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—John C. Hendee
IJW Editor-in-Chief

On the Cover

FRONT: Tihaya River flowing through the autumn tundra of Kronotsky Zapovednik, with the Kikhpinich and Krashenninikov volcanoes rising in the distance in the Kamchatka World Heritage Area, Russian Far East. © Igor Shpilenok (www.shpilenopk.com); International League of Conservation Photographers; and Minden Pictures.

INSET: Interior mountains of Kamchatka Oblast, RFE. © Vance G. Martin (www.wild.org).

An Examination of Constraints to Wilderness Visitation

BY GARY T. GREEN,* J. M. BOWKER,* CASSANDRA Y. JOHNSON, H. KEN CORDELL, and XIONGFEI WANG

Abstract: Certain social groups appear notably less in wilderness visitation surveys than their population proportion. This study examines whether different social groups in American society (minorities, women, rural dwellers, low income and less educated populations) perceive more constraints to wilderness visitation than other groups. Logistic regressions were fit to data from the National Survey on Recreation and the Environment and used to model the probability that individuals perceive certain constraints to wilderness visitation. Seventeen structural, personal, and psychological constraints related to health, facilities, socioeconomic standing, and other personal factors were examined. Modeled probabilities were explained by age, race, gender, income, education, place of birth, and rural and regional residence. Results revealed minorities, women, lower levels of income and education, and elderly populations were more likely to perceive they were significantly constrained from visiting wilderness. However, immigrants perceived fewer constraints to wilderness visitation than was expected.

(Left to right) Gary T. Green, Ken H. Cordell, Cassandra Y. Johnson, and J. M. Bowker. Photo by Eric A. Kuehler.

Xiongfei Wang. Photo by Eric A. Kuehler.

Introduction

On September 3, 1964, the Wilderness Act was signed, placing more than nine million acres (3.6 million ha) of wildlands throughout the United States into protected preserves (Hendee and Dawson 2002). These preserves were to be "administered for the use and enjoyment of the American people" (U.S. Public Law 88-577 (2a), 1964). They were also "to secure for the American people of present and future generations the benefits of an enduring resource of wilderness" (U.S. Public Law 88-577 (2a), 1964). Today, over 105 million acres (42.5 million ha) of designated wilderness exist (Despain 2006)).

Currently more than 56 million Americans per year visit a designated wilderness or primitive area (which some

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perceive as wilderness) for activities such as hiking, canoeing, camping, horseback riding, hunting, and fishing (Bowker et al. 2006). Millions more also enjoy more passive activities such as bird-watching, photographing wildlife, or simply sitting quietly and viewing beautiful scenery (Cordell et al. 2004). Research shows (and predicts) that with each passing year more and more people are choosing to visit wilderness or primitive areas to participate in wilderness type activities. In fact, some estimates are projecting a growth of 26% in overall wilderness or primitive area recreation users by 2050 (Cordell et al. 2005; Bowker et al. 2006).

Part of this growth and interest in wilderness (or perceived wilderness) visitation is related to the benefits that are associated with these areas and their use (Cordell, Tarrant, and Green 2003). Besides clean air and water, research has shown that some people accrue physical, spiritual, and psychological benefits from visiting wilderness areas (Cordell, Tarrant, McDonald, and Bergstrom 1998; Mace, Bell, and Loomis 2004). Other research has also shown that wilderness areas are valued by many people for their historical, environmental, cultural, recreational, or religious significance (Cordell et al. 2005; Johnson, Bowker, Bergstrom, and Cordell 2004; Schuster, Cordell, and Phillips 2005; Taylor 2000).

Despite the benefits and values that people place on, and accrue from wilderness areas and their use, some studies have shown that certain segments of American society do not, or seldom, visit or recreate within wilderness (Bowker et al. 2006; Cordell, Betz, and Green 2002). Unfortunately, few researchers have examined whether different segments of American society simply choose not to visit wilderness areas or whether they instead encounter or perceive constraints to wilderness visitation.

The Problem

Significant demographic changes are currently occurring, and are projected to continue to occur, in this country (Riche 2000; U.S. Census Bureau 2000). The American population is rapidly becoming more racially and culturally diverse (Taylor 2000). Yet, in regard to visitation and use, wilderness areas remain and are still strongly associated as areas predominantly used by white males (Bowker et al. 2006; Roberts and Rodriguez 2001). If our public lands (including wilderness and primitive areas) are to continue to receive the same support from the American people as in previous years, then the views and patronage of these growing diverse groups (e.g., Hispanics, Blacks, women) could become increasingly important to the future allocation or management of our public lands (Johnson et al. 2004: Taylor 2000) (see figure 1).

