# WILDERNESS RECREATION USE: THE CURRENT SITUATION

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*Abstract - The total amount of recreational use of the National Wilderness Preservation System is currently at about 14.5 million visitor days per annum. Trends indicate a stable or declining overall use; use on a per acre basis is declining. The common stereotype of the wilderness user as young, wealthy, urban, leisured, and a nonresident of the State or region is largely incorrect. The one characteristic that does sharply distinguish wilderness users is their very high education level. Use patterns in wilderness also differ from commonly he/d perceptions. Size of individual user groups is small, and getting smaller. Most visits are day-use only. Distribution of use is highly skewed toward weekends and summers, but the trend is toward increased dispersal of use across time and space. Higher impact and consumptive activities like hunting and horse use are declining as a percentage of total use.*

## INTRODUCTION

An assessment of recreational visitation to the National Wilderness Preservation System (NWPS) requires an understanding of three basic components of wilderness use: the total amount of use, characteristics of that use (e.g., when it occurs, where it occurs, and size of user groups), and characteristics of the users (e.g., age, gender, and income). Knowledge of these user variables, and trends of their change, are also required if legislators, policy makers, planners and managers are to intervene in the system to increase the flow of wilderness benefits to the American people. Finally, use information is a necessary, but not sufficient, condition for making trade-offs and allocation decisions about the proper mix of wilderness and other human values to be produced on public lands.

This paper provides a summary of the current use and user situation in the NWPS, indicates trends in use characteristics, and concludes with an assessment of the policy, planning, and management implications of the data. Throughout the paper, we lean heavily upon a state-of-knowledge review of the topic from the National Wilderness Research Conference at Fort Collins, Colorado in 1985. Readers are referred to that paper for more detailed information (Roggenbuck and Lucas 1987). In this paper, we touch only briefly upon changes in trends of wilderness recreation use, and leave the thorough and important discussion of those surprising findings to Lucas and Stankey (1988), who follow us at this benchmark conference.

## TOTAL AMOUNT OF WILDERNESS RECREATION USE

In 1986, between 14 and 15 million visitor days of recreation use occurred on the 89.9 million acre NWPS (table 1). Most of this use (11.2 million visitor days) occurred on national forest wilderness, the only agency that separates use estimates of wilderness from other dispersed recreational use. The National Park Service in 1986 reported 0.88 million backcountry overnight stays for parks with wilderness or wilderness potential. This is probably equivalent to about 1.8 million 12-hour recreation visitor-days. Day-use data for national park backcountry are generally unavailable, but day use is high in virtually all wilderness-often accounting for more than half of all wilderness visits (Roggenbuck and Lucas 1987). For example, unpublished use data for Yellowstone National Park in 1975 showed about 100,000 backcountry day-use visits and 65,000 overnight stays. Assuming about 150,000 1 2-hour visitor-days for the

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Table l.--National Wilderness Preservation System (NWPS) acreage and use (1986)

| Agency | Areas | Acreage | Visitor days |
|---|---|---|---|
| | Millions | Millions | |
| Forest Service | 329 | 32.5 | 11.2 |
| National Park Service | 38 | 37.8 | about 2.7 |
| Fish and Wildlife Service | 66 | 19.3 | .28 (1978) |
| BLM | 24 | . 3 7 | .05 (1978) |
| Total | 457 | 89.97 | between 14 and 15 |

65,000 overnight stays, and around 60,000 12-hour visitor-days for the 100,000 day users, this means that total visitor days of day-use of the Yellowstone backcountry was just under half of the total overnight visitor days (Hendee and others, in press). If the day-use to overnight use ratio of Yellowstone backcountry is typical, then all national park wilderness and backcountry use amounted to about 2.7 million visitor days of use in 1986.

There are almost no use figures for Fish and Wildlife Service and Bureau of Land Management Wilderness, but use there is very light. Based on a 1978 survey of agency managers, Washburne and Cole (1983) estimated recreation use on FWS wilderness at 0.28 million visitor-days, and BLM primitive area use at 0.05 million.

Trends in backcountry and wilderness use indicated rapid growth in the 1950's and 1960's, often exceeding 10 percent annual increases. Growth slowed in the late 1960's and 1970's to 3 to 5 percent average annual increases. Indeed, by 1976, overnight stays in national park wilderness and backcountry had peaked, and 1986 use was only 62 percent of that highest use year. Use of natlonal forest wilderness has fluctuated a great deal in the 1980's, some years increasing and some years decreasing. However, the use levels of national forest wilderness have only remained at this level because of the addition of new areas to the NWPS. Use levels of the core areas of the NWPS established by the 1964 Act peaked in 1979, and current use is 87 percent of that level (Lucas and Stankey 1988). Overall, because national forest use dominates the Wilderness System, use for the System as a whole peaked at about 16 million visitors days in 1985, and was down to below 15 million in 1986.

