

WILDERNESS USER CAMPSITE

SELECTION

By

JAMES MARSHALL GLECKLER  
"

Bachelor of Arts

University of Tulsa

Tulsa, Oklahoma

1974

Submitted to the Faculty of the Graduate College  
of the Oklahoma State University  
in partial fulfillment of the requirements  
for the Degree of  
MASTER OF SCIENCE  
May, 1977

Thesis  
1977  
G554w  
cop. 2



WILDERNESS USER CAMPSITE

SELECTION

Thesis Approved:

*J. E. Langway*  
\_\_\_\_\_  
Thesis Adviser

*R. L. Latta*  
\_\_\_\_\_

*James H. Shaw*  
\_\_\_\_\_

*Norman W. Mendenhall*  
\_\_\_\_\_  
Dean of Graduate College

977052

## PREFACE

Modern management of forest resources involves more than correct application of silviculture and timber management skills. There are numerous opportunities for the forester to apply sociological and psychological skills. In managing forests for recreational use the major emphasis is sociological. I consider myself very fortunate to be able to apply my background in sociology in this research project.

My interest in wilderness recreation as a participant led me to conclude that this would be the most stimulating recreation research for me to pursue. Initially it was rather difficult to get a handle on recreational research in this area but following some leads I quickly found the Forest Experiment Station files and journal articles by Forest Service researchers. Cross referencing in papers and articles led to compilation of a sizable bibliography of writings on all phases of management in American wilderness over the past forty years. Ideas for this project were germinated one day as I was reading a preliminary report on trail and campsite deterioration research. The author hypothesized that most camping takes place at an ecotone. This thought intrigued me and I started considering ways to find out where people camp in the wilderness and the logic behind their decisions. When I contacted John Hendee and Bob Lucas, they said that my ideas sounded reasonable and so I proceeded to formulate plans to carry out the research.

During the conduct of the research and the completion of my course

work I have been assisted in many ways by the faculty and staff of the Forestry Department and by the members of my graduate committee.

Dr. J. Lamar Teate, my major advisor and now Director, School of Forestry, Louisiana Tech University, has been extremely helpful and understanding during my two years at Oklahoma State. Other committee members whose assistance and encouragement I would like to acknowledge are: Dr. Ed Langwig, Department Head and co-chairman; Dr. G. H. Weaver, now of Mississippi State University; and Dr. Jim Shaw, School of Biological Sciences.

I would also like to acknowledge the special assistance and encouragement given to me by two Forest Service Personnel. Dr. Robert Lucas, leader of the Forest Service Wilderness Research Center, took the time to carefully review my research plans and offered invaluable suggestions. He also volunteered to review this report for which I am indeed grateful. Dick Cerise, recreation resource assistant at the Aspen Ranger District, gave freely of his time during the most busy season of the year to provide me with photos, maps, and expert information on wilderness camping.

I would also like to thank my family: My mother; my sister, Janet, who undertook the tedious and laborious job of typing this thesis; and my wife and children for the determination in seeing me through the undertakings of the last five years.

TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION. . . . .	1
Research Problem and Objectives . . . . .	1
Previous Work in the Field . . . . .	5
II. RESEARCHING CAMPSITE SELECTION. . . . .	7
Study Area . . . . .	7
Methods. . . . .	7
III. FINDINGS. . . . .	12
Features Commonly Encountered at	
Established Camping Areas. . . . .	12
Snowmass Ponds Camping Area. . . . .	14
Snowmass Lake Camping Area . . . . .	18
Willow Lake Camping Area . . . . .	22
Campsite Selection Criteria -	
Questionnaire Summary. . . . .	25
Groupings of Wilderness Visitors and	
Knowledge of Forest Service Restrictions . . . . .	25
IV. SUMMARY AND CONCLUSIONS . . . . .	29
A SELECTED BIBLIOGRAPHY. . . . .	35
APPENDIX . . . . .	37

LIST OF TABLES

Table	Page
I. Features at Established Camping Areas. . . . .	13
II. Questionnaire Summary - Campsite Criteria. . . . .	26
III. Wilderness Visitor Groupings and Knowledge of Restrictions. . . . .	28

LIST OF FIGURES

Figure	Page
1. The Study Area. . . . .	15
2. Snowmass Ponds Camping Area . . . . .	17
3. Snowmass Lake Camping Area. . . . .	20
4. Willow Lake Camping Area. . . . .	24



## CHAPTER I

### INTRODUCTION

#### Research Problem and Objectives

Outdoor recreation in primitive settings has increased dramatically in recent years, and nowhere has the demand for such recreation increased as rapidly as on areas of the National Wilderness Preservation System. On these areas officially designated under the Wilderness Act (PL 88-577) recreation has become the major use in recent decades. Records of National Forest Wilderness show that in 1946 there were approximately 33,000 wilderness visitor-days annually, which was five percent of the total National Forest campground use level (Lucas, 1971). By 1971 the visitor-day figure had risen to 5 million, a 15 fold increase, and wilderness visits comprised 17 percent of all National Forest overnight camping.

During the same period the total resource base on which wilderness recreation takes place has remained fairly constant. Officially designated areas on National Forests have increased five percent in the last 30 years, while roadless, "de facto" wilderness areas have decreased at least as much in the same period (Lucas, 1971).

Comprehensive studies of trends in outdoor recreation have shown that wilderness recreation use will continue to increase. The Outdoor Recreation Resources Review Commission in their report on wilderness recreation predicts an 8 to 10 fold increase in use between the years

1959 and 2000 (ORRRC, 1962). This increase will occur on a diminishing total resource base as road building and other development activities invade previously undisturbed areas.

Areas of the National Wilderness Preservation System receive proportionally a much greater share of recreation visitors than does roadless, "de facto" wilderness. Popularity gained over half a century of recreational use has caused many officially designated areas to receive a great deal of attention. Good publicity during the study and bill-passing stages of formally designating a new component of the system also creates much attention. Signs on roads and maps help acquaint prospective visitors with officially designated wilderness. All these reasons and more account for the heavy use on areas of the Wilderness Preservation System.

Many components of the Wilderness Preservation System offer far less solitude and much more visitor contact during the summer season than befits a "wilderness area". These areas are usually very large and could probably support the current demands for recreational use without any serious ill effects, were the recreation traffic more evenly distributed across the land, but this is far from the case. Recreation use is concentrated along popular trail systems and around lakes and other attractions (Stankey, Lucas, and Lime, 1974). This concentrated use has caused serious problems in decreasing the recreational, and to some extent, the ecological value of the wilderness resource.

As Lime (1970) has pointed out, the quality of both the resource and the experience for the visitor is central to the management of wilderness areas. A basic element of wilderness management, therefore, is the recreational carrying capacity of wildlands--how much use an area

can support without destroying or detracting from the wilderness environment and the wilderness experience for the visitor.

