

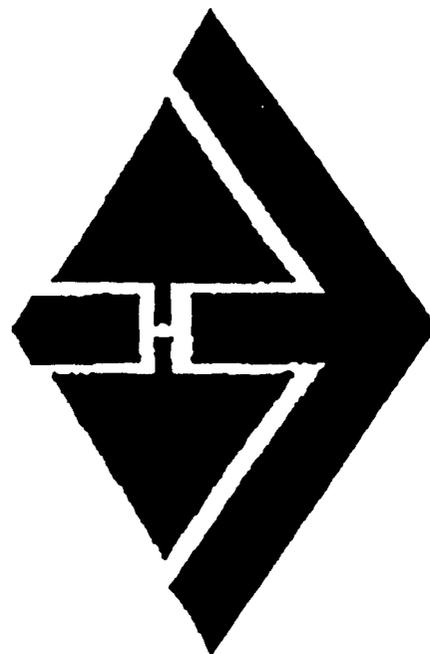
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TRENDS IN WILDERNESS RECREATION USE CHARACTERISTICS

PROCEEDINGS OF THE  
FOURTH INTERNATIONAL  
OUTDOOR RECREATION & TOURISM TRENDS SYMPOSIUM  
AND THE  
1995 NATIONAL RECREATION  
RESOURCES PLANNING CONFERENCE

MAY 14-17, 1995  
ST. PAUL, MINNESOTA

COMPILED BY: JERRILYN LAVARRE THOMPSON  
DAVID W. LIME  
BILL GARTNER  
WAYNE M. SAMES



PUBLISHED BY THE UNIVERSITY OF MINNESOTA

# Trends in Wilderness Recreation Use Characteristics<sup>1</sup>

Alan E. Watson, David N. Cole, and Joseph W. Roggenbuck<sup>2</sup>

**Abstract.**—Recent studies at the Leopold Institute have included analyses of use and user trends at the Boundary Waters Canoe Area Wilderness, Desolation Wilderness, Shining Rock Wilderness, the Bob Marshall Wilderness Complex, Great Smoky Mountains National Park, and Eagle Cap Wilderness. Some sociodemographics, like age, education, and the proportion of female visitors, have changed substantially without shifts in kinds of trips or preferences for conditions encountered. At the Eagle Cap Wilderness, visitors also showed a deeper commitment to wilderness and more purist attitudes toward appropriate behaviors in wilderness.

## INTRODUCTION

Most of the past reports of trends of wilderness use and user characteristics were drawn from comparisons of findings from about 30 studies of wilderness visitors at different places and at different times (Roggenbuck and Watson 1988). The only study before 1990 with comparable data across time at a single location was by Lucas (1985), which included comparisons for Bob Marshall Wilderness Complex (BMWC) users in 1970 and 1982. This limitation of available trends studies raised question regarding the generalizability of findings to trends in the larger wilderness system.

To gain more accurate knowledge about trends in wilderness user characteristics, the Leopold Institute conducted or funded studies in the early 1990s intended to measure aspects of wilderness visits and visitors at places where there were comparable data from earlier studies. A detailed report of user trends at three wildernesses (Cole, Watson, and Roggenbuck, in press) is currently near distribution. That research paper explores trends at the Boundary Waters Canoe Area Wilderness (BWCAW) in Minnesota, where Stankey's (1973) 1969 study was repeated in 1991; at the Desolation Wilderness in California, where two studies in 1972 (Stankey 1980; Lucas 1980) were partially repeated in 1990; and at the Shining Rock Wilderness in North Carolina, where Roggenbuck, Watson, and Stankey's (1982) 1978 study was repeated in 1990. In addition to these recent trends studies, we now also have the benefit of Burde and Curran's (1986) studies in the Great Smoky Mountain National Park comparing users in 1973 to 1983, the work by Lucas (1985) in the BMWC in Montana, and a study by Watson, Hendee, and Zaglauer (in preparation) comparing the values and

codes of behaviors of visitors to the Eagle Cap Wilderness in Oregon, in 1965 and 1993.

