
Community Attachments as Predictors of Local Environmental Concern

The Case for Multiple Dimensions of Attachment

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This article conceptualizes two distinct dimensions of community attachment—socially based attachment and attachment to a community's natural environment—and examines their connections with attitudes about local environmental issues. The findings indicate that the two dimensions of attachment are distinct and relate differently to environmental concern. In cases where the social attachment dimension is a statistically significant predictor of attitudes toward local environmental issues, the issues are representative of community culture and identity or health. In contrast, when natural environment attachment is a statistically significant predictor of local environmental concern, the topics reflect issues involving resource protection. Building on the previous work of Vorkinn and Riese, this study further clarifies that community-focused factors may be more useful variables for understanding attitudes toward environmental issues than sociodemographic ones.

Keywords: *community attachment; environmental concern; environmental attitudes*

Sociologists have long been concerned with the impacts of differing forms of social organization on social and sentimental bonds. Toennies, Marx, Weber, and Durkheim demonstrated a concern for the effects of the decline of local community based on social connections associated with the emergence of urban society.

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Contemporary researchers examining community attachment have continued to explore these issues, including Kasarda and Janowitz (1974), who developed a community attachment model that posited a systematic interaction between length of residence, position in the social structure, and stage in the life cycle. This model has been replicated by many others, with long-term residence emerging as a variable highly correlated with the strength of localized social attachments involving friends, relatives, and others known in the community (Beggs, Hurlbert, & Haines, 1996; Goudy, 1990; Kasarda & Janowitz, 1974). Length of residence has also been identified as a potential influence on place attachment variables, with some works asserting that long-term residence in a locale can enhance the likelihood of attachment to elements of the physical environment, as well as social attachments (Relph, 1976; Tuan, 1977). In contrast, Cuba and Hummon (1993) and Stedman (2002) found no associations between length of residence and attachment. Such contradictory findings indicate that more research is needed to better understand these dynamics.

To date, analyses of community attachment largely ignore the influence of the natural environment or biophysical indicators, with only a few recent exceptions (Beckley, 2003; Brandenburg & Carroll, 1995; Brehm, Eisenhauer, & Krannich, 2004; Hidalgo & Hernandez, 2001; Stedman, 2003). This dimension of community attachment is particularly important given growth trends in rural communities influenced by amenity-based migration. Although “newcomers” and “old-timers” may vary a great deal in regard to some social variables that are components of traditional community attachment models, they may share more similar connections to their communities in terms of attachment to the natural environment (Smith & Krannich, 2000).

Although recent works on community attachment compensate for the historical neglect of the natural environment, it is not yet clear how different dimensions of attachment may influence attitudes toward locally relevant environmental issues. Within the attachment literature, there is little empirical evidence on the linkages between community attachment and local environmental concern. Furthermore, although a broad range of predictors of environmental concern have been analyzed (Jones & Dunlap, 1992; Mohai, 2003; Van Liere & Dunlap, 1980), the focus is on social structural or sociodemographic bases of environmental concern. Such studies fail to explore the possibility that sentimental and emotional attachments to local communities, based on social ties as well as ties to the physical environment, may also influence levels of environmental concern.¹

In an effort to pursue this important line of inquiry, the primary objective of this article is to examine more closely the connection between two dimensions of community attachment—social and natural environment—and attitudes about local environmental issues. Research on multiple dimensions of attachment that include both social and environmental constructs is especially relevant in communities with high levels of natural amenities and associated patterns of population growth. New immigrants generally exhibit lower levels of social attachment, primarily because of

their shorter tenure in the community (Kitayama & Markus, 1994). However, new in-migrants drawn to the natural amenity settings and perceived quality of life in these areas may have much in common with longer term residents in terms of their sentimental and emotional attachments to local landscapes. Understanding these differences and their influences on attitudes about locally salient environmental issues is an important step in understanding both important correlates of environmental attitudes and how multiple forms of community attachment must be conceptualized and operationalized to more adequately examine the concept and its implications. To address these needs we examine the following broad research question:

Research Question 1: How do social and natural environment dimensions of community attachment relate to attitudes about local environmental issues?

Community Attachment

Examinations of attachment vary greatly from discipline to discipline. The most widely studied concepts, place attachment and sense of place, have been examined within architecture, anthropology, cultural ecology, environmental psychology, geography, planning, and sociology (Brandenburg & Carroll, 1995; Cross, 2001; Eisenhauer, Krannich, & Blahna, 2001; Relph, 1976; Tuan, 1974; Williams, Patterson, Roggenbuck, & Watson, 1992). Many distinct conceptual frameworks for the examination of attachment exist. The following discussion highlights some of the most salient conceptions of attachment and concludes with a conceptual framework of attachment as it specifically relates to the research objective.

Some of the earliest work on attachment can be found within the discipline of human geography. These early studies argue that positive cognition related to a specific setting allows people to acquire a sense of belonging to places that give meaning to their lives. Human geographers have most commonly used the term *sense of place* to describe and explore this attachment (Relph, 1976; Tuan, 1974). Within sociology, studies of place attachment often focus on attachments to specific or special physical places (Cheng, Kruger, & Daniels, 2003; Eisenhauer et al., 2001; Hidalgo & Hernandez, 2001; Kruger, 1996; Williams et al., 1992). Examples of such work include Brandenburg and Carroll's (1995) study of place attachment and specifically, the creation of place based on environmental values and meanings. In addition, Cheng et al. (2003) argued that attachments to place materialize as groups come together through the use of common symbols and the use of a common definition or language about a place. From the field of psychology, Hidalgo and Hernandez (2001) examined how the physical and social dimensions of attachment varied across various definitions of space that varied in size, ranging from the house to the city scale. In a similar manner, Stokols and Altman (1987) asserted that environmental elements, physical context, and sociocultural context are among the

factors contributing to aesthetic place perception. In a critique of the strict constructionist (Best, 1993) approach to sense of place, Stedman (2003) examined how elements in the physical environment are related to sense of place among residents of northern Wisconsin and concluded that certain landscape attributes are associated with attachments to the landscape. In combination, these works clarify the importance of physical space in the creation of sense of place, as well as place attachment. Although most of the work addressing these themes highlights the positive connotations of attachment, some researchers have asserted that attachment may also have negative effects, including limiting individuals' ability to leave an undesirable area or develop independence from existent social networks (Beckley, 2003).