Because of the greatly expanding demand for wilderness recreation and concentrated use in most wilderness areas, this recreational carrying capacity has been exceeded at numerous locations in wilderness areas. This has resulted in a greatly diminished experience for many wilderness users.

Camping involves many activities which can cause lasting visual evidence of a former campsite. Tents or other sleeping equipment crushing vegetation, heavy trafficking of the campsite, fire rings, trash disposal, and wood gathering are a few of the activities which readily alter the site. Because of this concentration of activity and the fact that visitors congregate at popular attractions to camp, areas where wilderness visitors stay overnight sustain the greatest and most lasting impact. In order to try and maximize visitor satisfaction by providing him with near pristine, uncrowded conditions our attention should first focus on the campsite.

Various management approaches are being considered to help alleviate the growing problem. Among them are educating the visitor, concentrating camping on so called "sacrifice areas" (currently the practice in much of the National Park Service backcountry), and simply limiting the total number of users. One such approach having special significance in the case of this study deals with attempting to disperse the concentrated use of popular trail systems and camping areas to increase the acceptable carrying capacity of wilderness to meet the growing need. With respect to camping areas, this technique involves identification and designation of new camping areas, either in locations

near old established camping areas or along newly opened trail systems. Basic research into the subject of campsite relocation has just started (Lucas, 1974), but the technique promises additional opportunities in sound management practices for hard-pressed wilderness managers, and it is far more popular in most circles than either sacrificing areas or putting a quota on the number of people entering the wilderness.

Another method for reducing crowding and overuse that has received considerable attention lately suggests designation and development of roadless areas for recreation (Stankey, Lucas, and Lime, 1974). These "backcountry areas" would provide visitors with low density, primitive outdoor recreation and reserve officially designated wilderness for management aimed primarily at the maintenance of undisturbed natural processes. Much of the recreation pressure on wilderness stemming from persons simply seeking a chance to hike and camp in a scenic, natural area away from civilization would be relieved by successfully implementing such a "backcountry recreation" program on the National Forests and other public lands.

A basic study of where visitors locate a camp and why they say they chose the place they did would provide critical information for the wilderness manager seeking to disperse concentrated use to less frequented areas, and for the "backcountry" planner looking for suitable and attractive primitive camping areas.

The objectives of this study are: (1) the identification of physical features common to popular camping areas of historical origin; (2) identification and description of preferred camping locations within selected camping areas; and (3) identification of the criteria visitors use in choosing a campsite. The study was also designed to identify the

wilderness campers interviewed according to several relevant groupings.

There are several terms which are used in this report to describe specific concepts related to campsite selection and its geography.

These terms are defined as follows:

CAMPING AREA - An area within a wilderness, usually named on maps and other material, which is identified as a good place to camp and used as a destination for overnight visitors. Camping Areas usually range from fifty to three hundred acres in size.

CAMPING LOCATION - That portion of a camping area where numerous campsites are clustered in a zone of similar physical features; e.g. Location one is in a forest, and location two is in the open along the lake shore. Camping Locations usually range from five to thirty acres.

CAMPSITE - The spot where a visitor sets up camp.

#### Previous Work in the Field

Probably the first substantial work done in the field of wilderness recreation was the ORRRC Report 3, Wilderness and Recreation--A Report on Resources, Values and Problems (ORRRC, 1962). Since that time the U.S. Forest Service has generated a relatively small but continuing flow of wilderness recreation studies from several of its Experiment Stations. Much of the early work was done at the Boundary Waters Canoe Area (Lucas, 1963, and Lucas, 1964), but because of the unique character of visitor use there, transfer of principles learned in the BWCA to the mountain West where most of the wilderness components are located is impossible. Studies designed to measure wilderness use were conducted in the West primarily by the Pacific Northwest and Intermountain Experiment Stations (Burch and Wenger, 1967). More recently the Pacific

Northwest Station has compared wilderness visitors with car campers and has studied the social characteristics and management preferences of wilderness visitors (Hendee, Catton, Marlow, and Brockman, 1968). In 1967 the Forest Service organized a new research unit under the Inter-mountain Experiment Station. The Wilderness Research Center in Missoula, Montana under the leadership of Robert Lucas and George Stankey has conducted or cooperated in research in several areas of management including wildfire's role in wilderness, campsite and trail impacts from recreation use, and the social carrying capacity of wilderness (Lucas, 1974).

Research into campsite choice in undeveloped areas has been very limited. One study (Frissell and Duncan, 1967) was conducted in the Quetico-Superior region and dealt briefly with wilderness user campsite preferences in the large Boundary Waters Canoe Area. In a recent report of a project conducted in the Spanish Peaks Wilderness of Montana, Brown and Schomacker (1974) dealt extensively with the location of old fire-rings and their relation to wilderness landscape features. Research in the field of backcountry camping seems to be limited to these two studies. The Selected Bibliography contains additional references to works dealing with developed site camper preferences, wilderness recreation research and current wilderness management trends.

## CHAPTER II

### RESEARCHING CAMPSITE SELECTION

#### Study Area

The area selected for study is the Maroon Bells - Snowmass Wilderness. This Wilderness Area is located in west-central Colorado on the White River National Forest. The Wilderness is approximately 31,000 hectares (77,000 acres) in size. Elevations range from slightly over 2,500 meters (8,000 feet) along the north boundary to 4,684 meters (14,156 feet) at the summit of South Maroon Bell. The scenic beauty of this range of mountains and its relatively good accessibility to the more densely populated areas to the east insures heavy recreation use levels throughout the summer season. This recreation traffic is primarily foot travel.

#### Methods

Experienced management personnel at the U.S. Forest Service Office in Aspen were asked to identify all popular camping areas within the wilderness. These areas were then analyzed with topographic maps and aerial photographs to determine their basic physical features. On the basis of knowledge gained in this preliminary survey of popular camping areas, three areas in the wilderness were chosen for study. The first two areas were selected on the basis of easy accessibility and heavy use. The other area was chosen because of its remoteness and low

level of use.

These camping areas were carefully mapped using topographic maps, aerial photos and an on-site survey. Designation of the water interface, the trail area and habitat types were placed on the area map and high-angle photographs of the area were taken for later reference.

At each camping area, my camp was situated out of sight of the other visitors so as not to influence their campsite choice. All campers in each area were surveyed for five evenings. In the evening, the visitors camping in the area were plotted as to their location on the area map. Multiple-night visitors to the area were only tabulated or interviewed once. Each plot represented one campsite selection process and one set of views. The plots were coded to correspond with the interviews.

