

Why Are Public Values Toward Wildlife Changing?

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While there is an assumption that values toward wildlife have changed in the United States over the last half of the twentieth century, few studies have addressed this topic. This article overviews a research program designed to examine wildlife value orientation shift in the U.S. Theory and empirical research suggest that increasing affluence, education, and urbanization, and declining residential stability drive value shift. We tested whether these factors are associated with the proportion of individuals with traditional “Materialist” values and a utilitarian orientation toward wildlife across six western states (Alaska, Arizona, Colorado, Idaho, North Dakota, and South Dakota). We conducted state-level analysis and found that the proportion of “traditionalists” within a state is strongly and inversely related to level of income, urbanization, and education, and positively related to residential stability. Results provide support for explanation that if current economic and social trends continue, a sustained erosion of traditional orientations toward wildlife is likely. This forms a key hypothesis to be tested in further research on this topic.

Keywords *education, income, materialist, residential stability, urbanization, utilitarian, values, value shift, wildlife value orientations*

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Introduction

Wildlife professionals generally agree that public values toward wildlife changed dramatically over the latter half of the twentieth century. There has been a gradual shift away from traditional wildlife values that emphasize the use and management of wildlife for human benefit. This trend is one of the most influential factors shaping wildlife management today. This shift, for example, is associated with the pervasive stakeholder conflict inherent in contemporary wildlife management issues, declining hunting participation (Heberlein, 1991), the growth of nongovernmental organizations that emphasize “nontraditional” views (Peterson & Manfredo, 1993), and stakeholder intervention in wildlife policy through mechanisms such as ballot initiatives (Minnis, 1998).

While the trajectory of wildlife value shift will have significant impacts on the future of wildlife management, little research has been directed toward that topic. Advances in this area are necessary at two levels. First, there is a need for approaches that bridge micro and macro levels of analysis in the study of human-environment relationships (Dietz & Rosa, 2002). At the micro level, there is a need for explanation of the relationship between human behaviors toward wildlife and concepts such as attitudes and value orientations. Theory should explain how shifts in value orientations result in changes in human behavior toward wildlife at the individual level. At a macro level, concepts should explain how wildlife value orientations are shaped by broader environmental, societal, and cultural factors and how change in these factors affects change in societal orientations toward wildlife.

Second, research strategies are needed that are appropriate for obtaining empirical evidence regarding this issue. There is a critical need for longitudinal research that allows for monitoring shifts in wildlife value orientations over time (Manfredo, Decker, & Duda, 1998).

This article overviews a research program designed to examine wildlife value orientation shift in the United States. We review the conceptual approach that guides the research program and present results from the first phase of a study examining the relationship between societal factors and interstate differences in wildlife value orientations.

A Theory of Value Orientations

Our approach to value orientations was first introduced in Fulton, Manfredo, and Lipscomb (1996) and applied in a number of subsequent studies (e.g., Bright, Barro, & Burtz, 2002; DeRuiter & Donnelly, 2002; Manfredo & Fulton, 1997; Manfredo, Pierce, Fulton, Pate, & Gill, 1999; Manfredo & Zinn, 1996; Manfredo, Zinn, Sikorowski, & Jones, 1998; Vaske & Donnelly, 1999; Vaske, Donnelly, Williams, & Jonker, 2001; Zinn, Manfredo, & Barro, 2002). In this approach, value orientations are a characteristic of an individual’s hierarchical belief structure. They reflect an

expression of basic values and are revealed through the pattern and direction of basic beliefs held by an individual. Value orientations provide the foundation for an individual's attitudes and norms, which in turn guide their behavior.

Our prior research empirically identified two wildlife value orientation dimensions, one labeled a protection-use orientation and the other a wildlife appreciation orientation (Fulton et al., 1996).¹ People who are classified on the use end of the protection-use scale believe wildlife should be managed and used to benefit humans and are positive toward hunting and fishing. Those on the protection end of the scale think wildlife should have rights similar to those of humans, and tend to oppose hunting and fishing. People who score high on the wildlife appreciation orientation tend to hold beliefs that emphasize the importance of wildlife education, wildlife-related recreation such as viewing, and wildlife protection for future generations.

Research has shown that the protection-use and appreciation orientations are effective in predicting hunting, fishing, and wildlife viewing participation (Fulton et al., 1996) and that the protection-use orientation is strongly associated with attitudes and intentions toward wildlife management proposals (Bright, Manfredo, & Fulton, 2000; Manfredo & Fulton, 1997; Manfredo et al., 1998, 1999; Manfredo & Zinn, 1996; Whittaker, 2000). This research suggests that utilitarian value orientations are associated with more severe responses to wildlife (e.g., destroying nuisance wildlife, hunting for urban wildlife, and wildlife trapping). Cross-sectional research by Manfredo and Zinn (1996) suggests that the U.S. public is moving away from this traditional, utilitarian focus and becoming more protection-oriented with respect to wildlife.

