                                         | 2.5            | 5.6              | 9.0            | 55.1     | 8.5               | 8.7                 | 10.6              |
| Mule deer are declining around Gunnison because of hunting.                                                                                                       | 4.1            | 10.1             | 17.4           | 42.0     | 10.5              | 8.9                 | 7.0               |
| Mule deer are declining around Gunnison because of development and loss of habitat.                                                                               | 17.4           | 20.9             | 19.5           | 29.9     | 6.8               | 3.3                 | 2.3               |
| The decline of Kokanee Salmon in Blue Mesa Reservoir because management has favored Lake Trout is a serious problem.                                              | 9.5            | 14.8             | 17.6           | 47.3     | 2.9               | 4.7                 | 3.2               |
| Lake Trout and Kokanee Salmon are equally important to me.                                                                                                        | 19.4           | 21.9             | 15.5           | 28.2     | 8.4               | 3.6                 | 3.1               |
| The Gunnison Prairie Dog is important for the ecosystem.                                                                                                          | 20.0           | 21.2             | 20.7           | 16.5     | 7.5               | 7.4                 | 6.7               |
| Gunnison Prairie Dogs are pests.                                                                                                                                  | 10.9           | 11.2             | 17.5           | 11.8     | 14.2              | 15.4                | 19.1              |
| The current policy of removing Gunnison Prairie Dogs from the city limits should be maintained.                                                                   | 11.5           | 10.1             | 13.4           | 29.0     | 10.4              | 11.9                | 13.7              |
| There are a lot fewer elk in the Gunnison Basin than the Colorado Division of Wildlife estimates.                                                                 | 3.7            | 5.9              | 8.4            | 66.4     | 5.9               | 6.1                 | 3.6               |
| I trust the Colorado Division of Wildlife to make appropriate decisions about elk hunting in this area.                                                           | 12.6           | 24.8             | 19.3           | 17.8     | 9.4               | 8.0                 | 8.1               |

**Several ideas have been proposed to change the way wildlife is managed. Each of the following describes an action suggested by some people to change wildlife management. We are interested in what you think about these proposed changes. Please indicate how you feel about each proposal by circling the number closest to the way *you* personally feel.**

| How do you feel about:                                                                                                   | Extremely Positive | Moderately Positive | Slightly Positive | Neutral | Slightly Negative | Moderately Negative | Extremely Negative |
|--------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------|-------------------|---------|-------------------|---------------------|--------------------|
| Protecting Gunnison Sage Grouse regardless of impacts to ranching and hunting activities.                                | 11.8               | 23.8                | 21.2              | 14.8    | 13.8              | 9.5                 | 5.1                |
| Taking management actions to control the decline of mule deer around Gunnison.                                           | 20.7               | 35.0                | 24.5              | 12.6    | 4.5               | 1.8                 | 0.9                |
| Controlling Lake Trout in Blue Mesa Reservoir to increase Kokanee Salmon populations.                                    | 13.5               | 30.2                | 24.9              | 23.4    | 4.8               | 1.9                 | 1.5                |
| Listing the Gunnison Prairie Dog as threatened or endangered.                                                            | 13.0               | 12.6                | 18.3              | 22.2    | 12.0              | 8.3                 | 13.6               |
| Implementing the Colorado Division of Wildlife's elk hunting license plan permanently, based on their population counts. | 19.0               | 22.8                | 17.0              | 26.8    | 8.0               | 3.2                 | 3.1                |

**Now we'd like to find out whether you think certain management actions should actually be made to address the above issues. If you had to decide today on whether the following changes should be made, how likely would you be to decide **IN FAVOR** of these changes? Please circle the number of the response that comes closest to how you would decide to act.**

| If you had to vote today, how likely is it that you would vote to:                                                    | Extremely likely | Moderately likely | Slightly likely | Neutral | Slightly unlikely | Moderately unlikely | Extremely unlikely |
|-----------------------------------------------------------------------------------------------------------------------|------------------|-------------------|-----------------|---------|-------------------|---------------------|--------------------|
| Protect the Gunnison Sage Grouse regardless of impacts to ranching and hunting activities.                            | 17.7             | 18.7              | 19.4            | 11.5    | 13.8              | 10.0                | 9.0                |
| Take management actions to control the decline of mule deer around Gunnison.                                          | 23.7             | 31.0              | 24.5            | 11.9    | 4.5               | 2.6                 | 1.8                |
| Control Lake Trout in Blue Mesa Reservoir to increase Kokanee Salmon populations.                                     | 15.7             | 28.2              | 25.5            | 20.0    | 4.4               | 2.5                 | 3.7                |
| Protect the Gunnison Prairie Dog by listing them as threatened or endangered.                                         | 15.8             | 15.6              | 15.8            | 15.8    | 10.6              | 8.7                 | 17.7               |
| Implement the Colorado Division of Wildlife's elk hunting license plan permanently, based on their population counts. | 20.6             | 21.8              | 20.5            | 24.2    | 5.9               | 3.6                 | 3.3                |

**Part IV:** There are two sections in the following table. First, check whether or not you participated in each activity when you were growing up. Next, please estimate how often you participate in the same activities now.

| Activity                               | Growing up, did you participate? |      | Times participated during last 12 months |              |              |               |                |                    |
|----------------------------------------|----------------------------------|------|------------------------------------------|--------------|--------------|---------------|----------------|--------------------|
|                                        |                                  |      | None                                     | 1 to 2 times | 3 to 5 times | 6 to 10 times | 11 to 25 times | More than 25 times |
|                                        | yes                              | no   |                                          |              |              |               |                |                    |
| Hunting                                | 37.4                             | 62.6 | 72.8                                     | 8.5          | 5.8          | 5.0           | 3.2            | 4.6                |
| Fishing                                | 86.5                             | 13.5 | 31.2                                     | 16.0         | 14.5         | 8.9           | 9.9            | 19.5               |
| Taking a special trip to view wildlife | 83.3                             | 16.7 | 20.3                                     | 14.5         | 19.0         | 14.7          | 12.7           | 18.7               |

**Overall, would you say you have a positive, negative, or neutral attitude toward...**

|                  | Extremely positive | Moderately positive | Somewhat positive | Neutral | Somewhat negative | Moderately negative | Extremely negative |
|------------------|--------------------|---------------------|-------------------|---------|-------------------|---------------------|--------------------|
| Hunting          | 19.6               | 20.3                | 16.4              | 12.9    | 10.9              | 11.3                | 8.6                |
| Fishing          | 37.5               | 27.9                | 13.3              | 11.3    | 6.7               | 2.0                 | 1.4                |
| Wildlife Viewing | 67.5               | 19.1                | 6.1               | 5.7     | 0.4               | 1.2                 | 0.1                |