## WILDERNESS USER CHARACTERISTICS

Within this and the use characteristics section to follow, two kinds of data will be presented. The first is a description of the wilderness user and use characteristics as they were found at the time of the study cited. Visitors to more than 30 wilderness areas located throughout the country have been surveyed (Roggenbuck and Lucas 1967) so we have considerable confidence in making statements about the NWPS. However, we caution that some regions, e.g., the deep South and much of the Southwest, have been little studied, and virtually all studies were completed between the mid-1960's and the mid-1970's. Our review has less sensitivity to any changes in use patterns and user characteristics in the last decade. Also, since the summarized studies were completed by many authors working at different times, often with differing objectives and using different data classifications, the precision of the data varies a great deal across studies. For this reason, we report only replicated and general patterns.

Secondly, where we have data that suggest changes in use patterns or user characteristics across time, we will acknowledge those trends. However, we have less confidence in the generalizability of these data. Thus far, only one study has compared use and users in a given area across two points in time. That was for the Bob Marshall Wilderness Complex (a complex that includes the Bob Marshall, Great Bear, and Scapegoat Wildernesses), where Lucas (1980, 1965) studied use and users in 1970 and 1982. Other indications of trends come from comparisons of different areas surveyed in the mid-l 960's and the late 1970's. Changes found might be due to area differences rather than trend shifts across time, but several studies have shown that wilderness use and users are strikingly similar across areas and regions (Boteler 1981; Lucas 1980; Roggenbuck 1980; Timm 1980).

## The Wilderness User Stereotype

A common stereotype of wilderness users portrays them as young, wealthy, athletic, urban, travelling long distances to visit the wilderness, and leisured enough to have large blocks of free time necessary for foot travel into wilderness (Hendee and others, in press; Norgaard and others 1979; Stankey 1971). This stereotype is so widely shared that it has formed the basis for opposition to additional wilderness allocations in Congressional testimony (Hendee and others, in press), and fostered management regulations to limit length of stay in wilderness as one means to reduce congestion in wilderness and allocate use more equitably among potential users. In this paper, we will summarize the scientifically drawn surveys of wilderness user characteristics, and will attempt-once and for all-to put to rest the user stereotype and the erroneous policy and management decisions that have flowed from it.

### Age

Wilderness users do tend to be young, younger than the general population. Roggenbuck's and Lucas's (1987) review of about 30 wilderness user studies showed that between 25 percent and 40 percent of wilderness visitors to most areas were between 16 and 25 years of age. The percentage of the general U.S. population in this age category was just under 20 at the time of the various studies. Wilderness visitors in the 26 to 35-year-old category represented from about 20 to 40 percent of ail use, but only about 15 percent of the U.S. population falls into this age bracket. However, middle-aged people are also commonly found in wilderness, often in larger percentages than exist in the general population. For example, 36 to 45-year-olds make up about 10 to 20 percent of all wilderness users and about 11 percent in the general population. About 10 percent of the U.S. population is between 46 to 55 years of age; the percentages of wilderness users in this category ranges from about 10 to 15 percent. Only in the post 55-year-old age bracket are wilderness users substantially underrepresented. About 20 percent of the general population and between 5 and 10 percent of wilderness users are past 55. Wilderness-use studies indicate that between 0 and 25 percent of all wilderness visitors are below 16 years of age; for most areas this percentage is between 5 and 10 percent. These numbers suggest that children too are underrepresented, since about 25 to 30 percent of the general population is in this age bracket. However, wilderness user studies likely underestimate use by children, because individuals below 16 are often excluded from wilderness sampling frames.

### Gender

Roggenbuck and Lucas (1987) reported that between 70 and 85 percent of the visitors to the wilderness areas surveyed are male. Males are, therefore, overrepresented in wilderness, but women represent a significant minority-often 25 percent. Also, because some studies only collected data about the party leader and since the party leader is most often a male, women are underrepresented in some study samples. Finally, there is some evidence to suggest that the percentage of women in wilderness is increasing. For example, Lucas (1985) reports that the proportion of female visitors to the Bob Marshall wilderness grew from 20 percent in 1970 to 30 percent in 1982.

### Place of Residence

Visitors to wilderness areas are generally from the state in which the area is located. Such in-state users usually number from 66 to 75 percent, but for lesser known areas and for all Forest Service wildernesses studied in California, this percentage exceeded 64 percent (Roggenbuck and Lucas 1987). In addition, Lucas (1965) has reported that wilderness visitors often come from the State's region closest to the wilderness area For example, 60 percent of all visitors to the Bob Marshall Wilderness Complex were from Montana, and 54 percent of ail its visitors were from northwestern Montana- the region where the areas are located.