A variation on sense of place is community attachment, which can be defined as the emotional investment in place (Hummon, 1992) that emerges in the context of residence and belonging. This conceptualization differs from some works on sense of place that focus on connections to and understandings of particular physical locations in the natural world (Bott, Cantrill, & Myers, 2003), and it has implications for understanding well-being and social dynamics within a community. Kasarda and Janowitz (1974) were among the first sociologists to develop a community attachment model that posited a systematic interaction between length of residence, position in the social structure, and stage in the life cycle. This model has been replicated and modified by many others, with long-term residence emerging as a strong indicator of increased sentimental ties to a local place (Beggs et al., 1996; Goudy, 1990; Kasarda & Janowitz, 1974). From this approach, community attachment appears to be most strongly associated with social integration that develops with time through interpersonal associations and localized social networks, but it is worth noting that Cuba and Hummon (1993) found that these connections were also influenced by the geographic scale of the place about which people were asked to consider their identification.

Hummon (1992) provided an in-depth examination of the concept of community attachment by bringing together multiple disciplinary perspectives to create a cohesive conceptualization of community sentiment. Fundamental to his conceptualization is the feeling of "rootedness" that contributes to a strong feeling of community attachment. In support of many other sociological perspectives, Hummon argued that community attachment appears to be most strongly rooted in involvement in local social relations. However, he also acknowledged that the built environment might also contribute to such emotional ties if perceived in favorable terms. Given our focus on rural communities in the Rocky Mountain West, Hummon's emphasis on the built environment can be redirected to emphasize the natural environment and natural settings. If the local natural environment is perceived in favorable terms, it too can contribute to overall levels and degrees of community attachment.

In view of the diversity of definitions and conceptions of attachment, we suggest that natural environment dimensions should be considered in conjunction with social

dimensions, as they both have the potential to be strong foundations for community attachment. Wilkinson's (1991) conceptualization of community supports this expanded definition; he argued that "it is not accurate or appropriate to treat the environment as though it were somehow separate from the social life it supports" and that "an active interdependency characterizes the relationship between social life and its surroundings" (p. 75).

Examining these distinct dimensions of attachment is especially appropriate in situations where amenity-based in-migration is occurring. In these contexts, recent in-migrants may quickly form strong sentimental ties to a locale, based largely on natural environment factors such as landscape features or the presence of wildlife. Indeed, McCool and Martin (1994) found that newcomers were more highly attached to their community than long-term residents. They argued that this was indicative of a tendency for newcomers to be attached to biophysical or landscape features of place, as opposed to social networks and local relationships, and that these natural environment attachments can be equally strong in forming an emotional investment in place. These considerations are especially important given recent research on patterns of population growth that asserts counties with federal lands within their borders are experiencing more rapid population growth than surrounding areas (Frentz, Farmer, Guldin, & Smith 2004; see also Beale & Johnson, 1998). Some researchers have concluded that these patterns are primarily because of amenity-based migration (Shumway & Otterstrom, 2001); others have asserted that in-migrants may have different expectations in regard to land management than long-term residents (Egan & Luloff, 2000). Frentz et al. (2004) stated that this pattern of population growth has many potential consequences for land and resource management issues, including a need to more effectively and inclusively involve people in decision-making processes. Doing so effectively involves understanding what attitudes citizens hold and some of the reasons underlying their orientations and beliefs. Understanding the linkages between varying dimensions of community attachment and environmental attitudes is a useful step toward comprehending how these attitudes are generated.

Environmental Concern

Research on social correlates of environmental concern has a long history. Van Liere and Dunlap (1980) summarized the data from numerous studies of environmental attitudes among the general public and concluded that there was fairly consistent evidence of associations between age, education, and political ideology and environmental attitudes. In contrast, hypothesized relationships between place of residence, income, sex, and occupational prestige and environmental attitudes were not supported. In an examination of whether the social bases of environmental concern have changed with time, Jones and Dunlap (1992) concluded that as a

whole, levels of concern about the environment stayed high from 1973 to 1990. Jones and Dunlap did not find support for the idea that environmental attitudes are linked to economic success or that concerns about the environment had crossed age, education, or political ideological lines as asserted in the "broadening base hypothesis" (p. 30).

In a more recent study, Theodori and Luloff (2002) examined how sociodemographic variables including age, education, gender, and income are related to self-identified positions on environmental issues. Significant correlations were observed between all the sociodemographic variables and respondents' classifications as proactive, sympathetic, or neutral on environmental issues. Education and political ideology were the most consistent predictors of engagement in a variety of pro-environmental behaviors, with gender and income also correlated with some forms of behavior. The observation of associations involving income contrasts with results reported by Brechin and Kempton (1994), who concluded that research within industrialized nations does not support the idea that higher incomes are associated with higher levels of environmental concern.