**Part V:** This section asks how you feel about wildlife in general. Please indicate the extent to which you agree or disagree with each of the statements. (*Circle the number that best represents your own response*).

|                                                                                                            | Strongly agree | Moderately agree | Slightly agree | Not sure | Slightly disagree | Moderately disagree | Strongly disagree |
|------------------------------------------------------------------------------------------------------------|----------------|------------------|----------------|----------|-------------------|---------------------|-------------------|
| Humans should manage wildlife populations so that humans benefit.                                          | 6.6            | 12.0             | 18.9           | 7.8      | 19.7              | 17.7                | 17.4              |
| The rights of wildlife are more important than human use of wildlife.                                      | 17.9           | 18.3             | 20.1           | 11.1     | 17.1              | 8.9                 | 6.1               |
| Hunting helps people appreciate wildlife and natural processes.                                            | 9.9            | 16.2             | 23.7           | 11.1     | 13.6              | 12.5                | 13.0              |
| The protection of wildlife populations or species is more important than keeping individual animals alive. | 18.2           | 22.1             | 23.5           | 21.4     | 9.8               | 4.1                 | 0.9               |
| I object to hunting because it violates the rights of an individual animal to exist.                       | 7.1            | 6.5              | 10.1           | 7.2      | 17.0              | 19.2                | 32.8              |

## General Opinions about Wildlife, continued...

|                                                                                                                                  | Strongly agree | Moderately agree | Slightly agree | Not sure | Slightly disagree | Moderately disagree | Strongly disagree |
|----------------------------------------------------------------------------------------------------------------------------------|----------------|------------------|----------------|----------|-------------------|---------------------|-------------------|
| It is acceptable for human use to cause the loss of some individual animals as long as wildlife populations are not jeopardized. | 21.6           | 24.3             | 23.1           | 7.8      | 11.8              | 6.9                 | 4.5               |
| Animals should have rights similar to the rights of humans.                                                                      | 7.8            | 11.4             | 18.6           | 11.7     | 18.5              | 17.5                | 14.5              |
| Hunting is cruel and inhumane to the animals. *                                                                                  | 7.4            | 7.5              | 13.1           | 6.9      | 18.5              | 18.7                | 27.8              |
| Preserving wildlife habitat is one of the most important strategies available for wildlife protection.                           | 43.9           | 29.9             | 16.5           | 7.0      | 1.3               | 0.9                 | 0.4               |
| It is important for humans to manage the populations of wild animals.                                                            | 18.2           | 27.3             | 28.2           | 10.6     | 7.8               | 5.0                 | 2.8               |
| Although wildlife may have certain rights, most needs that people have are more important than the rights of wildlife. *         | 6.0            | 11.7             | 23.9           | 13.3     | 22.4              | 12.9                | 9.8               |
| Hunting makes people insensitive to suffering. *                                                                                 | 4.2            | 7.7              | 12.3           | 12.5     | 18.4              | 17.6                | 27.2              |
| Protecting threatened or endangered species is important to me.                                                                  | 50.9           | 25.9             | 15.7           | 3.7      | 2.0               | 1.3                 | 0.5               |
| If animal populations are not threatened, we should use wildlife to add to the quality of human life.                            | 16.4           | 19.5             | 25.2           | 21.1     | 7.9               | 5.5                 | 4.4               |
| Sometimes it's OK to compromise the rights of people in order to protect wildlife.                                               | 17.3           | 18.5             | 27.0           | 14.3     | 10.4              | 7.3                 | 5.3               |
| Hunting helps people enjoy the outdoors in a positive way.                                                                       | 16.8           | 20.4             | 21.2           | 13.2     | 11.4              | 8.6                 | 8.5               |
| If we can't minimize the pain and suffering caused to wildlife by an activity, then we should not allow that activity.           | 11.9           | 12.3             | 18.8           | 23.3     | 14.0              | 10.1                | 9.5               |
| The rights of people and the rights of wildlife are equally important.                                                           | 14.6           | 13.0             | 16.8           | 11.5     | 24.1              | 11.4                | 8.7               |
| Hunting is a bad substitute for native predators and natural processes. *                                                        | 11.9           | 10.8             | 13.6           | 15.7     | 19.2              | 15.3                | 13.4              |
| People should not treat wildlife in ways that may cause pain and suffering, regardless of how much we may benefit.               | 18.1           | 16.1             | 19.4           | 15.1     | 16.4              | 8.5                 | 6.3               |
| Hunting can have beneficial effects on wildlife populations and ecosystems.                                                      | 23.5           | 24.9             | 27.8           | 14.0     | 3.3               | 4.0                 | 2.5               |

\* Reverse coded



**Part VI: Finally, we are interested in information about you personally. Please remember that all information will be kept strictly confidential, but if you feel uncomfortable answering any question, feel free to skip to the next one.**

Are you: 58.4 male 41.6 female What is your age? 18 to 80, mean 26.6

How long have you lived in Colorado? .1 to 65, mean 13.4 years

Before Colorado, what state did you come from? \_\_\_\_\_

How long did you live in that state? .2 to 58, mean 13.6 years

How would you describe where .... (Please check **only one** answer per column)

| your mother<br>lived when she<br>was growing up? | your father lived<br>when he was<br>growing up? | you lived mostly<br>when you were<br>growing up? |                                                          |
|--------------------------------------------------|-------------------------------------------------|--------------------------------------------------|----------------------------------------------------------|
| 25.1                                             | 24.1                                            | 17.8                                             | Farm, ranch, or rural area outside a town                |
| 28.5                                             | 27.9                                            | 24.2                                             | Small town (Fewer than 10,000 people)                    |
| 15.0                                             | 13.0                                            | 14.9                                             | Larger town or small city (10,001-50,000 people)         |
| 11.5                                             | 11.1                                            | 10.5                                             | Medium-sized city (50,001-100,000)                       |
| 13.0                                             | 14.4                                            | 22.1                                             | Large city/suburb of large city (100,001-500,000 people) |
| 7.0                                              | 9.5                                             | 10.5                                             | Metropolitan area (500,001 people or more)               |

