

Race, Residence and Environmental Concern: New Englanders and the White Mountain National Forest

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Abstract

This study explores the influence of racial identity and place of residence on environmental concern, as measured in terms of environmental values and ethics. A survey of representative samples of Massachusetts residents was conducted, and focused on the White Mountain National Forest. Objectives of the study were (1) to discover how environmental values and ethics vary across a diverse cross-section of New Englanders and (2) to explore the constructs of environmental values and environmental ethics as alternatives to environmental concern. Relatively few differences in environmental values and ethics were found between African American and white, and rural and urban subgroups. Environmental values and ethics were found to be potentially useful constructs that may measure a more fundamental relationship between people and the environment than environmental concern. Research and management implications of these findings are discussed.

Keywords: *race, residence, environmental concern, environmental values, environmental ethics, national forests*

Introduction

The White Mountain National Forest, often called “New England’s national forest,” provides an interesting setting in which to study the relationships between social and cultural diversity and environmental concern. Historical writings about this area reveal that the White Mountains have been many things to many people, from a source of prime timber to an inspiration for contemplative thought (Wallace 1980). Assuming the existence of such a wide range of values, this study inquires into both the specifics about, and the social distribution of, these values. As Nash (1982) has asserted, concern for the environment is often seen as a “full stomach” phenomenon . . . a luxury that can only be afforded by the wealthy and by those who do not have to extract their living

from the land. This study inquires further into this assertion by measuring environmental values and ethics among rural and urban as well as black and white residents of New England, asking questions that are of significance not only to the issue of environmental concern, but also to our social and cultural diversity.

This study had two specific objectives. The first was to discover how environmental concern — measured in terms of environmental values and ethics — varies across a diverse cross-section of New Englanders. More specifically, we wished to explore the influence of racial identity and place of residence on environmental values and ethics. Studying the influence of social factors on environmental issues, most commonly operationalized through the construct of “environmental concern,” is not a new phenomenon. Environmental sociologists have been studying the social bases of environmental concern for decades (e.g., Van Liere and Dunlap 1980; Jones and Dunlap 1992), and this body of literature may represent the most prominent work on the societal dimension of the environmental movement. In light of this body of work, therefore, the study’s second, more methodological, objective was to explore the constructs of environmental values and environmental ethics as alternatives to environmental concern. Can alternative measures of people’s feelings about nature shed additional light on the role of race and residence in environmental concern?

Studies of Race, Residence, and the Environment

Race and Environmental Concern

Early studies of black/white differences in environmental concern and related constructs have often found race to be a significant predictor of attitudes toward environmental issues (Taylor 1989). For example, using Dunlap and Van Liere’s New Environmental Paradigm (1978), a survey in a metropolitan Virginia area found African-Americans to be less environmentally concerned than Anglo-Americans

(Caron and Sheppard 1995). This finding is somewhat complicated by an earlier study from this sociologist (Caron 1989), however, which indicated that while blacks and whites differ on types of environmental issues of concern, they do not significantly differ on their level of environmental concern.

Further evidence of possible racial differences in environmental concern comes from studies of African-American participation in outdoor recreation activities. Some researchers suggest that outdoor recreation participation may be a manifestation of concern with nature, and that studies of participation in outdoor recreation may be relevant to understanding the role of race in environmental concern. Such studies have generally found relatively low levels of participation by blacks in traditional, nature-based outdoor recreation activities (e.g. Washburne 1978; West 1989; Floyd, Shinew, McGuire and Noe 1994). These findings may suggest that African-Americans are less environmentally concerned than Anglo-Americans. One of the main themes in this body of literature involves explaining differences in black/white participation in outdoor recreation. Some studies attribute low participation by blacks to ethnicity, by which is meant cultural differences in value systems (Washburne 1978; Klobus-Edwards 1981). Other studies attribute the racial recreation gap primarily to what is known as the marginality theory, which posits that African-Americans have limited economic resources for such activity as a result of past and present discrimination (West 1989). Other studies suggest that both of these factors may be operative (Hutchison 1988; Floyd, Shinew, McGuire and Noe 1994).

While the prevailing notion regarding racial differences in environmental concern has been that African-Americans may be generally less concerned about the environment than are Anglo-Americans (see Taylor 1989 for a review), more recent evidence suggests that may not be the case. In a study based on National Opinion Research Center General Social Survey data and an analysis of related research, Jones and Carter (1994) suggest that the idea that blacks are less concerned about environmental problems than are whites may be a common misconception. They argue that while blacks may prioritize environmental issues differently among other social concerns than do whites, this prioritization should not be interpreted as a lack of interest in environmental issues by blacks, and that differences in black/white environmental concern may be more myth than reality (Jones 1998). Additionally, Mohai (1990) found black concern for the environment to be nearly identical to that of whites based on national survey data. Parker and McDonough (1999) further question the racial gap in environmental concern, finding African-Americans and European-Americans to both show significant concern for the environment.

Some race and environmental concern research focuses on other racial and ethnic groups through the outdoor recreation literature; most of this literature concerns Hispanic recreation patterns. Studies have suggested that ethnicity and degree of acculturation both play a role in Hispanic recreation patterns (Baas, Ewert and Chavez 1993; Carr and Williams 1993; Caro and Ewert 1995). For example, most groups of Hispanic-Americans in a 1993 California study preferred what may be interpreted as family-oriented recreation activities such as picnicking, while Anglo ethnic groups preferred outdoor recreation activities that may be interpreted as more directly focused on the natural environment, such as hiking or walking (Baas, Ewert and Chavez 1993).