There is a substantial and growing body of research exploring how gender and race may relate to environmental attitudes. The most recent works on connections between gender and environmental attitudes support previous findings that gender differences in environmentalism exist. However, the underlying reasons for these differences are not well understood (Dougherty, Fulton, & Anderson, 2003; Dietz, Kalof, & Stern, 2002). In contrast, recent research on the relationships between race and levels of environmental concern indicates that the commonly accepted notion that African Americans exhibit lower levels of environmental concern is inaccurate; rather, they partake in environmentally conscious behaviors at levels comparable to those in the overall population (Mohai, 2003). These findings are consistent with the work of Fransson and Garling (1999), who reviewed numerous studies and concluded that as a whole, sociodemographic factors are not consistently strong predictors of environmental concern. It should also be noted that these authors asserted that the relationship between levels of environmental concern and the decision to engage in environmentally sound behaviors are tenuous at best. This conclusion is similar to the ones drawn in other research examining the relationship between environmental concern and involvement in environmentally sound behaviors (Bamberg, 2003; Stern & Dietz, 1994; Stern, Dietz, Kalof, & Guagnano, 1995).

Few studies examine the relationships between environmental concern and community-level variables. One notable exception is the work of Vorkinn and Riese (2001), whose study of attitudes toward a major hydropower development among residents of a rural community in Norway indicates that respondents' strength of attachment to place explained more of the variance in attitudes about the project than the sociodemographic variables examined. Vorkinn and Riese examined emotional attachments to and uses of specific natural areas affected by the proposal and

concluded that respondents' attachment to local communities and their length of residence in them are factors that need to be examined in future research.

These findings indicate the importance of examining the connections between variables concerning the context within which people develop environmental attitudes and the beliefs they hold. This research furthers this avenue of inquiry by focusing on two distinct dimensions of community attachment while controlling for respondents' length of residence and sociodemographic characteristics. Based on results from prior research, income, age, religious affiliation, sex, and level of educational attainment, variables are also incorporated in the analysis as control variables and as potential predictors of environmental concern.

Research Design and Approach

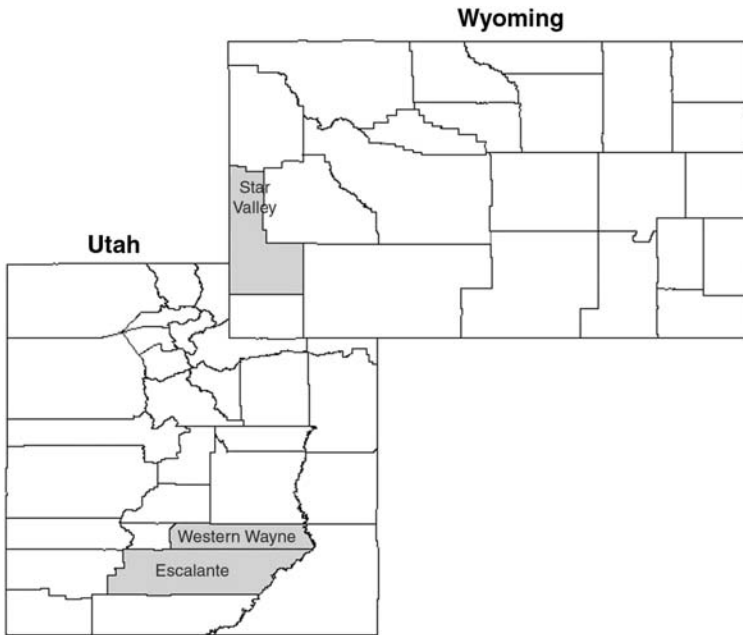
This research focuses on three high natural amenity rural community areas in the intermountain West: Star Valley, Wyoming; Western Wayne County, Utah; and Escalante, Utah. These three communities were selected based on their locations in areas characterized by high natural amenity contexts and related patterns of tourism-based development and/or in-migration (see Figure 1).

Study Communities

Star Valley, Wyoming. Star Valley is located at the western edge of Wyoming in Lincoln County, approximately 50 miles southwest of Jackson. The Star Valley study area is composed of a cluster of individual settlements, including the towns of Afton (1,818 residents in 2000), Alpine (550 residents), Thayne (341 residents), Smoot (182 residents), Grover (137 residents), and Etna (123 residents). Star Valley is about 50 miles long; 5 to 10 miles wide; encircled by the Caribou, Salt River, Wyoming, and Gros Ventre mountain ranges and the Bridger-Teton, Caribou, and Targhee National Forests; and within 100 miles of both Grand Teton and Yellowstone National Parks. Dairy farming and dairy processing industries, historically the primary sources of economic activity in the valley, have experienced substantial declines in recent decades, and only a handful of operating dairy farms remain. Timber harvesting and sawmills were also well established during the 1960s, but this segment of the economy has also declined significantly.

As the economy of Star Valley continues to change, tourism- and recreation-based services have come to play increasingly important roles. Because of the wide array of natural amenities surrounding the valley and the relatively close proximity of two national parks and Jackson Hole, Star Valley is increasingly attracting new in-migrants. During the mid-1970s, a significant vacation and recreation development began on the western foothills between Thayne and Etna. This development, known

Figure 1
Locations of Study Communities



as Star Valley Ranch, consists of 2,500 acres subdivided into 2,034 privately owned building lots, with 600 homes built or under construction in 1999. Although the development began as a vacation/recreation development, an increasing number of the homes are now occupied on a year-round basis, further demonstrating the trends in migration to this area. In addition, service sector workers in the Jackson Hole area have sought more affordable housing and a lower cost of living in the Star Valley area. The population of Alpine, located just 40 miles from Jackson, grew by 194% between 1990 and 2000. The towns of Afton and Thayne grew by approximately 30% and 25%, respectively, during the same period.

Western Wayne County, Utah. The western Wayne County study area is composed of a cluster of individual small communities located within a 15 mile-long corridor along State Highway 24. Moving from west to east, the study area includes the towns of Loa (252 residents in 2000), Lyman (234 residents), Bicknell (353 residents), and Torrey (171 residents), as well as adjoining unincorporated portions of the county. Farming and ranching have historically been core elements of the local economy, but as with many

other parts of the rural West, the economic importance of agriculture has declined in recent decades. A small lumber industry has also contributed to the local economy, although that has decreased considerably with reductions in timber harvesting on surrounding national forest lands. Increasingly, tourism- and recreation-based services have become key components of the local and regional economy.