The Wilderness Act (1964) recently celebrated its 40th anniversary. It seems both an appropriate and auspicious time to examine whether the wilderness areas (as well as the primitive areas) set aside for the enjoyment, use, benefit, and permanent good of all Americans are actually being utilized and enjoyed by all. This study hypothesizes that certain social and marginalized segments of American society (e.g., minorities, women, urban dwellers, immigrants, lower income and educated groups) are more likely than others (e.g., whites, men, nonimmigrants, and rural dwellers) to encounter or perceive their visitation and use of wilderness areas are constrained by factors related to socioeconomic

Figure 1—Woman and child preparing to go dog sledding in the Denali Wilderness, an area managed in Alaska by the National Park Service. Photo by Bob Butterfield (NPS).

standing, facilities, health, and other personal factors. In particular, 17 specific constraints, which may be grouped into two general categories, internal and external, are examined. Although the primary focus is on race (Blacks, Hispanics, Asian/Pacific Islanders), immigration, gender, rural and regional residence, income, age, and education were also examined. Following Henderson (1991, p. 366), an outdoor recreation constraint was defined as "anything that inhibits people's ability to participate in leisure activities, to spend more time doing so, to take advantage of leisure services, or to achieve a desired level of satisfaction." These include internal constraints such as personal skills, abilities, knowledge, and health problems; and also external constraints such as lack of time, transportation, or facilities (Jackson 1988).

This study focused specifically on perceived constraints to recreation use of wilderness or primitive areas. Constraints to wilderness access and use were reported by individuals who had visited or indicated an interest in visiting a wilderness or primitive area in the last 12 months. Individuals who had not visited or had no interest in visiting a wilderness or primitive area were also surveyed.

Benefits and Values of Our Public Lands

Enjoying our public lands and participating in outdoor recreation activities are considered fundamentally important and beneficial elements of many people's lives (Tinsley, Tinsley, and Croskeys 2002). However, despite the substantial research that indicates the benefits and values people associate with visiting and using our public lands, certain social and marginalized groups in American society (e.g., Blacks, Hispanics, women, urban dwellers, immigrants, low income or less educated populations) are typically underrepresented in terms of overall visitation and use (Cordell et al. 2004). This underrepresentation is especially apparent when considering visitation and use of wilderness areas (Bowker et al. 2006; Eller 1994).

Approximately 32% of Americans (aged 16 and over) per year visit a wilderness or other primitive area for purposes of recreation, whether for hiking, solitude, or just to view nature (Cordell et al. 2004; Cordell and Teasley 1998). Historically, visitation and use of wilderness areas have been seen as activities primarily enjoyed and engaged in by white, able-bodied males with above-average education and income (Bowker et al. 2006; Johnson et al. 2004). However, recent years have witnessed an increase in the numbers of "non-traditional" users of wilderness such as minorities and women (Cordell et al. 2005; Cook and Borrie 1995). Yet despite the recent and current growth in the diversity of the American population, visitation and use of wilderness areas by marginalized groups remains relatively low (Cordell et al. 2005; Riche 2000). Subsequently, the question remains as to whether certain marginalized groups in society (e.g., women, Hispanics, Blacks, immigrants, etc.) simply choose not to visit our wilderness or primitive areas or whether these groups are encountering, or have encountered, constraints that result in them being less likely than other groups to visit these lands (e.g., white, male, rural dwellers) (Johnson et al. 2004).

Constraints

Research pertaining to leisure and recreational constraints began in the 1970s and was substantially expanded during the 1990s (Crawford, Jackson, and Godbey 1991; Henderson 1991; Jackson 1997, 2000). Early research focused mainly on racial or gender differences, whereas recent research has examined the effects of income, education, age, and residence on people's participation in recreational activities (Arnold and Shinew 1998; Johnson et al. 2001). Despite the growth of research on constraints, relatively few studies have examined how socioeconomic factors or other issues (e.g., access, services, transportation) combine to constrain certain groups from accessing our public lands and participating in outdoor recreational activities (Arnold and Shinew 1998; Johnson et al. 2001; Philipp 1997). And, in particular, no research has looked specifically at constraints in regard to wilderness visitation and use.