In research reported here, we examine associations between factors theorized to affect culture change and wildlife value orientations. It was not our intent to show directly that wildlife value orientations are changing. Instead, we explore the question, "if values and value orientations have been changing as predicted, what is the pattern of differences we would expect to find in today's society?" The next section describes the theories that guided our expectations.

Factors Affecting Value Orientation Shift

Societal-level value shift is addressed in broad theories of cultural change developed in anthropology and sociology. An enduring emphasis embedded in many cultural change theories is the preeminent effect of a society's economic system and its interplay with technology, demography, institutions, and the environment (Buttel & Humphrey, 2002; Harris, 1999; Smith & Young, 1998). Within these models, broad-based cultural values and ideology are the result, not the cause, of interplay among these cultural and environmental factors (Harris, 1999).

Inglehart (1990, 1997; Inglehart & Baker, 2000) advances a theory of Materialist/Post-Materialist value shift that occurs in modern society. He (1990)

proposes that change in societal values in postindustrialized nations is a result of shifting need states. Economic development in these nations is suggested to elevate people from basic human “material” needs (security, shelter, food) to higher-order psychological needs that he terms Post-Materialist values. Inglehart and Baker (2000, p. 21) note:

While industrialization was linked with an emphasis on economic growth at almost any price, the publics of affluent societies placed increasing emphasis on quality of life, environmental protection, and self expression.

Inglehart suggests that the shift toward Post-Materialist values gained momentum following World War II, during which time industrialized nations entered into a period of heightened economic security. According to his theory, values are formed in the individual at an early age, and changes in values at the societal level occur over time as a result of intergenerational shift. Inglehart proposes that Post-Materialist values arise from the presence of economic and physical security during one’s formative years, which is most likely to occur among upper socio-economic strata. Based on these assumptions, Inglehart’s theory suggests that the affluence of the post-World War II era fostered a generation of individuals who, in today’s society, emphasize Post-Materialist concerns.

The Materialist/Post-Materialist value shift theory is supported by empirical data collected on a global scale (i.e., in 65 societies including more than 75% of the world’s population) and across several decades (see Inglehart, 1997; Inglehart & Baker, 2000). These data indicate that people with Post-Materialist values tend to have better jobs, more education, and higher incomes than those with a Materialist values set.

Inglehart’s concepts guided our investigation of factors affecting wildlife value orientation shift. First, we used Inglehart’s typology of Materialist and Post-Materialist values to assess the broad value mix evident in contemporary society. Second, we tested for the effects of *income* (as an indicator of economic advancement) and *education*—factors that are central to Inglehart’s theory—on Materialist/Post-Materialist values and on protection-use wildlife value orientations.² In particular, *we hypothesized that Materialist values and utilitarian wildlife value orientations are associated with lower levels of education and income.*

We propose that value and value orientation shift has in part been driven by *urbanization*. This hypothesis is based on concepts introduced by Bell (1973) who suggested that worldviews in postindustrialized society have shifted due to broad-scale occupational changes and technological advancements. These changes have affected day-to-day experiences, which in turn have had a profound effect on world views. Using Bell’s terminology, rural world views reflect “a game against nature” due to the presence of a more resource-dependent economy in rural areas (i.e., an economy more dependent upon extractive industries

such as agriculture, mining, fishing, timber, and oil and gas development). Urban areas, due to higher employment in industrial and service occupations would alternatively represent world views focused on “a game against fabricated nature” and “a game against other people.” Bell’s proposals are consistent with literature highlighting the association between urbanization and the growth of environmental values in postwar America (e.g., see Hays, 1987; Mertig, Dunlap, & Morrison, 2002). Based on this information, *we hypothesized that Materialist values and utilitarian wildlife value orientations are associated with rural lifestyles.*

Finally, we examined the notion of *residential stability* in the context of value shift. The United States currently has one of the highest rates of geographic mobility in the world; each year, nearly one in five households relocates (Jandt, 2001). This mobility reduces cultural variation by enhancing communication and exchange between social groups (Eriksen, 2001). Mobility brings exposure to more diverse world views that impact an individual’s development. More mobile lifestyles (e.g., previous travel experience) are associated with a greater ability to adapt to the norms and values of a new culture or society (a process known as acculturation; see Jandt, 2001). Although previously held values and traditions may not necessarily go away with migration to a new place, they are consciously chosen and defended against those of the alternative culture (Giddens, 1991).

