

Attitudes Toward Wilderness Study Areas: A Survey of Six Southeastern Utah Counties

JEFFREY O. DURRANT*
J. MATTHEW SHUMWAY

Department of Geography
 Brigham Young University
 Provo, Utah 84602, USA

ABSTRACT / Southeastern Utah is a region of world-renowned red-rock sandstone formations, large tracts of federal public land, rural communities centered on agriculture and extractive industries, and is often at the epicenter of environmental protection efforts in the western United States. Environmental groups have proposed formal Wilderness designations for much of the region's public land—proposals that have been actively fought by rural community leaders who do not want large areas “locked-up” from traditional livelihood and recreational uses. The debate over wilderness designation

in the region has been characterized in the media as one that is particularly contentious and polarizing. A survey of southeastern Utah residents was conducted in order to better understand this conflict. The survey focused on attitudes toward wilderness designation and management. We found that residents of southeastern Utah have negative attitudes towards the designation and management of Wilderness Study Areas. We propose that these attitudes should be carefully considered and engaged in future policy and management decisions. We suggest that negative opinions expressed by residents of southeastern Utah are not directed primarily at the concept of environmental protection but rather at the strong perception that these programs and initiatives have been carried out in a heavy-handed manner and dominated by outside influences that have overwhelmed local “voices.”

National Parks and Game Reserves have proliferated across the globe. In 1997, the World Conservation Union (IUCN) listed 21,196 areas totaling over 11.4 million km² as category I-III (the most restrictive designations) and an additional 33,029 areas, another 6.76 million km², as the relatively less restrictive category IV and V (Green and Paine 1997). An updated IUCN list due out in 2002 will undoubtedly show numerous additions to the 1997 list, including numerous National Monuments and other designations in the western United States. The effectiveness of relying on formal protective area designations to achieve conservation goals has been questioned by those interested in the impact on surrounding communities and their role in preservation. Increasingly, the importance of integrating local populations into protective area designation and management processes is being recognized (Hough 1988, Cox and Elmquist 1991, Hannah 1992, Wells and Brandon 1992, Little 1994, Alpert 1996, Neumann 1998, Taylor and others 1999).

In conjunction with efforts to integrate local populations into the preservation process, substantial research on attitudes towards environmental conserva-

tion and protective areas has been conducted. Most studies report generally positive attitudes towards protected areas, although some research has found generally negative feelings (Fiallo and Jacobsen 1995, Nepal and Weber 1995). Other research has questioned the support of these positive findings by examining the actions of people living around protected areas rather than relying on attitudes expressed in survey responses (Neumann 1998).

Explanations for variances in attitudes towards protected areas have focused on several key variables. Location has been found to be a factor, because those living farther away from protected areas were impacted less by restrictions and were more likely to oppose abolishment of these areas (Heinen 1993, Mkanda and Munthali 1994, Ite 1996, Badola 1998, Mehta and Heinen 2001). Many studies also point to education and affluence as central variables, with increased education correlated with positive attitudes towards conservation (Harcourt and others 1986, Infield 1988, Newmark 1991, Akama 1995, Trakolis 2001). Apart from lower levels of formal education, many negative attitudes were attributed to perceived impacts on livelihoods, specifically damage to crops by protected animals, restrictions on grazing livestock, hunting, fishing, collecting firewood and grass, and in areas with land shortages (Lehmkuhl and others 1988, Newmark 1991, Parry and Campbell 1992, Heinen 1993, Newmark and others 1993, Oli and others 1994, Akama and others 1995, Ite

KEY WORDS: Wilderness; Southeastern Utah; Survey; Attitudes

Published online March 4, 2004.

*Author to whom correspondence should be addressed, *email:* jeffrey_durrant@byu.edu