> Some studies have shown that certain segments of American society do not, or seldom, visit or recreate within wilderness.

However, research has indicated that various social and marginalized groups perceive greater barriers to recreation participation and access to public lands than other groups that constitute the core of mainstream American society, the latter being principally white families with middle-class incomes and values (Johnson et al. 2004). In fact, a number of studies have found that females (Henderson 1991; Henderson and Bialeschki 1991; Scott and Jackson 1996), Blacks (Floyd 1998; Philipp 1995), older people (Payne, Mowen, and Orsega-Smith 2002; Scott and Jackson 1996), immigrants (Stodolska 1998), people with lower incomes (McCarville and Smale 1993; Scott and Munson 1994), and less-educated people (Alexandris and Carroll 1997) are likely to perceive more constraints to visitation and use of our public lands.

Specific studies have established that Blacks are less likely than whites to recreate in dispersed or primitive settings or to travel to regional recreation areas (Bowker et al. 2006; Dwyer 1994; Philipp 1993). The marginality theory of recreation behavior attributes minority (particularly Black) differences in recreation behavior to social structural barriers such as lack of discretionary funds, transportation, and information about facilities (Johnson et al. 2001; Stamps and Stamps 1985). Colston and Patton (1994) also noted that many Blacks reported having reduced recreation opportunities due to poor access, information, availability, facilities, and so forth, or, in other words, constraints.

Regarding gender, Henderson and Bialeschki (1991) and Wearing

and Wearing (1988) submitted that because of familial responsibilities, in particular the role of women as caretakers, women tend to deny themselves opportunities to engage in outdoor recreational activities because they feel constrained. Henderson (1991) also argued that women's lives are structured to give greater consideration to others than to themselves. Fear of attack and harassment also represent very real psychological constraints to women's pursuit of outdoor recreation (Arnold and Shinew 1998). Women are more likely than men to feel inhibited in going to remote camping areas or hiking alone on backcountry trails because of fear of attack, rape, or other sexual harassment (Goble et al. 2003; Henderson 1991).

Recreation constraints for urban residents may be related to how marginalized populations in such areas have historically defined or perceived public lands. For instance, some marginalized groups may perceive they are unwelcome on public lands due to negative cultural perceptions, lack of positive role models, or poor marketing and outreach services by the managing agency. Also, in spite of the presence of public lands (including wilderness areas) near many cities, the mere existence of such resources does not guarantee recreational use by local populations (Loomis 1999).

Some recent studies have also suggested social-psychological factors such as place-meaning are important in understanding lack of participation by minorities (Virden and Walker 1999; Williams and Carr 1993). For instance, Johnson et al. (1997) found Blacks in north Florida were less likely than whites to recreate in wildland areas, although both groups had access to a local national forest. Lack of Black visitation to wildlands was related to the relative lack of "place attachment" that Blacks held for wildlands, compared to whites. Johnson et al. (2004) also found that immigrants indicated less on-site values (e.g., had visited or planned to visit a wilderness area) for wilderness than U.S.-born people. Asians and Latinos also indicated less on-site values for wilderness than whites.

In examining people's use of public land Scott and Munson (1994) found that income was the main predictor of perceived constraints to visitation. Furthermore, "fear of crime, lack of companionship, poor health, transportation problems, and costs" were also found to limit usage by people of low income (p. 79). Research by Johnson et al. (2001) also discovered that people with lower per capita incomes were more likely than people with higher per capita incomes to feel they were constrained in regard to lack of funds and lack of transportation. In the same study, older people were found to be less likely than younger ones to say insufficient time, no companions, and inadequate information hindered their participation in outdoor recreation activities.

The preceding discussion indicates that minorities, women, urban dwellers, immigrants, the elderly, and low income groups face more structural, personal, and psychological challenges to public land (including wilderness areas) visitation and use than other groups.

Managers should strive to be sensitive to the fact that some people often face multiple constraints to visitation.

Methodology

The National Survey on Recreation and the Environment (NSRE) is the United States's on-going, nationwide recreation survey, dating back to the Outdoor Recreation Resources Review Commission of 1960 (Cordell et al. 1996). Data for this study came from the NSRE (2000–2004) which was an in-the-home phone survey of 85,000-plus households across all ethnic groups and locations throughout the United States. Data on individual and household characteristics and information about recreation participation (activities, days, trips) were collected from everyone.