Residence and Environmental Concern

Rural/urban differences in environmental concern have been the subject of substantial inquiry in recent years. Although findings on the relationship of rural/urban residence to environmental concern have been somewhat mixed, they have generally concluded that urban residents are more concerned about the quality of their environment than are rural residents (e.g., Christenson 1978; Tremblay and Dunlap 1978; Van Liere and Dunlap 1980; Lowe and Pinhey 1982; Rickson and Stabler 1985). For example, Christenson (1978) found rural/urban residence significant in explaining variance in support for land use planning, and found rural residents to be less supportive of such measures than urban residents. Tremblay and Dunlap (1978) reported similar findings in their study of concern about pollution, but also concluded that rural/urban differences were most pronounced when the environmental issue studied was of local, rather than statewide or national concern.

Additionally, in Van Liere and Dunlap's review of environmental concern literature (1980), urban residence was found to be positively correlated with environmental concern. The authors caution, however, that the strength of relationship may depend on the measure of concern used. Lowe and Pinhey (1982) examined General Social Survey data to explain low levels of environmental support by rural residents and concluded that area of socialization, rather than area of current residence, may be the important factor. Rickson and Stabler (1985) found urban residents to be more concerned than rural residents about the issue of non-point agricultural pollution, although they attributed the attitudes of rural residents more to residential self-interest than to rural resistance to environmental management. Finally, Buttel and Flinn (1978) drew a methodological distinction between environmental awareness and support for environmental reform, and found urban residents to be more aware of environmental problems than rural residents. While this study found residence to be a predictor of awareness, it also found residence

to be only a weak predictor of attitudes toward environmental reform.

Other studies have questioned such rural-urban differences in environmental concern. Recent work by Jones, Fly and Cordell (1999) indicates no significant differences between urban and rural residents of the Southern Appalachian region on issues related to the environment. Fortmann and Kusel (1990) also found no rural/urban difference in environmental concern. The definition of residence used in this study, however, casts doubt on its relevance to the current study involving rural/urban residence; Fortmann and Kusel defined urban in this study as residents in a rural area who had recently migrated from a city. It could be argued, therefore, that the study actually measured environmental concern *within* a rural population. Freudenburg (1991) also challenges rural-urban differences finding that farmers actually have the highest levels of environmental concern, as compared to urban and other rural residents. Freudenburg's study, however, defines rural residence in terms of occupational dependence on the land; thus, the results cannot easily be applied to rural areas in general, as some rural areas do not depend on such industries as agriculture or mining.

Environmental Values and Ethics: Alternative Constructs of Environmental Concern

Reexamining some of the above studies with a more methodological focus may help clarify the conceptual construct of environmental concern. Subsequently, by defining and explaining alternative constructs — environmental values and ethics — appropriate uses for alternative measures of environmental concern may begin to become clearer: environmental concern and environmental values and ethics illuminate different facets of urban and rural or black and white interaction with the environment.

The majority of residence and environmental concern studies are focused on environmental advocacy or contemporary environmental issues. Tremblay and Dunlap (1978), for example, asked respondents' level of concern with various types of pollution. Fortmann and Kusel's (1990) rural/urban environmental concern study measured environmentalism — specifically, forest environmentalism — with questions about “contentious environmental issues,” such as clearcutting or herbicide spraying. Rickson and Stabler (1985) operationalized environmental concern on a similarly issue-based level, measuring the concept with questions on how important lake pollution was to the respondent, and if respondents would be willing to pay more in taxes for the elimination of pollution. Buttell and Flinn (1978) based their conclusions regarding residence and awareness of environmental problems on environmental issues, such as air and water pollution and local crowding.

Most studies examining the role of race in environmental concern also employ an issue-based measure. Caro and Ewert's (1995) study of Hispanic acculturation and environmental concern measured the concept with questions about the harmful nature of eleven environmental issues, ranging from wildfires to off-road vehicle use. To study the environmental concerns of blacks, Arp and Kenny (1996) used questions that addressed the use of pollution control measures and the siting of hazardous facilities. Likewise, Caron and Sheppard's (1995) examination of black-white differences in environmental concern operationalized concern in terms of Dunlap and Van Liere's (1978) NEP construct. The NEP scale represented an attempt to capture people's belief systems in regard to the environment by asking questions such as whether or not economic growth should be limited to protect environmental quality.

Before moving on to a look at environmental values and ethics constructs as alternatives to issue-based environmental concern, it should be noted that researchers have questioned the degree of internal consistency within the environmental concern construct itself. The concept of environmental concern has varied in its application in racial as well as residential studies. Several researchers have cautioned that this variance in indicators used may impact demographic/environmental concern relationships (Van Liere and Dunlap 1981; Jones and Carter 1994; Klineberg, McKeever and Rothenbach 1998). Environmental concern has been conceptualized and applied variously as support for spending on behalf of the environment, the perceived seriousness of environmental problems, and involvement in pro-environmental behaviors. Environmental concern thus appears to be a multidimensional concept, and study findings consequently must be interpreted in accordance with how environmental concern is conceptualized and measured.