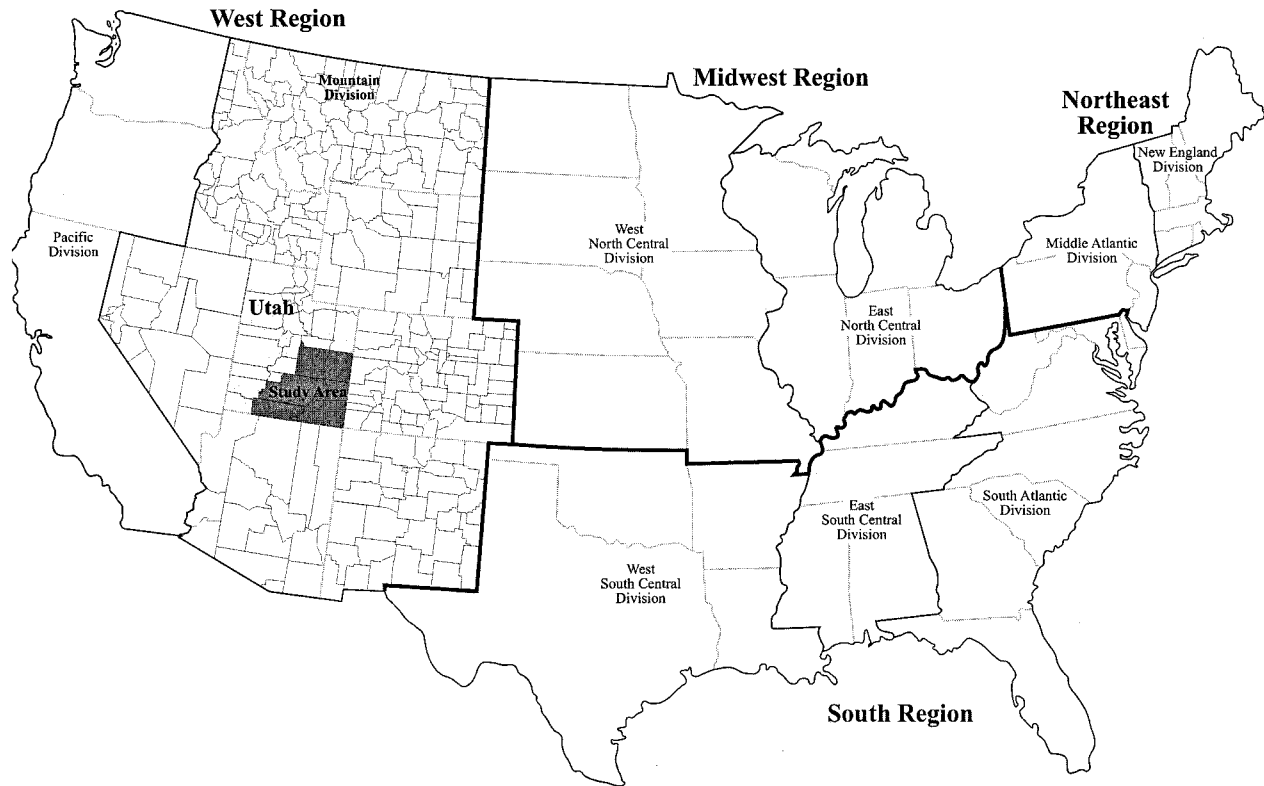


Figure 1. Relative location of Southeastern Utah.

1996, De Boer and Baquete 1998, Sekhar 1998). In short, negative attitudes are associated with situations where the perceived costs to individuals and communities outweigh the perceived benefits. In many instances, the protected area was viewed as benefiting outsiders more than local communities (De Boer and Baquete 1998, Mehta and Kellent 1998, Gillingham and Lee 1999, Trakolis 2001, Walpole and Goodwin 2001). In addition, poor relations with conservation officials because of harsh treatment or failure to minimize livelihood impacts was also cited as impacting attitudes negatively (Obua and others 1998, Sekhar 1998).

Although numerous surveys and other studies on attitudes have been conducted in various regions of the globe, there have been relatively few efforts directed at similar situations in the United States (Brunson and Steel 1996, Foster and McBeth 1996, Bennett and McBeth 1998 are exceptions). Data paucity is particularly apparent for the western United States, where federal public lands dominate and protective designations are as numerous as any global region (Green and Paine 1997). Perhaps the most notable exception to this trend is the Rudzitis and Johansen (1991) survey of residents in 11 "wilderness counties" located primarily in the western United States. Their survey results show

substantial support for the existence of wilderness areas in these counties—with more than 80% of respondents agreeing that wilderness areas are important to their counties.

Rudzitis and Johansen's survey did not include any counties from the state of Utah, where the debate over wilderness designation has been particularly contentious. Although less than a million acres of formal wilderness have been designated in Utah (mostly on National Forest land), there are more than three million acres of Wilderness Study Area (WSA) designations on Bureau of Land Management (BLM) lands, primarily concentrated in the southeastern portion of the state (see Figure 1). Although one survey, which focused on the entire state of Utah, found considerable support for wilderness designation, research on related public lands issues in southeastern Utah would suggest that similar levels of support for wilderness do not exist in this region (Goodman and McCool 1999, Durrant 2001). In an attempt to better understand public attitudes towards wilderness designation in southeastern Utah, we conducted a survey of residents living there. Our research utilized some questions developed by Rudzitis and Johansen, while adding additional questions. Both sets of questions probe into two main areas

Table 1. Federal Land Ownership and Wilderness Designations in Southeastern Utah (acres and % of county)

County (total acres)	Bureau of Land Management	National Park Service	United States Forest Service	Bureau of Indian Affairs	Total federal land
Emery (2,845,119)	2,082,438 (73.2%)	2,374 (0.08%)	212,928 (7.5%)	0	2,297,740 (80.7%)
Garfield (3,333,709)	1,711,279 (51.3%)	460,265 (13.8%)	1,049,409 (31.5%)	0	3,220,953 (96.6%)
Grand (2,355,592)	1,530,084 (65.0%)	76,611 (3.3%)	57,527 (2.4%)	197,973 (8.4%)	1,862,195 (79.1%)
Kane (2,627,696)	1,749,500 (66.6%)	470,144 (17.9%)	124,323 (4.7%)	0	2,343,967 (89.2%)
San Juan (5,066,481)	1,760,603 (34.8%)	591,720 (11.7%)	450,707 (8.9%)	1,223,757 (24.2%)	4,026,787 (79.5%)
Wayne (1,576,042)	988,739 (62.7%)	298,245 (18.9%)	160,349 (10.2%)	0	1,447,333 (91.8%)
Total (17,804,639)	9,822,688 (55.2%)	1,899,359 (10.7%)	2,055,243 (11.5%)	1,421,730 (8%)	15,199,020 (85.4%)

of focus central to the debate over Wilderness in the Western United States: attitudes towards wilderness and attitudes concerning the processes of designating federal lands as wilderness areas.

Those conducting research on local attitudes towards protective area designation often insist that understanding and valuing local opinions is critical to reducing land use conflict and improving environmental conservation (Brunson and Steel 1996, Foster and McBeth 1996, Bennett and McBeth 1998). Rudzitis and Johansen (1991), for example, emphasize that land managers "must base their actions on the values and desires of the public." Although the local population is a very small percentage of the public, they are certainly that part of the public who is most affected by federal land management decisions. This paper is therefore directed at better understanding the opinions of residents living in a vast region with designated and proposed protective designations.

Study Region and Wilderness in Utah

In 1964, the U.S. Congress passed the Wilderness Act, which established the nation's first wilderness areas (approximately 3.7 million ha) and established a mechanism for adding additional areas to the system by directing the Secretary of the Interior to review the lands in the national park system, national wildlife refuges, and game ranges and then to "report to the President his recommendations as to the suitability of each area or island for preservation as wilderness" (Wilderness Act, section 3c). The subsequent wilderness reviews led to the passage of numerous pieces of legislation establishing wilderness areas, including the 1980

Utah Wilderness Act that designated over 300,000 ha of U.S. Forest lands as wilderness areas.