Wilderness areas in the East that have been studied tend to have more out-of-state visitors. For example, about half of ail visitors surveyed in the Boundary Waters Canoe Area and the Allagash Wilderness Waterway in Maine were from out-of-state. This likely reflects the smaller size of eastern States, the relative scarcity of wilderness resources there, and high demand.

Finally, a few areas with national and international reputations, like the Great Smoky Mountains and Yosemite National Parks and their backcountries, have high nonresident use-sometimes amounting to more than 65 percent. These areas, however, are the exception and not the rule.

### Urban/Rural Residence

Most visitors to wilderness areas are from urban areas, as are most Americans. Indeed, the percentage of urban users of wilderness is a remarkably accurate representation of the States or regions from which the visitors come. For example, Lucas (1985) found that 50 percent of the Montana visitors to the Bob

Marshall Complex were from urban areas; 51 percent of the Montana population is urban. About 90 percent of the visitors to the Desolation Wilderness in California, a highly urbanized State, were urban residents (Lucas 1980). In southern California, with many large cities in the region, over 90 percent of the wilderness visitors come from cities with over a million people (Hendee and others 1978). Finally, Lucas (1985) reported that 74 percent of the out-of-state visitors to the Bob Marshall Wilderness Complex were urbanites, a proportion equal to that of all the US. population.

Hendee and others (in press) have recently noted one difference in the urban-rural nature of wilderness users versus the general population. Wilderness visitors are much more likely to have grown up in rural areas or small communities. In his 1970 study of visitors to the Bob Marshall Wilderness Complex, Lucas (1980) found that about 21 percent more visitors had grown up in rural surroundings than currently live there-about twice the size of the national shift from rural to urban residents for that time period. By 1982, the trend toward movement to urban areas had slowed considerably, but 7 percent more wilderness visitors to the Bob Marshall Complex had previously lived in rural areas than currently lived there. This shift was again about twice as large as that for the general population.

**Education**

The feature that most distinguishes wilderness users from the general population is their high education. In almost all areas studied, at least 40 percent of wilderness visitors have completed college (Roggenbuck and Lucas 1987). In many areas, the number exceeded 50 percent. This far exceeds the schooling of the U.S. general population, where 11 and 18 percent completed college or attended graduate school in 1970 and 1980, respectively. In most areas, the proportion of wilderness visitors going to school beyond college was greater than the proportion of the U.S. population that goes beyond high school (Lucas 1980). Also, the education levels of wilderness users repotted in studies are artificially low- as compared to the general population- because wilderness surveys often include people down to ages 14 or 16. They have not yet completed their education. In contrast, general population surveys only include people 25 years of age and older.

**Occupation**

In almost all of the 20 or so wilderness areas where occupation has been studied, the most common visitor was a professional or technical worker (Roggenbuck and Lucas 1987). Their numbers usually represented 30 to 40 percent of all wilderness visitors, or about four times the national average. In some areas in the East, like the Appalachian Trail and the Boundary Waters Canoe Area, percentages exceeded 60. Students were the second most frequent visitors, numbering from 20 to 33 percent for most areas. Students thus are also overrepresented in wilderness, because only about 4 percent of the U.S. population was students in 1980. Homemakers and clerical, sales and service workers (many of whom are female) were the most underrepresented in wilderness.

Interestingly, in the only study where use and users of the same area have been compared across time, Lucas (1985) noted a drop in the percentage of students and homemakers by about half between 1970 and 1982. In 1970, students made up about 17 percent and homemakers equalled about 9 percent of all users of the Bob Marshall Wilderness Complex. These numbers dropped to 11 percent and 4 percent, respectively, in 1982. Numbers of people in these categories in the general population did drop slightly during this time period, but not enough to explain the change among wilderness visitors. The drop in student participation likely reflects an attitude change about the desirability of wilderness recreation. The reduction in participation by homemakers is more difficult to explain, given the general increase in wilderness use by women. Perhaps there is a growing tendency for women who were homemakers and who visited wilderness to seek employment outside the home-and thus move to a different occupation category.

**income**

Wilderness visitors have above-average incomes, but so do most outdoor recreationists (Roggenbuck and Lucas 1987). Their moderately high incomes likely reflect the high educational and/or professional occupational status of most wilderness users. Variation in income across areas is, however, very high. For example in the early 1970's, 16 percent of the users of the Cabinet Mountain Wilderness (Montana), 21 percent of the Cranberry backcountry (West Virginia) users, 40 percent of the users of four California wildernesses, and 46 percent of the Desolation Wilderness (California) visitors had family incomes of $15,000 or more. About 23 percent of the general U.S. population had family incomes this high at the

time of the wilderness studies. These figures suggest that average income of users of some areas are at or even below the national average, but income for other areas far exceed it. These differences largely reflect the variation in the general population's income in the States in which the areas are located. Thus, the incomes of the Cranberry area users don't seem high compared to the national average, but they still exceed the State average for West Virginia.