After a party had been plotted and information as to mode of travel (foot or horseback), size of group, and camping mode (blanket, bag, or tent) noted, the party was approached and a short, direct interview was conducted. The interviews were conducted as quickly and pleasantly as possible because solitude is considered to be one of the most sought-after elements of wilderness recreation use.

In approaching the party a leader or spokesman was sought. The interview was conducted with a formal or informal leader (scoutmaster, father, etc.) since the questions were necessarily designed for a single respondent and it was likely that this spokesman was the most influential person in the choice of the camping location. The introduction and course of questioning were conducted in the following manner:

"Hi, my name is Jim Gleckler. I'm a forestry student from Oklahoma State University and I'm conducting some important research among



wilderness visitors which I hope will help managers in National Parks and National Forests provide better wilderness recreation opportunities. I wonder if just one of you would mind answering a few questions about your wilderness camping experience."

Assuming the response was affirmative.....

"Good. First of all, I would like to ask if you had any specific campsite features in mind as you entered this area (area name) and started looking for a place to set up."

\_\_\_\_\_ Yes \_\_\_\_\_ No

(if yes -) "What features did you have in mind?" (List them)

"What was it about this spot that caused you to choose it as a campsite?"

(List responses)

"Do you plan to fish while you are camped in this area?"

\_\_\_\_\_ Yes \_\_\_\_\_ No

"Backpacking, as I'm sure you know, is something different than regular camping. It involves walking (or riding) some distance with a pack and camping outdoors using equipment which you've packed in. And, of course, it doesn't necessarily have to take place in a wilderness or even in backcountry."

"Could you tell me how many seasons or years that you've been backpacking?"

Number \_\_\_\_\_

"Have you attended any courses such as those offered at the Outdoor Leadership School or Outward Bound?"

\_\_\_\_\_ Yes \_\_\_\_\_ No

(if yes -) "Which ones?" \_\_\_\_\_

"Have you read any books or do you regularly read any magazines dealing with backpacking or wilderness recreation?"

\_\_\_\_\_ Yes \_\_\_\_\_ No

"Do you belong to any conservation organizations?"

\_\_\_\_\_ Yes \_\_\_\_\_ No

"Are you aware of any Forest Service administered restrictions on where you may camp within this wilderness?"

\_\_\_\_\_ Yes \_\_\_\_\_ No

(if yes -) "Which ones?" \_\_\_\_\_

"I also have a brief questionnaire that I would appreciate your filling out." (Appendix)

In this manner 20 interviews were conducted with wilderness visitors in the Maroon Bells - Snowmass Wilderness during the week of August 4 - 10, 1975, and 36 interviews were conducted during the period of August 13 - 26, 1976. Every party approached during both periods consented to an interview. The 100 percent success at 56 interview attempts is an indication of the friendly, open attitude of the visitors to the Maroon Bells - Snowmass Wilderness.

When the field work was completed, the data were summarized. The features noted while analyzing popular camping areas were also summarized.

Maps of the three selected study camping areas were refined using the photographs taken earlier. The campsites plotted on these maps were scrutinized and placed into clusters termed "camping locations" on the basis of proximity and uniformity of habitat. Each of these clusters was circled on the map and given a camping location number.

The interview sheets were segregated on the basis of these plotted

campsite clusters and the reasoning behind campsite selection in each of the clusters was analyzed. A detailed description of the location of each cluster in terms of levelness, nearness to water, proximity of trails, vegetative cover, etc., was made. Interview sheets were reviewed for each camping area to establish the user groups visiting the area during the study period.

After the individual area summaries were completed, data from the questionnaire dealing with campsite selection criteria were summarized. And finally, overall wilderness visitor groups were summarized and information as to knowledge of U.S. Forest Service camping restrictions was taken from the interview sheets.

## CHAPTER III

### FINDINGS

#### Features Commonly Encountered at Established Camping Areas

The wilderness management personnel of the White River National Forest, Aspen Ranger District, cooperated in identifying popular camping areas in the Maroon Bells - Snowmass Wilderness. Camping areas which developed in popularity after many decades of use and re-use are considered valuable examples of the types of locations which readily lend themselves to enjoyable wilderness camping experiences. All of the popular areas pointed out by the experienced U.S. Forest Service personnel contained a water resource (spring, stream, pond or lake) and all but four of the 14 popular areas (71 percent) contained naturally impounded water (Table I). This is not to say that every water impoundment in the wilderness is a likely camping area. Many lakes in the Maroon Bells - Snowmass are inaccessible, at very high altitude and situated in very rough topography.

While studying aerial photos and topographic maps of each camping area, all were found to have level areas (less than 5 percent slope) adjacent to the water resource. Ten of the 14 popular areas (71 percent) had mature forests. All four features, (running water, impounded water, level areas, and mature trees) were found at six of the 14 wilderness camping areas. Ratings of more specific features such as

TABLE I  
 FEATURES AT ESTABLISHED CAMPING AREAS

Camping Area	Running Water	Impounded Water	Level Areas	Mature Forest
Avalanche Lake	X	X	X	X
Buckskin-Minnehaha Gulch	X		X	X
Capital Lake	X	X	X	
Conundrum Hot Springs	X		X	X
Crater Lake	X	X	X	X
East Maroon Creek	X		X	X
Geneva Lake	X	X	X	X
Lost Remuda Lake	X	X	X	
Pierre Lakes	X	X	X	
Silver Dollar Pond	X	X	X	X
Snowmass Lake	X	X	X	X
Snowmass Ponds	X	X	X	X
West Maroon Creek	X		X	X
Willow Lake	X	X	X	
Percentages	100%	71%	100%	71%

scenic merit, dry ground, or area camping capacity, were not possible by using the map and photo analysis described above, but such a technique does yield sufficient information on these basic features to allow preliminary identification of areas containing these features common to popular, established camping areas.