In southeastern Utah, a large portion of public lands are administered by the BLM. Therefore, less than 30,000 ha of wilderness were established in the region due to the relatively small amount of Forest service land (Table 1). The region's BLM lands came under wilderness review starting in the late 1970's after the passage of the 1976 Federal Lands Policy and Management Act (FLPMA) that mandated wilderness reviews be completed on BLM lands within 15 years. In Utah, the initial BLM wilderness review resulted in the establishment of approximately 1.3 million ha as WSAs. These WSAs are managed so as to maintain their "wilderness character" until Congress either formally designates the areas as wilderness, or releases them from further consideration. Although these areas are not "Wilderness" the BLM is mandated to maintain the "wilderness character" of WSAs, a situation that has led increasingly to policies that manage the areas as de facto wilderness areas.

The establishment and subsequent management of WSAs in Utah drew heavy criticism from both wilderness advocates and opponents (Goodman and McCool 1999, Durrant 2001). Rural communities in general and county politicians in particular felt that far too much public land was now "locked-up" in WSAs, whereas environmental organizations, led by an emerging Utah Wilderness Coalition (UWC), believed that many more acres of BLM land possessed "wilderness characteristics" and also should have been designated as WSAs. There were a few key results. The localized political clout of the rural counties led the BLM and most members of Utah's congressional delegation to

support legislation that would approximately 800,000 ha as Wilderness. On the other hand, growing national support allowed the UWC to conduct two wilderness reviews of their own—the first in the mid 1980's, resulting in a wilderness proposal of 2.3 million ha, and the second in the late 1990's that increased their proposal to approximately 3.7 million ha of wilderness. The UWC proposals have since picked up additional national support. This support is translating into political clout that means their initiatives are increasingly likely to be passed as legislation as support grows in Congress. In addition, the first UWC proposal led the Department of Interior to require the BLM to conduct an additional wilderness review in the mid-1990s—a review that found vast additional acres with “wilderness character” and has led to a planning process that could establish numerous additional WSAs. The result of these reviews has been a highly contentious and polarized debate over “wilderness” designation in the state of Utah.

Variations in Environmental Attitudes

Environmental attitudes and attitudes concerning wilderness and potential wilderness areas are shaped by a variety of both internal and external factors. For example, Brunson and Steel (1996), in their examination of variations in attitudes concerning management of federal rangeland, identified “individuals” values and their beliefs” as a principal cause of variations in environmental attitudes. In their research survey, respondents were categorized into one of three groups: *Dominion*, which is based on a religious or materialist view of life, *Ethics*, reflecting a biocentric view, and *Science*, which reflects a rationalist–technical view. There were significant differences in attitudes towards environmental issues among the groups. Brunson and Steel (1996) also found that some external variables such as location (urban/rural, east/west) have significant effects.

Probably the most identified external characteristic is the so-called rural/urban divide. Literature on variations in attitudes towards the environment by rural or urban resident are often traced by to the work of Tremblay and Dunlap (1978), who found less concern about environmental issues among rural residents. They postulated that these lower levels of concern could be due to one of two reasons: either (1) because of less direct exposure to environmental problems (differential-exposure theory), or (2) because rural residents are more likely to be involved in extractive economic activities, they would be less likely to favor environmental positions that con-

flicted with what they perceived as their own economic survival (extractive-commodity theory).

Currently, a number of studies have called into question both the idea that rural residents are anti-environmental and the somewhat simplistic duality of rural anti-/urban proenvironment attitudes (Fortmann and Kusel 1990, Rudzitis and Johansen 1991, McBeth and Foster 1994, and Alm and Witt 1997). For example, McBeth and Foster (1994) found that rural residents will express proenvironmental attitudes when there is a direct threat to their quality of life, whereas McBeth (1995) and Willits and Crider (1993) found significant relationships between rural environmental concerns and rapid economic and population growth in rural areas.

One of the most important trends impacting the rural West during since the late 1980s has been the rapid population growth in areas with high levels of natural amenities (Shumway and Davis 1996), which has both reinforced some old and created some new spatial patterns of economic growth (Shumway and Otterstrom 2001). Concomitant with shifting patterns of population growth and decline have been shifts in economic activities. Mining, forestry, and farming have continued to decline as an overall percentage of employment sources, whereas services geared towards retirement, recreation, and footloose activities have increased their percentage of total employment. As economic activities have shifted, the population composition of rural areas has changed. Many high-amenity areas have drawn people who are not connected with any local, extractive-based industry. On average these new migrants are older, better educated, and wealthier than long-term residents (Shumway and Otterstrom 2001). So, perhaps, the change in rural environmental attitudes has as much to do with a shift in population composition as it does with a shift in environmental attitudes of longer-term rural residents (composition hypothesis).

In this paper, we examine two of the three theoretical propositions—local economic structure and population composition—to see how they may affect attitudes towards wilderness issues facing populations in southeastern Utah and towards the processes involved in the creation and maintenance of wilderness areas.

Study Design

The six southeastern Utah counties selected for this study cover 7.2 million ha, or nearly 34% of the state of Utah. However, the total population of these counties comprises only 2% of Utah's population. Although this sparsely populated region grew by

Table 2. Population change in Southeastern Utah (*estimated population for the non-Navajo reservation portion of SJ County)

County	Population 1990	Population 2000	Change: number	Change: %
Emery	10,332	10,860	528	5.1
Garfield	3,980	4,735	755	19.0
Grand	6,620	8,485	1,865	28.2
Kane	5,169	6,046	877	17.0
San Juan*	7,320	8,367	1,047	14.3
Wayne	2,177	2,509	332	15.3
Total	35,598	41,002	5,404	15.2

Source: 1990 and 2000 US Census Data.