The environmental concern construct, as seen through the examples from residence and race literature, typically measures people's degree of concern about various environmental issues, rather than their degree of concern about the environment in general, or, at an even more fundamental level, their type and degree of interest in nature. An environmental values construct measures interest in the environment at a more fundamental level, thus offering an alternative to the more issue-specific and activism-oriented environmental concern construct. As might be expected, human values have been the subject of considerable attention across a variety of academic disciplines (Rokeach 1973; Andrews and Waits 1980; Brown 1984; Bengston 1994). While several theoretical dimensions of value have been identified, this study focuses on preference-based held values. Held values have been defined as “an enduring conception of the preferable which influences choice and action” (Brown 1984, 232).

Applied to forests, Bengston (1994, 520) defines a held value more specifically as “an enduring concept of the good related to forest and forest ecosystems.” The preference-based component of this concept of value signifies that value is assigned through human preference as opposed to social obligation (e.g., societal norms that suggest what people should value) or physical/biological function (e.g., the ecological dependence of tree growth on soil nutrients). Recent commentary suggests that preference-based held values are the appropriate focus of forest values research (Bengston 1994; Hetherington Daniel and Brown 1994). As used in this study, values are specific notions that define “an enduring concept of the good” as applied to a specific national forest.

Environmental ethics offer another construct of environmental concern. Like values, ethics have received considerable academic attention, particularly in the discipline of philosophy. Ethics can be defined as the “study or discipline which concerns itself with judgments of approval and disapproval, judgments as to the rightness or wrongness, goodness or badness, virtue or vice, desirability or wisdom of actions, disposition, ends, objects, or states of affairs” (Runes 1983, 113). Environmental ethics deal more specifically with human conduct toward the natural environment. It is inevitable that humans interact with the natural environment. But what ideas govern or structure this interaction? What is the appropriate relationship between humans and the natural environment? For purposes of this study, environmental ethics are defined as the diversity of ideas that drive human relationships with the natural environment. Examples include stewardship of nature as a religious duty and intrinsic rights of nature. As used in this study, environmental ethics are broader and more abstract constructs than values, as they apply to human/environment relationships generally rather than the values of national forests specifically.

Review of the above bodies of literature lead back to the study objectives posed at the beginning of this paper. Can alternative constructs to issue-based expressions of environmental concern — specifically, environmental values and ethics — be used to measure human-nature relationships, and how do such measures of environmental concern vary across social strata, such as race and residence?

Study Methods

The principal research method was a mail-back survey that measured environmental values and ethics of respondents. The study was designed to maximize diversity of the study population according to the two principal study variables, black/white racial identity and urban/rural residence, and was completed in regard to the White Mountain National Forest (WMNF). Sampling was carried out in such a way

that numbers of each subgroup — black, white, urban, and rural respondents — would be maximized, and data were analyzed for structural relationships between environmental values and ethics and each of these variables. Sampling procedures, measurement of study variables, and data analysis procedures are described in the following sections.

Sampling

Using telephone directories, two samples were drawn for the study: a stratified random sample of Massachusetts residents, and a second, separate sample of one of the original strata. Massachusetts was chosen because the study was part of a larger research project focused on the WMNF and residents of New England, and because Massachusetts has the most racially and residentially diverse population of the six New England states. For the first sample, 1500 addresses were chosen at random within three specific geographic strata of Massachusetts. These areas were chosen so as to best capture the state’s racial and residential diversity. Based on 1990 census data, three zip code areas were found that were characterized by the following social structures: 1) a primarily African-American, urban area, 2) a primarily white, urban area, and 3) a primarily white rural area. A primarily African-American rural area does not exist in Massachusetts, and the sampling procedure was only able to produce three strata of respondent groups, rather than the four originally desired. Accordingly, 500 questionnaires were sent to randomly selected residential addresses in an 85% urban African-American zip code, 500 were sent to people in an 87% urban white zip code, and 500 were sent to addresses in a rural, predominantly white county. The mail survey followed a modified procedure recommended by Dillman (1979), whereby a first mailing of the questionnaire and cover letter was followed a week later by a postcard reminder, and a second mailing to non-respondents two weeks after the postcard reminders.

Out of the 1500 questionnaires mailed in the first sample, 216 were undeliverable due to invalid addresses and other reasons. Out of the 1284 delivered, 508 were completed and returned, yielding a response rate of 40%. Out of those 508, 30 questionnaires were unusable, leaving a sample size of 478. The response rate for the primarily African-American, urban area was especially low (22.9%) and yielded an insufficient sample size. Consequently, a second sample of 500 was drawn from this area. Of the 500 questionnaires sent in the second sample, 58 were undeliverable. Of the remaining 442, 46 were completed and returned, yielding a response rate of 10.4%. The low response rates in the primarily urban, African-American strata are discussed later in this paper. Final size of the total sample was 524. The study questionnaire asked respondents to self-identify their racial

and residential group, and the sample yielded the following racial and residential subgroups: 144 urban whites, 130 urban minorities, and 250 rural residents.

A telephone survey of nonrespondents was conducted to explore potential nonresponse bias. All non-respondents were called once, and persons who were reached by telephone and agreed to participate were administered a shortened version of the study questionnaire, which included eight measures of respondents' demographic and socio-economic characteristics, and five items from each of the batteries of questions measuring forest use values, forest temporal values, environmental ethics, and attitudes toward national forest management policy issues. The sample size of nonrespondents was 71. Differences between respondents and nonrespondents were tested using T-tests of differences between means. Overall, there appear to be few differences between respondents and nonrespondents, and the differences that did arise seem to be of minor substantive importance. For example, respondents tended to report their community of residence as "suburban" more often than did nonrespon-

dents, and were older than nonrespondents. Additionally, nonrespondents tended to report lower levels of importance than did respondents for "moral/ethical" and "economic" values, as well as for "option" value.

