

# Wilderness Use in the Year 2000: Societal Changes That Influence Human Relationships With Wilderness

Alan E. Watson

---

**Abstract**—The purpose of this paper is to extend a synthesis of knowledge about wilderness visitors and their visits developed in 1985. At that time, visitor research was in decline, and there was very little ability to understand trends. Over the last 15 years, wilderness visitor research has been initiated at many places in the U.S. where no previous studies had been completed. There have also been several studies specifically aimed at providing comparisons over time. Although review of these studies has concluded that very little has changed about how we describe visitors, their visits or their preferences for management, limited data suggest that the way visitors relate to wilderness has changed and will continue to change well into the next century.

---

The National Wilderness Preservation System has been in existence in the United States since 1964, and we sometimes struggle still to interpret the intentions of the people who negotiated, crafted and fought to enact this legislation. While recreational values were considered important, protecting intact ecosystems also influenced the selection of places included in our national system. It is time to stop and ask ourselves how the people of this and future generations will relate to the wild parts of our landscape. Is the function of wild places in the lives of people today the same as it was in 1964? Will it remain the same into the future? What do we know about how this relationship has been changing, what has caused it to change, and how might we expect it to change in the future?

These questions form the purpose of this paper. First of all, we need to look back at the previous effort, in 1985, to summarize existing knowledge about wilderness use and users. Roggenbuck and Lucas (1987) reviewed existing wilderness visitor studies at that time, and they offered a summary of the knowledge they were able to glean from this examination. They also pointed out some knowledge gaps and made suggestions for future research. It is important to return to this review in order to appreciate where we stand today and discern important research topics for the future. Besides discussing some of the important points made by Roggenbuck and Lucas (1987), we also have the ability to describe how wilderness science has evolved in response to knowledge generated at that time. From this information,

we should be able to understand the importance of conducting wilderness visitor research and what the priority topics should be. We should also be able to develop some understanding of how and why human relationships with wilderness have changed and will continue to change in the U.S.

## Wilderness User Research in 1985 and 1999

---

In 1985, at the first and only previous National Wilderness Research Conference, Roggenbuck and Lucas (1987) summarized the knowledge gained from their examination of reports from about 23 different wilderness studies conducted between 1960 and 1983. I use the term “about” because some of the studies they reviewed were conducted before we had a National Wilderness Preservation System, and some of the studies they reviewed were not conducted in protected wilderness, even after the recognition of our wilderness system in 1964. For example, Boundary Waters Canoe Area visitors were studied in 1960 and 1961 (the Boundary Waters was officially recognized as wilderness with passage of the Wilderness Act in 1964), and Great Smoky Mountain National Park visitors were surveyed in 1976 and 1983, although there is no federal wilderness acreage inside the Park to date. They also included data taken from Appalachian Trail hikers who passed through National Forest lands in the Southern Region of the National Forest System in 1970 and 1971 and Baxter State Park visitors in Maine in 1979. While different studies made different contributions to the results they included, their report indicates that they extracted information from a total of 32 different studies, some in wilderness and some not in wilderness.

Before they summarized the findings from these studies, Roggenbuck and Lucas (1987) depicted the difficult times that wilderness visitor research was experiencing in the early 1980s. By their reckoning, use and user research was less common at the time of their summary than it had been a decade earlier. In reflecting over the short history of wilderness science, the good old days of the late 1960s and early 1970s were gone, and “...wilderness visitor surveys became scarce after the middle 1970s and nearly disappeared in the 1980s.” They were particularly concerned over the lack of knowledge about wilderness visitors in the East, the South, the Desert Southwest and California. Reflecting the lack of funding resources and the apparent decline of wilderness visitor research, these well-known wilderness researchers expressed concern that “...without further comparable studies our knowledge of trends will remain extremely skimpy.”

---

In: Cole, David N.; McCool, Stephen F.; Borrie, William T.; O'Loughlin, Jennifer, comps. 2000. Wilderness science in a time of change conference—Volume 4: Wilderness visitors, experiences, and visitor management; 1999 May 23–27; Missoula, MT. Proceedings RMRS-P-15-VOL-4. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

Alan E. Watson is Research Social Scientist, Aldo Leopold Wilderness Research Institute, Box 8089, Missoula, MT 59807 U.S.A., and U.S. Fulbright Scholar, Arctic Centre, University of Lapland, Rovaniemi, Finland, e-mail: awatson@fs.fed.us

I'm pleased to inform these wilderness science leaders that things are looking up a little. In a quick search of the library shelves at the Aldo Leopold Wilderness Research Institute, I noted that just since 1988, the year after the earlier summary was published, there have been at least 25 studies of wilderness visitors with sufficient depth to contribute to a general understanding of use and user characteristics at specific sites. Most of these studies, as with the studies summarized by Roggenbuck and Lucas (1987), extended beyond descriptive studies of use and users to contribute to understanding of attitudes, preferences, behaviors and evaluations of conditions encountered in wilderness. Partially as a result of the gap in information emphasized in the earlier summary, notable progress has taken place in conducting studies in the South, in California and in the East. These are only the studies that have been funded or somehow sponsored by the Leopold Institute; there have been many more conducted by other organizations to fill in gaps in knowledge about wilderness use. As Roggenbuck and Lucas noted with concern in their earlier summary, however, none of these more recent studies were aimed at establishing knowledge about trends in use or users. It seems that most of our resources have continued to be dedicated to development of new knowledge about previously unstudied areas.