#### Snowmass Ponds Camping Area

Snowmass Ponds, a popular camping area in the central part of the Wilderness, was chosen as a study camping area on the basis of accessibility and popularity. It is located along the heavily traveled corridor connecting Snowmass Lake with the developed wilderness portal campgrounds of Maroon Lake and Snowmass Creek (Figure 1). Its location 9.5 kilometers (6 miles) and 550 meters above the roadhead at Snowmass Creek Campground, makes it an ideal first evening objective for most wilderness visitors intending a further penetration of the back-country. It is also a short excursion destination for overnight hikers and fishermen, but because of the intense attraction of the Snowmass Lake area it must be considered more of a convenient stopover point rather than a major attraction. The area is stocked with trout and fishing is said to be first-rate. Snowmass Ponds are a series of naturally impounded marshes and lakes along Snowmass Creek with a general north-south orientation. They are at the bottom of a deep cut stream valley having 80 percent slopes covered with engelmann spruce and some sub-alpine fir. The main trail parallels the east side of the ponds and crosses to the west side at the large central log jam. Visitors usually hike in from the north and out to the south toward Snowmass Lake. Level areas around the ponds free of willow thickets and

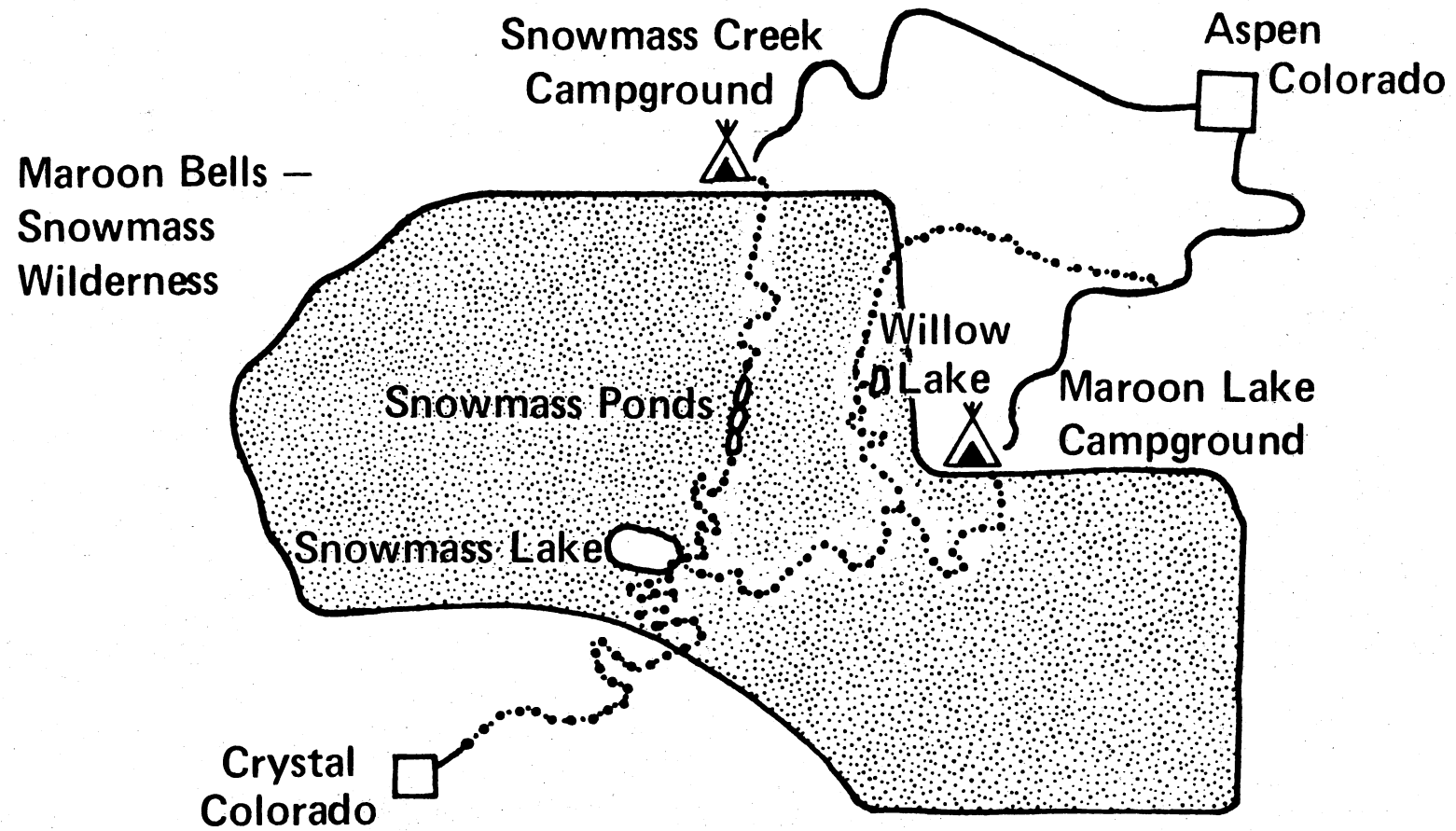


Figure 1. The Study Area

rock are restricted. Level benches occur along many of the slopes nearer the lakes or the stream.

Campers were clustered in three locations at the Snowmass Ponds Area (Figure 2). Location one contained six campsites during the study periods (38 percent of the total in the area during both periods). Location one can be described as a well stocked spruce-fir forest stand on 10 percent slopes with little or no understory vegetation, the forest floor being either bare or covered only with needle litter. The campsites clustered in an oval approximately 50 meters by 60 meters. Location one has numerous flat benches with less than 1 percent slope upon which all campsites were situated. It is only 10 meters from the edge of one of the series of lakes but the view and water access are somewhat restricted by willow thickets at the water's edge. The main trail passes through location one. The visitors to location one mentioned the following reasons for selecting a campsite there:

	Frequency (6 parties)
close to water	67%
shelter of trees	50%
level area	33%
few people	33%
cleared, open understory	17%
near main trail	17%
fishing nearby	17%
view	17%

The main trail also passes through location two. Location two had six campsites during the study periods (38 percent of total). It can be described as a talus slope of about 15 percent with a good grassy and cushion plant cover, numerous willow thickets, and a few scattered spruce and fir trees. The campsites clustered in a circular area with a diameter of approximately 30 meters. There are numerous level spots at location two, especially nearer the water where a good covering of