Measurement of Variables

Two separate environmental value typologies included in the study questionnaire were used as dependent variables in the analysis. Both of these typologies represent preference-based held values as described earlier. The first values variable, described here as "forest use values," represents one dimension of environmental valuation. Eleven potential forest use values of the WMNF were defined through literature review, using sources from history, philosophy, and related environmental fields, including Rolston (1988, 1989), Kellert (1996), and Nash (1982). The values, and questionnaire items used to measure them, are shown in Table 1. Respondents were asked to indicate how important they felt each value was for the WMNF. The response scale ranged from 1, "not at all important," to 6, "extremely important."

Table 1. Bivariate Analysis of Racial and Residential Differences in Environmental Values.

		Racial Subgroups					Residential Subgroups				
Forest Use Values	Statements	White Mean	Minority Mean	White SD	Minority SD	P Value for Difference	Urban Mean	Rural Mean	Urban SD	Rural SD	P Value for Difference
Recreation	The opportunity to camp, hike, and participate in outdoor recreation activities in nature.	4.77	4.43	1.1	1.2	.05	4.77	4.66	1.1	1.1	NS
Ecological	The opportunity to protect nature in order to ensure human well-being and survival.	5.19	5.15	.92	1.1	NS	5.19	5.10	.92	1.0	NS
Historical	The opportunity to preserve and experience nature as an important part of American history.	5.08	4.85	.94	1.1	NS	5.08	4.80	.94	1.0	.05
Therapeutic	The opportunity to maintain or regain physical health and mental well-being through contact with nature.	4.84	4.82	1.1	1.2	NS	4.84	4.67	1.1	1.1	NS
Aesthetic	The opportunity to enjoy the beauty of nature.	5.22	5.05	.85	1.1	NS	5.22	5.14	.85	.87	NS
Spiritual	The opportunity to get closer to God or obtain other spiritual meaning through contact with nature.	4.29	4.49	1.6	1.6	NS	4.29	4.07	1.6	1.6	NS
Educational	The opportunity to learn more about nature.	5.11	5.13	.91	1.0	NS	5.11	5.03	.91	.84	NS
Intellectual	The opportunity to think creatively and be inspired by nature.	4.76	4.77	1.3	1.3	NS	4.76	4.34	1.3	1.3	.01
Moral/ethical	The opportunity to exercise a moral and ethical obligation to respect and protect nature and other living things.	4.98	4.72	1.1	1.4	NS	4.98	4.77	1.1	1.2	NS
Economic	The opportunity to use nature for economic development such as logging, mining, and tourism.	2.85	2.95	1.4	1.6	NS	2.85	2.79	1.4	1.3	NS
Scientific	The opportunity for scientists to study nature and ecology.	5.06	4.77	1.0	1.1	NS	5.06	4.68	1.0	1.1	.01
Forest Temporal Values											
Use	The opportunity to use the forest now.	3.92	3.76	1.5	1.4	NS	3.92	4.04	1.5	1.3	NS
Future Use	The opportunity to use the forest in the future.	4.63	4.53	1.4	1.3	NS	4.63	4.72	1.4	1.2	NS
Others' Use	The opportunity to allow others to use the forest now.	4.20	4.57	1.2	5.4	NS	4.20	4.16	1.2	1.3	NS
Existence	The opportunity to enjoy simply knowing the forest exists.	4.89	4.58	1.2	1.5	NS	4.89	4.81	1.2	1.2	NS
Bequest	The opportunity to pass along the forest to future generations.	5.45	5.24	.83	1.0	NS	5.45	5.45	.83	.76	NS

The second environmental values variable used in this study, termed “forest temporal values,” represents another dimension of valuation. The temporal dimension of values originates in environmental economics theory, and defines the concept based primarily on the time period in which value accrues, as opposed to what is being valued. Five temporal values of the environment were identified through review of environmental economics literature, including Mitchell and Carson (1989) and Diamond and Hausman (1993). The temporal values typology and the questionnaire items used to measure them are shown in Table 1. Respondents were asked to indicate how important they felt each value was for the WMNF. The response scale ranged from 1, “not at all important,” to 6, “extremely important”.

Environmental ethics concern more fundamental beliefs about the appropriate relationships between humans and the

natural environment. The environmental ethics used in the questionnaire were defined through previous research (Valliere and Manning 1995; Manning and Valliere 1996; Manning, Valliere and Minter 1996; Negra and Manning 1997; Minter and Manning 1999, Manning, Valliere and Minter 1999) and literature review. These ethics were measured using a series of 17 scale items. Each of the 17 potential environmental ethics was represented by a single scale item. Respondents were asked to indicate the extent to which they agreed or disagreed with each item using an eleven-point response scale, ranging from -5, “strong disagree,” to +5, “strong agree”. The seventeen environmental ethics, and the questionnaire items used to measure them, are shown in Table 2.

The independent variables used in the study were measured with demographic questionnaire items. Race was measured by two questions in the survey instrument. Respon-

Table 2. Bivariate Analysis of Racial and Residential Differences in Environmental Ethics.