Which categories would you say best describe your religious upbringing and current religious affiliation?

| Religious Upbringing |                    | Current Affiliation |                    |
|----------------------|--------------------|---------------------|--------------------|
| 1.8                  | Atheist            | 6.6                 | Atheist            |
| 32.0                 | Catholic           | 19.0                | Catholic           |
| 1.0                  | Jewish             | 0.3                 | Jewish             |
| 12.7                 | Non-religious      | 24.9                | Non-religious      |
| 28.5                 | Protestant         | 18.3                | Protestant         |
| 24.1                 | Other; what? _____ | 30.9                | Other; what? _____ |

How devout to those beliefs were you during your upbringing and at the present time?

|                   | Very devout |      | Moderately devout |      | Not at all devout |      |
|-------------------|-------------|------|-------------------|------|-------------------|------|
| During upbringing | 14.0        | 15.1 | 14.0              | 24.3 | 12.7              | 10.3 |
| Currently         | 15.2        | 14.9 | 9.2               | 20.1 | 10.5              | 18.6 |

What is your class rank at Western State College? 18.8 frosh 27.7 Sophomore 25.0 Junior 28.4 Senior

Number of credit hours earned (approx.) 3 to 196, mean 56.4

Did you transfer from another institution? Yes 39.4 No 60.6

What is your major area of study at Western State College? \_\_\_\_\_

[For employees] Are you: 38.0 Staff 48.4 Faculty 13.6 Administration

How long have you worked at WSC? .1 - 41, mean 8.9 yrs

What department, area, or discipline do you work in? \_\_\_\_\_



**APPENDIX B:**  
**Interview Schedule**

## Interview Schedule

Introduction: (Begin by working to establish rapport with the participant, including variations of the following).

- Small talk / introductions
- Purpose: Several weeks ago you completed a written survey that I distributed about your feelings toward wildlife. Now you have agreed to participate in a more in-depth interview, to further explore those feelings. I am interested in hearing your ideas, in your own words. There is no right or wrong here—only your opinions and thoughts matter. Really, I'd like this to be more like a conversation than an interview—if you have topics you would like to expand on that I didn't anticipate, that's great! I do have a set of questions here that I'd like to cover, but I'm very open to your ideas.
- Self disclosure: (To engage the participant's interest and pave the way for him or her to talk freely.) I've enjoyed learning about various people's experiences with wildlife. It's amazing how different everyone's ideas are! (Participants may self disclosure to help them feel comfortable discussing personal issues). I appreciate your willingness to share your thoughts with me.
- I'd like to tape-record what you have to say so that I don't miss any of it. I don't want to rely only on my notes, because I might miss something or change your words somehow. So, if you don't mind, I'd very much like to use the recorder. If at any time during the interview you would like to turn it off, all you have to do is press this button, and the recorder will stop.

Interview Schedule (questions in plain text will be asked if prompting is needed)

1. **Do you participate in any kind of wildlife-related activities?** What ones? Please include anything that relates to wildlife in any way (including books, TV, etc.). How often?
2. **Did you participate in any kind of wildlife-related activities when you were growing up?** What ones? How often?
3. **Do your parents, grandparents, or other close relatives participate in any of those activities?** Others?
4. **Who or what has most influenced your ideas about wildlife?**
5. **Please describe that influence as best you can.** For example, when were you influenced most? In what ways were you influenced? Why was this influence particularly significant for you?

*Depending on response to previous question, explore any areas that weren't discussed...*

Are there any (other) particular people that influence(d) your ideas about wildlife? (Friends, teachers, public figures or personalities).

Are there any particular books, magazines, or literature that influence(d) your ideas about wildlife?

Are there any particular television shows or movies that influence(d) your ideas about wildlife?

Are there any particular childhood experiences that influence(d) your ideas about wildlife?

Are there any particular more recent experiences that influence(d) your ideas about wildlife?

Anything else? (courses, pets)

**6. Do you think your ideas about wildlife are different from people in an older generation, like your parents' and grandparents' generations?**

How are they different? Why do you think that is? Provide specific examples if you can.

**7. Was there anything about the place where you grew up that might have influenced your ideas about wildlife? Please explain. How about any of the other communities you've lived in since? (rurality, people bring in animals during hunting season, politics, other ideas?)**

**8. Are there any particular wildlife species that you care greatly about or are very interested in? Which ones? Why is that?**

**9. Are there any aspects of your spiritual life, religious beliefs or religious upbringing that affect(ed) your views about wildlife?**

**10. Have any of your experiences with work (paid or unpaid) affected your views about wildlife?**

**11. Do you think being a woman / man affects your views about wildlife?**

**12. How much knowledge or background do you think you have when it comes to wildlife?**

What kinds of things do you know about?

**13. Please describe a memorable wildlife encounter you've had—one that comes easily to mind. Does that experience influence and/or reflect your current views**

**toward wildlife? Why or why not? Any other events or experiences you want to talk about?**

**14. At this point in your life, how do you feel about hunting?**

**15. How do you feel about fishing?**

**16. What do you think humans' role in wildlife management and protection is currently? What do you think it should be?**

**17. Do you want to talk about anything else I haven't asked you that you think might apply?**



**APPENDIX C:**  
**Pre-test Survey with Results**  
**(presented in frequencies)**  
**Sample size = 38**  
**Administered May 2 & 3, 2000**  
**to**  
**Students of RECR 352: Ecosystem Management**  
**Western State College of Colorado**



**Part I: The ways people feel about wildlife varies greatly. Below are some descriptions of hypothetical people. Please read through them and answer the questions below.**

### Description 1

This person believes that wildlife should be managed so that humans benefit. They feel that the importance of wildlife can be measured by their usefulness to human activities and experiences. They endorse and may participate in hunting and fishing, because of the quality these activities can add to human life. They may value wildlife for many human-centered purposes, including opportunities to view wildlife, hunt, or fish. They feel that these activities help people enjoy the outdoors and appreciate natural processes. They would not object to the destruction of "nuisance" wildlife.

### Description 2

This person believes that the protection of wildlife is more important than human use of wildlife, and that wildlife are valuable for their own sake. They may object to hunting and fishing because these activities violate the rights of individual animals or fish to exist. They feel that hunting and fishing activities are cruel, and cause needless pain and suffering. They place value on protecting habitats and entire species, and would object to destroying "nuisance" wildlife for human convenience. Overall, protecting wildlife would always have a higher priority than any human use of wildlife, including recreation or spiritual values.