## **The Exceptions: Studies of How Human Relationships With Wilderness Have Changed**

Fortunately, there is more good news for our distinguished scientists of the previous decade. Included in the summary by Roggenbuck and Lucas (1987) was some speculation about how use and users seemed to be changing. Remember, most of these observations came from looking at about 23 wilderness studies conducted during the previous 20 years at a variety of places. They did take advantage of a recent study by Lucas (1985) aimed at determining user trends at the Bob Marshall Wilderness Complex in Montana (studies in 1970 and 1982). Unfortunately, that was the only wilderness study with those objectives available at that time. There have been several comparative studies since.

In 1990 and 1991 Cole and others (1995) conducted three studies specifically to provide information on trends in wilderness recreation use and users. Three very different types of wilderness were selected, in different parts of the country, but they all depended on the existence of previous studies to provide comparison. All three were included in the original summary of knowledge by Roggenbuck and Lucas (1987). At the Desolation Wilderness in California, a study in 1990 was intended to provide comparisons to studies by Lucas (1980) and Stankey (1980), conducted in 1972. Previous research at Shining Rock Wilderness in North Carolina in 1978 (Roggenbuck and others 1979; Roggenbuck and others 1982) was repeated in 1990. The third study was in the Boundary Waters Canoe Area Wilderness in 1991, repeating a study by Stankey (1971, 1973) conducted in 1969.

Another type of comparison study, conducted in 1993 (Watson and others 1996), had a very different intent. The purpose of this study of visitors to the Eagle Cap Wilderness

in Oregon was to look at trends related to users of the area, but it concentrated more on trends in commitment to wilderness and attitudes toward some specific wilderness camping and traveling behaviors. The original Eagle Cap study for comparison was in 1965 (Hendee and others 1968), just one year after passage of the Wilderness Act, and it was one of the studies summarized in the 1985 summary of knowledge about wilderness users.

## **Trends in Wilderness Use and User Characteristics**

---

Roggenbuck and Lucas (1987) drew several qualified conclusions from looking at the data they had to examine, mostly from the 1960s and 1970s. They were able to conclude that the group of visitors under age 35 was the most common and that the age structure of visitors did not seem to be changing. They noted that males were consistently the large majority, but sensed that female visitors may be increasing in proportion. Also noticeable were the increasing education of visitors and the consistently above-average incomes of visitors, although they would not have been described as wealthy.

The studies at the Desolation, Shining Rock and Boundary Waters Canoe Area (Cole and others 1995), and the Bob Marshall comparative study (Lucas 1985), concluded that only five of 83 variables studied across all four areas changed substantially and consistently. Three of those were user characteristics.

Contrary to what Roggenbuck and Lucas (1987) were observing in data compiled in 1985, visitors in the 1990s were consistently and significantly older than users from earlier studies. The most common age group was now between 35 and 40 years. Visitors were more highly educated than previously, as was evident in the earlier studies. In fact, as high as 40% to 50% had some graduate level college education. This would compare to about 8% in California and 6% in Minnesota and North Carolina, according to the 1990 census. Proportions of the population with graduate level college education were so low at the time of earlier studies that they were not recorded or not published in generally available sources for comparisons. These percentages are not exactly comparable due to differences in age restrictions for the sample and census counts, but the magnitudes are so extremely different that it is easy to see that the increase in educational attainment among wilderness visitors greatly exceeds the pace for the general population, where earlier population estimates are available. The proportion of females visiting wilderness has increased significantly across all areas studied, as earlier speculated, with some estimates as high as 35% of the visiting public.

One demographic descriptor that did not differ substantially and consistently across all four data sets, but which did show somewhat weak, but consistent changes, was income. Generally, income increased across studies; it never went down for any of the study groups. More recent studies, however, have generated some curiosity about the dilemma over the extremely high incomes of some segments of wilderness visitors. In the Frank Church–River of No Return Wilderness, Hunger and others (in press) found that nearly