In contrast, residential stability provides a social environment that reinforces the structure of values that has evolved within a particular community. To the extent that members of a community share common goals and values, the community can be viewed as fostering a distinct culture/subculture or worldview (Jandt, 2001; Monaghan & Just, 2000; Schusky, 1975; Smith & Young, 1998). According to Monaghan and Just (2000), “communities command an identification and allegiance that is rooted in the shared history and shared experience of its members, an experience of place” (p. 99). This sense of collective belonging can foster, over time, the sharing and ultimately the internalization of community values (i.e., a process commonly associated with socialization; Eriksen, 2001).

The role of residential stability is also supported by research on amenity in-migration and the social aspects of “boomtowns” (i.e., towns that have experienced accelerated population growth and increased economic activity resulting from the presence of a new industry, usually extraction-related; e.g., see Little, 1977) in the western United States. This literature suggests that value differences can exist between longtime residents of a community and newcomers. Price and Clay (1980) and Jobs (1995) refer to these differences as a “culture clash” between newcomers and longer-term residents. These differences have also been noted with respect to attitudes and value orientations toward land management (Krannich & Smith, 1998; McCool & Martin, 1994; Smith, 1997), the environment (Rudzitis, 1999; Schnaiberg, 1986; Vaske et al., 2001), and wildlife management (Teel, Krannich, & Schmidt, 2002; Zinn & Andelt, 1999). Longtime residents of a state or area, for example, are more likely than newcomers to support traditional

forms of wildlife management (e.g., lethal control of predators or “nuisance” wildlife; Teel et al., 2002; Zinn & Andelt, 1999). A more traditional value set among longtime residents may in part be explained by the “rural background” that is common among these individuals (Smith, 1997). In light of this evidence, *we hypothesized that Materialist values and utilitarian wildlife value orientations are associated with higher levels of residential stability.*

Methods

The research reported here is from the first phase of a long-term research program. Residents of six western states (Alaska, Arizona, Colorado, Idaho, North Dakota, and South Dakota) were surveyed to assess Materialist/Post-Materialist values, wildlife value orientations, attitudes toward selected management actions, participation in wildlife-related recreation activities, and sociodemographic characteristics.

Sampling and Data Collection

The population for this study was defined as adult (i.e., at least 18 years of age) residents in each of the six states. The sampling frame consisted of private households with a permanent mailing address. Addresses and phone numbers for a random sample of households, by state, were obtained from Survey Sampling, Inc.

Data were collected using mail-back questionnaires administered from Colorado State University during March–May, 2002. A modified Dillman (2000) technique, involving introductory postcards, two complete mailings (i.e., questionnaires with cover letters), and reminder postcards, was used. To obtain approximately equal numbers of male and female respondents, half of the cover letters mailed with questionnaires in each state requested participation by an adult male while the other half requested participation by an adult female.

A telephone interview nonresponse check was administered to a random sample of nonrespondents across the states. Nonrespondents were asked eight value orientation questions and three wildlife-related recreation participation questions, the responses to which were compared with those of respondents to determine if the two groups significantly differed with respect to these constructs.

Measurement of Concepts

Wildlife Value Orientations. Value orientations were measured following the approach used by Fulton et al. (1996). In this approach, value orientations are identified by composite scales consisting of items that represent basic beliefs. We measured basic beliefs by selecting 25 items from the 35-item list developed by Fulton et al. (1996) to represent eight basic wildlife belief domains (Table 1).³ A reduced set of items was used to minimize respondent burden. Items were selected based on the following criteria identified in the Fulton et al. (1996)

study: size of factor loadings on their respective belief domains (obtained from a confirmatory factor analysis), and individual item reliability results (e.g., interitem correlations and alpha-if-item-deleted scores).

Value orientation scores were computed in a two stage process.⁴ First, items were grouped into their basic belief domain and tested for internal consistency using Cronbach's alpha. Results indicated generally acceptable basic belief item clusters (Table 1; Nunnally & Bernstein, 1994). Respondents were given a score for each basic belief domain, computed as the mean of all items within that domain. In the second stage, we assessed the reliability of value orientation scales, which were found to be highly internally consistent (e.g., alpha = .88 for the protection-use orientation). Value orientation scores were assigned by computing the mean of their respective basic belief domain scale scores.

Materialist/Post-Materialist Values. We measured Materialist/Post-Materialist values following procedures recommended by Inglehart (1997). Respondents ranked a series of goal statements that represented either Materialist or Post-Materialist values (Table 2). Goals were arranged in three choice sets, with each set containing three Materialist and three Post-Materialist goal statements. Respondents ranked goals within each set from 1 (most important) to 6 (least important).