Western Wayne County is bordered by the Dixie National Forest and the Escalante Grand Staircase National Monument to the south and the Fish Lake National Forest to the north. Capitol Reef National Park is located immediately east of the study area, near the “gateway” town of Torrey. These natural amenities make western Wayne County an attractive area for increasing numbers of in-migrants and seasonal residents, as well as shorter term visitors. Torrey, located closest to Capital Reef National Park and on the travel route to the Grand Staircase Escalante National Monument, is the community with the most tourism-related businesses and development. Between 1990 and 2000, the population of Torrey increased by 40%, whereas the town of Bicknell grew by more than 17%. In contrast, the county seat of Loa lost population during the 1990s, falling 18% between 1990 and 2000. This reflects both the effects of declines in traditional resource-based industries and the concentration of tourism-oriented developments and other amenity-based growth in the easternmost portions of the study area.

Escalante, Utah. Escalante (population 818 in 2000) is located in Garfield County in southern Utah. The surrounding area is dominated by extensive tracts of public lands, with more than 95% of the county’s land area in federal and state ownership. Economic activity in this area has long been centered on timber and agriculture, particularly livestock grazing on public lands. Although these are still important components of the local economy, both have experienced substantial declines in recent decades. Meanwhile, tourism- and recreation-based services have become increasingly important contributors to the local economy.

Beautiful natural amenities ranging from red rock deserts and slot canyons to forested mountains characterize the landscapes that surround Escalante. In 1996, the Escalante Grand Staircase National Monument was established on Bureau of Land Management lands surrounding Escalante, bringing increased national and international attention to the area. The monument, coupled with the many other natural amenities in the region, has increasingly drawn tourists and recreationists to this remote rural area, and several new and expanded tourism-oriented businesses have developed in recent years. However, despite increased tourist visitation and expectations of ensuing amenity-based growth and development following designation of the monument, Escalante has yet to experience the economic and demographic expansion often associated with the growth of destination tourism. Indeed, unlike most other rural communities in the surrounding region, Escalante experienced a slight population decline during the 1990s, dropping from 838 residents in 1990 to 818 in 2000. Some in-migrants were drawn to the area’s natural resource amenities

during this time, but that in-migration did not offset out-migration influenced by the economic factors identified above.

Data Collection

Survey data were collected during the summer of 2001 from representative probability samples of adult residents in each of the study areas. The questionnaire instructions included a map of study communities on the cover page as well as introductory instructions that specified the communities the research was examining. This helped to focus respondents' attention on the same locale, including seasonal or part-time residents who might otherwise have provided information about a different place of residence. Households were randomly sampled from public utility records; sample sizes were 200 in both Western Wayne County and Star Valley and 166 in Escalante; the smaller sample in Escalante reflects both the much smaller population of that community and the presence of numerous unoccupied homes during the time of data collection. Individual respondents within sampled households were selected by having the person age 18 or older whose birthday had occurred most recently complete the self-completion questionnaire. Questionnaires were administered using a "drop-off/pick-up" methodology (see Steele et al., 2001), which included multiple callback attempts at selected households to maximize contact with a potential respondent in each occupied household. Individuals unable to complete and return the completed survey during the week that the research team was in the area were provided with a postage-paid envelope and asked to return the completed survey by mail. These procedures produced survey participation rates of 81% in Escalante, 81% in Star Valley, and 85% in Western Wayne County.²

Because of the high numbers of seasonally or episodically occupied residences in the study sites and the use of a drop-off/pick-up method that targeted respondents during a specific 2-week period of the summer of 2001, our samples inevitably underrepresent seasonal populations in these communities. Unless seasonal residents and vacation home owners were occupying their second residence during the time when questionnaires were being delivered, they were not included in the study. A resulting limitation of this research is that it is far more representative of the permanent populations of these communities than of seasonal or episodic residents.

To determine if the three communities in this study differed significantly in terms of residents' local environmental concern, a one-way analysis of variance was conducted on the six environmental concern indicators. The few statistically significant differences that were noted primarily involve differences between Escalante and the other two study sites and most likely reflect continued unhappiness concerning President Clinton's establishment of the Escalante Grand Staircase National Monument in 1996. Because observed differences across the communities were relatively few and small in magnitude, the three study area samples were combined into a single aggregated data set for analyses.

Variable Measurement and Analysis Approach

The analysis presented here first employs factor analysis to decompose two distinct dimensions of community attachment. The section of the questionnaire designed to measure community attachment included a list of 14 individual items. All of these items were measured using a 1 to 7 numeric rating scale that asked respondents to circle the number best representing how important these different conditions were to their attachment to the area/community. Included were a wide range of items that addressed social conditions (friends close by, family ties, etc.), economic conditions (economic opportunities, ability to earn a living off the land, etc.), and natural environment conditions (presence of wildlife, natural landscapes and views, etc.). A Kaiser-Mayer-Olkin measure yielded .78, demonstrating that the distribution of values in the initial measure of attachment dimensions was adequate for conducting factor analysis. The Direct Obliman method of rotation was used to achieve the factor loadings for the dimensions of attachment.³ Table 1 represents the results from the factor analysis of the attachment variables. These results reveal two distinct dimensions of attachment, reflecting attachment to both localized social and natural environments.