half of the dominant user group of the river system inside the wilderness—the commercial river floaters, which are about two-thirds of the floater population—report annual household incomes of over \$100,000, compared to about 12% of noncommercial floaters reporting this income level. While Roggenbuck and Lucas (1987) refuted the charge that wilderness is accessible only to the very wealthy, this information on commercial river floaters suggests that, at some places for some types of access, the very wealthy are the dominant users. Gilbert and Kolh (summarized in Hurst 1998) reported that in 1990, only 15% of the U.S. population had household incomes above \$70,000 per year. This knowledge, linked with recent understanding of the casual nature of the relationship between the commercial customer and the wilderness resource (low experience levels, low self-evaluation of skills and lack of accurate expectations teamed with discordant evaluations of conditions encountered (high expectations for primitive conditions, positive evaluations of nonprimitive conditions encountered)) raises questions about the tradeoffs between perceptions of the high values of introducing casual wilderness users to intense wilderness experiences and the social costs associated with mixing casual and intense wilderness visitors on the same wilderness resource. Management policies which are influenced by commercial enterprises catering to this segment of the user public are possibly contributing more to rural economic development goals than the goal of providing wilderness experiences (Hunger and others, in press).

Roggenbuck and Lucas (1987) also observed that party size was small at most places studied, and the studies they reviewed suggested a decrease in average party size across areas. They acknowledged that while horse groups and river rafters appeared to be traveling in larger groups than wilderness hikers, two- to four-person groups seemed the most common. They also observed that length of stay was short, with day trips dominating, and trips seemed to be getting shorter. Cole and others (1995), however, found no visit characteristic that changed substantially and consistently. Things like the proportion of organized groups in wilderness, the proportion of visitors traveling with family members, the activities they participated in while in wilderness, the number of groups they reported encountering in the wilderness and the difficulty they had in finding acceptable campsites did not change. Neither did length of stay nor group size. In one place where managers believed the opposite to be happening (—that is, nonsystematic observation led to assumptions that group size was creeping up over the years—), careful analysis of trend data found tremendous fluctuation and not consistent trends to allow the conclusion that party size had changed at all for river user groups on the Middle Fork of the Salmon River in the Frank Church–River of No Return Wilderness (Becker and others, in press), although total annual use has consistently increased.

In general, the admittedly limited number of studies specifically designed to detect changes in use and user characteristics concluded that nothing much has changed. The characteristics of the visitors haven't changed very much, the trips they take haven't changed very much, and even the preferences they expressed for management of the wilderness are not very different from those they expressed about 20 years earlier (Cole and others 1995).

## So What Has Changed?

---

The study of Eagle Cap visitors (Watson and others 1996) may be the more critical study of trends, not just because it did find differences in many variables, but because of the types of variables included in the two comparative studies. Hendee and others (1968) concluded from their 1965 study of Eagle Cap visitors that when visitors held strong wilderness values, these values were the product of (among other things) higher than normal educational attainment and membership in one or more conservation or outdoor organizations. These authors encouraged the stewards of the new National Wilderness Preservation System to become more aware of the social processes underlying trends in wilderness use and how these trends may influence the values which visitors ascribe to wilderness.

By 1993, wilderness visitors to the Eagle Cap had exhibited changes similar to those described above from other visitor trend studies. They were older, with the age category 35 to 54 increasing from about half to two-thirds of visitors surveyed, and more highly educated. However, contrary to inconsistent findings from other studies, these users demonstrated significantly higher membership in conservation or outdoor recreation organizations (25% in 1965, 44% in 1993). The length of wilderness stays and the amount of time spent in wilderness each year had not changed.

As predicted back in 1965, these substantial increases in education and membership in conservation or outdoor recreation organizations paralleled changes in attitudes and commitment toward wilderness. While we may have incorrectly speculated that many things have changed about wilderness visitor and visit characteristics, we would all probably have correctly assumed that their attitudes toward wilderness have changed. But no one knew how much these things had changed. We see from Watson and others (1996) that the changes were substantial and always in a positive direction. Current visitors exhibit much more purist attitudes about wilderness behavior, and they express much stronger wilderness values than visitors did shortly after passage of the Wilderness Act. For example, in 1965, 87% of the visitors surveyed thought it was okay to bury noncombustible trash in the wilderness. By 1993, only 9% expressed this belief. Similarly, about one-fourth thought it inappropriate to bring radios into the wilderness in 1965, while two-thirds were against radios in the wilderness in 1993. Even the three-fourths that felt a campfire was necessary during wilderness trips dropped to only one-third in 1993.

Comparisons to the baseline study by Hendee and others in 1965 resulted in knowledge that the proportion who believed we should allow lightning-caused fires to burn changed from only 3% to 44% by 1993. Livestock grazing was supported by 17% in 1965 and only 9% in 1993, and visitors who feel that hunting is incompatible with wilderness objectives increased from one-third to one-half.

These attitudes toward wilderness values and behaviors are clearly examples of the things we should be monitoring among wilderness visitor characteristics. The attitudes and values associated with wilderness protection appear to be related to visitor characteristics such as education and active membership in conservation or outdoor recreation organizations, and it is the change in attitudes that may

truly drive the purpose and process of wilderness protection in the future. While Roggenbuck and Lucas (1987) lamented that studies of wilderness visitors aimed at "...topics more closely related to visitor experiences and behaviors...are assigned higher priority" than those aimed at describing use and user characteristics, in hindsight it now appears that much more research should have been targeted to track changes in these indicators of the relationship between people and wilderness.