The NSRE used stratified random sampling done in 18 versions. Each version consisted of five modules or sets of questions. Recreation activity participation and demographics modules composed the core of the survey and were asked of all people sampled. For instance, some modules gathered information about last trip profile, life style, land management agencies, environmental attitudes, recreation benefits, or wilderness constraints (Cordell et al. 1999, 2004).

The NSRE was conducted using a computer-aided telephone interviewing system with a random digit dial sample. The interviewer, upon hearing someone answer, inquired how many people in the household were 16 years or older. The interviewer then asked to speak to the person 16 or older who had the most recent birthday (Oldendick et al. 1988). Upon reaching an appropriate

person, the interviewer read the survey questions as they appeared on the computer screen. The wilderness constraints questions were included within version 11 of the NSRE; data were collected from July through November 2001.

Before reaching the wilderness constraints module, all respondents were read the following passage: "Did you visit a wilderness or other primitive, roadless area (within the last 12 months)?" Individuals who indicated that they had visited a wilderness or other primitive, roadless area within the past year (or expressed an interest or desire to visit) were subsequently asked 17 questions on constraints (see Table 1). For each question individuals were asked to indicate by "yes" or "no," whether that constraint affected their ability to visit a wilderness area.

To statistically test whether the groups of interest (minorities, women, rural dwellers, immigrants, low income, less educated) were more (or less) constrained in their visitation of wilderness areas than their counterparts, logistic regression equations were estimated for each of the constraints. Logistic regression can be used to model the probability of binary outcomes; here, whether an individual responded "yes" or "no" to perceiving a given constraint toward wilderness or primitive area visitation. For each constraint the logistic regression was specified as:

$$prob(yes) = \frac{\exp(XB)}{1 + \exp(XB)} \qquad (1)$$

where, X is a vector of explanatory variables and B is a parameter vector (Greene 2002). Both binary and continuous explanatory variables were included. A statistically significant positive coefficient on any of these variables would indicate that the probability the respective group feels constrained in their visitation to wilderness areas is higher than for those outside the group. Such a finding would suggest that the particular group was more affected than the base case (U.S. born, white, male, rural, high school educated, North), and hence the null hypothesis could be rejected.

Continuous variables included age and household income. Binary variables were used for ethnicity (Black, Hispanic, Asian/Pacific Islander), gender (female), region (South, Central, West), education (less than high school, bachelor's degree or more), immigrants (not born in the United States), and for residency (urban).

Table 1. Dependent Variables Used in the Wilderness Constraints Groupings

Personal	Don't have enough time because of long work hours or long school hours Don't have enough time because of family, childcare, or other home-related duties Can't afford the equipment needed for wilderness use Can't afford to travel to wilderness area Hiking and climbing trails are difficult and physically tiring activities Have a physical disability Don't have enough hiking, map reading, or camping skills My family and friends don't usually visit wilderness areas
Structural	Not aware of a wilderness area you could visit, if you wanted to Wilderness areas are crowded Don't know about the recreation opportunities in wilderness areas Wilderness areas lack basic services such as restrooms
Psychological	Feel uncomfortable in wild, remote natural areas Prefer being in places with more people People of my race believe wilderness areas are not safe My family and friends believe wilderness areas are not safe Concerned for my personal safety

Results

Logistic regression models for "visited a wilderness area" and each constraint were estimated using LIMDEP 8.0 (Greene 2002). Table 2 lists variable definitions, coding, and sample means. Analysis revealed that "visited a wilderness area" plus all 17 constraint regressions were statistically significant based on likelihood ratio tests (Greene 2002). Results for each explanatory variable are presented below (see table 3 for summary of results significant at $p \leq 0.05$).

Age was significant for 10 of the constraints equations. In three of the cases ("don't have enough time because of long work hours or familial duties," and "friends and family don't visit wilderness areas") the coefficients were negative, meaning that as people grew older they felt less constrained by these reasons from being able to visit a wilderness area.

Conversely, in the cases of "physical disability," "feel uncomfortable in wild areas," "wilderness areas are crowded," "my race believe areas are unsafe," "hiking and climbing trails is difficult," "lack basic services," and "concerned for personal safety," people felt more constrained by these reasons as they grew older. Furthermore, in general, as people become older they are less likely to say they visited a wilderness area.