## TRENDS IN VISITOR CHARACTERISTICS

Across the studies at BWCAW, Desolation, Shining Rock, Great Smoky Mountain National Park, and the BMWC, there were a total of 63 variables offering some level of comparability. The variables represent important characteristics of wilderness visitor use: sociodemographic descriptions, visit characteristics, visitor perceptions of resource and use conditions and evaluations of these conditions, and visitor preferences for conditions and management.

Table 1 was developed in an effort to summarize the strength and consistency of trends in these 63 variables across the five wildernesses. Strongly consistent trends were those which demonstrated statistically significant change in the same direction in at least three areas, with no opposing results. Weakly consistent trends were those with changes in the same direction in all areas, but not significant in at least three of them. Variables that did not change had no significant changes in any direction. Strongly inconsistent trends included those characteristics that changed significantly in opposing directions at different areas. Weakly inconsistent changes had significant changes in one direction at some places and nonsignificant change in the opposing direction at other places. This paper will focus only on the strongly consistent trends and the variables which were not found to change at all. See Cole et al. (in press) for discussion of methods, specific questions asked, and statistical comparisons.

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<sup>1</sup>Watson, A. E., D. N. Cole, and J. W. Roggenbuck. 1995. Trends in wilderness recreation use characteristics. In *Proceedings of the Fourth International Outdoor Recreation and Tourism Trends Symposium and the 1995 National Recreation Resource Planning Conference*, May 14-17, 1995, St. Paul, MN, comp. J. L. Thompson, D. W. Lime, B. Gartner, and W. M. Sames. St. Paul, MN: University of Minnesota, College of Natural Resources and Minnesota Extension Service.

<sup>2</sup>Aldo Leopold Wilderness Research Institute, USDA Forest Service, Box 8089, Missoula, MT 59807; and (Roggenbuck) College of Forestry and Wildlife Resources, 324 Cheatham Hall, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061-0324.

**Table 1.** Strength and consistency of trends across five wildernesses for 63 variables. Cole, Watson, and Roggenbuck (in press).

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| <p><b>Strongly consistent trends:</b> Older visitors; higher educational attainment; more females; more visitors who have been to other wildernesses; better ratings for litter conditions.</p>  |
| <p><b>Weakly consistent trends:</b> Increased income; fewer first-time wilderness visitors; visitors were older when they first visited wilderness; more solo visitors; smaller groups; fewer organized groups; shorter overnight stays; more day-use; less fishing; more mountain climbing; use more concentrated in summer; higher total encounter rates; less support for low-standard trails and leaving a few trees blown down across the trail; more support for high-standard trails, bridges over creeks, bridges over rivers, natural lightning fires, packing unburnable garbage out of the wilderness, prohibiting wood fires where dead wood is scarce, and limiting the size of visitor groups.</p> |
| <p><b>Variables that did not change:</b> Population of current residence; days spent in wilderness in the past year; proportion of visitors who hike, photograph, and swim; off-trail travel; number of campsite encounters; ability to find preferred level of campsite solitude; ratings of "wear and tear"; support for outhouses, cement fireplaces, interpretive signs, a natural fishery, and restricting use if area is overused.</p>   |
| <p><b>Strongly inconsistent changes:</b> Proportion of visitors who are students and members of conservation organizations; first-time visitors to the specific wilderness; number of previous visits to the specific wilderness; proportion of visitors who hunt and study nature; number of encounters with large groups; relationship between satisfaction estimates and hypothetical encounter rates.</p>  |
| <p><b>Weakly inconsistent changes:</b> Number of wilderness visits in the past year; typical frequency of wilderness visits; proportion of groups with family members; proportion of hiking groups; distance traveled; number of different campsites used; concentration of use on weekends; concentration of use at certain trailheads; overall trip quality ratings; visitor opinions about the number of people they encountered; preferred campsite encounter rates; visitor support for trailless areas, fire rings, assigning campsites, and administrative use of chain saws.</p>   |

**Strongly Consistent Changes**

Only five variables were found to demonstrate strong and consistent changes across the five areas available for this analysis. They included age of visitors, gender, education, proportion of visitors with previous experience at other wildernesses, and evaluations of the extent of litter problems in the wilderness.