## Why Have Values and Attitudes Changed?

Watson and Landres (1999) have offered some thoughts on why wilderness plays a different role in society today, how wilderness values will continue to change into the future and how management and policy are related to wilderness values (figure 1). What makes wilderness different today from what it was in 1964, when legislators and interest groups came together in agreement about what was to be protected at that time, is that it just isn't 1964 anymore. Why would we expect the forces that drove creation of this national wilderness preservation system to be exactly the same today? Basic wilderness philosophy aside, we need to stop a minute and think about what has changed and see if it gives us insight into why wilderness values have changed and how they might change in the future. This model suggests that the things that are changing about our society, as well as some specific things we have done to protect the wilderness resource, are major influences on the attitudes (values) people have about wilderness and it is these collective values that lead to legislative action and management policies. The meanings attached to wilderness experience represent the ways we value wilderness and contribute to attainment of higher order benefits that, in turn, drive societal change and specific actions.

### Societal Influences

First of all, there are things that have changed about the society we all live in that also change the way we relate to wilderness. This relationship is different from 1964, and it is even different from 1985. Some of the ways our society has changed include changes in our culture, technological advances, environmental changes and diversification in the economy.

**Changes in Culture**—Our society is already dominated by an urban culture, and this domination is only going to increase. Stokes (1999) expressed the belief that population growth and urbanization are two of the four most important contributors to change in the political environment surrounding wilderness issues. Not only do we see the physical changes involved with the transition of farm and ranch lands to housing, businesses and roads, but our society has transformed to an urban culture, complete with changes in racial and ethnic mix, increasing education and income and an increasingly important dependence upon others to affect change. Wirth (1972) predicted that urbanism was going to create a feeling of inability to influence change on the part of the individual. This would precipitate the need to join with

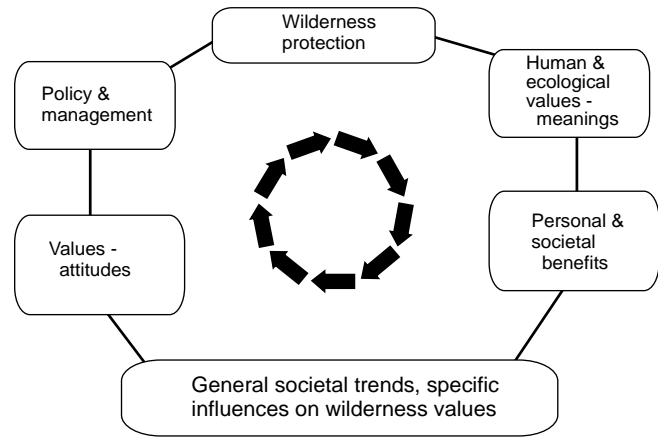


Figure 1—Influences on human relations with wilderness (adapted from Watson and Landres 1999).

others of similar interests into organized groups to obtain ends. Today, in Missoula, Montana, the urgency to protect a dwindling supply of open space in the urban area is represented by the acronym of the organized conservation group Save Open Space (S.O.S.). Membership is largely composed of urban residents trying to exert some control over a valued, threatened natural environment by mustering community support.

Carlson and McLeod (1978) found that among farmers, those with higher education, higher income and a shorter involvement in farming held weaker agrarian philosophies, obviously characteristics associated with an urbanizing society. A New York Times poll of 1989 found that the third most popular activity among domestic U.S. vacationers was visiting small towns. Some researchers believe that urban residents value the rural landscape more than rural residents do. If increasing urbanization leads to increasing value associated with undeveloped landscape, and undeveloped landscape is diminishing, the way to accomplish protection of undeveloped landscapes is to join others with similar interests; increased association with others interested in protecting landscapes leads to even more purist attitudes toward protection, and even stronger wilderness attitudes would be expected in the future, as they have developed in the recent past.

**Technology Advances**—In John Naisbitt's (1982) first book on megatrends, he projected that through the end of this century, we would continue to feel the effects of a switch from an industrialized society to an information society. We are living more and more in an economy and a society built on information. This has driven us en masse toward redefining power and quality of life. In the computer age, we are forced to deal with conceptual space rather than physical space. Back in 1964, it was easy to understand the meaning of Bob Marshall's statement that "Certain vigorous people gain intense satisfaction in doing for themselves all the tasks essential for existence." That fit well with the image of primitive skills needed to enjoy wilderness travel and camping and the values of society at that time. Today, that statement is more aptly applied to the skills necessary to survive our increasingly technology-oriented society. It is

the person with instant access to the World Wide Web, a cellular telephone and the most efficient computer software who has the essentials for existence in our society. The wilderness resource has become more and more of a contrast to the effects of dominant societal values. As the continuum continually extends toward the technology end, the primitive end becomes more valuable to society as a point from which to compare and understand the benefits and threats technology offers to society. While not essential to physical existence, the novelty of wilderness skills, the opportunity to deal with physical space and the need to verify knowledge about natural places make the role of wilderness today a different one from the past.