**Which description best captures most of your friends' feelings about wildlife? Circle only one number on the 1-9 scale.**

| Description 1                  |                                 |                               |                               | Neutral                               |                               | Description 2                 |                                 |                                |
|--------------------------------|---------------------------------|-------------------------------|-------------------------------|---------------------------------------|-------------------------------|-------------------------------|---------------------------------|--------------------------------|
| Describes my friends perfectly | Describes my friends quite well | Describes my friends somewhat | Describes my friends a little | Neither scenario describes my friends | Describes my friends a little | Describes my friends somewhat | Describes my friends quite well | Describes my friends perfectly |
| 2                              | 6                               | 11                            | 7                             | 1                                     | 4                             | 6                             | 1                               | 0                              |

**Which description best captures your own feelings about wildlife? Circle only one number on the 1-9 scale.**

| Description 1          |                         |                       |                       | Neutral                       |                       | Description 2         |                         |                        |
|------------------------|-------------------------|-----------------------|-----------------------|-------------------------------|-----------------------|-----------------------|-------------------------|------------------------|
| Describes me perfectly | Describes me quite well | Describes me somewhat | Describes me a little | Neither scenario describes me | Describes me a little | Describes me somewhat | Describes me quite well | Describes me perfectly |
| 0                      | 4                       | 3                     | 5                     | 6                             | 6                     | 3                     | 9                       | 2                      |

***Please continue on the next page...***

**Part III:** This section asks how you feel about some specific, local wildlife issues for the Gunnison Basin. You may be familiar with some of these issues, and others may be new to you. Please indicate the extent to which you agree or disagree with each of the statements. *(Circle the number that best represents your own response.)*

|                                                                                                                                                                   | Strongly<br>agree | Moderately<br>agree | Slightly<br>agree | Not<br>sure | Slightly<br>disagree | Moderately<br>disagree | Strongly<br>disagree |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------|-------------------|-------------|----------------------|------------------------|----------------------|
| The Gunnison Sage Grouse's habitat requirements should have a higher priority than local ranchers' rights to graze on <u>public</u> lands where Sage Grouse live. | 9                 | 8                   | 10                | 7           | 2                    | 2                      | 0                    |
| Local ranchers should not have to accommodate Gunnison Sage Grouse habitat requirements on their <u>private</u> land.                                             | 0                 | 4                   | 5                 | 4           | 6                    | 11                     | 8                    |
| It is OK to have a short, controlled hunting season for Gunnison Sage Grouse.                                                                                     | 1                 | 2                   | 1                 | 7           | 5                    | 8                      | 14                   |
| I think mule deer are declining around Gunnison because of increased predator populations, especially coyotes.                                                    | 0                 | 2                   | 5                 | 13          | 5                    | 5                      | 8                    |
| I think mule deer are declining around Gunnison because of hunting.                                                                                               | 0                 | 0                   | 6                 | 14          | 9                    | 5                      | 3                    |
| I think mule deer are declining around Gunnison because of development and loss of habitat.                                                                       | 5                 | 6                   | 13                | 8           | 2                    | 2                      | 2                    |
| The Kokanee Salmon decline in Blue Mesa Reservoir is a serious problem.                                                                                           | 12                | 10                  | 6                 | 5           | 2                    | 3                      | 0                    |
| Lake Trout should be managed and controlled to prevent further Kokanee Salmon decline in Blue Mesa Reservoir.                                                     | 6                 | 9                   | 13                | 7           | 1                    | 0                      | 1                    |
| The Gunnison Prairie Dog is valuable and should be protected under the Endangered Species Act.                                                                    | 4                 | 6                   | 5                 | 12          | 4                    | 4                      | 2                    |
| Prairie dogs are pests and should be kept out of the city limits of Gunnison, as is current policy.                                                               | 0                 | 3                   | 2                 | 4           | 10                   | 8                      | 11                   |
| The Colorado Division of Wildlife has grossly overestimated elk population numbers over the past two years in Gunnison County.                                    | 1                 | 1                   | 4                 | 18          | 6                    | 5                      | 3                    |
| I trust the Colorado Division of Wildlife to make appropriate decisions about elk hunting in this area.                                                           | 1                 | 12                  | 12                | 4           | 3                    | 4                      | 2                    |

**Now we'd like to find out whether you think certain management actions should actually be made to address the above issues. If you had to decide today on whether the following changes should be made, how likely would you be to decide IN FAVOR of these changes? Please circle the number of the response that comes closest to how you would decide to act.**

| If you had to vote today, how likely is it that you would vote to:                                                    | Extremely likely | Moderately likely | Slightly likely | Neutral | Slightly unlikely | Moderately unlikely | Extremely unlikely |
|-----------------------------------------------------------------------------------------------------------------------|------------------|-------------------|-----------------|---------|-------------------|---------------------|--------------------|
| Protect the Gunnison Sage Grouse regardless of impacts to ranching and hunting activities.                            | 8                | 12                | 9               | 4       | 1                 | 2                   | 2                  |
| Take dramatic steps to control the decline of mule deer around Gunnison.                                              | 3                | 15                | 8               | 6       | 4                 | 0                   | 2                  |
| Control Lake Trout populations in Blue Mesa Reservoir so Kokanee Salmon can persist.                                  | 8                | 19                | 4               | 4       | 1                 | 1                   | 1                  |
| Protect the Gunnison Prairie Dog by listing them as threatened or endangered.                                         | 7                | 5                 | 8               | 7       | 5                 | 3                   | 2                  |
| Implement the Colorado Division of Wildlife's elk hunting license plan permanently, based on their population counts. | 7                | 13                | 7               | 7       | 2                 | 2                   | 0                  |

**Part IV:** There are two sections in the following table. First, check whether or not you participated in each 0activity when you were growing up. Next, please estimate how often you participate in the same activities now.

| Activity                               | Growing up, did you participate? |    | Times participated during last 12 months |              |              |               |                |                    |
|----------------------------------------|----------------------------------|----|------------------------------------------|--------------|--------------|---------------|----------------|--------------------|
|                                        |                                  |    | None                                     | 1 to 2 times | 3 to 5 times | 6 to 10 times | 11 to 25 times | More than 25 times |
|                                        | yes                              | no |                                          |              |              |               |                |                    |
| Hunting                                | 15                               | 23 | 28                                       | 4            | 1            | 3             | 0              | 2                  |
| Fishing                                | 32                               | 5  | 10                                       | 11           | 5            | 1             | 1              | 10                 |
| Taking a special trip to view wildlife | 32                               | 5  | 4                                        | 4            | 8            | 7             | 5              | 10                 |