A Materialist/Post-Materialist index was developed by first summing the importance rankings on the Post-Materialist goal statements across all choice sets. The same procedure was then used to sum scores on all Materialist goal statements. The sum of Post-Materialist rankings was then subtracted from the sum of Materialist rankings. In the resultant Materialist/Post-Materialist index, a negative score indicated a Materialist values set, a positive score indicated a Post-Materialist values set, and a 0 was treated as "mixed."

Recreation Participation and Socio-Demographics. Hunting, fishing, and wildlife viewing participation were assessed by asking subjects whether or not they had participated in the activity over the past 24 months. Response to questions about size of residence (i.e., urban vs. rural area—current level of urbanization), income, and education level was obtained using categorical scales. The following categories were used to measure size of residence: "a large city with 250,000 or more people," "a city with 100,000 to 249,999 people," "a small city with 50,000 to 99,999 people," "a town with 10,000 to 49,999 people," "a small town/village with less than 10,000 people," and "a farm or rural area." Income was assessed using the following categories: "less than \$10,000," "\$10,000 to \$24,999," "\$25,000 to \$49,999," "\$50,000 to \$74,999," "\$75,000 to \$99,999," "\$100,000 to \$124,999," "\$125,000 to \$149,999," and "\$150,000 or more." Education was measured using the following scale: "less than high school diploma," "high school diploma or GED," "technical/vocational degree beyond high school," "some college," "4-year college degree," and "advanced degree beyond 4-year college degree." Residential stability was measured by dividing duration of in-state residence by age, both recorded as direct measures of years.

TABLE 1 Items and Reliability Results for Basic Wildlife Belief Dimensions Included in the Protection-Use Wildlife Value Orientation

Basic wildlife belief dimensions Items composing each scale ¹	Cronbach's alpha
<i>Wildlife use</i>	.56
<ul style="list-style-type: none"> • It is important for humans to manage populations of wild animals • If animal populations are not threatened, we should use fish and wildlife to add to the quality of human life • Humans should manage wild animal populations so that humans benefit 	
<i>Wildlife rights</i>	.76
<ul style="list-style-type: none"> • The rights of fish and wildlife are more important than human use of fish and wildlife • I object to hunting because it violates the rights of individual animals to exist • Animals should have rights similar to the rights of humans 	
<i>Hunting</i>	.86
<ul style="list-style-type: none"> • Hunting enables people to enjoy the outdoors in a positive manner • Hunting is cruel and inhumane to the animals² • Hunting helps people appreciate natural processes • Hunting for food is acceptable³ 	
<i>Fishing</i>	.66
<ul style="list-style-type: none"> • Catching fish for sport is cruel² • Catching fish for food is acceptable³ • Fishing enables people to enjoy the outdoors in a positive manner³ 	

¹Basic belief items were grouped to form basic belief dimensions, and basic belief dimensions were grouped to form the protection-use wildlife value orientation (alpha = .88). Items were measured on a scale from 1 = strongly disagree to 7 = strongly agree.

²These items were reverse coded prior to analysis.

³These items were developed for use in the study and are not part of the original set of items used by Fulton, Manfreda, and Lipscomb (1996).

Data Analysis

The objective of this study was to examine the relationship between values/value orientations and the following socio-demographic characteristics: urbanization, income, and education. Following techniques used by Inglehart (1997), we

TABLE 2 Items Used to Identify Materialists and Post-MaterialistsGoals¹*Materialist*²

- Maintain a high level of economic growth
- Make sure this country has strong defense forces
- Maintain order in the nation
- Fight rising prices
- Maintain a stable economy
- Fight crime

Post-Materialist

- See that people have more to say about how things are done at their jobs and in their communities
- Try to make our cities and countryside more beautiful
- Give people more to say in important government decisions
- Protect freedom of speech
- Progress toward a less impersonal and more humane society
- Progress toward a society in which ideas count more than money

Cronbach's alpha = .69

¹ All goals provided here were borrowed from Inglehart (1997) and ranked by respondents in three sets containing equal numbers of Materialist and Post-Materialist goals on a scale from 1 = most important to 6 = least important. We developed two additional goals for each set to represent wildlife and natural resource values (one intended to represent a Materialist value and the other a Post-Materialist value). These latter goals were removed from analysis and therefore not reported here because they lowered the overall reliability of Inglehart's (1997) original items.

² These items were reverse coded before creation of a scale.

conducted state-level analysis. States are appropriate units of analysis because they have distinct political institutions (administrative organizations, laws, governing bodies) and authority in setting policy for management of nonmigratory fish and wildlife within state boundaries. In addition, they often have distinct demographic characteristics, biophysical environments, social identity, and economic conditions. In conducting state-level analysis, we were testing whether or not the cultural conditions within a state (e.g., interaction of economy, migration, affluence, institutions) influence the composition of wildlife value orientations held by people residing there. The reader should note that aggregate analysis often reveals stronger associations among variables because individual-level measurement error is cancelled out (Inglehart & Baker, 2000).