The social dimension of attachment was measured using four items combined into a summated index. Based on the factor loadings and face validity, the four variables used to measure the social dimension of attachment included: friends close by, family ties in the area, local culture and tradition, and opportunities to be involved in community projects or activities. A reliability analysis of this index yielded a Cronbach's alpha coefficient of .73. Although factor loadings were also high for the items addressing economic opportunities (.647) and ability to earn a living off the land (.751), our focus is explicitly on the social attachment dimension and, therefore, these two variables were excluded from the social attachment index for face validity reasons: Both clearly correspond to an economic dimension as opposed to a social dimension involving interpersonal ties and interactions.

The natural environment dimension of attachment included three items: natural landscapes/views, presence of wildlife, and opportunities for outdoor recreation. These items were combined into a summated index to obtain an overall measure of the natural environment dimensions of respondents' attachment to their place. A reliability analysis of this index yielded a Cronbach's alpha coefficient of .74.⁴

Six measures were employed to examine various types of local environmental concern. In contrast to more global measures of environmental concern, the focus in this study was on indicators that reflected local issues and areas of concern directly related to the context of the localities and surrounding region. The first indicator asked respondents to indicate their overall satisfaction with the quality of the natural environment in their community; responses were recorded on a scale ranging from 1 = *completely dissatisfied* to 7 = *completely satisfied*. The remaining five indicators asked respondents to indicate the importance of selected actions or activities for

Table 1
Factor Loadings for Dimensions of Attachment

Attachment Variable	Component Factor Loading			Standard Deviation
	Social Attachment ($\alpha = .73$)	Natural Environment Attachment ($\alpha = .74$)	Mean	
Friends close by	.653	-.019	5.65	1.707
Family ties	.713	-.131	4.97	2.395
Local culture and traditions	.727	.065	5.43	1.769
Slow pace of life	.261	.211	6.33	1.082
Economic opportunities	.647	.184	5.00	1.913
Ability to earn a living off land	.751	.064	5.16	2.232
Natural landscapes/views	.104	.728	6.66	.784
Presence of wildlife	.036	.855	6.35	1.095
Opportunities for outdoor recreation	.116	.861	6.51	.962
Opportunities for motorized recreation	.426	.369	5.07	2.082
Opportunities to be involved in community projects	.667	.302	4.99	1.745
Area not heavily developed	.117	.269	5.57	1.481
Few restrictions on what I can do with my land/property	.491	.053	5.90	1.425
Ability to freely express opinion about community affairs	.582	.247	5.87	1.460

Note: Bolded items represent those items included in the final multiple-item index.

maintaining or improving the quality of life in their community; responses ranged from 1 = *not at all important* to 7 = *extremely important*. These five indicators consisted of the following items: importance of preserving opportunities for traditional multiple use, importance of protecting agricultural land/open space, importance of limiting the rate of population growth, importance of preserving roadless areas, and importance of implementing new policies to protect the environment.

We use a series of multivariate analyses to determine whether the two dimensions of attachment are statistically significant predictors of local environmental concern when the influences of individual-level sociodemographic variables are also taken into account. Considering the influence of these individual characteristics is potentially important in communities affected by amenity-based growth, because such places may be substantially transformed in terms of their sociodemographic composition if in-migrants differ from established residents with respect to characteristics such as age, income levels, religious orientation, and other personal background

characteristics. Consequently, six additional independent variables were added as control variables. Respondents' age (in years), sex (female = 0, male = 1), household income level (11 categories in US\$10,000 increments, ranging from less than US\$10,000 to US\$100,000 or more), and education (1 = high school or less; 2 = post-high school, no bachelor's degree; 3 = bachelor's degree or higher) were included, as these variables have exhibited fairly consistent associations with global environmental concern in past research.

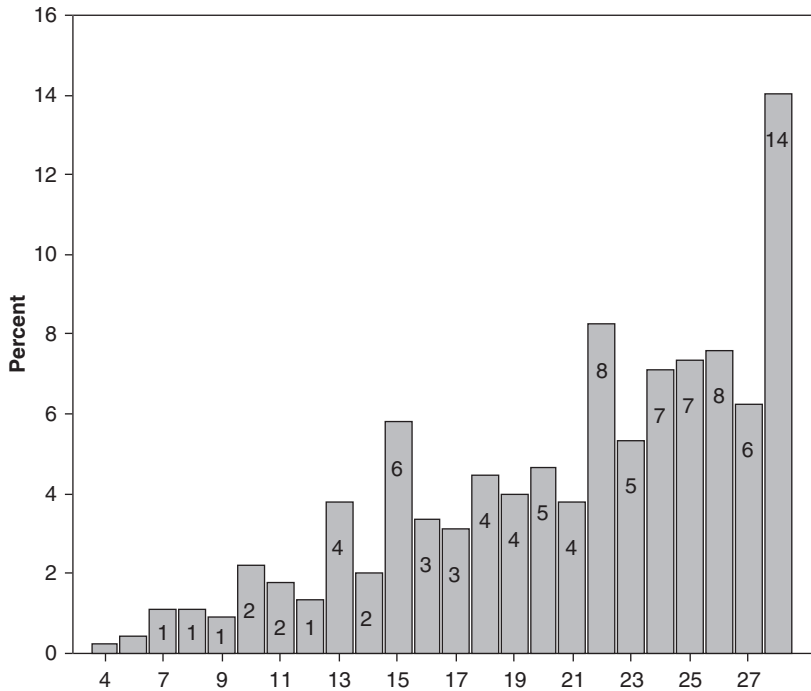
The fifth control variable was length of residence, which was added to account for the influence of recent in-migration to the study areas. Many researchers have argued that an important factor in classifying newcomers and long-term residents in areas affected by episodes of substantial population change is the approximate year in which a major wave of in-migration to the community began (Blahna, 1985; Graber, 1974; Smith & Krannich, 2000). For the communities examined here, as with many other areas of the rural West, much of the amenity-related growth began in earnest in approximately 1990. Accordingly, length of residence was dichotomized to differentiate recently arrived residents (10 years or less, coded 0) from longer term residents (11 years or more, coded 1).⁵

Finally, because of the dominance of the Church of Jesus Christ of Latter-day Saints (LDS) faith within the study areas, religion was included as a sixth control variable. All of the study communities are historic Mormon settlements, and the continued dominance of the LDS faith (overall, 68% of all respondents were Mormons) plays an important role in the social structure and context of these communities. Toney, Stinner, and Byun (1997) found that membership in the Mormon church provided an instant social connection for individuals living in the region, regardless of how long they had lived in a community or where they had moved from. Moreover, affiliation with the Mormon faith has exhibited important associations with environmental beliefs and attitudes in some prior research (Hunter & Toney, 2005). Accordingly, religion was recoded into a dichotomous variable, with 1 = LDS and 0 = Other.