**Overall, would you say you have a positive, negative, or neutral attitude toward...**

|                  | Extremely positive | Moderately positive | Somewhat positive | Neutral | Somewhat negative | Moderately negative | Extremely negative |
|------------------|--------------------|---------------------|-------------------|---------|-------------------|---------------------|--------------------|
| Hunting          | 4                  | 6                   | 11                | 5       | 2                 | 7                   | 3                  |
| Fishing          | 9                  | 12                  | 6                 | 6       | 5                 | 0                   | 0                  |
| Wildlife Viewing | 22                 | 7                   | 6                 | 3       | 0                 | 0                   | 0                  |

**Part V:** This section asks how you feel about wildlife in general. Please indicate the extent to which you agree or disagree with each of the statements. (*Circle the number that best represents your own response*).

|                                                                                                                                  | Strongly agree | Moderately agree | Slightly agree | Not sure | Slightly disagree | Moderately disagree | Strongly disagree |
|----------------------------------------------------------------------------------------------------------------------------------|----------------|------------------|----------------|----------|-------------------|---------------------|-------------------|
| Humans should manage wildlife populations so that humans benefit.                                                                | 2              | 1                | 5              | 3        | 5                 | 13                  | 9                 |
| It is acceptable for human use to cause the loss of some individual animals as long as wildlife populations are not jeopardized. | 7              | 6                | 8              | 5        | 3                 | 6                   | 3                 |
| It is important for humans to manage the populations of wild animals.                                                            | 5              | 12               | 5              | 6        | 6                 | 3                   | 1                 |
| If animal populations are not threatened, we should use wildlife to add to the quality of human life.                            | 5              | 5                | 10             | 8        | 3                 | 7                   | 0                 |
| The rights of wildlife are more important than human use of wildlife.                                                            | 4              | 9                | 8              | 9        | 5                 | 1                   | 1                 |
| Animals should have rights similar to the rights of humans.                                                                      | 6              | 13               | 13             | 0        | 6                 | 0                   | 0                 |
| I object to hunting because it violates the rights of an individual animal to exist.                                             | 3              | 0                | 3              | 6        | 12                | 8                   | 6                 |
| Hunting helps people appreciate wildlife and natural processes.                                                                  | 2              | 4                | 11             | 6        | 7                 | 4                   | 4                 |
| Hunting is cruel and inhumane to the animals.                                                                                    | 5              | 2                | 5              | 2        | 15                | 5                   | 4                 |
| Hunting makes people insensitive to suffering.                                                                                   | 1              | 1                | 9              | 4        | 11                | 5                   | 7                 |
| Hunting helps people enjoy the outdoors in a positive way.                                                                       | 3              | 6                | 12             | 2        | 7                 | 5                   | 3                 |
| Fishing causes pain and suffering to fish.                                                                                       | 3              | 1                | 5              | 5        | 14                | 4                   | 5                 |
| Catching fish for sport is cruel.                                                                                                | 3              | 2                | 8              | 1        | 5                 | 14                  | 5                 |
| Catching fish for food is inhumane.                                                                                              | 0              | 0                | 0              | 0        | 7                 | 15                  | 16                |

**Part VI: Finally, we are interested in information about you personally. Please remember that all information will be kept strictly confidential, but if you feel uncomfortable answering any question, feel free to skip to the next one.**

Are you: 24 male 14 female

What is your age? 22.6 mean

How long have you lived in Colorado? 7.7 mean years

Before Colorado, what state did you come from? \_\_\_\_\_

How long did you live in that state? 16.8 years

How would you describe where .... (Please check only one answer per column)

| your parent(s)<br>lived when you<br>were born? | you lived mostly<br>when you were<br>growing up? | you would like<br>to live<br>someday? |                                                          |
|------------------------------------------------|--------------------------------------------------|---------------------------------------|----------------------------------------------------------|
| 10                                             | 8                                                | 9                                     | Farm, ranch, or rural area outside a town                |
| 10                                             | 10                                               | 17                                    | Small town (Fewer than 10,000 people)                    |
| 12                                             | 11                                               | 5                                     | Larger town or small city (10,000-50,000 people)         |
| 1                                              | 1                                                | 5                                     | Medium-sized city (50,001-100,000)                       |
| 5                                              | 6                                                | 0                                     | Large city/suburb of large city (100,001-500,000 people) |
| 0                                              | 1                                                | 1                                     | Metropolitan area (500,001 people or more)               |

Which categories would you say best describe your religious upbringing and current religious affiliation?

Religious Upbringing

0 Atheist  
8 Catholic  
1 Jewish  
9 Non-religious  
12 Protestant  
6 Other; what? \_\_\_\_\_

Current Affiliation

1 Atheist  
1 Catholic  
0 Jewish  
19 Non-religious  
4 Protestant  
10 Other; what? \_\_\_\_\_

How devout to those beliefs were you during your upbringing and at the present time?

|                   | Very devout |   | Moderately devout |   | Not at all devout |   |
|-------------------|-------------|---|-------------------|---|-------------------|---|
| During upbringing | 4           | 2 | 5                 | 6 | 8                 | 4 |
| Currently         | 6           | 5 | 2                 | 3 | 3                 | 9 |

What is your class rank at Western State College? 0 Frosh 7 Sophomore 17 Junior 14 Senior

What is your major area of study at Western State College? \_\_\_\_\_

**Thank you for participating in this survey! Your time is sincerely appreciated.**

For more information, contact:

Darla S. DeRuiter  
Assistant Professor  
Department of Kinesiology & Recreation

Western State College  
Gunnison, CO 81230  
(970)943-2292

dderuiter@western.edu



## **APPENDIX D:**

### **Written Responses to Open-ended Survey Question:**

**“You might feel that neither of the descriptions fit you very well, or that something is missing from the descriptions. How else can you describe how you feel about wildlife to help us understand you better?”**