Ethic	Statements	Racial Subgroups					Residential Subgroups				
		White Mean	Minority Mean	White SD	Minority SD	P Value for Difference	Urban Mean	Rural Mean	Urban SD	Rural SD	P Value for Difference
Storehouse	Nature is a storehouse of raw materials to be used by humans.	5.76	6.66	3.45	3.45	NS	5.76	5.47	4.00	3.04	NS
Liberalism/ Natural Rights	Nature has a moral right to exist.	10.15	9.70	7.03	2.46	NS	10.15	9.37	7.03	2.23	NS
Intellectual Dualism	The ability to think makes humans fundamentally different from and more important than the rest of nature.	5.80	6.71	3.58	3.82	NS	5.80	4.96	3.58	3.44	.05
Anthropocentric Humanitarianism	Cruelty toward animals makes people less human.	9.37	8.43	2.70	3.15	.05	9.37	9.03	2.70	2.77	.NS
Threat to Survival Efficiency	Nature can be dangerous to human survival. The supply of resources which nature provides humans for (for example, timber and minerals) is limited.	4.35	4.39	3.56	3.57	NS	4.35	4.73	3.56	3.45	NS
Animism/ Organicism	All living things, including humans, are part of an interconnected community.	8.70	7.34	2.96	3.19	.01	8.70	9.15	2.96	2.37	NS
Quality of Life	All living things are sacred.	9.85	9.66	1.87	2.35	NS	9.85	10.06	1.87	1.46	NS
Mysticism	Nature adds to the nonmaterial quality of our lives (for example, outdoor recreation, natural beauty).	10.27	9.74	1.46	2.32	NS	10.27	10.12	1.46	1.63	NS
Religious/ Spiritual Duty	All living things are sacred.	9.35	8.85	2.54	3.01	NS	9.35	8.73	2.54	2.75	.05
Future Generations	It is our responsibility to take care of nature, as religion teaches us.	9.20	9.66	2.62	1.98	NS	9.20	8.67	2.62	2.63	NS
Spiritual Evil	Nature is important because future generations will need it.	10.30	10.33	1.65	1.43	NS	10.30	10.04	1.65	1.57	NS
Ecological Survival	Religion teaches us that nature can be a spiritual evil.	3.51	4.15	2.92	3.22	NS	3.51	3.86	2.92	2.67	NS
God's Creatures	Human survival depends on nature and natural processes.	9.47	9.45	2.88	2.56	NS	9.47	9.67	2.23	1.88	NS
Pantheism	Nature is God's creation.	9.22	10.20	2.90	1.76	.01	9.22	8.44	2.90	3.23	.05
Religious Dualism	All living things have a spirit.	8.31	7.57	2.88	3.65	NS	8.31	7.51	2.88	3.14	.05
Humanitarianism	Humans were created as different and more important than the rest of nature.	5.88	6.56	3.87	3.94	NS	5.88	4.74	3.87	3.48	.01
	Animals should be free from needless pain and suffering caused by humans.	10.17	9.90	1.69	2.33	NS	10.17	9.53	1.69	2.30	.01

dents were asked, "Which of the following best describes you? Are you mainly 1) White, 2) African American, 3) Asian or Pacific Islander, 4) Native American, or 5) Other," and were also asked "Are you any of the following: Hispanic, Latino, or of Spanish origin?" Race was subsequently recoded from this scale into a dichotomous variable, with white respondents in one category and African American, Asian or Pacific Islander, Native American and other minority respondents in the second category. As African-American respondents comprised 72% of this latter category, and as statistical testing revealed no significant differences in responses between the African American, Asian or Pacific Islander, Native American, and Other categories, the terms "African American" and "minority" are used interchangeably in the rest of this paper.

Residence was measured by self-identification with an item asking respondents "Which of the following best describes the area in which you live? 1) Urban, 2) Suburban, or 3) Rural?" When respondents indicated suburban residence, they were subsequently recoded into a rural or urban category, according to the aforementioned sample stratification.

Analysis of Data

Prior to data analysis, weights were assigned to each case according to the rate at which that strata was sampled. The purpose of the weighting was to adjust for the fact that the urban, African-American strata was oversampled. Weights were computed by taking the rate at which each particular strata should have been sampled, based on the total sample and population sizes, and dividing it by the rate at which that strata actually was sampled. Thus, the weight for the urban African-American strata was less than one, while the weights for the other two strata were each greater than one; these weights were then assigned to each case in that strata, and were used in all analyses. Additionally, as the race and residence variables used in this study were necessarily intercorrelated, given the fact that all racial minorities in the sample were urban residents, analysis of racial differences was performed using only urban residents, and analysis of residential differences was performed using only white respondents.

Study Findings

Table 1 summarizes study findings regarding forest values, including mean scores for all subgroups as well as significant differences between subgroups. Urban and rural mean scores for all eleven forest use values and all five forest temporal values are shown here, as well as the standard deviations for those means. This information is also shown for

the white and minority subgroups. The last column of information for each of the subgroup categories (residence and race) indicates the P value for racial and residential differences in those values.