**Environmental Change**—As an urbanized and educated society, we are much more aware of environmental threats and changes today than ever before. Ancient civilizations may have lived in closer harmony, but we are constantly bombarded by new information about the threats our lifestyles pose to the environment. From the time of industrialization, we have constantly become more of a threat to the environment, but now we have endless options to reduce our impacts. We have changed everything from our deodorants to our vehicle air conditioners to protect the ozone layer. Our attitudes toward beef and the fast-food restaurants that prepare it in quantity have changed due to relationships between tropical deforestation and agriculture. Activism, or even passive support, of efforts to protect the environment are positive character attributes of members of our society. Methods to protect the environment have become major issues of debate in modern political campaigns, and we find countries competing in the international forum to be leaders in environmental protection.

**Diversification of the Economy**—The economy of a society based on information is based on a resource that is not only renewable but self-generating. This information-based economy is much less dependent on commodity extraction, and we have developed a good understanding of how natural amenities influence the local tax base and the local economy (Power 1996). In 1960, about 21% of nonmetropolitan jobs in the U.S. were in the extractive industries. By 1985, that was down to only 8%. Power (1996) describes this transition from a set of “core” extractive industries to an expanded and diversified economy during this century. He points out that lands with wilderness qualities are a relatively scarce resource with significant alternative uses. Wilderness protection does not impoverish communities by locking up resources. Rather, it protects the economic future of communities by protecting high quality natural environments that are increasingly in demand across the nation.

## Specific Influences

Watson and Landres (1999) also suggest that some specific things have likely contributed to changes in attitudes toward wilderness. These would include things that have increased awareness about impacts caused by recreation, media coverage of natural ecological processes, increased scientific understanding of natural processes and noticeable loss of protected natural areas.

**Awareness of Impacts Caused by Recreation**—The Leave No Trace program, originally developed by the U.S. Forest Service in the 1970s, has been embraced by the Bureau of Land Management, the National Park Service, the U.S. Fish and Wildlife Service and a broad range of outdoor user groups. In addition, it is gaining support from the recreation industry and has formally organized as a nonprofit organization (Swain 1996). LNT recently empowered young, enthusiastic teams of people to travel throughout the U.S. in Subarus packed with Leave No Trace educational brochures and souvenir first aid kits, evidence of corporate sponsorship to support spreading the word about how you can reduce your impacts on the natural environment while hiking, rafting and bicycling. Generally, wilderness education programs are aimed at school age children, with the hope of impressing them with the importance of taking care of the limited natural places we have. The Wilderness Impact Monster program (Hendricks and Watson 1999, Hendricks, in press), started in Oregon in association with the Eagle Cap Wilderness, has spread to many places in the U.S. as a method of making young and old more aware of wilderness etiquette and our responsibility to take care of the wilderness environment. These and other agency- and corporate-sponsored programs have been aimed specifically at changing some of the attitudes and values we know have changed for wilderness visitors and the public.

**Media Coverage of Natural Ecological Processes**—National and regional coverage of the role of fire in natural ecosystems after the large fires of 1988 is believed to have influenced public perceptions of the value of fire. Barraged by Smokey Bear slogans and the belief that fire is bad, the American public awoke in the 1980s to find scientists proclaiming the need for fires to correct many years of fire exclusion policies. In a study by Manfredo and others (1990), a strong relationship was found between knowledge about fire effects and support for policies that allowed some fires to burn in places where they did not pose threats to safety or property. In the Rocky Mountain West, where recent occurrence of wildland fires had dominated the media, knowledge about fire effects, and therefore support for policies to let some fires burn, was higher than in other parts of the U.S.

**Increased Understanding of Natural Processes**—Today, we have much greater understanding of natural processes and their importance than we did in earlier decades. The terms “biodiversity,” “habitat fragmentation” and “ecosystem management” are not used and understood only by scientists or in academic circles. The way we think and talk about the landscape has been shaped by specific advances in scientific understanding about the interrelationships among parts of our environment. Rachel Carson was writing *Silent Spring* as the debate over wilderness protection was occurring. Today, we are extremely aware of the effects of toxic chemicals on our environment and human health. We are also constantly changing the way we look at wild places due to new knowledge about the effects of fish stocking on native amphibians (Matthews and Knapp 1999), the effects of non-native species on biodiversity (Asher and Harmon 1995) and the effects of recreation on natural animal populations (Gutzwiller and others 1998). The United States is considered the super science power of the world. We are the biggest and most effective science producer of all the

countries. The United Kingdom comes closest, with an estimated 18% of U.S. science development; Japan is 12%, Russia is estimated at 3%, Italy and Sweden at 4% and India at 1%. Our understanding of natural processes and the effects of our behaviors on the environment continue to change rapidly.