- 1 I do believe in hunting + fishing for human consumption, not for trophy purpose. But I also believe in protecting animal habitats and not letting humans overrun their space.
- 2 I tend to feel that #2 describes me EXCEPT that I do not have a problem w/ bow-hunting of deer & elk or fishing. I don't believe bears and mountain lions should be hunted whatsoever.
- 3 There is no "nuisance" wildlife. All animals serve a purpose, even if we are not aware of the purpose.
- 4 While my husband 's family depended upon hunting and fishing for survival during lean years, we/they also are very much aware & outspoken on need to protect habitat.
- 5 Last sentence of description #1 should be removed.
- 6 1st, note my age (80). Raised in ranching area of Co. Regret loss of wolves - but understand. However, hunting wolves in Alaska is wrong! Have fought prairie dogs all my life. Times change, of course, & so should customs, etc.
- 7 Parts of both descriptions
- 8 Wildlife has an important place in life but I don't want farmers going out of business, just hunters and people who over fish the lakes & streams
- 9 I'm more apt to consider ways in which humans and wildlife can co-exist harmoniously.
- 10 Remove the line about hunting + fishing being cruel...We need to do some hunting + fishing for management.
- 11 I do believe that protecting habitats/species is important but I'm not opposed to hunting/fishing and don't oppose opp to view wildlife (in their habitat)
- 12 1 & 2 too either/or
- 13 I agree with sentences 1&4 in description 2 much more than sentences 2&3.
- 14 I see the need for some hunting due to our influence on the predator/prey relationship. I value all life but see the priority of human's life over wildlife in most cases. I accept the food chain
- 15 Both are extremes that don't fit.
- 16 I do not differentiate between humans + wildlife except as I happen to know each on a personal basis. I believe animal management is necessary sometimes but I don't enjoy it. I don't promote hunting + fishing for sport but I realize it is an essential source of food for financially disadvantaged humans.
- 17 I also think that wildlife needs controlled for over population.
- 18 There should be efforts to protect wildlife when...unintelligible...threatened by human forces. Also there should be refuges so wildlife can have safe habitat.
- 19 I think there should be a happy medium. Keep humans happy but also protect wildlife.
- 20 Almost all wildlife has value for its own sake.
- 21 I think that many separate hunting from fishing. Many fishermen rarely kill fish, participating only in catch & release activities.
- 22 Wildlife is important. Hunting & Fishing do add activities to human life, but should be conducted in a way so that pain & suffering are minimized. These activities, if managed correctly, can also support healthy habitats & species.
- 23 I do hunt & fish, but do not agree that wildlife can be managed (much) nor do I agree with destruction of nuisance wildlife.
- 24 I have some problem with term "nuisance". Certainly, some wildlife can be "pests". I am not in favor, however, of developing natural habitats for humans and then declaring the wildlife in those habitats as nuisances.
- 25 This type of person can use the "human centered" argument to rationalize a lot of things if you are not careful.
- 26 Hunting and fishing are cruel, yet valuable to our economy and control population.
- 27 I believe that human activities have altered natural systems and therefore intensive management of wildlife is necessary. I tend to have a preservation and hands-off bias despite the former statement. To me wildlife represent a spiritual connection to the Earth and allow me to experience my own spirituality.
- 28 Seems like a blend of descriptions would be more accurate.
- 29 every living organism has its right, to walk gently on the planet as best we can, to be open to learning how our actions may need to be assessed so we can improve our humanness...our lightness
- 30 My friends, family, and myself fall somewhere in between 1 + 2. We all partake in hunting, fishing, and viewing of wildlife. But, on the side we have also spent much effort, time, and money trying to



- help maintain habitat for wildlife. We have helped feed starving animal, stock remote lakes and streams and other activities to help certain ecosystems survive. I feel the format of this survey is very unfair. Take for instance all of the people who have moved here over the years and have done as much damage as cattle. I wish there were more room for comments
- 31 My view is a combination-We are entrusted with the proper care of wildlife-to do this we both use, as well as protect what we have been charged with...we act for neither our interest nor theirs only-For we will answer to he who entrusted us!
- 32 It needs to be managed and protected at the same time.
- 33 I do not object so strenuously or righteously to hunting & fishing as No. 2 suggests, and I guess I believe we've got as much "right" to eat the bear as the bear has to eat us---
- 34 Using wildlife and moving or destroying nuisance wildlife is natural and appropriate provided they exist in large quantity. Habitat for wildlife must be protected. All natural resources are a trust. We may use them, but we are stewards and must take responsibility for their welfare.
- 35 Wildlife + Humans must co-exist. Wildlife do not merely exist for the sake of humans.
- 36 Did not like many of the questions, we have wildlife problems because humans over population and killing predators. Yes I believe in hunting for food and sport but not just for the sake of killing. The natural balance of nature can take care of itself our management, needs to be done with the human population.
- 37 I agree with #1 until the last line. "Nuisance" is far too general and has potential for abuse.
- 38 I do believe that protection of wildlife is important, but I don't object to hunting or fishing if it is used for food & is done legally. I do object to hunting or fishing for clothes or jewelry-or trophy. I don't think a hunter or fisherman should kill more than they will eat.
- 39 1-Wildlife is valuable for its own sake.  
2-Humans are a part of nature.  
3-Hunting is okay if managed  
4-Loss of habitat is not okay and must be stopped.
- 40 destruction of nuisance wildlife may be important for the safety of the community but shouldn't be used as a yard stick for measuring the value of wildlife importance to the earth
- 41 I basically agree with description #1 except that wildlife must be managed in a way that will maintain substantial populations, even of "nuisance" animals. However, there are situations where "nuisance" animals should be destroyed (Anytime they endanger human life in human habitat, or a becoming too populous for other species).
- 42 I believe that wildlife come first and we need to protect it. However, fish, hunting, exc. does not hurt the wildlife in fact it helps to control the wildlife. (We need to control them only because our own population is out of control, but that's a whole nother subject)
- 43 I feel wildlife is something we can enjoy by looking as well as hunting. I feel if we outlawed hunting, then we would have overpopulation of animals and you would see its affects through death & starvation. It was god's gift to us to admire as well as feed if necessary.
- 44 I feel that they were here first and what gives us the right to invade their privacy by building more & more everyday on their land.
- 45 Believe God created Man to, for lack of a better word "Rule" over the Animals...This does not mean we don't have a responsibility to them!
- 46 I think that humans/wildlife can live together w/ preserved areas for them, & their safety, but I also feel that hunting etc. is just as useful to humans
- 47 My belief about wildlife fall in between the two descriptions by leans towards #1.
- 48 Wildlife should be used responsibly for human enjoyment & benefit
- 49 The interaction of wildlife & humanity is vital to maintaining some form of homeostasis--both humans & wildlife are a priority that should be kept in mind--senseless killing is wrong, but killing for a purpose (survival of to help preserve the ecosystem) is good-hunting is fine if the animal is not wasted + if not done in excess-just to help w/ #s
- 50 In description 2 the person seemed to have respect for the hunted animals which is need to describe me But I do believe in hunting and fishing. But would gladly give it up to make the land where I hunt and fish a preserve where we can visit but can't hunt or fish.
- 51 I think hunting with a bow + arrow should be the only way.
- 52 Wild life is viewed by me as Ecologically important and interconnectedness with all beings on this