The relatively high incomes of wilderness visitors have led some to suggest that wilderness is only used by the wealthy. Data on use and users do not, however, support this notion. For most areas studied in 1970, from one-third to one-half of all users had family Incomes below $10,000 at a time when the median US. income was about $9,000 (Lucas 1980). In addition, we have already demonstrated that most visitors to wilderness come from the region within the State where the area is located, so travel costs are typically low. Finally, typical expenditures for wilderness visits are low-usually about $10 per day in the early 1970's (Lucas 1980; Stankey 1971).

**Club Membership**

While some have suggested that wilderness visitors represent a relatively small cadre of people committed to wilderness protection, data on user membership in conservation organizations refute this notion, For almost all areas that have been studied, conservation club membership numbered only from 20 percent to 35 percent (Roggenbuck and Lucas 1987). And among these club memberships, fewer than haif-usually only about a third-belonged to organizations like the Sierra Club or the Wilderness Society that were oriented toward wilderness preservation. Most of the remaining club members belonged to rod and gun clubs or some other outdoor activity group (Lucas 1980). Exceptions to these findings were a few areas in the Appalachians and in New England, where conservation organization membership was somewhat higher-as high as 57 percent in the Joyce Kilmer-Slickrock Wilderness of North Carolina.

**Previous Wilderness Experience**

The previous use history of 'most wilderness visitors can be characterized by a few words: high experience, frequent visits, and short stays. For most western areas studied, 70 percent to 90 percent of all visitors had made at least one previous trip to a wilderness area (Roggenbuck and Lucas 1987). This percentage was somewhat less in the East, where wilderness areas are fewer and typically more recently established. Variation in the number of times the study area had been previously visited was high. For many areas, the number of people who had no previous visits to the area where they were surveyed was 30 or 40 percent, but this percentage reached 60 percent for some areas. At the same time, many areas also had between 20 percent and 30 percent of their visitors who had made six or more visits. Visitors averaged three or four wilderness visits a year, and spent a total of 6 to 10 days in wilderness (Lucas 1980).

**Typo of Group**

The family is the most common type of group within wilderness, often comprising about 40 percent of all groups (Roggenbuck and Lucas 1987). Wilderness user trend studies have shown that the predominance of the family is growing, and is spreading more evenly across seasons of the year and travel methods. Lucas (1985) reported 1970 horse users and fall visitors of the Bob Marshall Wilderness Complex more frequently to be groups of friends. By 1982, family groups were as common in the fall as in the summer, and the proportion of family groups and groups of friends were similar for horse users and hikers. Also, almost half of the groups studied have contained children. Finally, when groups containing family members and friends are added to those composed solely of family members, family groups almost always exceed 50 percent.

Groups of friends are the second most common type of wilderness user group, frequently numbering from 30 to 40 percent. For a few areas like the Great Bear in Montana, with its large hunter contingency, or the Fitzpatrick in Wyoming, with its high use by outdoor education groups, friendship groups exceed 50 percent.

Use of the wilderness by organized groups or clubs and by lone individuals is low everywhere. Solo hikers seldom equal 10 percent of all user groups, and for the organized groups, like Boy Scout or Girl Scout groups, the number is usually below 5 percent.

## WILDERNESS USE PATTERNS

### Group size

Wilderness visitor groups are typically small, and getting smaller. The average size for National Forests is four to five people; and for National Park lands, the number is two to three individuals. For virtually all areas, two to four person groups account for 50 percent to 75 percent of all parties (Roggenbuck

and Lucas 1987). Two-person groups are the most common. As mentioned earlier, lone individuals are rare in wilderness-usually numbering fewer than 10 percent of all visitor groups. National Park wilderness does, however, tend to have somewhat more solo hikers than do Forest Service wildernesses. Finally, groups larger than 10 people are completely absent in some areas, and account for about 5 or 8 percent in several others. Only rarely do such large groups exceed 10 percent, and then only in such areas as the San Gorgonio in California with its nearby summer youth camps.

In the one study, which compared use patterns of the same areas across time, party size has dropped dramatically (Lucas 1985). In 1970, groups in the Great Bear and Scapegoat Wildernesses averaged 5.2 and 5.6 individuals, respectively. By 1982, these numbers had declined to 3.8 and 4.4. During this time period many wilderness managers had implemented group size limitations to 10 persons, but this does not seem to account for much of the reductions in average party size. Few parties had previously exceeded 10.