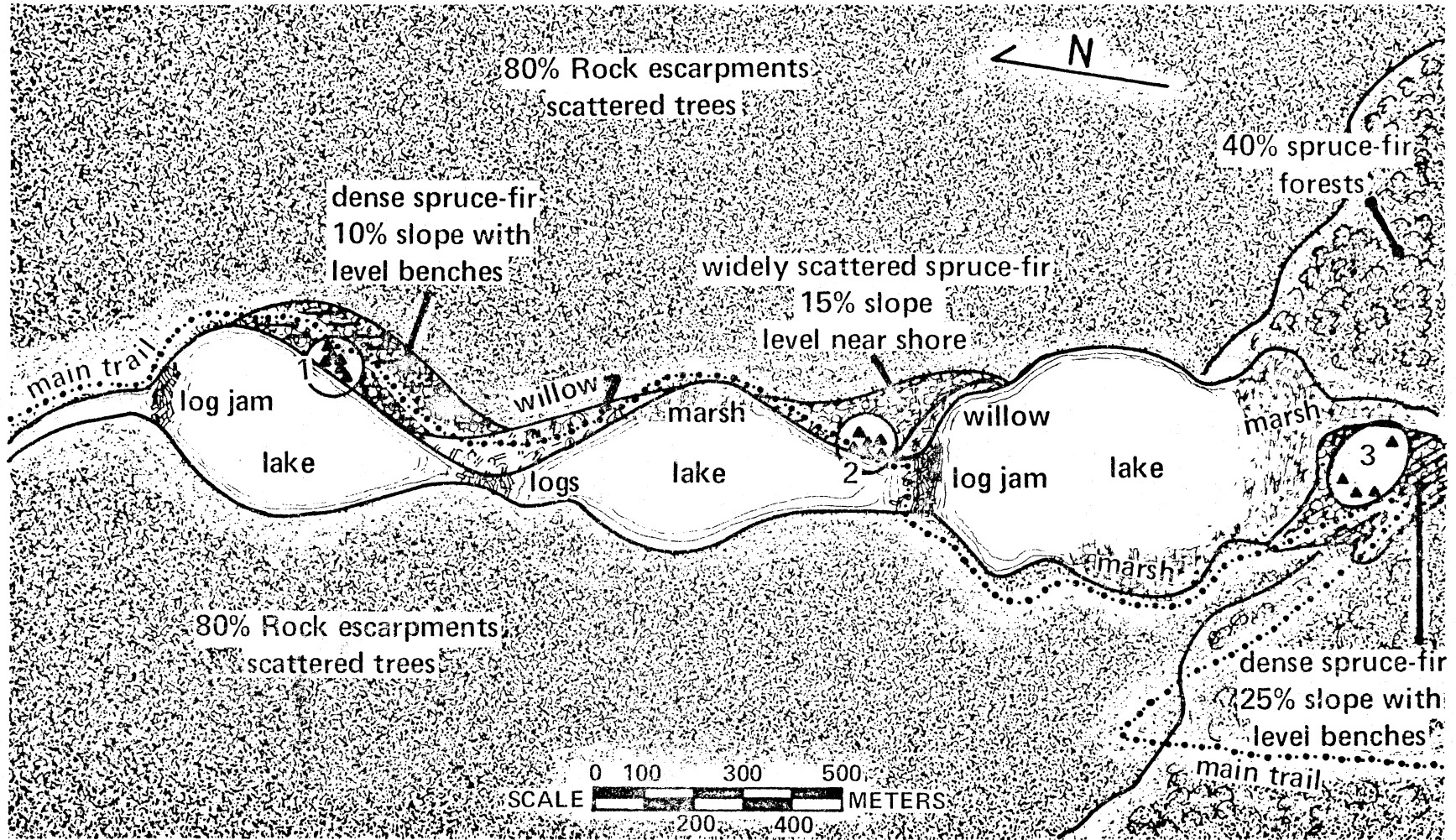


Figure 2. Snowmass Ponds Camping Area

soil was present above the rocky substrata. The location borders on a gently flowing segment of the Snowmass Ponds between the large central log jam and the smaller middle impoundment of water. Visitors to location two mentioned the following reasons for their selection of a campsite there:

	Frequency (6 parties)
close to water	100%
openness of area	83%
level area	67%
near main trail	33%
old fire ring	33%
few people	17%
view	17%

Location three contained four campsites (25 percent of the total). This location is very similar to location one having level benches on a 25 percent slope in well stocked spruce-fir forests, but location three extends 50 meters downslope from the main trail to the running waters of Snowmass Creek as it enters the first impoundment. This slope has numerous level benches 10 to 15 square meters in size its whole length. The campers at location three gave the following as reasons for choosing a campsite there:

	Frequency (4 parties)
close to water	75%
level area	50%
near main trail	50%
fishing nearby	25%
few people	25%
shelter of trees	25%
view	25%

#### Snowmass Lake Camping Area

Snowmass Lake is by far the most popular attraction in this Wilderness Area. It lies in the central portion of the Wilderness at an altitude of 3,500 meters (10,890 feet) above sea level. The area is the

meeting point of trails coming from Snowmass Creek Campground and Maroon Lake Campground to the north and east, and the trail from Crystal to the south. The Snowmass Lake area is central to any trip through the main part of the Wilderness and it therefore receives heavy visitor traffic from all directions. Snowmass Lake is a natural, morainal impoundment in a glacial cirque about 36 hectares (90 acres) in size. From the lake at the east end flows Snowmass Creek. Here at the morainal dam are gently rolling or level spruce-fir forests. On the other sides of the lake (north, south, and west), are moderately steep slopes and sheer rock walls. Most slopes are covered with scattered spruce-fir stands and bushy tundra plants. At the west end of the lake, opposite the level morainal forest rises a steep talus slope from which the magnificent Snowmass Peak protrudes to an altitude of 4,500 meters (13,841 feet). The view across this tranquil alpine lake makes this camping area rate as one of the most scenic in the mountain West.

Visitors chose campsites in three types of terrain at Snowmass Lake (Figure 3). At location one visitors selected campsites near the main trail on the level to gently sloping (less than 15 percent) terrain of the glacial moraine. Location one is a strip 10 meters wide and 150 meters long along the open area at the forest's edge near the water. All 15 campsites plotted (45 percent of the total for the area) were within 10 meters of the lake and seven campsites were within 10 meters of Snowmass Creek as well. The area in location one north of the mouth of the creek is more nearly level and has more flat spots suitable for camping. All campsites in location one commanded a view of Snowmass Peak across the lake. Campers at location one noted several reasons for their selection:

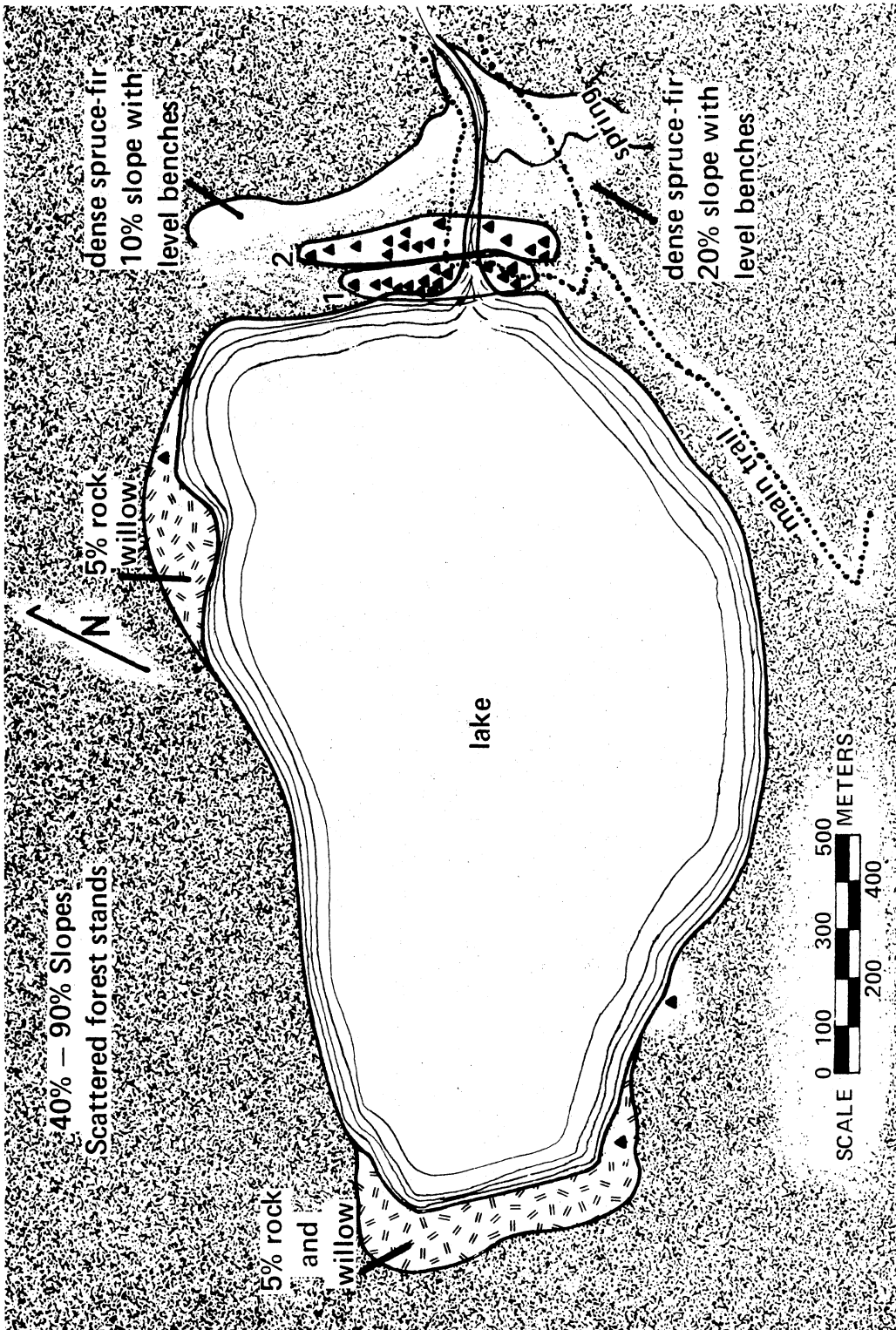


Figure 3. Snowmass Lake Camping Area

	Frequency (15 parties)
close to water	67%
view	47%
few people	40%
level area	40%
near main trail	40%
shelter of trees	27%
wood for fuel	13%

Location two lies on the morainal deposits but campsites here are within the spruce-fir forest proper, having more restricted views and lake accessibility. Steeper slopes dominate the part of location two south of the creek but numerous level spots suitable for camping are present on either side. Location two is 15 to 30 meters from the lake but has running water from the creek within its boundaries. It also has an elongated shape, being about 30 meters longer than location one. The main trail passes through much of location two. Most spruce-fir stands adjoining the Snowmass area have a healthy understory of brushy vegetation, but most of the understory at location two is cleared and a bare forest floor exposed. Fifteen campsites (45 percent of total for area) were established in location two during the study periods. The visitors gave the following as reasons for their choices:

	Frequency (15 parties)
level area	67%
close to water	60%
few people	47%
old fire ring	47%
shelter of trees	33%
wood for fuel	20%
dry ground	13%
near main trail	13%

There were also three scattered campsites at Snowmass Lake in places with limited suitable camping spots. One campsite was established on the north side of the lake along a level but very rocky deposit having numerous willow thickets. Two campsites were established at the

southwest corner of the lake, one on isolated level benches some 30 meters upslope from the lake and the other among dense willow thickets and sharp rocks on a talus slope of about five percent. Reasons for selection given by visitors in these scattered campsites were:

	Frequency (3 parties)
close to water	100%
level area	67%
dry ground	33%
old fire ring	33%
few people	33%
shelter of trees	33%
view	33%

#### Willow Lake Camping Area

Willow Lake, a very scenic alpine tarn lying in a rugged glacial cirque well above timberline, was chosen as a study camping area because of its inaccessibility and low level of use. Willow Lake is usually reached from Maroon Lake Campground 9.5 kilometers (6 miles) over moderately difficult terrain. The pass which must be negotiated to enter the cirque is approximately 900 vertical meters (3,000 feet) from the campground elevation. Willow Lake is not usually accessible for day use. The lake is stocked but fishing is only fair. The landscape is alpine tundra with rolling meadows, numerous small ponds and low brushy vegetation. There are no trees around the lake. Only dwarf willow and krumholz spruce and fir are scattered about the area. Further down, in the sheltered valley some 300 meters from the outlet of the lake, mature spruce-fir forests cover the valley floor. There is a narrow, nearly level area about 10 meters in width around all but the east edge of the lake. This strip is alternately soggy, rocky, dry with good herbaceous growth, and covered with dwarf willow thickets. Next to this strip on the south and east sides of the lake rises a rock and talus slope at a

100 percent grade. Gentle rolling meadows or small rocky outcrops with numerous benches and smooth flat, grass-covered tops occur on the north and west sides of the lake.

The campsites at Willow Lake were situated in two terrain types. Two campsites were scattered in the level zone near the lake's edge and the remaining five campsites were loosely clustered well away from the lake shore on level ledges and the tops of rock outcroppings. These higher campsites (71 percent of the total for the area) all had a good view of Willow Lake and although some were not very accessible from the lakeshore, the numerous shallow depression ponds provided easy accessibility to good water. The campsites were situated on grassy knolls or terraces and some had 1 to 2 meter krumholz scattered around the campsite. This krumholz provided some shelter and fuel for fires if needed. The closest campsite was situated about 20 meters from the lakeshore and the farthest away was 100 meters. Visitors gave the following reasons for locating up above the lake:

	Frequency (5 parties)
fewer bugs up in the open	60%
level area	60%
away from lake	40%
close to water (pond)	40%
few people	40%
grassy smooth area	20%
near main trail	20%
shelter of krumholz	20%
view	20%
wood for fuel	20%

The campsites near the lake were situated on two of the grassy level sites which are scattered amidst the less favorable sloping, wet, rocky parts of the shore line. Both campsites were within 5 meters of the shore and afforded ready access to the lake. The reasons these two parties stated for selection where they did were:

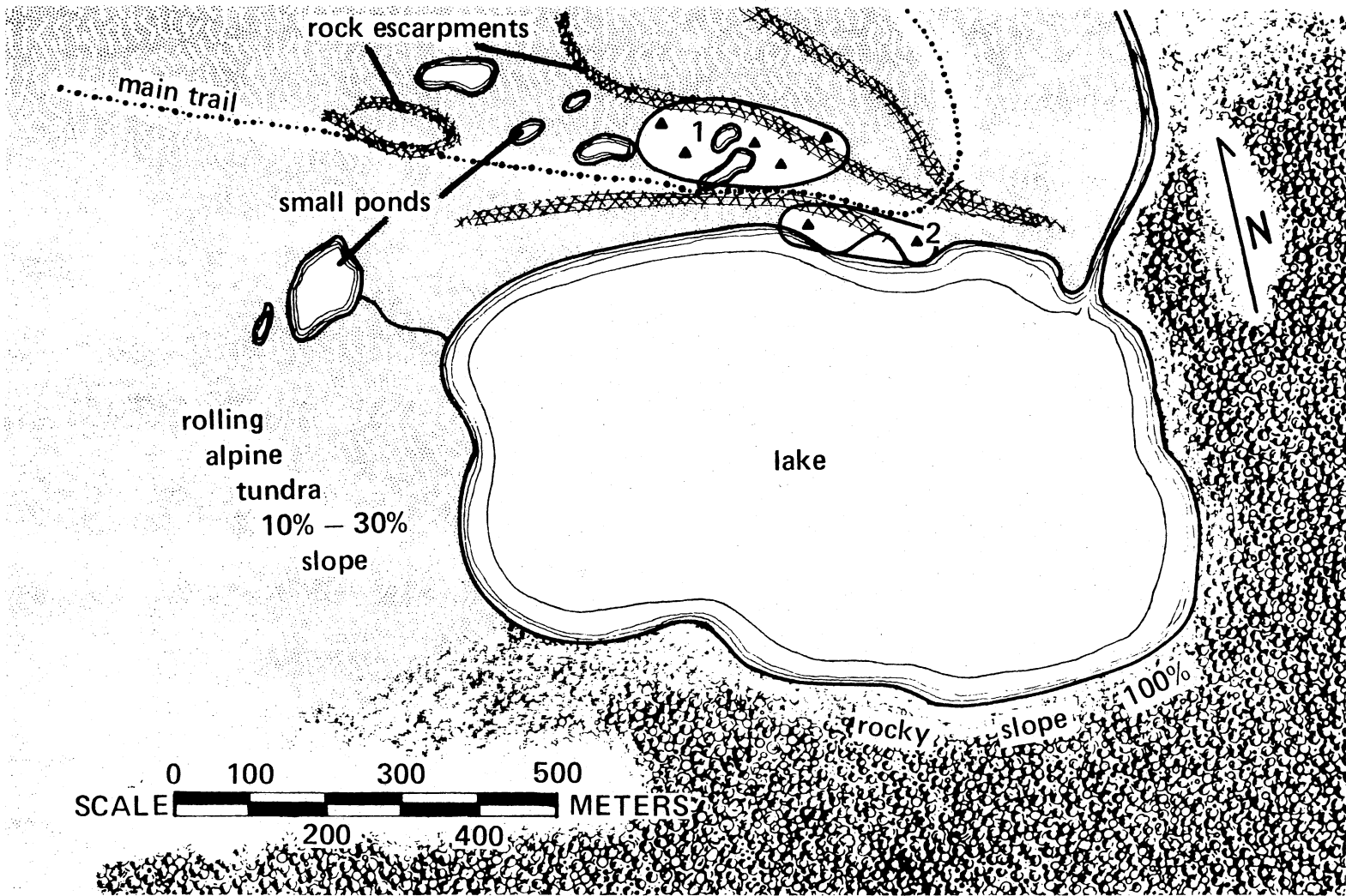


Figure 4. Willow Lake Camping Area



	Frequency (2 parties)
close to water	100%
level area	50%
view	50%
down low, away from wind	50%

#### Campsite Selection Criteria- Questionnaire Summary

In filling out the questionnaire (Appendix) it was hoped that visitors would indicate what they consider to be the most important criteria in choosing a campsite. Visitors were asked to rank their four most important considerations. The following system of weighing the four responses was used in analyzing the questionnaire rankings:

a 1 was assigned 30 points credit to the appropriate criterion;

a 2 was assigned 26 points;

a 3 was assigned 23 points;

criteria with a number 4 were given 21 points.

This system assigned a total of 100 points to each questionnaire sheet and thus for 56 interviews a total of 5,600 points was allotted. Table II shows the summary of the scores and percentages for each category.

#### Groupings of Wilderness Visitors and Knowledge of Forest Service Restrictions

Certain distinctions in the cases of group size and experience had to be made in establishing visitor groupings. Only those parties with four people or three tents or more were considered to be large. Experience at backpacking can be gained in a number of ways. One way is by visiting backcountry areas. Without other influences, visitations for 5 years or 5 use seasons would qualify a person as an experienced

TABLE II  
 QUESTIONNAIRE SUMMARY - CAMPSITE  
 CRITERIA

Criterion	Point Score	Percentage of Total (5,600)
Solitude	902	16
Near fishing spot	119	2
Scenic view	815	15
Forage for packstock	30	1
Shelter provided by trees	557	10
Levelness	492	9
Short distance from trail	97	2
Near water	1,212	22
Signs of use absent	143	3
Dry ground	423	8
Prefer to re-use old campsite	180	3
Absence of rocks	417	7
Away from cold air	44	1
Good morning sunshine	118	2
Absence of insects (write in)	30	1
Good neighboring campers (write in)	21	less than 1
Totals	5,600	100%

backcountry visitor. Training in a school such as Outward Bound, Outdoor Leadership School or Philmont Boy Scout Ranch would qualify a person much quicker as an experienced wilderness packer. A person with such training was credited with 3 years equivalent individual experience in backpacking and this figure added to his years or seasons backpacking figure. Likewise, reliable books or magazines regularly read and well known conservation organizations were credited with 1 year's individual experience equivalency each. Thus a young man or lady who last year attended Colorado Outward Bound, who reads Backpacker Magazine regularly and belongs to the Sierra Club could, because of his or her intensified interest in backpacking and the wilderness in general, qualify as an experienced backpacker without any further experience. Whereas a person who for the last four summers has visited this camping area for several days each season, and otherwise is not an active backpacker would be scored as a novice. Such a breakdown of the field data, while arbitrary, was aimed primarily at measuring a visitor's experience at choosing a desirable place to camp. Table III summarizes the data on user groups and knowledge of restrictions on camping.