Results

Figure 2 presents the frequency distribution for the measure of social attachment. A mean response value of 21.03 on a scale of from 4 to 28 indicates that respondents had fairly strong social attachments to their communities; the standard deviation of 5.761 reflects a moderate amount of variance. Figure 3 presents the frequency distribution for natural environment attachment. The mean value of 19.43 on a scale of from 3 to 21 indicates that respondents generally had a very strong natural environment attachment. As could be expected in natural amenity-based communities, there was limited response variation on this variable; the standard deviation is a modest 2.540, and 57% of respondents indicated the highest possible strength of attachment

Figure 2
Response Distribution on Social Attachment Index

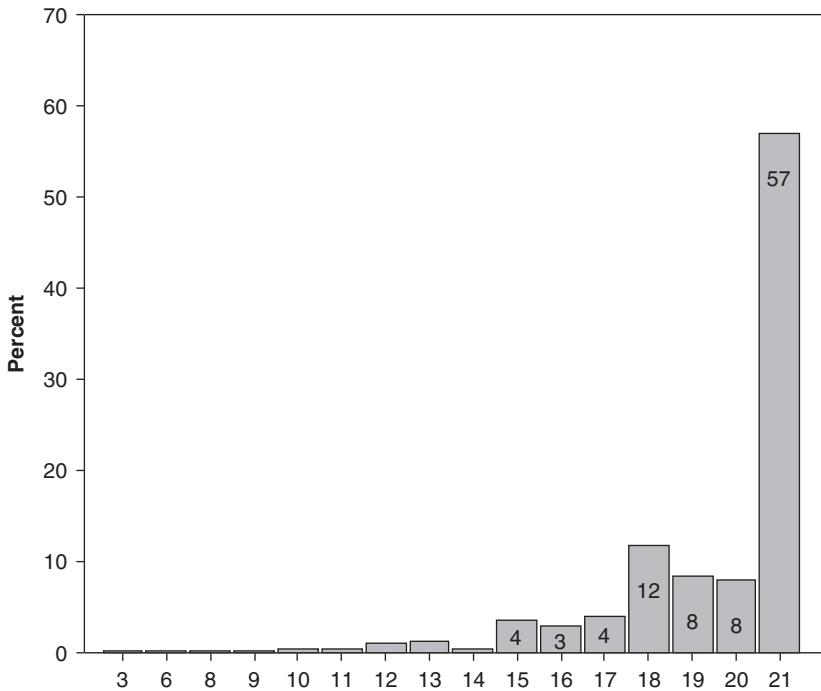


Note: Mean = 21.03; standard deviation = 5.76; $N = 449$.

to the natural environment. A Pearson correlation coefficient of .050 revealed that the measures developed to capture these social and natural environment dimensions of attachment are not significantly correlated. This reinforces the distinctiveness of these two dimensions that jointly comprise the broader community attachment concept and their use as separate independent variables in the analysis that follows.

An assumption of this research was that the relationships between the two dimensions of community attachment and attitudes toward environmental issues deserved examination in part because in high natural resource amenity communities, the strength of attachments might vary between newcomers and longer term residents. Table 2 reports the results of t tests used to examine differences in the strengths of social and natural environmental attachments between these two categories of

Figure 3
Response Distribution on Natural Environment Attachment Index



Note: Mean = 19.43; standard deviation = 2.54; $N = 456$.

residents. The findings indicate that the strength of social attachments to the community are significantly different between residents who had lived in the area more than 10 years and those who had not. In contrast, there was not a significant difference between newcomers' and long-term residents' strengths of attachment to their community's natural environment. This may reflect the fact that recent in-migrants typically have been drawn to these areas by the environmental characteristics of surrounding landscapes. However, this is simply a plausible explanation based on knowledge of these communities gained through in-depth interviews with some residents; motivations for in-migration were not a specific focus in the survey data analyzed here.

Table 3 summarizes the results of regression analyses that examine how levels of concern about locally salient environmental issues may be related to the two dimensions of community attachment, along with selected sociodemographic variables.

Table 2
Mean Differences Between Newcomers and Long-Term Residents
on Two Dimensions of Community Attachment

Variable	Newcomer ^a			Long-Term Resident ^b			<i>t</i> test
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	
Social attachment	17.77	5.997	142	22.54	4.980	307	-8.824***
Natural environment attachment	19.67	2.363	145	19.32	2.615	311	1.349

a. Ten years or less.

b. Eleven years or more.

*** $p < .001$.

With the exception of religion, the sociodemographic variables were not consistent predictors of local environmental concern. Sex and length of residence were statistically significant predictors for only two of the dependent variables, and no other demographic variables were significant factors in any of the models. However, either social attachment or natural environment attachment were significant predictors of local environmental concern in all the statistical models.

Social attachment was the only statistically significant predictor ($B = .187$) of satisfaction with the quality of the local natural environment; those reporting high levels of social attachment were more likely to be satisfied with local environmental quality. It is surprising that neither environmental attachment nor any of the sociodemographic variables identified in prior research as correlates of general environmental concern exhibited a significant relationship with this dependent variable.