**Loss of Protected Natural Areas**—While the National Wilderness Preservation System has increased since 1985, the amount of undeveloped places has generally decreased. Scarcity naturally increases the value of natural landscapes in an urban society that is rapidly developing its unprotected places. As the landscape changes, movements to save open space, to protect greenways and to expand protected areas increase. Wetland development, offshore mineral exploration and tourism development are all proceeding at a rapid pace, contributing to the threat of depletion of unexplored, undeveloped places in the U.S. A growing awareness of increasing scarcity has affected the value of natural landscapes to many people.

## The Future

---

Some of the societal and specific influences that are going to change our relationship with wilderness in the next century include continued urbanization of our culture, increasing technology and information availability and the potential commercialization of wilderness resources and experiences.

## Continued Urbanization

As our urban centers merge together and traditional U.S. rural values continue to subside, a greater proportion of wilderness visitors will both grow up and continue to reside in urban situations. With urbanization comes expectations of higher incomes, higher educational attainment and a tendency to join organizations to influence change, including protecting natural landscapes. While these visitors will have less frequent exposure to nature and less familiarity with the skills needed to deal with wilderness travel, they may find the switch from dealing with conceptual space to physical space as novel as recent past generations found the reverse situation. Recent reports of substantial social and economic benefits of wilderness experience programs on urban, economically disadvantaged youth (Russell and others 1998) only provide a glimpse of the potential value of wilderness protection to increasingly urban populations. One of the great research questions is the need to understand how increasing urbanization will influence wilderness values in the future. Speculation suggests that the more urban we become, the more valued will be the primitive landscape from which we originated.

## Technology and Information

Vice President Al Gore once said “We are at the present time woefully unprepared to grapple with the serious ethic choices with which the new technology will confront us. The very power to bring about so much good will also open the door to serious potential problems.” While genetic cloning,

new surgical techniques and medications and alternative energy sources were probably foremost in his thoughts, his concerns apply equally to the increasing effects of technology and information on wilderness. In the future, it will continue to be easier to find wilderness than it was in the past, the likelihood that one will be able to do more indepth planning of wilderness trips while seated at the computer at home will increase, and the presence of technological devices that directly conflict with the purpose of being in wilderness will increase substantially. As this technology invades every aspect of wilderness exploration, we will face the serious need for development of an “information ethic,” just as we were once in need of a “land ethic.” One of the reasons people go to wilderness is for the sense of discovery and uncertainty.

In a study of Desolation Wilderness users in 1997-1998 that asked visitors to rank 19 potential uses of recreation fees, providing access to existing information posted on the Internet/World Wide Web about the Wilderness was ranked 15th and 17th for two independent samples of campers and 18th and 19th for two independent samples of day users (Vogt and Williams, in press). This may be interpreted to mean these visitors dislike the existing information about the Wilderness, they lack Internet access or they recognize the inappropriateness of so much available information about a wild place. Much of the risk and adventure can be taken away by the availability of electronic information such as photographic images of campsites or vistas, fish stocking history of lakes and streams and recent human visitation levels. Aldo Leopold once lamented that unknown places disappear as a dominant fact in human life. It may take society’s discovery of the last uncharted place (and “posting it on the web”) to understand what such discovery takes away.

## Commercialization of Wilderness Resources and Experiences

The single greatest threat to the relationship that has evolved between the American people and wilderness is the recent trend toward charging fees for access to wild places on public land. More (in press) argues that imposing fees for access to public lands may not be consistent with the interests of the general public. Instead, commonly used willingness-to-pay pricing approaches to establish fee policies pushes public policy toward the preferences of the affluent in our society. For Desolation Wilderness visitors, responses to new and additional proposed fees were associated with user perceptions that these fees would limit access for some segments of society (Watson and others 1998). While existing restrictions on participation in wilderness recreation—such as trailhead quotas, limits on river float permits, etc.—have mostly been perceived as fair to all potential participants, the introduction of fees changes the function of wilderness in the lives of the American people, with the most profound effects expected on the relationships between wilderness and the American working class (More, in press).

Fees could also change the relationship between the American people and the agencies charged with managing wilderness. More (in press) is concerned that current strategies for implementing recreation fees on public lands are serving the interests of the agencies more than they are serving the

public. Winter and others (in press) provide context for the importance of this concern by presenting arguments that social trust may be the most significant predictor of anticipated impacts of new fees, general attitudes toward recreation fees, and amounts people are willing to pay for recreation access. While Winter and others (in press) report that the expected impact of fees is more likely to be in the form of reduced spontaneity than exclusion, there is no doubt that it will change the values associated with wilderness.