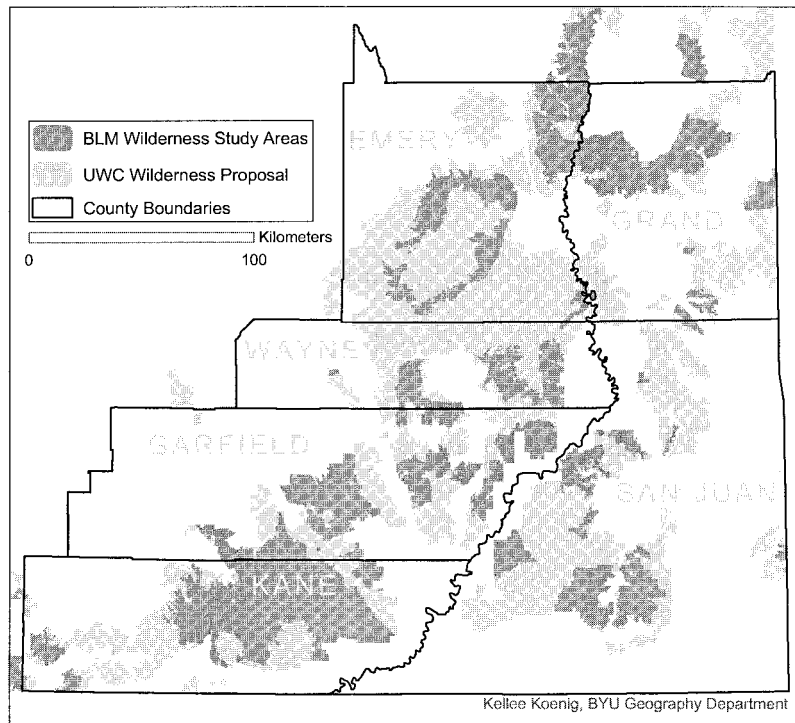


Figure 2. Designated Wilderness Study Areas (WSAs) and Proposed WSAs in Southeastern Utah.

15%, it was the slowest growing part of the entire state (which had 30% growth for the same period. An exception to this is Grand County, which experienced a population growth rate similar to the state average (Table 2). Within these six counties, the federal government controls the vast majority of land nearly 3.9 million ha. It is within this context that the BLM is proposing an additional 2.9 million hectares for wilderness designation (Figure 2).

Survey Sample and Questionnaire

Two thousand households from six southeastern Utah counties (Emery, Garfield, Grand, Kane, San Juan, and Wayne) were randomly selected from telephone listings. Mail questionnaires were sent to resi-

dents of these six counties, along with a follow-up letter approximately 6 weeks later; 608 questionnaires were returned, for an overall response rate of 30.4%. We stratified the sample by county populations in order to allow for statistical comparison among the selected counties. The survey has a 95% confidence level for the entire region, and the overall sampling error of 4% ranged from 8 to 12% among the individual counties. A majority of respondents were men more than 50 years old; more than 41% had household incomes less than \$30,000, and a majority had attended college, with more than a third graduating. Overwhelmingly, the respondents had resided in their county for more than 10 years, with more than half having spent at least 20 years in the county.

Table 3. Statements used to determine attitudes towards Wilderness Study Areas, (WSAs,) and management of those areas

Attitudes concerning WSAs

- The presence of nearby Wilderness Study Areas is an important reason why I moved to or stayed in this area.
- There should be more access to Wilderness Study Areas.
- Wilderness Study Areas should be opened for mineral or energy development.
- Nearby Wilderness Study Areas are important to _____ county.
- There should be additional Wilderness Study Areas designated nearby.
- Wilderness Study Areas hinder economic livelihood opportunities.

Attitudes concerning the creation and management of WSAs

- Wilderness Study Area designation is an important management tool in protecting the natural environment.
 - The process of establishing Wilderness Study Areas was fair, accurate, and appropriate.
 - Local citizens should have more influence in the designation and management of Wilderness Study Areas.
 - There should be additional Wilderness reviews conducted in order to find additional areas that may qualify for WSA designation.
 - Congress should immediately designate all Wilderness Study Areas as formal Wilderness Areas.
-

Although the questionnaire asked numerous questions concerning respondent's attitudes towards the environment, public land use, and personal opinions of public land management, the focus here is on 11 questions regarding the designation and management of WSAs. For purposes of comparison, the first five questions are the same questions posed by Rudzitis and Johansen (1991), with "Wilderness Study Area" substituted for "Wilderness," whereas the last six questions were included for insight into issues surrounding WSA management. The questions asked the respondents whether they strongly agreed, agreed, were neutral, disagreed, or strongly disagreed with the following statements. Table 3 lists the 11 statements used for this paper. The first six items were used to evaluate attitudes toward WSAs, and the last five statements serve a similar purpose with respect to the use and management of WSAs. Responses to these statements are used in subsequent tables to describe the relationships among attitudes and changing economic and demographic characteristics.

Analytical Methods

Our purpose here is to examine two aspects of attitudes towards wilderness in southeastern Utah. First, we want to discover the general attitudes of the residents of these counties towards wilderness study areas and how they are created and managed. In order to do this, we present information concerning attitudes for all six counties. For clarity and comparison purposes, the responses to the 11 statements in Table 3 have been reduced to three categories: *agree* (includes strongly agree), *neutral*, and *disagree* (includes strongly disagree).

Our second purpose is to test two of the three arguments concerning the causes of variations in attitudes.

Whereas most of the research on this topic concentrates on urban/rural dichotomies, we examine the attitudes within a particular rural area dominated by federal lands and federal land issues. The impetus for this approach comes from the work of Bennett and McBeth (1998), who argue that there are increasing proenvironmental attitudes within rural areas due, at least in part, to the changing economic and demographic composition of the rural West. For this comparison, we examine responses to the 11 questions broken down by county characteristics representing economic and demographic factors. We compare differences in attitudes, using chi-square statistics, by county-level economic structure (measured by the Hachman index of economic diversity), and demographic composition (measured by length of time in county).

Survey Results

An important caveat to remember is that responses to the survey must be put within the context of the struggle over public lands in Utah. Nowhere has the debate over potential Wilderness designation been more contentious and polarizing than in Utah. For years, county and state leaders, in addition to most of the state's congressional delegation, have been firmly and adamantly against large-scale Wilderness designations. On the other hand, wilderness advocacy groups, such as the UWC, have been particularly aggressive and successful in developing political muscle on the national level. The result has been very little interest in engaging the other side and relying instead on a hope that enough political power will be created to roll over the opposition. It is within this contentious climate that southeastern Utah citizens are asked their opinions about the designation and management of WSAs.