Of the nine significant constraints equations related to gender, women felt more constrained than men in all nine. For the reasons of "not aware of wilderness areas," "physical disability," "feel uncomfortable in wild areas," "don't have enough hiking and map reading skills," "prefer places with more people," "don't know about recreation opportunities," "hiking and climbing trails is difficult," "lack basic services," and "concerned for personal safety," women felt more constrained than men from visiting a wilderness area. Furthermore, women were also more likely to say they had not visited a wilderness area.

Three constraints equations were significant for immigrants. Immigrants were more likely to say they had not visited a wilderness area, that they "prefer places with more people," and were "concerned for their personal safety." However, immigrants felt less constrained than people born in the United States for the reason of "family and friends don't visit wilderness areas."

Six constraints equations for income resulted in significant negative coefficients, indicating that people with lower household incomes felt more constrained than people with higher household incomes from being able to visit a wilderness area. Households with lower incomes felt more constrained for the reasons of "can't afford the equipment," "can't afford to travel," "have a physical disability," "prefer being in places with more people," "concerned for personal safety," and "hiking and climbing trails is difficult." Conversely, people with higher household incomes felt more constrained due to reasons of "don't have enough time because of long work hours or familial duties," and "family and friends don't visit wilderness areas." However, in general, as people's income increases they are more likely to say they had visited a wilderness area.

People with less than a high school education felt less constrained than people with a high school education from visiting a wilderness area due to reasons of "don't have enough time because of my job and family." However, for reasons of "prefer being in places with more people" and "concerned for personal safety," people with less than a high school education felt more constrained than people with a high school education. Furthermore, as people's education level increases they are more likely to know about "recreation opportunities in wilderness areas," to have "family and friends who believe wilderness areas are safe," and to have visited a wilderness area. People with a graduate degree are also more likely to "have visited a wilderness area," "be able to afford equipment," and "have enough hiking and map reading skills," than people with a high school education.

Thirteen constraints equations were significant for Blacks. Except for the reason of "have a physical disability," Blacks felt more hindered from visiting wilderness areas than whites for the reasons of "not aware of a wilderness area they could visit," "could not afford the equipment or to travel to wilderness area," "feel uncomfortable or concerned for

Table 2. Explanatory Variables Used in Constraints Model

Variable	Definition	Mean*
Age	Age of participant (Years)	42.8543
Gender	Sex of participant (Male=1)	0.4716
Immigration	Born in the United States (Immigrant=1)	0.1308
Income	Household income (Dollars)	53,369.15
Low education	Less than high school diploma or GED (Low Ed=1)	0.2348
B.S./graduate Education	Bachelor's or higher education (High Ed=1)	0.2081
Black	Self-identifies as Black (Black=1)	0.1244
Asian/Pacific Islander	Self-identifies as Asian/Pacific Islander (API=1)	0.0323
Hispanic	Self-identifies as Hispanic (Hisp=1)	0.1412
Urban	Beale Code >4 (Urban=1)	0.7971
South	States include TN, NC, MS, AL, GA, SC, FL, VA, AR, and LA (South=1)	0.2127
Central	States include AZ, NV, UT, ID, MT, WY, CO, NM, ND, SD, NE, KS, OK, and TX (Central=1)	0.1613
West	States include WA, OR, and CA (West=1)	0.1706

Note: "*" Means were weighted by poststratification using a combination of multivariate and multiplicative weights to account for age, race, sex, education, and urban/rural differences.

personal safety in wild, remote areas," "don't have enough hiking and map reading skills or know about recreation opportunities in wilderness areas," "prefer being in places with more people," "their race, family, and friends believe wilderness areas are not safe," "hiking and climbing trails are difficult activities," and "lack of basic services." Blacks were also more likely to say they had not visited a wilderness area.

Asian/Pacific Islanders were less likely to say they visited a wilderness area than whites. They were also less likely to say "they don't have enough time because of familial duties." However, Asian/Pacific Islanders felt more constrained than whites for reasons of "could not afford the equipment or to travel to a wilderness area."

Hispanics perceived many of the same constraints as Blacks to wilderness visitation. For instance, Hispanics felt more constrained than whites from visiting a wilderness area for the reasons of "feel uncomfortable or concerned for personal safety in wild, remote areas," "don't have enough hiking and map reading skills," "prefer being in places with more people," "people of their race believe wilderness areas are not safe," "hiking and climbing trails are difficult activities," and "lack of basic services." Hispanics were also less likely than whites to say they had visited a wilderness area.