One of the most basic effects of charging fees for wilderness access will be the perception of commercialization, or treating the wilderness as a commodity, even by members of the public who agree in principle with charging user fees (Trainor and Norgaard, in press). And we expect substantial displacement effects due to fees (Schneider and Badruk, in press). The existence of fees at some areas, even if we develop a policy that charges for all public land access, will influence whether people participate in outdoor recreation and where they go. Future analyses of use and user characteristics, like this one, will not be directly comparable to previous summaries, mostly because of the effects of this one major change in public policy.

## Future Research on Wilderness Visitors

Future wilderness visitor research should focus more on the effects of urbanization, technology, and information and communication on the way people use and value wilderness. As a result of recent and anticipated changes in society and some specific things that influence how the American people will relate to wilderness in the future, there are several new issues that should commonly be addressed in visitor surveys. Here are some examples of information needs that should be considered; most have not been included in the past:

1. Did the visitor pay a fee? How many times during the past year did the visitor pay a fee to visit wilderness? How do fees affect the amount of time spent in wilderness, the number of wildernesses visited and the way visitors feel about wilderness?

2. How well do the visitors feel that the Forest Service (or National Park Service, Bureau of Land Management or Fish and Wildlife Service) represents their personal values related to wilderness?

3. Did the visitor bring a cellular phone on the trip? Did the visitor bring a global positioning system on the trip?

4. Did the visitor obtain information on the Internet about the wilderness, beyond how to get there? Does the visitor have Internet access at home? Has the visitor ever accessed the Internet page for a specific wilderness or a national forest to obtain wilderness information?

5. What is the annual household income (in categories defined to provide better documentation of high income group participation) of the visitor? How many people are in the household?

6. Did the visitor come to this wilderness as a member of a private party, a commercially guided party or an institutional group?

7. What conservation or outdoor recreation organizations currently list the visitor as a member?

8. Does the visitor come to the wilderness for functional, emotional or symbolic reasons?

9. What ecological values does the visitor ascribe to wilderness protection?

Wilderness research is not in decline as it was in the middle of the 1980s. In fact, it is occurring at a more rapid rate than it was at that time. There remains, however, a tendency for scientists to initiate wilderness studies at places where no previous research had occurred, instead of conducting followup studies at places with baseline information available. When wilderness visitor populations have been examined for changes in characteristics of users or their trips, very few changes were found. Currently there is a need for more trend studies, but not simply of descriptive characteristics of the people who visit wilderness and their trips. We need to better understand the values they associate with wilderness and the forces in society that are leading to changes in those values. In research studies of the future we need to ask questions which provide us with greater understanding of visitor attitudes toward technology, commercialization of wilderness experiences, public trust, socioeconomic influences and personal meanings ascribed to wilderness visits. This knowledge will provide us with greater insight into how the attitudes of the American people toward wilderness are changing and the meanings that wilderness protection are likely to provide.

## References

- Asher, Jerry E.; Harmon, David W. 1995. Invasive exotic plants are destroying the naturalness of U.S. wilderness areas. *International Journal of Wilderness*. 1(2): 35-37.
- Becker, Kurt; Christensen, Neal; Guyton, Linda. In press. A review of floating use and projections for the future - Middle Fork of the Salmon River, Idaho. In: Cole, David N.; McCool, Stephen F. 2000. *Proceedings: wilderness science in a time of change*. Proc. RMRS-P-000. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.
- Carlson, John E.; McLeod, Maurice E. 1978. A comparison of agrarian values in American society. *Rural Sociology*. 43: 134-151.
- Cole, David N.; Watson, Alan E.; Roggenbuck, Joseph W. 1995. Trends in wilderness visitors and visits: Boundary Waters Canoe Area, Shining Rock, and Desolation Wildernesses. Research Paper INT-RP-483. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 38 p.
- Gutzwiller, Kevin J.; Clements, Krista L.; Marcum, Heidi A.; Wilkins, Charles A.; Anderson, Stanley H. 1998. Vertical distributions of breeding-season birds: is human intrusion influential? *Wilson Bulletin*. 110(4): 497-503.
- Hendee, J. C.; Catton, W. R., Jr.; Marlow, L. D.; Brockman, C. F. 1968. Wilderness users in the Pacific Northwest - their characteristics, values, and management preferences. Research Paper PNW-61, U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station, Portland, OR. 92 p.
- Hendricks, William W. In press. Attitudes toward roles in a wilderness education program. *International Journal of Wilderness*. (August 1999)
- Hendricks, William W.; Watson, Alan E. 1999. Wilderness educators' evaluation of the impact monster program. Research Paper RMRS-RP-15, U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Ft. Collins, CO.
- Hunger, Don; Christensen, Neal, Becker, Kurt. In press. A river through wilderness: an analysis of commercial and private boat user experiences on the Salmon River. *International Journal of Wilderness*. (August 1999)