In regard to attitudes about the importance of preserving opportunities for traditional multiple uses of natural resources, social attachment ($B = .266$) was the strongest predictor, with religion ($B = .167$) and length of residence ($B = .117$) also emerging as statistically significant predictors. Respondents who had a high level of social attachment, were longer term residents, and expressed affiliation with the LDS religion were more likely to feel that preserving opportunities for traditional multiple uses of public lands and resources were important for maintaining and improving the future quality of life in their community.

In contrast, both natural environment attachment ($B = .147$) and social attachment ($B = .123$) were statistically significant predictors of attitudes toward the importance of protecting agricultural land/open space. Those with higher attachments to both the natural and social environments of these communities were more likely to support efforts to protect agricultural lands and open space. None of the sociodemographic variables exhibited significant associations with this dependent variable.

Table 3
Regression of Resident Sociodemographic Characteristics and Dimensions of Community Attachment on Selected Indicators of Local Environmental Concern

Independent Variable	Satisfaction With Quality of Natural Environment (i.e., Clean Air and Water; <i>n</i> = 393)		Importance of Preserving Opportunities for Traditional Multiple Use (i.e., 390)		Importance of Protecting Agricultural Land/Open Space (i.e., 388)		Importance of Limiting Rate of Population Increase (i.e., 384)		Importance of Preserving Roadless Areas (i.e., 388)		Importance of Implementing New Policies to Protect the Environment (i.e., 389)	
	<i>b</i>	<i>B</i>	<i>b</i>	<i>B</i>	<i>b</i>	<i>B</i>	<i>b</i>	<i>B</i>	<i>b</i>	<i>B</i>	<i>b</i>	<i>B</i>
Constant	5.793		4.005		3.407		.352		2.664		2.789	
Age ^a	-.003	-.050	.001	.008	.004	.051	.006	.087	.006	.047	.007	.052
Sex ^b	.099	.050	.176	.055	-.036	-.013	-.030	-.008	-.450	-.102*	-.396	-.098*
Religion ^c	.187	.087	.578	.167**	-.187	-.061	-.561	-.131*	-1.183	-.247***	-1.300	-.294***
Length of residence ^d	-.223	-.106	.397	.117*	.007	.002	-.052	-.012	-.602	-.128*	-.603	-.139**
Education ^e	.005	.004	.108	.052	.129	.070	.031	.012	-.057	-.020	-.133	-.050
Income ^f	-.028	-.039	-.019	-.016	.007	.006	-.037	-.024	-.140	-.102	-.129	-.084
Social attachment	.032	.187**	.073	.266***	.030	.123*	.035	.105*	-.009	-.024	-.004	-.001
Natural environment attachment	.010	.025	-.022	-.034	.087	.147**	.185	.227***	.160	.176**	.163	.195***
<i>R</i> ²	.036**		.169***		.031*		.060***		.131***		.163***	

a. Measured in years.
 b. 0 = female; 1 = male.
 c. 0 = not Mormon; 1 = Mormon.
 d. 0 = 10 years or less; 1 = more than 10 years.
 e. 1 = high school or less; 2 = post-high school, no bachelor's degree; 3 = bachelor's degree or higher.
 f. 1 = \$19,999 or less; 2 = \$20,000 to \$39,999; 3 = \$40,000 to \$59,999; 4 = \$60,000 to \$79,999; 5 = \$80,000 to \$99,999; 6 = \$100,000 or more (all in U.S. dollars).
 p* < .05. *p* < .01. ****p* < .001.

In a similar manner, both social attachment ($B = .105$) and natural environment attachment ($B = .227$) were associated with support for limiting the rate of population increase in the community; those expressing higher levels of attachment on both dimensions were more likely to support population control. At the same time, religion was significantly and negatively related to this dependent variable ($B = -.131$), indicating a tendency for Mormon residents to oppose population growth control policies.

Attachment to the natural environment was positively related to opinions about the importance of preserving roadless areas ($B = .176$), whereas the association with social attachment was insignificant. Men tended to place less importance on roadless area preservation ($B = -.102$), as did Mormons ($B = -.247$).

Finally, natural environment attachment was the only dimension of attachment that was significantly related ($B = .195$) to attitudes about the importance of implementing new policies to protect the environment; it is not surprising that those expressing stronger attachment to the environment were more likely to support environmental protection policies. Religion, sex, and length of residence exhibited statistically significant and negative associations with this dependent variable, reflecting a tendency for men, those of the LDS faith, and longer term residents to be less supportive of policies designed to protect the environment in these settings.

A brief review of the results as a whole identifies some patterns that are surprising given the results of previous studies (Vorkinn & Riese, 2001). One conclusion that clearly emerges is that although observations of the relative importance of the predictor variables in the regression equations examined in this research are theoretically interesting, the regression equations as a whole do not have a great deal of explanatory power. This result is not uncommon in research on correlates of environmental attitudes, but discernable factors may contribute to such a result in this research. For example, in the study by Vorkinn and Riese (2001), the environmental issue examined was the effect in specific places of a large-scale development project that had been an important issue of public debate for some time in the region, which may have strengthened and polarized attitudes toward the project grounded in place attachment. In contrast, the environmental issues examined in this research do not explicitly involve that type of large-scale impending development with a place-specific threat to the natural environment and surrounding communities. This particular dynamic may partially account for the lower proportions of explained variance in the attitudes examined. In addition, issues pertaining to the degree of normality of variable distributions provide some possible explanations. In addition, other statistical analyses indicated that several of the independent variables used in the regression equations had nonnormal distributions, which may have slightly suppressed the strength of the relationships examined. In sum, these results clarify that although dimensions of attachment are variables worthy of consideration in efforts to understand attitudes about environmental issues, more work is needed to understand these relationships.