Table 4. Percent agree or disagree with Wilderness Study Area statement, entire region

Statement	Agree	Disagree	Neutral
• The presence of nearby Wilderness Study Areas is an important reason why I moved to or stayed in this area.	14	66	20
• There should be more access to Wilderness Study Areas.	66	20	15
• Wilderness Study Areas should be opened for mineral or energy development.	66	23	10
• Nearby Wilderness Study Areas are important to the county.	44	38	18
• There should be additional Wilderness Study Areas designated nearby.	18	66	16
• Wilderness Study Areas hinder economic livelihood opportunities.	64	20	16
• Wilderness Study Area designation is an important management tool in protecting the natural environment.	32	50	18
• The process of establishing Wilderness Study Areas was fair, accurate, and appropriate.	12	66	23
• Local citizens should have more influence in the designation and management of Wilderness Study Areas.	82	9	9
• There should be additional Wilderness reviews conducted in order to find additional areas that may qualify for Wilderness Study Area designation.	18	65	17
• Congress should immediately designate all Wilderness Study Areas as formal Wilderness Areas.	14	77	10

Attitudes Towards Wilderness Study Areas

Brunson and Steel (1996) found significant differences in attitudes concerning federal lands and federal land management by location/distance from impacted lands. In essence, attitudes vary by how designation and management of public lands directly affects the perceived economic livelihood and quality of life of the public being surveyed. First we discuss results aggregated over all six counties (Table 4). We then disaggregate these findings by variables designed to capture economic structure (extractive-commodity theory) and population composition (composition hypothesis) (Tables 5 and 6).

One of Rudzitis and Johansen's (1991) significant findings was that a majority of residents in their wilderness county survey (53%) agreed with the statement that wilderness areas are an important reason for moving to or staying in their current county of residence. In our survey, only 14% of the respondents agreed with that statement (66% disagreed). One reason for the difference may be differences in population growth between the two survey areas. Although State of Utah's population growth (29.6%) was more than double the national average (13.1%) between 1990 and 2000, the six southeastern counties included in our survey grew at just slightly more (15.2%) than the national average, a level far below the counties selected by Rudzitis and Johansen (1991), perhaps suggesting that if there had been greater in-migration to these Utah counties, the percentages agreeing and disagreeing would be similar to that found by Rudzitis and Johansen. For example, Emery County, with the lowest population growth during the 1990s (5.1%), had the second lowest percent agreeing (14%), whereas the fastest growing county, Grand at 28.2%, had the most people

agreeing with the statement (29%). As would be expected, the difference in population growth rates is also evident in the length of time respondents had lived in their current county. In our sample, only 27% had lived there less than 10 years, compared to 49% in Rudzitis and Johansen's population (these points are explored in more detail in a later section).

Responses to the other questions concerning attitudes towards WSAs displayed similar patterns. The majority of respondents (64% to 66%) believe there should be more access to WSAs, that WSAs should be open for energy and mineral development, that WSAs hinder economic development, and that there should not be any additional WSAs designated. From the responses to these questions, it is clear that there is a significantly negative attitudes towards WSAs from the local population in southeastern Utah.

Much of the negative attitude stems from the debate on "access" to public lands that revolves around the history, extent, and type of motorized access (Durrant forthcoming). The Utah BLM Wilderness review, in accordance with FLPMA, sought out "roadless areas of five thousand acres or more" (PL 94-579, sec 603(a)), and the BLM developed inventory guidelines that defined a "road" (BLM 1978). Two problems have arisen from this approach: first, there are different and often conflicting interpretations of the BLM definitions (along with many other perceptions and definitions of a "road"); second, the WSAs established by the BLM's inventory have numerous vehicle "routes" going into and across these areas, regardless of whether or not they were defined as a "road." Local residents have used these routes for work and recreation, and the 66% of

Table 5. Percent agree/disagree with Wilderness Study Area (WSA) statements by county economic structure

Attitudes concerning WSAs	Agree	Neutral	Disagree
WSAs nearby imp for moving/living here ^a			
Least diversified (HI < .50)	7	21	72
Diversified (HI = .5 to .75)	10	18	72
Most diversified (HI > .75)	24	23	53
More Access to WSAs ^a			
Least diversified (HI < .50)	70	14	16
Diversified (HI = .5 to .75)	63	19	19
Most diversified (HI > .75)	57	14	20
WSAs open for mineral development ^a			
Least diversified (HI < .50)	75	12	14
Diversified (HI = .5 to .75)	69	8	23
Most diversified (HI > .75)	52	14	34
WSAs important for the county ^a			
Least diversified (HI < .50)	36	20	44
Diversified (HI = .5 to .75)	36	19	46
Most diversified (HI > .75)	57	18	25
More WSAs nearby ^a			
Least diversified (HI < .50)	13	14	74
Diversified (HI = .5 to .75)	13	17	70
Most diversified (HI > .75)	27	21	52
WSAs hinder economic development ^a			
Least diversified (HI < .50)	71	17	12
Diversified (HI = .5 to .75)	72	12	17
Most diversified (HI > .75)	50	19	30
WSA important management tool ^a			
Least diversified (HI < .50)	25	22	54
Diversified (HI = .5 to .75)	22	17	62
Most diversified (HI > .75)	45	18	37
WSA process is fair ^a			
Least diversified (HI < .50)	7	23	70
Diversified (HI = .5 to .75)	7	20	73
Most diversified (HI > .75)	20	26	54
More local input ^a			
Least diversified (HI < .50)	88	7	5
Diversified (HI = .5 to .75)	82	7	12
Most diversified (HI > .75)	72	15	14
More WSA reviews ^a			
Least diversified (HI < .50)	17	17	66
Diversified (HI = .5 to .75)	20	16	64
Most diversified (HI > .75)	33	16	51
WSAs immediately into wilderness areas ^a			
Least diversified (HI < .50)	6	9	84
Diversified (HI = .5 to .75)	12	8	80
Most diversified (HI > .75)	22	14	64

^aChi-square statistic significant at .05.