**Age.** At four of the five areas, the average age was significantly higher in the repeat studies. For example, at the BWCAW, the average age of similar samples increased from 25 years to 37 years between 1969 and 1991.

**Gender.** There was a significant shift in the proportion of females included in the repeat surveys at three of the five areas. At Shining Rock Wilderness, for example, the overall proportion of the sample who were female went from 25 percent in 1978 to 31 percent in 1990.

**Education.** The education level of wilderness visitors has always been found to be higher than the general population

(Note: visitor surveys of this type are generally limited to those visitors at least 16 years of age due to the complexity of questions usually asked; therefore, comparisons are generally made with members of the public who are 16 and over, as well). While education levels of the general US population have risen, education levels of wilderness visitors have changed at an even higher rate. For example, at the BWCAW the proportion of the sample indicating they had at least some graduate level education (study beyond the BS/BA level of college) rose from 15 percent in 1969 to 41 percent in 1991. Most BWCAW visitors come from Minnesota, where census data show that for the general state adult population the percentage obtaining some graduate education increased from 4 percent to 6 percent between 1970 and 1990. For BWCAW visitors, the median level of education increased from 13.1 years in 1969 to 16.4 years in 1991.

**Previous wilderness experience.** While some aspects of previous experience changed inconsistently across the areas studied, the proportion who reported previous visits to other wildernesses increased significantly. At the BWCAW, with visitors coming from a part of the country with relatively few wildernesses, the proportion of the sample visiting other wildernesses increased from 45 to 58 percent. At the Desolation Wilderness, 94 percent of the overnight visitors reported visiting other wildernesses previously (up from 61 percent in 1972).

**Evaluation of conditions.** In all three areas where visitors were asked about their perceptions of the seriousness of various visitor use impacts, concern about the problem of litter has declined. While litter is the only impact problem showing consistent and significant change for the better, a comparison of raw score evaluations of the various impacts evaluated shows that litter is still the most serious problem to visitors, with visitors tending to evaluate it as a small to moderate problem in most areas.

**Variables That Did Not Change**

**Current residence.** A much larger group of user characteristics did not change (14 variables). For example, Shining Rock visitors have tended to reside in moderate-sized communities across time, with the median from the 1978 and 1990 samples around 30,000 population. In North Carolina, where Shining Rock is located, the median population level of communities for residents of that state was 7,500 in 1980. Nationally, it was 70,000 in 1980.

**Number of days spent in wilderness in past year.**

While differences may exist between day-users and overnight campers (for example day-users at the Desolation Wilderness averaged a little less than five days in the past year and campers averaged around eleven), the total amount of time spent in any wilderness in a year has remained constant across all visitors.

**Proportion of visitors who hike, photograph, or swim.** These three variables are the only three of the activities studied which did not seem to change in any direction. These activities remain popular at most areas.

**Typical distance traveled off-trail.** While overnight visitors to the Desolation Wilderness, for example, reported increased distance traveled during a visit from about 15 to 17 miles in the 1972 to 1990 studies, the distance visitors believed they traveled off established trails showed no overall significant difference. Reports of off-trail travel varied greatly between parties, but the average across the two study years averaged an estimated 2 to 2.5 miles.

**Number of groups encountered around campsites.** While we know that use densities vary considerably across different wildernesses and within different zones of the same wilderness, overall reports of campsite encounters did not change for the samples across time.

**Campsite solitude.** The proportion who were able to find the level of solitude they desired at their campsites remained unchanged. As an example, at the BWCAW, about one-third of the visitor sample saw more people than they desired camped nearby.