- planet
- 53 I believe that wildlife should be managed to a point, but only if the wildlife is used for a useful purpose. I do not believe in needless killing.
- 54 I do believe control of certain species should be done to regulate food for other animals, but I don't agree w/ cruel punishment to obtain this goal.
- 55 Wildlife should never be taken for granted, Always be treated with respect
- 56 I advocate using BLM land for mtn-biking/jeep riding, etc. In that sense, I would fit into #1, but oppose hunting and fishing as a game sport.
- 57 Wildlife is an important issue with humans, we must find away so we can both co-exist
- 58 I fit somewhere in between. Hunting & fishing can bring people and myself closer to nature. At the same time hunting and fishing are not activities that I take lightly. Taking an animal's life is a sacred act and should not be done just because its fun.
- 59 I don't necessarily feel that hunting and fishing are cruel, depending on how it is done. (although I would do neither) The native american way of respecting the hunted animal and using every piece of its body because they NEED to to survive is respectable.
- 60 I feel that fishing and hunting is alright but to go as far as destroying (killing) "nuisance" animals is just wrong, humans need to accommodate for animals as well.
- 61 I believe wildlife should be appreciated for its own purposes-not just human purposes however, when a nuisance is being caused that is harmful to humans, priority should be given to ourselves.
- 62 I believe that animals can benefit humans & I endorse hunting and fishing but I would object to destroying "nuisance" wildlife in most cases for human concerns
- 63 I personally don't hunt because seeing a dying animal did something to me. Yet I do feel that people should hunt to control populations.
- 64 I am more towards description 1. I agree w/ hunting and fishing but I am not for the "destruction" of any animal including nuisance animals.
- 65 I feel that #2 is accurate except I feel that it is healthier for the environment, individual, and animal to hunt than to buy meat from the grocery store. (This is for people who chose to eat meat.)
- 66 I agree with person number 2 but I believe that we are already hurting many species and ecosystems and we must work extremely hard to try and rejuvenate some of the habitat that we have successfully destroyed.
- 67 The combination of the two would best describe me.
- 68 I think wildlife is great but I don't think we should totally restrict things like hunting & fishing-as long as there are limits than I think those activities are fine.
- 69 I believe that humans + wildlife coexist. They benefit us but we can also benefit them in certain ways. We can help endangered species for example.
- 70 I am a fly-fishing guide so I obviously endorse fishing. But I believe wildlife is valuable for its own sake, and I work hard to make sure I teach as many people as I can to handle fish responsibly. I'm also active in T.V. Also, there is a big difference between bait-fishing/trolling and fly-fishing.
- 71 I feel that there can be a balance between conservation and the quality of life that sport hunting brings to certain individuals
- 72 I feel that some hunting must be done for the benefit of the animals, although I don't want to participate. My husband hunts for "the meat". We have gotten into many discussions on the subject. He says, "If we didn't hunt and 'control' the animal populations they would starve and suffer."
- 73 I myself enjoy to hunt and fish, but at the same time I care about wildlife, I would object to the destruction of all nuisance wildlife
- 74 I think that fishing is okay simply because there are a lot of fish. I don't approve of hunting because you can buy food so why kill it?
- 75 I think that the land can be used not only for hunting but also for fishing and hiking. I also believe that some land should be put aside for animals themselves. I think a mix of the extreme views describes me best
- 76 Wildlife management benefits both people and animals. An in between is missing.
- 77 I feel wildlife needs to be valued not dominated. These species have been around a hell of a lot longer than humans have and should be appreciated for that.
- 78 It is not our place to further threaten their habitats by doing construction or for game purposes. The earth will go on without us long after everybody has been destroyed & I don't think you should harm

- them any further than pollution & negligence has already.
- 79 I don't believe wildlife exists for human benefit alone, that they exist for their own purpose as well. However, I think it is a human right to benefit from wildlife in a responsible manner for either pleasure or necessity.
- 80 The control of wildlife helps build the population and a healthier population
- 81 I am all for the protection of wildlife, but it bothers me with all of the restrictions put on everything.
- 82 I believe that some hunting & fishing should be allowed because the predatory species have been run out or killed off over a century ago. Unless we re-introduced Grizzly's back to their native habitats & protected mountain lion, deer populations would be out of control
- 83 I am very involved in Recreation, yet I also value wildlife and nature. I believe it is possible to both recreate and preserve the land and its inhabitants
- 84 I think that hunting and fishing are acceptable only if you need it (the meat) in order to survive. If someone hunts or fishes simply to see who can get the trophy kill, I'm extremely against it. However, if you're doing it because you simply can't afford the meat then I think it's acceptable.
- 85 I feel that description 2 best describes my feelings except for hunting. Of course I don't believe that people should hunt endangered animals or for sport alone. But I do feel that this is one of the most natural ways for humans to eat meat and if the individual is hunting or fishing for their own sustenance, it is fine.
- 86 I don't necessarily think that the destruction of "nuisance" wildlife is needed unless the wildlife is "nuisance" of harmful to you &/or your personal property
- 87 Wildlife should be revered as sacred. I believe we should live together and not separate ourselves from wildlife. If we have a better understand of wildlife's roles to nature, we may apply them to our own lives to help benefit the world we live in.
- 88 We need to do what we can to conserve our wildlife before we lose it.
- 89 I think that we do need to protect wildlife and the natural ecosystems they live in. On the other hand I also believe in hunting and fishing and I believe that is a part of wildlife too.
- 90 I feel that hunting specifically should not be just for the horns. It should be for the meat.
- 91 I believe there is a medium in which conservation can be used to benefit humans as well as animals not just one or the other.
- 92 I believe that wildlife is sacred + should be protected to the extent. Yet on the other hand we have shared a symbiotic relationship with our surroundings for such a long time. I fish but it is mainly for sport. And I think that hunting is beneficial nutritionally + as a teaching tool to children + adults.
- 93 I feel that since the large predators have long since been removed from the ecosystem out here, we as humans need to control the populations of some species through management. I also believe that survival of the fittest animals pertains to "nuisance" animals, and if they cannot survive in this human dominated world, they will either evolve or go extinct.
- 94 Destroying "nuisance" wildlife is not something I support. Hunting and fishing (to a degree) are permissible to me, but not to the level they have reached these days. Protection of animals is more important than human gratification and utility.
- 95 The wildlife aspect in Western Colorado concerning protection + management does not effect my lifestyle whatsoever. God created them let Him whatever he pleases to do with the animals.
- 96 I like to hunt + fish, yet when someone beats their dog, I for one can't stand it.
- 97 I enjoy wildlife and believe it should only be protected enough to help humans survive but it shouldn't go any further
- 98 I feel the management of wildlife and the conservation of their habitats is very important, even animals species have the right to survive. There are too many endangered species already--its our job as humans to protect these animals.
- 99 I think wildlife is very important and most should be left alone. But it is also there for human enjoyment and I believe camping + fishing etc is are very good things to do.
- 100 Wildlife is becoming invaded by people building houses that creep up the mountains. So then wildlife there needs to be contains soon there'll be no place for them, there is already to many of us. 100% PROTECT THE WILD
- 101 Fishing + Hunting is fine when done in moderation.
- 102 I agree with the second one except for the hunting + fishing part. I don't think animals should be used for only human purposes but I am not against hunting + fishing.