## Length of Stay

A surprising use characteristic, and one which sharply refutes the wilderness stereotype, is the short length of stay of most wilderness visits. For the majority of areas, the most common visit is for one day or less (Roggenbuck and Lucas 1987). Even for large western wildernesses, the one-day visit is often the most common. For example, Lucas (1980) found that more than 60 percent of all visits to the Cabinet Mountains and Mission Mountains Wildernesses and the Spanish Peaks Primitive Area of Montana were for one day. Even in the very large and nationally known Selway-Bitterroot Wilderness of Idaho and Montana, 48 percent of all visits were for a day or less. Trips of a week or more are almost nonexistent; half of all the western areas studied had no sampled trip of this length. Average length of stay for most areas across all regions of the country is 2 to 3 days.

Exceptions to the typically short lengths of stay are those areas with disproportionately high horse, canoe or hunting use, or high use by outdoor education schools. For example, the Bob Marshall and Great Bear wildernesses are well known for horse use and hunting attractions, and their average length of stay is 4 to 5 days. Outdoor education schools likely explain the longer stays in the Popo Agie, Bridger, and Fitzpatrick Wildernesses in Wyoming.

Length of stay is also getting shorter in wilderness. For example, Lucas (1985) found visits to the Bob Marshall Wilderness Complex averaged 5.7 days in 1970; by 1982, trip length had decreased to 4.7 days. This decline is probably due to the presence of proportionately more hikers, fewer horse users, and fewer hunters in wilderness in recent years. Far fewer horse users and hunters than hikers are one-day users.

## Method of Travel

The vast majority of wilderness visitors are hikers, except for the Boundary Waters Canoe Area and a very few horse-oriented wildernesses in the West. In the East, hiking is the only method of travel for many areas. The Boundary Waters Canoe Area exception has 75 percent paddle canoeists, 21 percent motor boaters or motor canoeists, and 4 percent hikers. Even in the Rocky Mountain West, horse parties usually comprise fewer than 20 percent of all groups. In those few areas, like the Bob Marshall, the Great Bear and perhaps the Teton, where horse use is at or above 50 percent, hiking use is increasing relative to horse use. For example, the Outdoor Recreation Resources Review Commission (ORRRC) study (1962) estimated that 90 percent of all Bob Marshall visitors were horse users in 1959. By 1970, this number was 59 percent (Lucas 1980) and in 1982, there was an even split between the horse users and hikers (Lucas 1985). Indeed, the shift away from horse use and toward hiking use was the biggest change that Lucas (1985) found In his comparison of 1970 and 1982 use and users of the Bob Marshall, Great Bear, and Scapegoat Wildernesses. In 1970, horse users were the clear majority in this three-area complex. By 1982, the situation had reversed, and hikers had become the most common users (Roggenbuck and Lucas 1987).

## Time of Use

Most wilderness use occurs during the summer months, generally accounting for 60 percent or more of all use (Roggenbuck and Lucas 1987). Even for areas with high amounts of fall hunting, like the Great Bear or the Bob Marshall, the majority of all use occurs during the summer. For alpine areas, and many National Forest Wildernesses of the West are alpine, this use characteristic suggests high concentrations of use during July and August, because snow makes many trails impassible until late June.

Within this general trend of high summer use, certain areas have short peaks of intense use in other seasons. The first week or two of hunting season

causes sharp climbs in use in a few western wildernesses, and the fall color season makes October a high use time in New England and the Southern Appalachians. Spring Is the most attractive use period in some areas of the South, Southeast, and the lower elevations of wilderness in the Southwest and Southern California. Finally, winter use of wilderness is little studied, but it appears to be light. However, it is much more common than a decade ago, and it seems to be growing.

Like most outdoor recreation, wilderness use is concentrated on weekends. For example, Lucas (1980) reported that two-thirds to three-fourths of all visitors to the nine western areas he studied in 1970 entered on a Friday, Saturday or Sunday. Weekend concentration levels in the accessible San Gorgonio and San Jacinto Wildernesses in California were also severe in the early 1970's (Hendee and others 1978). Fears that even higher concentrations of use would be found In the wilderness areas in the East have not, however, materialized. In the Great Gulf Wilderness, three National Forest wildernesses in the Southeast, and the Great Smoky National Park in the summer, weekday use accounted for 40 to 68 percent of all use (Roggenbuck and Lucas 1987). This diminished weekend peaking may simply reflect the later dates of the Eastern studies. Lucas (1985) has reported that in 1982, weekend use accounted for 58 percent of all use of the Bob Marshall Wilderness Complex, down from about 70 percent for the three areas in 1970. This shift away from weekend peaking of use may be a response to educational efforts by management agencies to obtain greater dispersal of use across time and area.