Results for perceived constraints by residence revealed that urban dwellers were less likely than rural dwellers to say they had visited a wilderness area, which could be due to the proximity and location of wilderness areas in regard to urban dwellers. However, overall, there were no other significant differences between urban and rural residents' perceived constraints to wilderness visitation. This result may in part be due to the amount of urban and exurban sprawl and development of rural areas in recent years that has somewhat blurred the traditional demarcation between urban and rural communities.

The South was significant for three of the constraints equations. In all three cases ("can't afford to travel to wilderness areas," "members of their race believe wilderness areas are not safe," and "concerned for personal safety"), Southerners felt more constrained from visiting wilderness areas than Northerners. However, Westerners were more likely than Northerners to have visited a wilderness area. Westerners were also less likely than Northerners to say "their family and friends don't visit wilderness areas," or to say "they feel uncomfortable in wild, remote natural areas." Similarly, people who resided in the Central region were less likely than Northerners to say they were constrained because "they didn't know about the recreation opportunities in wilderness areas."

Overall, the most prevalent constraints to wilderness visitation were that people "felt concerned for their personal safety" and "preferred being in places with more people." People also expressed that "they felt uncomfortable in wild, remote natural areas," "did not have enough time because of familial duties," and "hiking and climbing trails were difficult activities." The least mentioned constraints were "wilderness areas were crowded" and "family and friends believe wilderness areas are not safe."

Discussion

It was hypothesized that different social and marginalized groups in society—minorities, women, rural residents, immigrants, low income, and less educated people—perceived more constraints to wilderness and primitive area visitation than their counterparts, and, thus, their relatively lower visitation rates. Results, for the most part, supported the hypothesis that minorities, women, and low income and less educated people had higher probabilities of feeling constrained than their counterparts. Results also indicated that immigrants encountered more constraints than people born in the United States, although they perceived far fewer constraints than was initially expected.

Table 3 provides a summary of significant ($p \leq 0.05$) perceived constraints by personal, structural, and psychological groupings. These groupings help to identify and separate those constraints that wilderness managers may or may not be able to potentially address.

Personal Constraints

Generally speaking, managers of wilderness areas are not usually in the position to address or alleviate several types of personal constraints (Johnson et al. 2001). However, managers of wilderness areas could possibly address the constraints of "can't afford the equipment," "hiking and climbing trails are difficult activities," and "don't have hiking or map reading skills" that were perceived as barriers to participation for older people, women, people with low income, Blacks, Asian/Pacific Islanders, and Hispanics. Wilderness managers could help to alleviate some of these barriers by striving to better inform and educate these different groups about equipment needs and wilderness use. Providing better information about easier access points and locations of easier trails

Table 3. Summary of Significant Results (p<.05) for Personal, Structural, and Psychological Wilderness Constraints ("–" and "+" = significant negative or positive results)

Variable	Age	Gender	Immigration	Income	Low Education	B.S./Grad Education	Black	Asian/ Pacific Islander	Hispanic	Urban	South	Central	West
Visited a wilderness area	–	+	–	+	–		–	–	–	–			+
Personal													
Not enough time b/c of work and long hours	–			+	–								
Not enough time b/c of family, etc.	–			+	–			–	–				
Can't afford the equipment				–		–	+	+					
Can't afford to travel to wilderness areas				–			+	+			+		
Hiking and climbing trails are difficult activities	+	–		+			+		+				
Have a physical disability	+	–		–			–						
Don't have hiking, map, reading skills		–				–	+		+				
Family and friends don't visit wilderness areas	–		–	+									–
Structural													
Not aware of wilderness area to visit		–				–	+						
Wilderness areas are crowded	+											+	
Don't know about recreation opportunities		–			–		+					–	
Wilderness areas lack basic services	+	–					+		+				
Psychological													
Feel uncomfortable in wild, remote areas	+	–					+		+				–
Prefer places with more people		–	+	–	+		+		+				
People of my race believe wilderness areas are not safe	+						+		+		+		
Family and friends believe wilderness areas are not safe					–		+						
Concerned for personal safety	+	–	+	–	+		+		+		+		

could help reduce or alleviate some constraints. Providing greater outreach services (i.e., programs that are specifically targeted to help educate underrepresented groups about wilderness use) could also help to address some of these constraints (Arnold and Shinew 1998; Roberts and Rodriguez 2001; Scott and Jackson 1996).