- 103 I believe that they have just as much of a right to be here as we do. I also believe that hunting in a controlled manner is good as it is a way of life for all creatures.
- 104 Wildlife is a beautiful part of this world. We our order by God to watch after and take care of wildlife. If we choose to hunt an animal we should not waist the food or hunt it to extinction.
- 105 I don't think people should kill animals and leave them there to decay. I think animals were put on the earth to supply human needs and as long as people make use of what you kill its okay.
- 106 I believe that people who hunt and fish responsibly in Colorado also bring in a lot of revenue to the state of Colorado.
- 107 I like too fish, but I am all for the protection of wildlife. this is to an extent of course, we have to live together, but we cant attack others to make them feel the way conservationists want.
- 108 I enjoy wildlife, but I also benefit by taking things out of their habitat, such as flowers.
- 109 #2 is good but I think there still has to be fishing & hunting our over population happens
- 110 I am okay to do anything for the wildlife. I don't litter. I like to respect the environment in that way.
- 111 I am somewhere in the middle. I don't feel that wildlife is here for our benefit, but I also don't feel that hunting and fishing are cruel.
- 112 I don't agree with destruction of a forest to build for human use but I do think that hunting and fishing is okay.
- 113 Sometimes wild life can get in the way of things for example a bear can come in to town and mess things up or a person can hit a deer with their car and mess the car up a lot. A lot of wild life wildlife can tear up a farmer's crop.
- 114 I feel that hunting and fishing for food is a very natural thing
- 115 Wildlife should be managed & kept up not only by the people working for the wildlife but also everybody that is there. No one should leave a mess of things in a forest or else keep trash picked up.
- 116 I feel it should be a give take relationship people need animals for food etc. but should not abuse this privilege. Animals need people to make sure they have an environment to live in. We need each other.
- 117 I believe you can fish and hunt but only if you are going to use all of the parts of the animal and do it with moderation. I also believe that it should be a view of what we can do for wildlife. This way in the long run Humans + animals benefit.
- 118 Nature to me means a lot. While I feel we should do everything we can to preserve nature I also enjoy fishing and don't disagree with proper hunting.
- 119 The absolute protection on wildlife will cause a negative effect to their ecosystem and in return ours. We balance of each other, humans/wildlife, so there influential factors must be considered. Human Development (i.e. pop growth) is the greatest threat to animals not hunting and fishing.
- 120 We all have out place in the ecological circle, some are hunters some are hunted. We have to be respectful though. Follow the laws of nature, and we would be just fine.
- 121 I feel very strongly about the protection of animal species and habitats-and disagree with hunting as a recreational activity, but coming from A.K.- and living with the longest elk herd in Colorado I see hunting as a source of food because I am vegetarian if I don't raise or hunt my own food.
- 122 I feel that hunting/ fishing has no purpose as a recreational sport, especially because we have already destroyed so much natural ecosystem for grazing land so American can eat meat. I only support hunting in small indigenous tribes as a form of subsistence.
- 123 I definitely believe in protecting wildlife however human and other organisms do need and use wildlife. I don't however think humans are above/ more important than wildlife-this is where I think most humans are wrong in their attitudes.
- 124 I certainty enjoy hunting + fishing; however, there is certainly a point that it is not necessity. In as much, our society is not dependant on gaming. Wildlife are valuable for their own sake but I feel there is a proper place for gaming as well.
- 125 I feel that humans can benefit from wildlife very much in the sense of hunting, fishing, etc. But at the same time, there is no such thing as a nuisance wildlife in which we should destroy. We live off of the animals and they live off of us. That is the way it should stay.
- 126 I feel that the wildlife is a great place for humans ot go too. Wildlife is very peaceful + humans don't belong there if they are destroying the area.
- 127 Well, I like to fish, I don't think that is bad at all. I don't hunt but I don't feel it is bad. I don't think we should eradicate anything because its a pain in the butt, except mosquitos. I think use and

- preservation of wildlife can be balanced.
- 128 I do not necessarily consider animal life higher the human life like it was described in description 2.
- 129 I believe that animals have a right to live without the persecution of people. They are part of the web of life that sustains us all. However, to take away a person's right to enjoy fishing or hunting is wrong. When done properly, these activities help to support wildlife with revenue for protecting them.
- 130 I think it is management of animals, fish and then human. I agree with regulated hunting.
- 131 Questions arise as to what your definition of wildlife is? I don't know if you folks mean wilderness, natural world or just plain old critters. This should be emphasized in some way.
- 132 I wholeheartedly agree w/ the statement "wildlife are valuable for their own sake", but as far as violating animals "right to exist", I hold the opposite opinion.
- 133 I just think I am more of a blend of the two descriptions. While neither describes me exactly, I see characteristics of myself in each.
- 134 That hunting is not necessarily black and white that there is a gray area people need to realize hunting is ok in certain cases.