## Distribution of Use Among Areas

Wilderness recreation use is extremely variable across areas. In 1984, 11 National Forest wildernesses (the Boundary Waters Canoe Area (MN), John Muir (CA), Frank Church-River of No Return (ID), Absaroka-Beartooth (MT), Indian Peaks (CO), Alpine Lakes (WA), Weminuche (CO), Selway-Bitterroot (ID-MT), Desolation (CA), Bridger (WY), and Emigrant (CA)) received 41 percent of the total recreational use of the 165 Forest Service areas. One area, the Boundary Waters Canoe Area Wilderness, reported 1,252,706 visitor days-or more than 12 percent of total national forest wilderness use. Heavily used areas tend to be located near population centers, often in the Southern Appalachians, New England, Minnesota, and California.

Limited National Park Service backcountry use data also reflect uneven distributions of use. In 1984, Yosemite, Kings Canyon, Sequoia and the Grand Canyon all reported close to or over 100,000 backcountry overnight stays. At the same time, several National Park Service wilderness-like areas, including Badlands, BigThicket, Craters of the Moon, Death Valley, Katmai, and Lava Beds, reported fewer than 1,000 overnight stays. Some wilderness areas reported no use (Roggenbuck and Lucas 1987).

The estimates of visitor-days of use per acre also demonstrate extremely variable use. For example, while the average visitor-days of use per acre for National Forest wilderness was 0.31 in 1984, use of North Carolina wildernesses averaged 5.24: Indiana, 2.86; Tennessee, 2.29; Georgia, 2.07; Minnesota, 1.16; and New Hampshire, 1.07. Proximity to population centers alone was not an adequate predictor of use, because many areas in the populated East, like Hell Hole Bay in South Carolina and Bradwell Bay in Florida, with their swamps and frequently flooded forests, have 0.05 visitor-days per acre or less. Roggenbuck and Lucas (1987) have suggested that area size, character of the, resource, presence of attractions, managing agency, time of establishment as wilderness, extent of area access, season and year, trail system configuration, type of user, and tradition all influence amount of use.

## Intra-Wilderness Use Distribution

Typically, use within a wilderness, as reflected in use of trailheads, trail segments, and camping areas, is also distributed very unevenly. In his study of nine wilderness areas in the West, Lucas (1980) generally found that about one-fourth of all the access points accounted for 80 percent or more of all use. In all areas, except the Selway-Bitterroot Wilderness, just three trailheads accounted for at least one-half of all use. In Yosemite National Park backcountry, 4 percent of the trailheads received 68 percent of all use. Use of trailheads within wilderness areas in the East seems more evenly distributed.

Some recent data suggest that use is becoming more dispersed. For example, Lucas (1964) reported that 52 percent of all paddling canoeists in the Boundary Waters Canoe Area originated from one access point. In 1974, seven of the BWCA's 70 entry points accounted for 70 percent of all use. In 1976 the trend toward greater use dispersal was reinforced by the adoption of quotas by entry points. Thus, when use was reported for 88 entry points in 1984, the top 10 accounted for 51 percent of all use (Roggenbuck and Lucas 1987). In 1970 in the Bob Marshall, Great Bear, and Scapegoat wildernesses, between 7 percent and 25 percent of the entry points to these three areas accounted for 80 percent of all use. In 1982, this amount of use entered at 33 to 45 percent of the areas' trailheads (Lucas 1985).

Use of the various trail segments within an area is also highly variable, because of trailhead location relative to population centers, ease of road access to trailheads, location of attractions within the area, extent of trail development, trail configuration within the area, and distance from the wilderness periphery. For example, even though the Spanish Peaks Primitive Area had one of the most evenly distributed trail use patterns among the areas that Lucas (1980) studied, about 50 percent of all the visitor-miles of travel occurred on 10 percent of lts trail miles. Thirty percent of the trail miles had 70 percent of all use. In the Boundary Waters Canoe Area, paddling canoeists are 40 times more likely to see other parties on some lakes than on others (Lime 1975).

Camping also tends to occur at attraction points in the backcountry, typically at such places as lakes, streams, or viewpoints. Concentration, however, seems somewhat less pronounced than at trailheads or along trail segments, perhaps because of the greater need for solitude in campsites. Still, in the Desolation Wilderness of California, 16 percent of the campsites accounted for over half of all overnight use: the least used half had only 18 percent of all use (Hendee and others 1978). Lucas (1985) reported that many campsites in the Bob Marshall Wilderness Complex received fewer than 30 nights of use per year, while several had 120 nights of use (or almost constant occupation during the visitor-use season). Finally, winter camping use-while much lighter than in the summer-is apparently even more concentrated. Hughes (1985) reported greater concentration of use at shelters in the Smokies backcountry in winter than in summer; and among shelter use, there was greater use concentration at fewer shelters.