These findings indicate that most potential forest use values of the WMNF were rated highly by all subgroups. For all subgroups, ten of the eleven forest use values received a mean importance rating of 4.0 ("moderately important") or higher on the 6-point scale. Scores for economic value averaged below 4.0 for all four subgroups. Forest temporal value scores for all subgroups averaged 4.0 ("moderately important") or higher on the 6-point scale for four of the five values. Mean scores for use value were below 4.0 for three of the four subgroups.¹

Turning to the differences within the racial and residential subgroups, mean value scores showed more statistically significant differences across residential lines than across racial ones. T-tests of independent samples of white and minority subgroups showed significant difference at the .05 level for one of the sixteen forest values. Recreation value scores differed between white and minority respondents (white mean = 4.77, minority mean = 4.43). None of the other racial differences in forest use or temporal values were statistically significant. The remaining differences in average forest values scores were found across residential lines, with three values indicating statistically significant differences.² All three of these values were in the use values category. Historical/cultural value scores differed between urban and rural respondents (urban mean = 5.08, rural mean = 4.80). Intellectual value scores also differed between these subgroups (urban mean = 4.76, rural mean = 4.34). Finally, scientific value scores differed between the urban and rural subgroups (urban mean = 5.06, rural mean = 4.68). The latter two differences were significant at the .01 level.

Table 2 summarizes study findings regarding environmental ethics, including mean scores for all subgroups as well as significant differences between subgroups. These findings indicate that most potential environmental ethical positions were highly supported by respondents. Moreover, the patterns of support were similar across rural, urban, minority, and white respondent subgroups. The original scale, anchored at -5 and +5, was recoded into an eleven-point scale anchored at 1 and 11, with scores above six indicating agreement, and scores below six indicating disagreement. All four subgroups exhibited agreement with twelve of the seventeen environmental ethics included in the questionnaire. These ethics received mean agreement scores of seven or above from all four subgroups. Three of the ethics elicited responses in the "uncertain/no response" range. These included the religious dualism, intellectual dualism, and storehouse ethics. The remaining two ethics, threat to sur-

vival and spiritual evil, each received mean agreement scores in the disagreement range from all four subgroups.

Tests of significant differences between subgroups concerning these mean environmental ethics scores indicate a few areas of difference among the racial and residential subgroups in the sample. First, white respondents tended to rate two environmental ethics — anthropocentric humanitarianism and efficiency — as more important than did minority respondents. Minority respondents rated the “God’s creatures” ethic as more important than did white respondents.

Second, significant differences between the residential subgroups were found on six of the seventeen environmental ethics. Urban residents rated all six of these ethics — intellectual dualism, religious dualism, mysticism, pantheism, God’s creatures, and humanitarianism — higher than did rural residents. Of those, religious dualism and humanitarianism were significantly different at the .01 level.

Multiple regression analysis was performed for each of the 16 forest use and temporal value variables.³ The purpose of this analysis was to test the model of race and residence as explanatory factors for individual values — for example, recreation value or existence value. As race and residence had a high potential for intercorrelation in this study (as minority respondents were necessarily urban in this population), regressions examining the race variable were only run using urban cases, and regressions examining the residence variable were only run using white cases, as explained earlier. Furthermore, in order to test the unique effect of both race and residence upon each value variable, the model for each individual regression equation also included control variables such as age, gender, and education, in addition to the race or residence variable; the individual forest use or temporal value item served as the dependent variable.

As shown in Table 3, urban/rural residence was statistically significant in four of the sixteen equations: residence was significant at the .01 level in explaining the variance in intellectual value (Beta = -.201), and scientific value (Beta = -.211) and at the .05 significance level in explaining the variance in ecological value (Beta = -.118) and historical/cultural value (Beta = -.125). Adjusted R² values for these four regression equations were low, ranging from .04 to .07. The negative direction of each of these regression coefficients indicates that, for each value, urban residents are more likely than rural residents to find these values of the WMNF important.

Race was not statistically significant in any of the sixteen regression equations (Table 3). Race regressions were run using the larger minority group and white respondents, as well as using only African American and white respondents. Results did not vary.

Multiple regression analysis was also conducted for environmental ethics, using environmental ethics statements

Table 3. Multivariate Analysis of Racial and Residential Differences in Environmental Values and Ethics

	Beta: Race	Beta: Residence
Intellectual Value		-.201**
Scientific Value		-.211**
Ecological Value		-.118*
Historical/Cultural Value		-.125*
Storehouse Ethic	.187*	
Efficiency Ethic	-.246**	
Religious Duty Ethic	.193*	
God’s Creatures Ethic	.307**	

* .05 significance level

** .01 significance level

as the dependent variable and race and residence separately (see above) as independent variables, with demographic variables included in all equations (Table 3). Race appeared as a statistically significant factor in four of the seventeen ethics equations. Race was significant at the .01 level in explaining the variance in the “God’s creatures” ethic. Minority respondents were more likely than white respondents to agree with this ethic (Beta = .307). Race was also significant in explaining the variance in the “efficiency” ethic, with white respondents more likely than minority respondents to agree with the statement, “The supply of resources which nature provides humans (for example, timber and minerals) is limited” (Beta = -.246). The third ethic for which race was a significant explanatory factor was the “religious/spiritual duty” ethic. The direction of this coefficient (Beta = .193) indicates that minority respondents are more likely than white respondents to agree with this ethic. Finally, race was also significant in explaining the variance in the “storehouse” ethic. The direction of the coefficient in this equation (Beta = .187) indicates minority respondents are more likely than white respondents to agree with the statement, “nature is a storehouse of raw materials to be used by humans.” The significance level for the last two ethics was .05.

Regression equations run with residence as the independent variable indicate rural/urban residence was not a statistically significant factor in explaining the variance in any of the seventeen environmental ethics.