HI, Hachman Index. See text for description of index.

the respondents who agree that there should be more access are most often concerned about maintaining motorized access on these routes.

Responses to question four (are WSAs important to the county) are more mixed than responses to other WSA attitude questions. For this question, 44% of respondents agreed that nearby WSAs are important to their county. This can be interpreted in two ways: 1) that having nearby WSAs is important, or 2) that these

areas, currently designated as WSAs, are important. Some respondents apparently interpreted each way, with many believing that these areas are important not as WSAs, but as places for recreation and other activities, while some felt they were important as WSAs (the results combine these two possible interpretations). Population growth, technological advancements, increased leisure time, and other variables have all led to an increased number of people seeking out diverse rec-

Table 6. Percent agree/disagree with Wilderness Study Area (WSA) statements by length of residence

Attitudes Concerning WSAs	Agree	Neutral	Disagree
WSAs nearby imp. for moving/living here ^a			
Less than 10 years	29	27	44
Between 10 & 20 years	18	31	51
More than 20 years	5	16	79
More Access to WSAs ^a			
Less than 10 years	43	26	31
Between 10 & 20 years	68	19	12
More than 20 years	74	9	17
WSAs open for mineral development ^a			
Less than 10 years	34	13	53
Between 10 & 20 years	53	17	30
More than 20 years	84	9	7
WSAs important for the county ^a			
Less than 10 years	69	16	16
Between 10 & 20 years	41	27	33
More than 20 years	32	19	48
More WSAs nearby ^a			
Less than 10 years	38	25	37
Between 10 & 20 years	19	26	55
More than 20 years	8	11	81
WSAs hinder economic development ^a			
Less than 10 years	35	24	41
Between 10 & 20 years	56	19	25
More than 20 years	80	12	8
WSA important management tool ^a			
Less than 10 years	62	16	23
Between 10 & 20 years	35	19	46
More than 20 years	31	21	64
WSA process is fair ^a			
Less than 10 years	25	37	39
Between 10 & 20 years	15	24	61
More than 20 years	4	17	79
More local input ^a			
Less than 10 years	60	17	23
Between 10 & 20 years	76	13	11
More than 20 years	92	5	3
More WSA reviews ^a			
Less than 10 years	45	20	35
Between 10 & 20 years	31	13	56
More than 20 years	11	16	73
WSAs immediately into wilderness areas ^a			
Less than 10 years	30	19	52
Between 10 & 20 years	20	11	68
More than 20 years	4	7	90

^aChi-square statistic significant at .05.

reational opportunities on public land. Technical rock climbers, sightseers, back country backpackers, and solitude seekers are joined by increasing numbers of off-highway enthusiasts driving machines with amazing capabilities. Each activity or pursuit requires space, and often one sought-after experience is incompatible with others.

Economic Structure and Population Composition

Using the ideas stemming from extractive-commodity theory and from the composition hypothesis, we

disaggregated the above results by economic structure and population composition. Economic structure is measured using the Hachman Index. This index of similarity measures how closely the employment distribution of the subject region resembles that of a reference region. It is the inverse of the subject region's mean location quotient relative to the reference region where each industry's location quotient is weighted by the subject area's share of employment in the given industry as shown in the following formula:

$$\text{Hachman Index} = \sum_{ij} ((Emp_{ij} - Emp_{ji})^2) / Emp_{ji}$$

The value of the index ranges between 0 and 1. As the value of the index approaches 1, this means that the subject region's employment distribution among industries is more similar to that of the reference region. If the reference region is the nation, and, given the assumption that the nation's economy is diversified, a larger value of the Hachman Index relative to the nation means that a subject region is more diversified (and therefore less specialized). The idea here is that the greater the economic diversification, the less likely local residents are going to be dependent on any one industry—which in the case of southeastern Utah would be extractive-based economic activities. The less local residents rely on extractive-based industries, the more likely they are to support environmental concerns, including WSAs.

The counties were categorized into three groups: *least diversified* (<.50 on the Hachman Index), *somewhat diversified* (.50 to .75), and *diversified* (>.75). San Juan and Emery counties are the least diversified, Garfield and Wayne counties are in the middle group, and Grand and Kane counties have the most diversified economies. Significant differences are apparent among the three groups (Table 5). The most diversified counties (Grand and Kane) generally have more favorable attitudes regarding WSAs and their perceived impacts on local areas. The attitudes quickly swing in the other direction as economic diversification decreases. These findings support the extractive-commodity theory.

If the extractive-commodity theory still has some validity, how do we explain the difference in findings between our survey results and those of Rudzitis and Johansen (1991), Foster and McBeth (1996), and Bennett and McBeth (1998), who find increasingly positive attitudes towards the environment among rural residents? The differences, we believe, not only lie in changing attitudes of long-term rural residents, but also in the fact that the population composition of rural areas, particularly in the West, is changing. No region in the United States increased more rapidly in population than states in the Mountain West region (primarily Arizona, Colorado, Idaho, Nevada, and Utah). Although the majority of this growth was concentrated in the region's urban areas, significant growth also occurred in its rural areas, bringing an increasingly diverse population (Shumway and Otterstrom 2001). In terms of environmental attitudes, the most important aspects of the changing population composition of these rural areas are as follows: 1) the increasing degree

of economic independence from local extractive industries of newly arrived migrants, 2) the increasing importance of local natural amenities as a reason given for moving to these areas, and 3) the lack of long-term experiences with local environments (previous experiences being episodic). The debate over wilderness designation and environmental protection in the rural west is often portrayed as differences in opinions and perceptions between "old" or long-term residents seeking to maintain traditional lifestyles and "new" residents seeking an escape (Shumway and Durrant 2000). These factors suggest that newer residents are much more likely to have positive attitudes regarding WSAs. We measure population composition by length of time in the respondents' current county of residence.