## Activities

Fishing (where possible), photography, nature study, and swimming (particularly in the Southeast and California) follow hiking as the most common activities in wilderness. Hunting is prevalent in some areas, but is always less than what might be expected. Even in such hunting hot spots as the Bob Marshall and the Great Bear wildernesses, just over 30 percent and 40 percent, respectively, of the sampled visitors hunted. Even in the fall hunting season, most visitors are not hunters.

In a study of activity trends in the Bob Marshall Wilderness Complex, hiking, fishing, and photography remained important across 1970 and 1982 users (Lucas 1985). Of these, only fishing declined, and that only slightly. Hunting was the only activity with a substantial change, and it dropped sharply in percent of total visitation.

## SUMMARY

The amount of recreational use of the NWPS appears to have stabilized or is declining. In the 1980's, use of Forest Service wilderness has increased some years and dropped in others. The overall result has been a generally stable visitation trend. However, on a per acre basis, use is declining; For example, in 1975 there were 15.4 million acres of Forest Service wilderness with 7.5 million visitor days of use, for an average of 0.49 visitor days per acre. By 1986, Forest Service wilderness had increased to over 32 million acres and 11.2 million visitor days, for an average of 0.35 visitor days per acre. This represents a sharp reversal in use trends, for in recent decades wilderness use had been increasing rapidly.

The common stereotype of the wilderness users as young, wealthy, urban, leisured, and a nonresident of the State or region is largely incorrect. Wilderness visitors are young, but so too are most outdoor recreationists. Also, people in their thirties, forties and early fifties are found in wilderness in equal or greater proportions than exist in the general population. Women are a sizeable minority in wilderness, and their numbers seem to be growing. Most wilderness users live in urban areas, but so do most outdoor recreationists and so do most US. citizens. Most wilderness visitors come from the region within the State closest to the wilderness. Thus, travel time and cost to the wilderness visitor are not high. The family group and the group made up of family and friends are the most common kind of wilderness user. Also, the use of the wilderness as a family recreational resource seems to be increasing. Income of families of wilderness visitors are higher than average for the States within which they live, but only moderately so and typically not any further above State income averages than for other outdoor recreationists. Most wilderness visitors are in professional and technical occupations: students are the second most numerous. However, a recent trend study of wilderness users suggests that the proportion of students is dropping significantly. Wilderness users do not seem to be an elite group of zealous resource preservationists or outdoor adventurists. Typically, fewer than 30 percent of an area's visitors belong to conservation organizations, and most of the memberships are with rod and gun clubs and not the traditional wilderness advocacy groups. The one characteristic that does sharply distinguish wilderness users from the general population and other outdoor recreationists is their very high education levels. The nation's higher education system with its many courses and outing clubs promoting wilderness appreciation seems to have fueled the

demand for wilderness use (Hendee and Roggenbuck 1985). Whether this relationship is one of direct causality Is, however, unknown, For example, some other variable or variables may have caused both the interest in wilderness coursework and the increased visitation to wilderness.

Use patterns in wilderness also differ from commonly held perceptions, and trends suggest continued change away from the stereotype. Size of individual user groups in wilderness is small, and getting smaller. However, the lone individual is rare. Privacy and intimacy in small, closely knit groups are the norm, not complete solitude away from all others. Length of stay is surprisingly short, with most visits being day-use only. Trends suggest that the average length of stay is getting shorter. Distribution of use across time and across areas is highly skewed, with most use occurring on weekends during the summer on a small percentage of wilderness areas. However, there is considerable evidence suggesting that use is beginning to disperse. Weekday use is becoming more common; winter use is increasing, and there is less concentration of use at attractions which can become impact and conflict zones within wilderness. Finally, the higher impact and consumptive recreational activities in wilderness are declining as a proportion of total use. For example, limited data suggest that horse use is declining, fishing is stable to slightly declining, and hunting as a percentage of total use is dropping sharply.

## IMPLICATIONS

The above review of wilderness use and user characteristics suggests that managers, planners, and policy-makers should view wilderness in a new light. We believe that six changes in the meaning of wilderness and destroyed myths about wilderness use must be attended to.