Several control variables were significant in the regression equations. Of these variables — employment status, gender, age, ethnicity, education, and income — gender appeared the most frequently. Gender appeared as an explanatory factor in twelve of the thirty-two regressions run (sixteen regressions examining race, and sixteen examining residence). In each of these instances, women were more likely than men to find study values, important, including existence, bequest, and therapeutic values. Other interesting results with the control variables included income explaining

some of the variance in recreation value. In this instance, wealthier respondents were more likely than lower-income respondents to find the recreation value of the WMNF important. Furthermore, education explained some of the variance in ecological value, as those respondents with more education were more likely to find ecological value important.

Discussion

Findings from this study add to the growing body of literature on environmental concern, and how such concern is expressed across social strata, specifically race and residence. To some degree, study findings mirror much of the scientific literature in this area. That is, there is both commonality and divergence in environmental concern across racial and residential subgroups.

On one hand, we are impressed with the apparent extent of consensus about environmental values and ethics across study subgroups. Bivariate analyses found only one statistically significant difference between racial subgroups out of 16 forest values, and only 3 statistically significant differences between racial subgroups out of 17 environmental ethics. There were only 3 statistically significant differences between residential subgroups out of 16 forest values, and only 6 statistically significant differences between residential subgroups out of 17 environmental ethics. We believe that our measures of environmental concern — forest values and environmental ethics — are broader and more fundamental constructs of environmental concern than have traditionally been used, and that this may be why we found more consensus among respondents than some other studies.

On the other hand, the statistically significant differences between racial and residential subgroups suggest that there is a gap between racial and residential subgroups on some dimensions of environmental concern. For example, study findings of residential differences in forest values and environmental ethics indicate urban residents in the sample showed statistically higher support for historical/cultural, intellectual, and scientific values of the WMNF than did rural residents, as well as for six of the 17 ethics, including intellectual dualism, mysticism, and pantheism. These results are similar to findings from other studies, which conclude that urban residents are more likely than rural residents to value the environment in a more abstract, nonconsumptive sense (Kellert 1996). Historical/cultural importance, intellectual stimulation, and scientific study are all examples of such nonconsumptive values.

This study may differ from earlier studies in terms of the explanation it suggests for those differences in residential subgroups. As rural residents in this sample live in a Massachusetts county where the economy is generally not

directly dependent upon the land, such as in logging or in agriculturally-based rural areas, the rural/urban difference in these forest values and environmental ethics is therefore logically not attributable to a rural dependence on the land.⁴ This is contrary to earlier findings, such as those by Kellert (1996) and Rickson and Stabler (1985), which posit that a rural tendency toward consumptive valuation is likely a product of self-interest due to an extractive economic base. The explanation for lower rural support for nonconsumptive values and ethics in this case may more closely resemble that of Lowe and Pinhey (1992), who suggest that socialization may be more important than economic dependence.

Analytical findings elaborate on these descriptive findings. The regression equations, although they possess low explanatory power, indicate certain patterns in values among the subgroups. For example, residence is statistically related to four of the sixteen forest values in the study. The forest values for which residence was a factor — intellectual, scientific, historical/cultural, and ecological — all involved relatively abstract conceptions of value. Furthermore, the direction of the residential variable's influence was the same in all four cases: urban respondents were more likely than rural respondents to find these abstract values of the WMNF as relatively important. Analytical findings concerning environmental ethics produced no significant relationships, suggesting that the relationship that may exist between ethics and residence, as indicated by the descriptive findings, is not a strong enough one to explain any of the variation in those ethics.

An alternative explanation of the effect of residence on environmental values is that rural residents are more likely than urban residents to support consumptive environmental values. As discussed above in relation to the descriptive findings, this explanation has frequently appeared in the literature (see, e.g., Rickson and Stabler 1985; Kellert 1996). Our study findings do not tend to support such a rural residence-consumptive value connection, however, as descriptive analysis revealed no significant differences in rural/urban mean scores for what might be considered the more consumptive values and ethics, such as current or future use value, or the storehouse ethic. What analytical and descriptive findings did reveal, however, was higher urban support for abstract forest values such as intellectual and scientific value, and more abstract ethics like mysticism and pantheism. These findings suggest a subtle, but potentially important distinction between concluding that rural residents are more supportive of consumptive forest values and concluding instead that urban residents are more supportive of relatively abstract forest values.

Study findings on differences between racial subgroups tend to corroborate findings from the outdoor recreation par-

ticipation literature. Several studies have found that some minority groups, including African Americans, participate in traditional outdoor recreation activities at lower levels than do whites (e.g., Washburne 1978; West 1989; Floyd, Shinew, McGuire and Noe 1994). Minorities in this study, the majority of whom were African Americans from an urban area, found the WMNF's recreation value to be less important than did whites in the study. Explanations for this difference between racial subgroups have centered around the ethnicity thesis, which suggests cultural differences between white and minority groups lead to different participation rates (Washburne 1978), and the marginality thesis, which counters that recreation participation differences are more a product of limited minority resources as a result of discrimination (West 1989). Further exploration of these theses, however, is beyond the scope of this study and a subject for further research.

Differences between racial subgroups were also found with regard to religious/spiritual environmental ethics. Descriptive and analytical findings indicate minority respondents were more likely than white respondents to support environmental ethics that involved spiritual beliefs, such as "Nature is God's creation," and "It's our responsibility to take care of nature, as religion teaches us." These findings warrant further investigation into the possible explanations of such differences.