**Evaluations of wear and tear.** On a scale from "very poor" to "very good," visitor perceptions of conditions had not changed significantly. However, some data suggest that these findings might be an artifact of the level of previous experience at the site or day v. overnight use (Watson and Cronn 1994). At the Desolation Wilderness, for example, 35 percent of day visitors surveyed in 1972 and in 1990 evaluated wear-and-tear conditions to be very good. Data from this study, however, suggest that more experienced day-users have significantly poorer evaluations of resource conditions at the Desolation Wilderness. The same situation existed for overnight visitors to the BWCAW.

**Support for outhouses, cement fireplaces, interpretive signs, natural fisheries, and restricting number of visitors.** Support for these controversial, though sometimes used, management practices remained constant. Sometimes there are differences evident between types of wilderness users, such as day-users demonstrating a fairly neutral attitude toward outhouses, while campers feel slightly negative about them; day-users are slightly supportive of interpretive signs in wilderness, and campers are slightly negative.

## **WILDERNESS VALUES AND CODES OF BEHAVIOR**

A study at the Eagle Cap Wilderness in Oregon in 1993 was partially intended to repeat a study of visitors in 1965 by Hendee, Catton, Marlow, and Brockman (1968). These studies sought to assess the strength of wilderness values held by visitors and the behaviors they considered appropriate in wilderness. At this time only one study provides this type of comparison, raising questions again about the generalizability of these findings. From comparisons of responses from the two samples, Watson, Hendee, and Zaglauer (in preparation) concluded that 1993 Eagle Cap visitors showed a deeper commitment to wilderness and a more purist attitude toward appropriate behaviors in wilderness. These visitors also represented an older segment of society than in the earlier sample, and they were more highly educated.

Nearly two-thirds of the 1965 Eagle Cap visitors supported the rights of people to camp wherever they please in wilderness. Less than one-fourth of the 1993 sample supported this behavior. Also, the 1993 sample demonstrated a comparable decline in beliefs about the appropriateness of cutting wood for a campfire or tree boughs for a bed. Attitudes toward the necessity of a campfire, burying noncombustible trash, bringing radios into the wilderness, and taking shortcuts all showed similar shifts in perceptions of appropriateness. Visitors in 1993 were much more concerned about their impacts on wilderness.

Views also changed on some controversial wilderness values from 1965 to 1993. Support for allowing lightning-caused fires to run their course increased from about 3 to 44 percent. Similarly, over one-third (44 percent) of the 1993 sample supported allowing heavy infestations of native insects to run their course in wilderness, compared to only 5 percent support in 1965. The apparent value placed on risk and being self-sufficient is reflected in the decrease in support for placing highest priority on the rescue of injured or lost visitors. Some items with less dramatic changes, but still demonstrating significant shifts in a more purist direction, include reduced support for allowing pack animals, livestock grazing, hunting, and building corrals for livestock in wilderness. Support for charging fees to visit wilderness decreased.

## **CONCLUSIONS**

From the study of trends in user characteristics, it appears that some sociodemographics have changed substantially, without shifts in kinds of trips or preferences for conditions encountered. This suggests that possibly we have mostly the same visitors at these wildernesses, but they are older, more experienced, and more educated. Alternatively, different

people may indeed be visiting wilderness, but they take similar types of wilderness trips and show comparable attitudes about what they encounter there. If this is the case, managers may need to worry less about the sociodemographic shifts predicted in the future. Further changes in age distribution, educational achievement, gender distribution, and past wilderness experience would not be expected to lead to changes in how visitors enjoy wilderness. However, there could be a relationship between the changing sociodemographic variables and the values wilderness visitors have and how they view appropriateness of some wilderness behaviors, based on knowledge gained from the Eagle Cap study.

Of course, some sociodemographic or personal factors may be influential in future use characteristics that we have simply not measured in the past. For instance, we have very little historic information on ethnicity trends in wilderness visitors. As this character of our society changes in most parts of the country, as it is predicted to do, unanticipated shifts in use characteristics and values could occur.

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