When disaggregated responses are by length of residence, there is a clear pattern of variations in attitudes concerning WSAs. In fact, it appears as if length of residence is a more significant factor than county economic structure. Basically, the longer an individual has lived in their current county of residence, the less positive their attitudes are towards WSAs and vice versa. Long-term residents want more access to WSAs, overwhelmingly think WSAs ought to be open for energy and mineral development, believe that WSAs hinder economic development, and do not want any additional WSAs designated. Short-term residents have a much more mixed set of responses, but generally those who have lived in these counties less than 10 years have more positive attitudes towards WSAs.

Wilderness Study Area Designation and Management

Sixty-six percent of respondents in our survey disagreed with the statement that there should be additional WSAs designated nearby, compared with only 35% in the Rudzitis results. The difference in these findings highlights the extent to which residents in southeastern Utah have been dissatisfied with the entire Wilderness inventory process and results. This is further demonstrated by the additional questions added to this survey. Only 12% of respondents felt that the BLM inventory process was fair, accurate, and appropriate. Eighty-two percent felt that local citizens should have more influence in the designation and management of WSAs, and only 18% wanted additional Wilderness reviews in order to find other areas that may qualify as WSAs.

Chi-square statistics were calculated for responses to each of the questions in this section by economic struc-

ture and length of time living in the county (Tables 5 and 6). Results (all statistically significant) are similar to results concerning the presence of WSAs. For example, respondents who live in counties more dependent on extractive industries (less economically diverse), who live in counties with slower population growth rates, and those who have lived in these counties for longer period are generally opposed to the designation of more wilderness areas in their counties and to the use of WSAs as management tools, and feel they should have more influence in the designation and management process.

There is substantial dissatisfaction among many residents of southeastern Utah with BLM management in general and the use of WSA status as a management tool. Residents believe that their "voice" is being drowned out by the emergence of outside environmental organizations that are having increasing influence in public land policy and management. In Emery County, for example, this frustration has led County leaders to propose a National Monument in the San Rafael Swell in a desperate and risky attempt to formalize some type of local involvement and influence in land use decisions (Durrant 2001).

Discussion and Conclusion

In discussing the generally positive response towards Wilderness found in the results of their survey, Rudzitis and Johansen (1991) state that public attitudes have become more favorable towards environmental protection, and land agencies have been slow to react to these changes and embrace Wilderness as a public value rather than something that is "expendable or uneconomical to develop." They further write that: "If the agencies do not embrace the values of the public, conflicts surely will increase, and both the public and agencies will be worse off".

If it is important that land management agencies embrace the values of the public, then it is important to define who the public affecting a particular site is. Should local regions with negative Wilderness views also have their values embraced? Or should national trends, and values from other regions be more prominent in land use decisions, leading to a uniform approach to individual regions? If the goal is to reduce conflict, should local user values be considered with greater care than those of people living in other areas—people who rarely, if ever, visit or impact an area? Research on local attitudes towards protected area designation and management suggest that successful management requires a better understanding of, and willingness to work with, local communities. We found

attitudes of survey respondents in southeastern Utah are decidedly negative towards the designation and management of WSAs. Our finding is that negative opinions expressed by this survey are not directed primarily at the concept of environmental protection, but rather at the perception that these programs and initiatives have been carried out in a heavy-handed manner and dominated by outside influences. Embracing the values of southeastern Utahans does not mean that environmental protection should be forgotten or pristine lands sacrificed. Responses to open-ended questions on our survey indicate that many respondents favor conservation, and there appears to be considerable anger with users such as ATV operators who tear up the land. Land management agencies should, therefore, heed the decade-old call by Rudzitis and Johansen to embrace local opinion and seek to strengthen local input. The result may be reduced conflict and greater success in environmental conservation.

References

- Akama, J. S., C. L. Land, and G. W. Burnett. 1995. Conflicting attitudes toward state wildlife conservation programs in Kenya. *Society & Natural Resources* 8:133–144.
- Alpert, P. 1996. Integrated conservation and development projects. *Bioscience* 46:845–855.
- Alm, L. R., and S. L. Witt. 1997. The rural-urban linkage to environmental policy making in the American West: A focus on Idaho. *Social Science Journal* 34:271–284.
- Badola, R. 1998. Attitudes of local people towards conservation and alternatives to forest resources: A case study from the lower Himalayas. *Biodiversity and Conservation* 7:1245–1259.
- Bennett, K., and M. K. McBeth. 1998. Contemporary western rural USA economic composition: Potential implications for environmental policy and research. *Environmental Management* 22:371–381.
- BLM (Bureau of Land Management). 1978. Wilderness inventory handbook. September 27.
- Brunson, M. W., and B. S. Steel. 1996. Sources of variation in attitudes and beliefs about federal rangeland management. *Journal of Range Management* 49:69–75.
- Cox, P., and T. Elmqvist. 1991. Indigenous control of tropical rainforest reserves: An alternative strategy for conservation. *Ambio* 20:17–21.
- De Boer, W. F., and D. S. Baquete. 1998. Natural resource use, crop damage and attitudes of rural people in the vicinity of the Maputo Elephant Reserve, Mozambique. *Environmental Conservation* 25:208–218.
- Durrant, J. 2001. *Struggle over land and lines: mapping and counter-mapping Utah's San Rafael Swell*. PhD dissertation, Department of Geography, University of Hawaii at Manoa.
- Fiallo, E., and S. Jacobsen. 1995. Local communities and protected areas: Attitudes of rural residents towards conservation and Machalilla National park, Ecuador. *Environmental Conservation* 22:241–249.