Conclusions

Study findings lead to several conclusions regarding environmental policy and further research. First, nearly all of the forest values and environmental ethics included in this study received relatively high importance ratings from respondents in all four subgroups. Mean importance scores among all subgroups were above the 4.0, "moderately important" mark for fourteen of the sixteen environmental values. The only two exceptions were economic and use values. Likewise, twelve of the seventeen environmental ethics received mean scores on the agreement side of the scale from all four subgroups. Only the "anti-environment" ethics met with broad disagreement. This suggests to managers of protected areas such as the WMNF that the public looks to these lands for a wide variety of values. However, less consumptive and future-oriented values and ethics tended to receive higher ratings than did more consumptive and present use values and ethics. These findings emphasize the importance of managing the WMNF according to its multiple use mandate, but emphasizing protection of non-consumptive, future-oriented values of the forest.

Second, more explicit attention should be devoted to nontraditional environmental constituencies. The fact that

there were relatively few differences in environmental values and ethics between racial and residential subgroups in this study suggests that the constituency of the WMNF may be considerably broader than traditionally assumed. Historically, a major constituency for the WMNF is white urban residents who value the forest's recreation opportunities (U.S. Census, 1990; USDA, 1997). However, as indicated by the high level of support for a diversity of forest values across subgroups in the study, that typical user profile is only one of several constituencies who value the forest. The predominant finding with regard to racial and residential differences in this study was the degree to which such differences are overshadowed by similarity and commonality. It is important to conclude that groups such as African Americans and rural residents may value the WMNF as much as do the urban white recreationists, and for similar reasons. Public land managers should be encouraged to reach out to nontraditional constituencies when making major land management decisions.

Some observers may suggest, however, that reaching out to nontraditional constituencies may not be a worthwhile venture if their environmental values and ethics tend to mirror those of traditional constituencies. However, the similarities in environmental values and ethics between subgroups in this study do not give license to overlook the potential differences that do exist between traditional and nontraditional constituencies. For example, racial and ethnic minorities such as African Americans do not exhibit as much support for the recreation values of the WMNF as do white respondents, and place greater emphasis on religious/spiritual ethics than do white respondents. These differences may have important management implications, and warrant further investigation. Moreover, the importance of reaching out to traditionally underrepresented societal groups lies not only in new information obtained, but also in the sense of inclusiveness generated. More specifically, from a management point of view, traditionally underrepresented groups are more likely to feel like they have a stake in the future of the WMNF if they are included in the decision-making process. What may ultimately be important to managers is that more people may value the WMNF — from a diversity of perspectives — than was previously thought.

Third, the persistently low response rate in the predominantly African American strata of the sample — as low as 10% — suggests that mail surveys may not be the most effective way to reach this sector of the population. This supports Wicks and Norman's (1996) findings that indicate telephone surveys yield higher response rates than mail surveys among African Americans. Alternate research methods, such as personal interviews or focus groups, should also be considered.

Fourth, study findings may have important policy implications regarding the issue of environmental justice.

Environmental justice concerns unequal and unfair environmental costs that may be imposed on selected groups in society based on race, ethnicity, gender, class, residence or other characteristics. For example, race has been found to be a predictor of the location of hazardous waste facilities in the United States (Commission on Racial Justice, 1987). The apparent similarities in environmental values and ethics across racial and residential groups found in this and other studies may compound environmental injustice suffered by blacks, rural residents, and other underrepresented groups.

Fifth, environmental values and ethics appear to be useful research constructs. As noted earlier, environmental concern is the traditional research construct found in the literature examining human-environmental relationships, and is usually measured through support for or opposition to specific environmental issues, or degree of activism in environmental matters. This traditional conceptualization has often found differences in environmental concern between racial and residential subgroups. We believe that these traditional measures of environmental concern may be influenced by mediating variables such as income, access to political power, and economic dependence on natural resources. As alternative constructs, environmental values and ethics may measure a more fundamental relationship between people and the natural environment. Study findings based on these constructs suggest that there are relatively few differences in environmental concern based on race or residence.

In addition, while this study explored the relationship between race and residence and environmental values and ethics, it did not investigate the implication of these relationships for respondents' actions and behavior. There is evidence to suggest that a gap may exist between environmental concerns and values and environmental actions and behavior (Mohai 1990; Satterfield and Gregory 1998). Research on this issue may require a contextualization of values in order to better link them with action (Satterfield and Gregory 1998). This is an area for further research.

Finally, findings from this study support some conclusions in the environmental concern literature, but do not support others. This suggests that additional research into environmental concern is warranted. Studies using environmental values and ethics constructs carried out in a variety of study sites, and among different population groups, will better illuminate our understanding of fundamental human interest in the environment. Furthermore, additional research regarding African-American environmental values and ethics will be particularly valuable, as the low response rate among racial and ethnic minorities in this study limits the degree to which study findings can be generalized. Other directions for further research on environmental values and ethics include consideration of variables other than race and residence. For

example, among the control variables used in this study, gender often influenced support for environmental values and ethics — women were more likely than men to support nearly all the environmental values studied. This relationship should be further explored.

Endnotes

1. Mean use value for the remaining subgroup, rural residents, was 4.04.
2. Significance level throughout the paper is .05, unless otherwise noted.
3. Bivariate regressions were also performed, where only race and residence were used as independent variables. Results did not differ significantly from the multivariate analysis.
4. Over 70% of the Franklin County workforce is employed in a managerial, professional, sales, or service occupation. (U.S. Census, 1990).

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