Discussion

The factor analysis, descriptive statistics, *t* tests, and correlation analysis all indicate that social attachment and natural environment attachment are distinct and separate dimensions of the broader community attachment concept. The inclusion of both of these dimensions in analyses of community attachment and its implications, therefore, is important if we are to more completely understand how residents are attached to their communities. Understanding the relationships between these dimensions of attachment and other variables of interest has the potential to foster better understanding of the connections between community attachment and important social issues. This knowledge is relevant to community activism, outreach, and public participation in decision making at the local level, particularly in regard to environmental issues.

When examining our findings regarding the importance of social attachment and natural environment attachment as predictors of local environmental concern, a pattern is evident in the results. Where social attachment was the only dimension of community attachment that was significantly related to attitudes about local environmental issues, the environmental issues are representative of community culture/identity or environmental health concerns, issues that are inherently “social” in nature. For example, attitudes about the importance of preserving opportunities for traditional multiple use are reflective of the historic cultural identity in these rural settings, all of which are surrounded by large expanses of public lands with histories deeply rooted within family traditions of ranching, farming, hunting, fishing, and related activities. In a similar manner, satisfaction with quality of the natural environment was operationalized in terms of clean air and water, which represent issues pertaining to the health and well-being of community residents, rather than environmental attributes that are specifically appreciative or amenity based.

In the two cases where both social attachment and natural environment attachment were statistically significant predictors (attitudes about the importance of limiting the rate of population increase and the importance of protecting agricultural land/open space), these dependent variables are still reflective of community culture and identity, whereas at the same time addressing the potential impacts of growth and development on the natural environment. Views about the importance of protecting agricultural land/open space may reflect respondents’ social attachments to cultural traditions based in farming or ranching, as well as attachments linked to appreciation of wildlife habitat or other types of undeveloped open space left in a natural state. Beliefs about the importance of limiting population increase may reflect an attachment to a community’s way of life and existing social systems, as well as to aspects of the natural landscape that may be threatened by development accompanying population increases. The statistical models for these dependent variables reflect the relevance of both dimensions of attachment.

In the two cases where natural environment attachment is the only attachment dimension that is significantly related to local environmental concern, the indicators are more indicative of a resource protection orientation. The importance of preserving roadless areas and the importance of implementing new policies to protect the environment are indicators of local environmental concern that focus more directly on the significance of the landscape itself and the need to protect it from further human-induced changes. In these instances, social attachment appears to be less relevant in accounting for variation in such concern.

Finally, it should be noted that when all the statistical models are examined, the two dimensions of community attachment are more consistent predictors of attitudes about these environmental issues than are any of the sociodemographic variables. The one partial exception to this tendency involves the relationships observed between being Mormon and attitudes about several local environmental issues. Where present, this association was unusually strong compared to correlations between religious orientation and environmental attitudes observed in most prior research and indicative of the important role that religious orientation continues to play in the "Mormon Culture Region" of the intermountain West (Toney et al., 1997).

Research on correlates of opinions about environmental issues has for many years focused heavily on the influence of individual sociodemographic characteristics. This research indicates that more attention should be focused on the connections between community-level variables, particularly dimensions of attachment, and attitudes about environmental issues. Our findings suggest that these relationships are nuanced in terms of the specific dimensions of community attachment that are examined: Social attachment appears to be an important predictor of local environmental concern when the indicators reflect aspects of the environment that are particularly relevant to community culture or identity, whereas natural environment attachment emerges as an important predictor of local environmental concern when the indicators reflect a focus on protection of the local environment and surrounding landscapes.

These findings have implications for the future conceptualization of community attachment as well as for its application in community planning and land-use management activities. Our results demonstrate the distinctiveness of two dimensions of attachment and the importance of differentiating these elements of attachment when conceptualizing them within a sociological framework. Doing so can help us to more clearly articulate the connections between community attachment and attitudes about a variety of local issues. Moreover, recognition of this distinction is of particular significance for local planning and land-use management efforts. When conflict arises concerning land-use issues that involve elements of community culture and identity, it is important to consider both social and natural environment dimensions of community attachment, as they both appear to be relevant to these issues. As Wilkinson (1991) argued, individual well-being, social well-being, and ecological well-being are closely intertwined. This conclusion supports the findings of Vorkinn

and Riese (2001) and builds on their work by clarifying that community-focused factors, in addition to the place attachment ones they identified, are important correlates of attitudes about local environmental issues. It is clear that future research should delve more deeply into these relationships.

Notes

1. Of course, it is also possible that levels of environmental concern could affect community social and natural environment ties through reciprocal relationships between these variables. Although examination of this is beyond the scope of the present analysis, future research addressing that possibility would provide a useful contribution to our understanding of these relationships.

2. Participation rate is calculated from the number of completed surveys returned out of the number of respondents that were actually contacted as eligible for the study.

3. The Kaiser-Meyer-Olkin measure is a measure of whether the distribution of values is adequate for conducting factor analysis. Measures greater than .7 are considered acceptable. The Direct Obliman method of rotation was used because it allows for a nonorthogonal rotation of selected factors to achieve a better simple structure.

4. For a more detailed explanation of the factor analysis for the two dimensions of attachment, see Brehm, Eisenhauer, and Krannich (2004).

5. The questionnaire asked when respondents moved to the community and did not specify that the community had to be their primary residence. As a result, seasonal residents with a long history in the community would be included as "long-term" residents. Although Stedman (2003) has asserted that length of association may be as important a variable as length of residence in considering the relationship between people's history with a community and their attachment to the local environment, we chose to use the more traditional length of residence measure because this work focuses on social attachment as well and because our sampling approach resulted in contact with relatively few seasonal residents. Future research should explore the distinctions between length of association and length of residence to determine if important variations exist.

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