- Fortmann, L., and J. Kusel. 1990. New Voices, Old Beliefs - Forest Environmentalism among New and Long-Standing Rural Residents. *Rural Sociology* 55 (2):214-232.
- Foster, R. H., and M. K. McBeth. 1996. Urban-rural influences in U.S. environmental and economic development policy. *Journal of Rural Studies* 12:387-397.
- Gillingham, S., and P. Lee. 1999. The impact of wildlife-related benefits on the conservation attitudes of local people around the Selous Game Reserve, Tanzania. *Environmental Conservation* 26:218-228.
- Goodman, D., and D. McCool. 1999. Contested Landscape: The Politics of Wilderness in Utah and the West. University of Utah Press, Salt Lake City, Utah.
- Green, M., and J. Paine. 1997. State of the world's protected areas at the end of the twentieth century. Paper presented at IUCN World Commission on Protected Areas on "Protected Areas in the 21st Century: From Islands to Networks" Albany, Australia, 24-29th November, 1997.
- Hannah, L. 1992. African people, African parks: An evaluation of development initiatives as a means of improving protected area conservation in Africa. Biodiversity Support Program, Washington, DC.
- Harcourt, A. H., H. Pennington, and A. W. Weber. 1986. Public attitudes to wildlife conservation in the Third World. *Oryx* 20:152-4.
- Heinen, J. 1993. Park-people relations in Kosi Tappu Wildlife Reserve, Nepal: a socio-economic analysis. *Environmental Conservation* 20:25-34.
- Hough, J. 1988. Obstacles to effective management of conflicts between national parks and surrounding human communities in developing countries. *Environmental Conservation* 5:129-136.
- Infield, M. 1988. Attitudes of rural community towards conservation and local conservation area in Natal, South Africa. *Biological Conservation* 45:21-46.
- Ite, U. E. 1996. Community perceptions of the Cross River National Park, Nigeria. *Environmental Conservation* 23:351-357.
- Lehmkuhl, J. F., R. K. Upreti, and U. R. Sharma. 1988. National parks and local development: grasses and people in Royal Chitwan National Park, Nepal. *Environmental Conservation* 15:143-148.
- Little, P. 1994. The link between local participation and improved conservation: A review of issues and experiences. Pages 347-372 in D. Western, and P. Wright. Eds, *Natural connections: perspectives in community-based conservation*. Island Press, Washington, DC.
- McBeth, M. K., and R. H. Foster. 1994. Rural environmental attitudes. *Environmental Management* 18:401-411.
- McBeth, M. K. 1995. Rural environmental and economic-development attitudes—an empirical-analysis. *Economic Development Quarterly* 9:39-49.
- Mehta, J., and J. Heinen. 2001. Does community-based conservation shape favorable attitudes among locals? An empirical study from Nepal. *Environmental Management* 28:165-177.
- Mehta, J., and S. Kellert. 1998. Local attitudes toward community-based conservation policy and programmes in Nepal: A case study in the Makulu-Barun Conservation Area. *Environmental Conservation* 25:320-333.
- Mkanda, F. X., and S. M. Munthali. 1994. Public attitudes and needs around Kasungu National Park, Malawi. *Biodiversity and Conservation* 3:29-44.
- Nepal, S., and K. Weber. 1995. The quandary of local people-park relations in Nepal's Royal Chitwan National Park. *Environmental Management* 19:853-866.
- Neumann, R. 1998. *Imposing Wilderness: Struggles Over Livelihood and Nature Preservation in Africa*. University of California Press, Berkeley, California.
- Newmark, W. D., N. L. Leonard, H. I. Sariko, and D. M. Gamassa. 1993. Conservation attitudes of local people living adjacent to five protected areas in Tanzania. *Biological Conservation* 63:177-183.
- Newmark, William D. (ed). 1991. Attitudes of local people toward Kilimanjaro National Park and Forest Reserve. Pages 87-96 in. *The Conservation of Mount Kilimanjaro*. IUCN, Gland, Switzerland and Cambridge, UK.
- Obua, J., A. Y. Banana, and N. Turyahabwe. 1998. Attitudes of local communities towards forest management practices in Uganda: the case of Budongo forest reserve. *Commonwealth Forestry Review* 77:113-118.
- Oli, M. K., I. R. Taylor, and M. E. Rogers. 1994. Snow leopard *Panthera uncia* predation of livestock: an assessment of local perceptions in the Annapurna Conservation Area, Nepal. *Biological Conservation* 68:63-68.
- Parry, D., and B. Campbell. 1992. Attitudes of rural communities to animal wildlife and its utilization in Chobe Enclave and Mababe Depression, Botswana. *Environmental Conservation* 19:245-252.
- Pope, C. A., and J. W. Jones. 1990. Value of wilderness designation in Utah. *Journal of Environmental Management* 30:157-174.
- Rudzitis, G., and H. Johansen. 1991. How important is wilderness? Results from a United States survey. *Environmental Management* 15:227-233.
- Sekhar, N. U. 1998. Crop and livestock depredation caused by wild animals in protected areas: The case of sariska Tiger Reserve, Rajasthan, India. *Environmental Conservation* 25:160-171.
- Shumway, J. M., and J. H. Davis. 1996. Nonmetropolitan population change in the intermountain west. *Rural Sociology* 61:512-528.
- Shumway, J. M., and J. O. Durrant. 2000. In pursuit of understanding place: The transformation of the rural West from old to new in Emery County, Utah. *Papers and Proceedings of the Applied Geography Conferences* 23:81-88.
- Shumway, J. M., and S. M. Otterstrom. 2001. Spatial patterns of migration and income change in the mountain west: The dominance of service-based, amenity-rich counties. *Professional Geographer* 53:492-502.
- Taylor, C., J. Gough, and J. Warren. 1999. Social and economic impacts of Kaharangi National Park. *Science for Conservation* 119:1-62.
- Trakolis, D. 2001. Local people's perceptions of planning and management issues in Prespes Lakes National Park, Greece. *Journal of Environmental Management* 61:227-241.

- Tremblay, K., and R. Dunlap. 1978. Rural-Urban Residence and Concern with Environmental Quality: A Republican and extension. . *Rural Sociology* 43(3):474–491.
- Walpole, M., and H. Goodwin. 2001. Local attitudes towards conservation and tourism around Komodo National Park, Indonesia. *Environmental Conservation* 28:160–166.
- Willits, F., and D. Crider. 1993. Pennsylvanians View Economic Development: A Ten-Year Perspective. *Journal of the Community Development Society* 24(1):30–45.
- Wells, M., and K. Brandon. 1992. People and Parks: Linking Protected Area Management with Local Communities. World Bank, Washington, DC.