Many segments of our society are unaware of the different recreational opportunities or public services currently available to them (Stodolska 1998). For example, some public land areas offer free travel passes, outdoor clothing and equipment to volunteer workers, or have subsidized programs for different populations (e.g., children, disabled, unemployed, or elderly) (Pride 2004). Therefore, increasing outreach services into communities and local organizations containing low socioeconomic populations, which provide customized information (in multiple languages) concerning the availability of subsidized or free volunteer programs could help increase these groups' overall awareness of the different options available to them (Arnold and Shinew 1998; Roberts and Rodriguez 2001). Working in

cooperation with local transportation agencies and nonprofit and charitable organizations, wilderness managers could also alert local communities and key organizations (those that serve minority, female, low education or income groups) about existing volunteer or educational programs available in their areas, as well as provide this information within their regular media outlets (e.g., Web sites, brochures) (Roberts and Rodriguez 2001; Scott and Munson 1994).

Figure 2—Female hiker in the Big Branch Wilderness in Vermont, a U.S. Forest Service managed area. Photo by George Wuerthner.

Structural Constraints

Overall, one or more of the structural constraints of "not aware of wilderness areas to visit," "wilderness areas are crowded," "don't know about recreation opportunities," and "lack of basic services" were perceived as barriers to wilderness visitation by older people, women, Blacks, and Hispanics. Our natural resource areas are sometimes criticized for not providing information, brochures, or signage in multiple languages or that only depict whites males doing activities, and not women, Blacks or Hispanics. Many women and minorities point to the fact that women or minorities are often underrepresented in positions such as rangers, interpreters or guides. This underrepresentation likely promotes the perception that our natural resource areas are predominantly for white males (Eller 1994; Roberts, Outley, and Estes 2002; Roberts and Rodriguez 2001). Although the public's perception may be somewhat false, it is still a perception that needs to be addressed, and wilderness staff could receive more training regarding different minority populations' cultural perceptions and their needs. Staff should also be encouraged to help promote ways or opportunities for these groups to be able to visit and enjoy our wilderness areas (Roberts and Rodriguez 2001).

Psychological Constraints

Across most minority groups (including women), immigrants, older people, people with less education, and people with less income, the constraints of "feel uncomfortable in wild, remote areas," "prefer places with more people," and "concerns for personal safety" were perceived as barriers to visitation. One of the strengths of this study has been its examination of the existing differences between particular minority groups (e.g., women, Blacks, Asian/Pacific Islanders, and Hispanics) regarding their perceived constraints. This examination has served to reinforce the fact that more research is needed about these groups. For instance, do different groups have different perceptions of what constitutes a safety issue, such as fear of wild animals in wild or remote areas, racial conflict in outdoor areas (Virden and Walker 1999), or is it something else entirely?

In regard to women and their concerns about personal safety, one could argue that many women are constantly aware of their surroundings and their personal safety, and this concern becomes more acute when they visit remote or unlit natural resource areas (Arnold and Shinew 1998). However, research has also shown that many women adapt their behavior (e.g., don't walk alone, hike with a dog) to address their concerns, so they can continue to enjoy remote natural areas (Arnold and Shinew 1998; Henderson 1991) (see figure 2). Future research could seek to examine the ways women or minorities strive to alter their behavior to ensure continued participation in outdoor activities, and what measures, if any, could wilderness managers initiate to help alleviate or accommodate these behavioral modifications (Henderson 1991).

The questions used in this study were broad, and no attempt was made to probe deeply into the context or meanings behind some of the constraints. However, this study's findings about personal safety concerns perceived by minorities, females, low income, less educated, and older participants merit further scrutiny from researchers and public land managers. Therefore, future efforts should be made to examine in greater depth the context and actual reality (versus perception) of the personal safety concerns encountered by these groups (Henderson 1991). At a minimum, organized group or buddy programs, increased information (concerning facilities, transportation, safety, wild animals, etc.), and an increased presence of more rangers and guides from diverse backgrounds should be considered as ways to help to mitigate some people's perceptions of and barriers to wilderness visitation.

Our public lands, natural resources, and wilderness areas were designed, for the most part, for the enjoyment, benefit, and recreational participation for all. However, it appears that some segments of our society feel they are unwelcome or

constrained from visiting our more primitive public lands. Managers should strive to be sensitive to the fact that some people often face multiple constraints to visitation, and hence, a more holistic approach in the provision of their facilities, programs, and services might be warranted. **IJW**

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