In conducting state-level analysis we constructed variables that indicated the proportion of "value types" and "wildlife value orientation types" in each state. Using Inglehart's (1997) Materialist/Post-Materialist index, we classified respondents as "Materialists" (respondents with a negative index score), "Post-Materialists"

(respondents with a positive score on the index), or “Mixed” (respondents with a 0 on the index). Respondents were classified on the protection-use wildlife value orientation scale as “Protectionists” (scoring 1–3.49 on the 7-point protection-use scale), “Neutral” (3.5–4.49), or “Utilitarians” (4.5–7).

The final step in preparing for state-level analysis was to create a composite index from the cross-tabulation of Inglehart value types and wildlife value orientation types. Given the low n within the cells of these crossed variables, and to facilitate parsimonious descriptions, we created a four-category value/wildlife value orientation (V/WVO) variable to be used in further analyses. The categories of this new variable included “Materialist Utilitarians,” “Mixed (Materialist and Post-Materialist) Utilitarians,” “Post-Materialist Utilitarians,” and those who were classified as “Neutral or Protectionists” on the protection-use wildlife value orientation scale.

From the resulting classification, we focused on Materialist Utilitarians in our analysis because they represent the “traditional” V/WVO group that is predicted to be diminishing. To test hypotheses, we computed Pearson’s correlation coefficients for the relationship between state-level characteristics (i.e., education, income, urbanization, and residential stability) and the percent of Materialist Utilitarians identified within each state. We also graphed relationships to better understand across-state variability.

Results

The overall response rate for the survey was 35% ($n=3216$) with rates ranging from 32% to 38% across the participating states (Table 3). Nonresponse tests ($n = 2204$, 75% response rate) showed no differences in value orientations between respondents and nonrespondents, but statistically significant differences were found with respect to participation in wildlife-related recreation. Findings also showed that our sample was underrepresented by younger age categories and by females. Data were weighted to account for these differences using state population estimates of age and gender obtained from the U.S. Census 2000 (U.S. Department of Commerce, 2002). Colorado data were weighted based upon the proportion of the state population that each region represents. For a more thorough description of the weighting procedures and the nonresponse assessment, readers are directed to Teel, Bright, and Manfredo (2003).

Values and Wildlife Value Orientations

Findings show that respondents who give priority to Materialist values outweigh those prioritizing Post-Materialist values by two to one (65% compared to 31.4%). The prevailing wildlife value orientation among the six states was toward wildlife use (79.6%), while 13.9% scored in the neutral range, and only 6.6% were classified as protectionists (Table 4). The cross-tabulation of V/WVO

TABLE 3 Final Response Rates by State for the Mail-Back Questionnaire

	Completes	Response rate
Overall	3,216	35%
Alaska	347	32%
Arizona	370	32%
Colorado ¹	1,281	38%
Front Range	389	34%
East Slope	380	33%
West Slope	440	40%
Idaho	404	35%
North Dakota	406	34%
South Dakota	408	36%

¹To ensure within-state population estimates of $\pm 5\%$ at the 95% confidence interval, the target sample size was 400 respondents per state (Scheaffer, Mendenhall, & Ott, 1990), with the exception of Colorado. Colorado used a stratified random sampling design to obtain estimates for three regions of the state including the Front Range, Eastern Colorado, and Western Colorado. The target sample size for each of these regions was 400 people.

types showed a concentration of respondents in two major areas—Materialist Utilitarians (54.7%) and Post-Materialist Utilitarians (21.9%).

Descriptive Statistics for V/WVO Types. Table 5 shows differences among the four V/WVO classifications with respect to wildlife-related recreation participation and selected sociodemographics. Materialist Utilitarians and Mixed Utilitarians were the most likely to have hunted (34.0%, 35.3%), while those in the Neutral/Protection category were the least likely (5.5%). Materialist Utilitarians had the lowest proportion of people participating in wildlife viewing compared to

TABLE 4 Cross-Tabulation of Wildlife Value Orientation Types and Materialist/Post-Materialist Value Types for All Six States¹

Materialist/Post-Materialist type	Wildlife value orientation type			Marginal totals
	Protectionist	Neutral	Utilitarian	
Materialist	3.0%	7.3%	54.7%	65.0%
Mixed	0.2%	0.4%	3.0%	3.6%
Post-Materialist	3.3%	6.1%	21.9%	31.4%
Marginal totals	6.6%	13.9%	79.6%	

¹For analysis shown here, Colorado's sample size was weighted by 1/3 (in addition to other weighting described in the methods section) to adjust for its increased sample size resulting from stratification.