First, the need for additional wilderness allocation **on the basis of recreational use demand** is dropping. Use has stabilized or dropped in recent years. Population demographics suggest that use may decline even further. For example, the proportion of the U.S. population over 55 years of age and the proportion of blacks and Hispanics in the population are increasing. These population groups are underrepresented in wilderness. This does not, however, mean that we have enough classified wilderness everywhere. There are many other legitimate reasons for wilderness protection besides recreational use, such as protection of representative examples of natural ecosystems and protection of endangered species. Also, the greatest recreational use of wilderness is the vicarious user (Driver and others 1987), and we haven't even addressed that important user here. 'The number of vicarious users- those people who dream of wilderness, spend money to view wilderness literature and films, and spend time and money supporting the wilderness allocation process- is probably increasing in the general population. Policymakers need to give greater consideration to these off-site and nonrecreational demands for wilderness.

Second, the benefits of wilderness recreation use accrue primarily to individuals in the region immediately surrounding the wilderness, People do not travel far to wilderness. Therefore, it is important to have a NWPS with individual units distributed widely throughout the country. One could argue that wilderness, like iron ore deposits, is where it exists. However, others have argued that wilderness has more to do with wrinkles on the brow than wrinkles on the landscape (Nash 1982). The history of wilderness allocation in the country favors the latter position-as evidenced by the so-called Eastern Wilderness Act (PL 93-622) the Endangered Wilderness Act (PL 95237), and the Forest Service RARE II study criteria. Data on wilderness use and users confirm this philosophy, and the National Park Service, the Bureau of Land Management, and the Fish and Wildlife Service should follow the lead of the Forest Service in bringing the wilderness to the people to the largest extent possible.

Third, the use of wilderness and the role of wilderness in the American cultural context have matured. Wilderness recreation and protection have become legitimized. Wilderness is no longer a fad. Thus, we no longer see the sharp increases in recreational use of wilderness, but we see increasing use and support for wilderness by the 'common man; i.e., the middle and upper middle class American family. This suggests broad-based political support, and managers have the opportunity to view, and must view, the business of protecting wilderness and providing visitor services over the long haul.

Fourth, because wilderness use has stabilized or is declining and because user behavior appears to be becoming more sensitive to wilderness values, the task of wilderness management should be easier in the future than in the past. This has two important implications for management. Managers can now confidently and enthusiastically begin to focus on wilderness quality. Now, more than in the past, managers have an opportunity to know their clientele, define high quality wilderness experiences, and shape

use and users to protect the wilderness resource and its human benefits. Next, managers will have the opportunity to focus on the delivery of benefits to people-to improve quality of life and thereby develop supportive constituencies. This contrasts sharply with the past when many managers-rightly or wrongly-felt compelled to focus attention on crowding, conflicts, impacts, and use and user restrictions, and thereby often incurred the displeasure rather than the pleasure of constituents (Burch 1984).

Fifth, some of the surprising wilderness use patterns suggest that we don't have a very good understanding of the benefits of wilderness recreation. As the focus of wilderness management shifts more and more toward quality rather than quantity, and toward individual human benefits rather than broad societal outputs, this lack of knowledge will increasingly become a sore spot. For example, many wilderness philosophers and advocates suggest that people need considerable time in wilderness before they can begin to attain such spiritual and mental benefits as time-environment fusion, feelings of oneness with the earth, and feelings of stability and relaxation through connection with ancient rhythms and our ancestral past (Olson 1972). Yet, most of our wilderness visits are for one day or less. Is the NWPS now providing the optimum mix of wilderness benefits? Should planners and managers intervene to shape the attainment of benefits, as in the past they intervened to reduce impacts?

Sixth and last, education-because it is the key indicator of the wilderness user- appears to play the pivotal role in wilderness allocation, planning, and management. While education is very important in fueling wilderness demand (Hendee and Roggenbuck 1985) we don't yet fully understand that process. We need to find these answers. We do know that wilderness users are highly educated; and as such, will have influence beyond their numbers in the political process, will actively be involved in wilderness planning processes, and will expect high quality management. The high educational levels offer a unique opportunity for wilderness suppliers and recipients to work closeiy together for mutual benefit. The manager-generated information-education programs to reduce impacts or disperse use in wilderness represent one success story that almost certainly reflects the high education levels of the wilderness user. Other opportunities building on high education levels also exist. For example, wilderness users are likely to seek and process more, and more complex, information when they choose recreation sites to visit. Managers can influence user decisions to the mutual benefit of both parties through the provision of appropriate information. For instance, they might be able to shift use from heavily-used areas to under-used wilderness. Finally, as wilderness managers shift their focus from responding to the negative impacts of great quantities of visitors to the provision of individual human benefits, they may want to advertise their high quality areas and service. After all, building supportive constituencies who receive personal benefits from resource management and use will increasingly become a prerequisite to agency well-being. When that time comes, communications with existing and potential wilderness users will become increasingly important, and knowledge of education levels will be an important variable in identifying, shaping, and responding to the needs and opinions of this important clientele group.

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