- Hurst, C. 1998. *Social inequality: forms, causes, and consequences* (3<sup>rd</sup> ed.). Needham Heights, MA: Allyn and Bacon. 438 p.
- Lucas, Robert C. 1985. Visitor characteristics, attitudes, and use patterns in the Bob Marshall Wilderness Complex, 1970-82. Research Paper INT-345. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 32 p.
- Manfredo, Michael J.; Fishbein, Martin; Haas, Glenn E.; Watson, Alan E. 1990. Attitudes toward prescribed fire policies: the public is widely divided in its support. *Journal of Forestry*. 88(7): 19-23.
- Matthews, Kathleen R.; Knapp, Roland A. 1999. A study of high mountain lake fish stocking effects in the U.S. Sierra Nevada Wilderness. *International Journal of Wilderness*. 5(1): 24-26.
- More, Thomas A. In press. A functionalist approach to user fees. *Journal of Leisure Research*. 3<sup>rd</sup> Quarter 1999.
- Naisbitt, John. 1982. *Megatrends: Ten new directions transforming our lives*. NY: Warner Books.
- Power, Thomas Michael. 1996. Wilderness economics must look through the windshield, not the rearview mirror. *International Journal of Wilderness*. 2(1): 5-9.
- Roggenbuck, Joseph W.; Timm, Wendy N.; Watson, Alan E. 1979. Visitor perception of the recreation carrying capacity of three wilderness areas in North Carolina. Unpublished report on file at: School of Forestry and Wildlife Resources, Virginia Polytechnic Institute and State University, Blacksburg, VA. 208 p.
- Roggenbuck, Joseph W.; Watson, Alan E.; Stankey, George H. 1982. Wilderness management in the southern Appalachians. *Southern Journal of Applied Forestry*. 6(3): 147-152.
- Roggenbuck, Joseph W.; Lucas Robert C. 1987. Wilderness use and user characteristics: A state-of-knowledge review. In: Lucas, Robert C., comp. *Proceedings—national wilderness research conference: issues, state-of-knowledge, future directions*; 1985 July 23-26; Fort Collins, CO. General Technical Report INT-220, USDA Forest Service, Intermountain Research Station, Ogden, UT.
- Russell, Keith; Hendee, John C.; Cooke, Steve. 1998. Social and economic benefits of a U.S. wilderness experience program for youth-at-risk in the Federal Job Corps. *International Journal of Wilderness*. 4(3):32-38.
- Schneider, Ingrid E.; Budruk, Megha. In press. Displacement as a response to the federal recreation fee program. *Journal of Park and Recreation Administration*. 3<sup>rd</sup> Quarter 1999.
- Stankey, George Henry. 1971. The perception of wilderness recreation carrying capacity: a geographic study in natural resources management. East Lansing, MI: Michigan State University. 351. Unpublished dissertation.
- Stankey, George H. 1973. Visitor perception of wilderness recreation carrying capacity. Res. Pap. INT-142. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. 61 p.
- Stankey, George H. 1980. A comparison of carrying capacity perceptions among visitors to two wildernesses. Res. Pap. INT-242. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. 34 p.
- Stokes, Jerry. 1999. Wilderness management priorities in a changing political environment. *International Journal of Wilderness*. 5(1): 4-8.
- Swain, Ralph. 1996. Leave No Trace (LNT)—outdoor skills and ethics program. *International Journal of Wilderness*. 2(3):24-26.
- Trainor, Sarah Fleisher; Norgaard, Richard B. In press. Recreation fees in the context of wilderness values. *Journal of Park and Recreation Administration*. 3<sup>rd</sup> Quarter 1999.
- Vogt, Christine A.; Williams, Daniel R. In press. Support for wilderness recreation fees: The influence of fee purpose and day versus overnight use. *Journal of Park and Recreation Administration*. 3<sup>rd</sup> Quarter 1999.
- Watson, Alan E.; Hendee, John C.; Zaglauer, Hans P. 1996. Human values and codes of behavior: Changes in Oregon's Eagle Cap Wilderness visitors and their attitudes. *Natural Areas Journal*. 16(2): 89-93.
- Watson, Alan; Puttkammer, Annette; Chistensen, Neal. 1998. Final report: Desolation Wilderness visitor response to fees. Unpublished report to the Eldorado National Forest, the Lake Tahoe Basin Management Unit and the Southwest Region of the U.S. Forest Service. On file at the Aldo Leopold Wilderness Research Institute. 379 p.
- Watson, Alan; Landres, Peter. 1999. Changing wilderness values. In: Cordell, H. Ken, Principal Investigator. *Outdoor recreation in American life: a national assessment of demand and supply trends*. Champaign, IL: Sagamore Publishing: 384-388.
- Winter, Patricia L.; Palucki, Laura J.; Burkhardt, Rachel L. In press. Anticipated responses to a fee program: the key is trust. *Journal of Leisure Research*. 3<sup>rd</sup> Quarter 1999.
- Wirth, Louis. 1972. Urbanism as a way of life. In: Birnbaum, Max; Magey, John. *Social change in urban America*. NY: Harper and Row.