TABLE 5 Value/Wildlife Value Orientation Types by Wildlife-Related Recreation Participation and Sociodemographic Variables

Descriptive variables	Cramer's V	Value/Wildlife value orientation type			
		Materialist Utilitarians	Mixed Utilitarians	Post-Materialist Utilitarians	Neutral/Protectionists
% Participated in hunting in past 24 months	.25	34.0%	35.3%	25.5%	5.5%
% Participated in fishing in past 24 months	.26	61.9%	51.5%	60.6%	29.6%
% Participated in wildlife viewing in past 24 months	.12	38.4%	43.2%	32.5%	45.2%
Gender	.18	56.0%	50.0%	51.3%	33.3%
Education (% with an advanced degree)	.10	13.1%	8.7%	21.8%	22.5%
Income (% in \$50,000–\$75,000 category)	.08	28.5%	26.7%	27.6%	22.4%
Mean age ¹	.02 ²	47.0 ^a	44.3 ^{ab}	41.1 ^b	45.2 ^a

¹Difference tests using one-way Analysis of Variance ($F=15.76$, $p<.001$) and Scheffe's post hoc test for mean differences. Means with different superscripts are statistically different.

²Partial Eta-Squared.

the other groups. Only 29.6% of those in the Neutral/Protection group reported participation in fishing, compared to 51.5%–61.9% for the other groups. A high percentage of Neutral/Protectionists were women (66.7%), while the other groups were more equally split between males and females. Post-Materialist Utilitarians had higher levels of education and were, on average, younger than members of other groups. Neutral/Protectionists had slightly lower incomes and higher levels of education compared to other groups.

The six states differed in representation of V/WVO types. North Dakota (62.8%) and South Dakota (64.2%) had the highest percentage of Materialist Utilitarians, followed in order by Idaho (55.8%), Alaska (52.2%), Arizona

(48.5%), and Colorado (44.1%) (Table 6). Alaska differed from all other states due to its high proportion of Post-Materialist Utilitarians (34.2%, compared to 19.8%–21.3% in other states). Finally, Arizona and Colorado had higher percentages of people in the Neutral/Protection category than did the other four states.

Tests of Hypotheses. The primary purpose of this study was to explore factors (i.e., income, education, urbanization, and residential stability) proposed to affect V/WVO shift in North America. We found a significant inverse relationship ($r = -.91, p = .01$) between the proportion of Materialist Utilitarians within a state and the percent of populace above the modal response category for income (\$25–49,999; Figure 1). The relationship between the proportion of Materialist Utilitarians and the percent of people in a state who have a high school education or less was also significant ($r = .93, p = .01$) and suggested that lower levels of education were associated with higher percentages of Materialist Utilitarians. Similar findings exist for urbanization, defined as the percent of people residing in a medium-to-large-size city. There was a strong inverse relationship (though not statistically significant at $p < .05$) between this socio-demographic characteristic and the proportion of Materialist Utilitarians in a state ($r = -.74, p = .09$).

Finally, we examined the relationship between the proportion of Materialist Utilitarians within a state and residential stability (i.e., duration of in-state residence divided by age). Results indicated a strong positive relationship ($r = .86, p = .03$), suggesting that as stability increases, the percentage of Materialist Utilitarians in a state also increases.

TABLE 6 Distribution of Value/Wildlife Value Orientation Types Across States

States	Value/wildlife value orientation type			
	Materialist Utilitarians	Mixed Utilitarians	Post-Materialist Utilitarians	Neutral/Protectionists
Alaska	177 52.2%	9 2.7%	116 34.2%	37 10.9%
Arizona	173 48.5%	5 1.4%	76 21.3%	99 28.9%
Colorado	550 44.1%	30 2.4%	250 20.0%	412 33.5%
Idaho	223 55.8%	24 6.0%	79 19.8%	72 18.5%
North Dakota	243 62.8%	15 3.9%	81 20.9%	48 12.4%
South Dakota	258 64.2%	6 1.5%	69 17.2%	64 17.2%

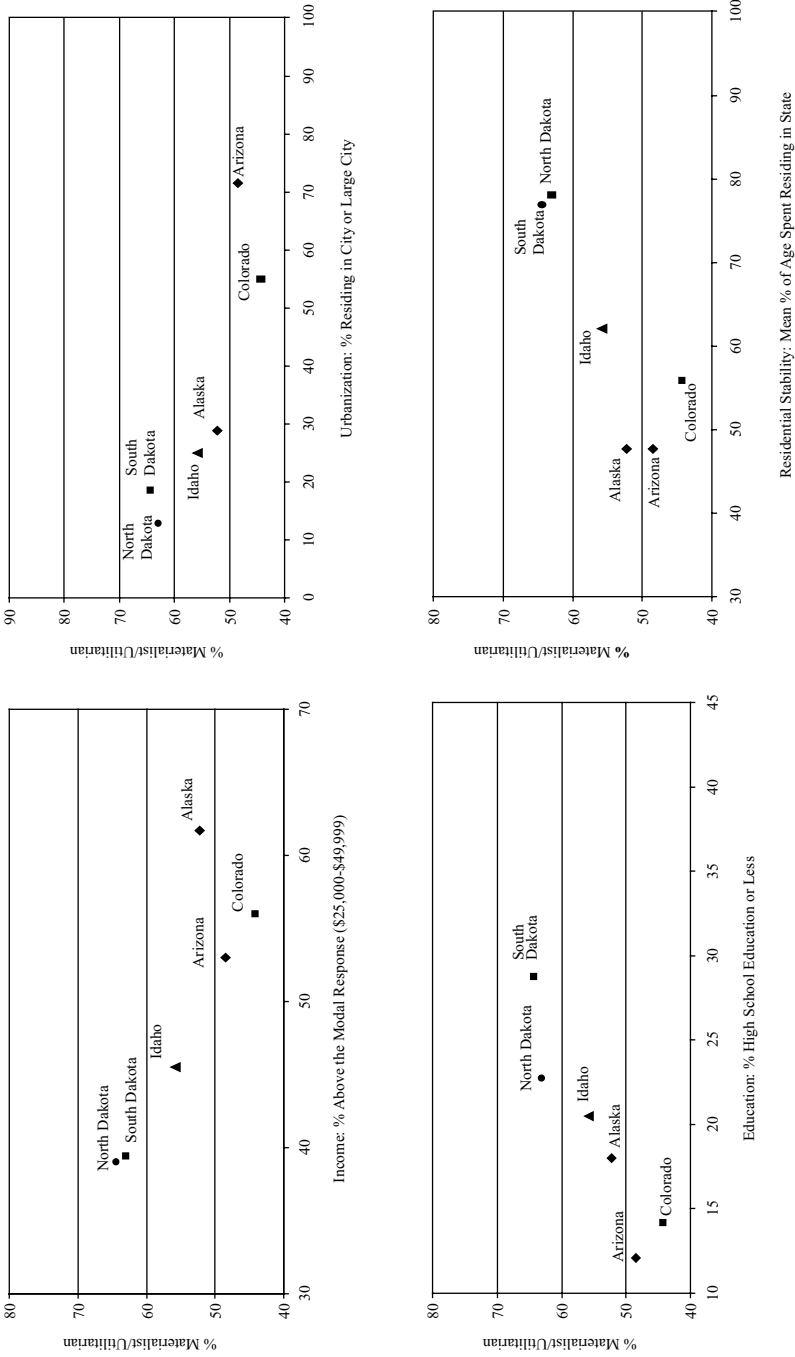


FIGURE 1 Associations between proportion of Materialist Utilitarians in a state and selected societal characteristics.

Summary and Implications

This study explored the association between societal factors theorized to affect value shift and wildlife value orientations. Theory and empirical research suggest that increasing affluence and education (Inglehart, 1997), urbanization (Bell, 1973; Hays, 1987), and declining residential stability (e.g., see Eriksen, 2001; Smith, 1997) drive value shift. As these conditions arise, there is a shift away from traditional Materialist values (focused on physical security and economic well-being) toward Post-Materialist values (focused on quality of life, self-expression, and self-esteem). We predicted that changes in these societal-level conditions have also initiated a gradual shift away from traditional wildlife value orientations that emphasize the use and management of wildlife for human benefit.

We examined the factors that explain interstate variability in the proportion of individuals with Materialist values and a utilitarian orientation toward wildlife. We found that the proportion of these “traditionalists” within a state is strongly and inversely related to income, urbanization, and education, and positively related to residential stability.

These findings must be regarded as preliminary given that only six states were included in the analysis and that these states do not represent a random sample of all of the United States or of all states in the western region of the United States. Further, we established the association among variables in our model, but these results do not conclusively establish the cause explained by theories used here. The findings do, however, allow us to infer support for these theories and pose clear hypotheses to be tested in later phases of this program of research.

These findings may have important theoretical and applied implications. They provide a theoretical and empirical link between the widespread conflict in contemporary wildlife issues and potentially causative conditions in society. Elements of thought that dictate a person’s position on a wildlife issue are driven by wildlife value orientations. We propose that these orientations change in the context of broader value change within society. Factors that have been linked to value shift in modern developed countries include the growth of affluence and education, expanding urbanization, and increased mobility. We would infer that the increase of these factors in North America since the 1950s has spawned a gradual shift away from traditional wildlife value orientations, a trend similar to what Dunlap (2002) has observed in the growth of environmental protection values.

Given this explanation of the past, what can be suggested for the future? First, it should be noted that a discussion of value shift requires us to look across a relatively long window of time—decades if not centuries. Values change slowly in society, and, in the absence of catastrophic events, change primarily between generations. They are formed early in one’s life and typically do not change within an individual during his or her lifetime.

The most obvious implication from this theory would suggest that factors affecting the trend of affluence, education, mobility, and urbanization will affect

future shifts in wildlife value orientations. For example, should we enter into a period of increased warring or widespread disease, where affluence is threatened, one could predict a trend back toward utilitarian value orientations and Materialist values. Without such a catastrophic event, and with sustained growth and an extension of past trends (i.e., increased urbanization, mobility, affluence, and education), there would continue to be an erosion of utilitarian wildlife value orientations.

Another possibility, however, is that the shift toward a protectionist view of wildlife is nested within the growth of a protectionist view of the environment. A growing number of researchers suggest that the future of values toward the environment will be closely tied to the relationship between economic growth and the expanding degradation of the environment. The resulting theories vary greatly in their predictions. Schnaiberg (1980) suggested a very bleak outlook, proposing an acceleration of environmental degradation due to the "treadmill of production" inherent in capitalism. The sustained need for production will deepen environmental degradation and would presumably broaden environmental values. Similarly, O'Connor (1998) suggests that the growing ecological crisis will serve as a catalyst for widespread social and political change in the world based on a need to reverse the destructive forces of capitalistic production.

In direct opposition to these perspectives are proponents of ecological modernization (Fisher & Freudenburg, 2001; Spaargaren & Mol, 1992) who suggest that capitalism and the technological innovations that are borne from capitalism offer the only realistic solution to the expanding ecological crisis. Interestingly, in all of the above-mentioned explanations, it is assumed that environmental values expand due to recognition of a growing ecological crisis. In each case, we are led to believe that environmental protection values will grow and deepen, and we might further propose that wildlife protection value orientations will follow.

These proposals are, of course, highly speculative and reinforce the need to monitor wildlife value orientations over time. An immediate implication for management, however, can be drawn from this study. A frequent interest of wildlife managers is in changing values toward wildlife. The theory presented here suggests that is an unrealistic goal. It may be possible to change the public's attitudes on a specific issue, but values and value orientations are shaped by the broader conditions of society. We would still contend, however, that it is quite important for managers to understand the composition of values and value orientations within the public (see Bright et al., 2000), since these constructs affect attitudes toward wildlife management and can be useful in guiding planning and program implementation.

The concepts presented here are also important as we take wildlife conservation to a global scale. The success of conservation efforts will depend upon compatibility with cultural values. Further, theory here suggests that success in conservation may reside in understanding and addressing the broader cultural conditions (e.g., economy, urbanization, etc.) present within a society that have played a role in

shaping the dominant values of that society. As recognized by the World Commission on Environment and Development (1987), “environment and development are not separate challenges; they are inexorably linked” (p. 37).

Notes

1. In the Fulton et al. (1996) article, the orientation dimensions were labeled as follows: “wildlife benefits/existence” and “wildlife rights/use.” In later publications, they came to be known as the wildlife appreciation and protection-use orientations (e.g., see Bright, Manfredo, & Fulton, 2000).

2. Our view of the basis for culture shift in developed countries differs from Inglehart’s. Inglehart suggests that the rise of environmental values is due to a shift toward “quality of life” needs within society (Inglehart & Baker, 2000). That is, with basic survival and materialist needs satiated, postindustrialized societies move on to higher order quality of life needs, one of which includes quality of the environment. This explanation ignores the growing awareness that a deteriorating environment poses serious health and safety risks to humans. In other words, it ignores the argument that states that the growing adoption of environmentalism in postindustrialized nations is at least in part due to the perceived awareness of the threat of environmental degradation to basic human survival—a very materialistic need, and not a mere issue of quality of life (e.g., see Dunlap, 1991; Dietz & Rosa, 2002).

3. Several items selected from the fishing and hunting belief domains were reworded based on interest and feedback from participating state agencies. More specifically, there was an interest in ensuring that wording reflected both positive and negative perceived characteristics of these activities.

4. We identified two wildlife value orientations in the current study, the wildlife appreciation orientation and the protection-use orientation (Fulton et al., 1996). Due to high skewness and low variance associated with the appreciation scale, we chose not to conduct analyses reported here with this variable.

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