TABLE III  
WILDERNESS VISITOR GROUPINGS AND  
KNOWLEDGE OF RESTRICTIONS

---

Snowmass Ponds (16 parties)

Travel Mode	<u>Hiker</u>	<u>Packstock User</u>
	15	1
Group Size	<u>Large</u>	<u>Small</u>
	6	10
Intend to Fish	<u>Yes</u>	<u>No</u>
	10	6
Experience	<u>Experienced</u>	<u>Novice</u>
	10	6
Knowledge of Restrictions	<u>Yes</u>	<u>No</u>
	9	7
	<u>Correct Knowledge</u>	<u>Incorrect</u>
	5	4

Snowmass Lake (33 parties)

Travel Mode	<u>Hiker</u>	<u>Packstock User</u>
	33	0
Group Size	<u>Large</u>	<u>Small</u>
	11	22
Intend to Fish	<u>Yes</u>	<u>No</u>
	15	18
Experience	<u>Experienced</u>	<u>Novice</u>
	21	12
Knowledge of Restrictions	<u>Yes</u>	<u>No</u>
	25	8
	<u>Correct Knowledge</u>	<u>Incorrect</u>
	14	11

Willow Lake (7 parties)

Travel Mode	<u>Hiker</u>	<u>Packstock User</u>
	7	0
Group Size	<u>Large</u>	<u>Small</u>
	2	5
Intend to Fish	<u>Yes</u>	<u>No</u>
	1	6
Experience	<u>Experienced</u>	<u>Novice</u>
	5	2
Knowledge of Restrictions	<u>Yes</u>	<u>No</u>
	5	2
	<u>Correct Knowledge</u>	<u>Incorrect</u>
	1	4

Total for all Wilderness Visitors  
(56 parties)

Travel Mode	<u>Hiker</u>	<u>Packstock User</u>
	55	1
Group Size	<u>Large</u>	<u>Small</u>
	19	37
Intend to Fish	<u>Yes</u>	<u>No</u>
	26	30
Experience	<u>Experienced</u>	<u>Novice</u>
	36	20
Knowledge of Restrictions	<u>Correct Knowledge</u>	<u>Incorrect</u>
	20	19

---

## CHAPTER IV

### SUMMARY AND CONCLUSIONS

The conclusions made concerning the locations chosen for overnight stays and the reasoning behind the selection of these locations are necessarily limited to the study areas and the campers involved. It is hoped however, that through careful consideration of the camping area and camping location descriptions, as well as the visitor group breakdown, wilderness management personnel will be able to apply the results in a broad range of situations and backcountry locations.

Persons visiting the camping areas studied in the Maroon Bells - Snowmass Wilderness were almost exclusively backpackers (Table III). Only one party surveyed had pack or riding stock. Most groups (66 percent) were small. About half of the parties intended to fish while camping in the area. Sixty-four percent of the visitors interviewed were considered experienced according to the qualifications mentioned in Chapter II. Variations from the overall trends occurred at Snowmass Ponds where the majority (62 percent) intended to fish while there, and at Willow Lake where only one party intended to fish (14 percent) and the experience level was higher (71 percent as opposed to 64 percent).

Worthy of particular note is a lack of accurate knowledge of U.S. Forest Service camping restrictions on the part of the visitors. Generally, restrictions were placed on any camping within 200 yards (c.a. 184 meters) of the main trail or water. Of the 70 percent of the

visitors interviewed that said they knew of restrictions, only 51 percent knew them correctly. This is only 35 percent of the total number of visitors interviewed. It was originally considered that Forest Service restrictions on camping might seriously effect a free selection of campsites. Considering that most of the visitors that were knowledgeable of correct camping restrictions were ignoring them, and that only 35 percent of the visitors interviewed knew of those restrictions at all, it is felt that such restrictions had little effect. One exception is the Snowmass Lake area where campers were directed to locate only on the north side of the stream. As can be seen in the plotted locations (Figure 3) most visitors obeyed the signs and located north of the stream outlet.

The locations chosen for camping were very similar in character for the two heavy use areas. Location one and three at Snowmass Ponds correspond closely to location two at Snowmass Lake. All were enclosed, forested locations with cleared understory and numerous level spots suitable for camping. The main trail at both areas passed through each. Location one at Snowmass Lake and location two at Snowmass Ponds were likewise very similar in character. Both locations were situated primarily in the open with only scattered trees and near water. Location one at Snowmass Lake was at the forest's edge. Both areas contained numerous level spots for camping and they too were very accessible from the main trail. Location two at Snowmass Lake was the farthest from calm or gently flowing water at approximately 20 meters distance. The other three locations were directly adjacent to lake shores. Even so, location two had a flowing stream within its boundaries. The area around Willow Lake has a slightly different character

than the heavy use areas. One difference is the absence of fully developed forest trees. Another important characteristic is the occurrence of numerous small ponds in depressions on the north side of the lake. The majority of campsites at Willow Lake were loosely arranged over the rugged, unsheltered outcrops at some distance from the main body of water. This camping location was unlike those found elsewhere in the other areas. The campsites near the shore of Willow Lake compare closely with the open sites near water at Snowmass Ponds and Snowmass Lake. In examining camping location characteristics in this way, strong similarities readily appear such as accessibility from the main trail, smooth, level spots suitable for tent and bag, shelter and fuel provided by trees, and nearness to water.

Turning to the reasoning given by wilderness campers for their choices of the locations in all three camping areas, the most frequent responses given on the 56 interviews can be summarized as follows:

	Frequency (56 parties)
close to water	88%
level area	50%
few people	36%
shelter of trees	27%
near main trail	25%
view	25%
old fire rings	18%

Of the 56 parties interviewed, 49 (88 percent) stated that the location of water effected their choice of a campsite. Visitors often considered a level area suitable for comfortable sleeping in choosing a campsite. Twenty-five percent of the time, parties used nearness to the trail as a criterion for campsite location. It seems that some of the time, visitors are very tired from the strenuous hiking by the time they reach their destination and do not wish to explore the area thoroughly before deciding on just the right spot. Campers often sacrifice

solitude, view, and the like, in order to unload and assume a horizontal position as quickly as possible. Many parties actively seek old fire rings and established campsites at which to locate. They usually feel that such a campsite is "legal", and they want to refrain from making new impacts on the wilderness.

All 56 parties interviewed completed a questionnaire which asked them to rate certain campsite selection criteria (Appendix). Table II is the summary of the scoring for each of the campsite criterion. Of particular note are the categories "Nearness to Water", "Solitude", and "Scenic View" which were far and above all other categories and together have 2,929 or 52 percent of the 5,600 points assigned. Of these, "Nearness to Water" seems to be of primary importance for backpackers in search of a campsite. Also of note is that the categories "Levelness", "Dry Ground", and "Absence of Rocks" totaled 1,332 points or 24 percent of all points assigned. This would seem to indicate that campers are on the lookout for smooth, level, dry areas on which to sleep.

Comparing the camping location clusters and the reasoning summary with the questionnaire scoring we would have to say that nearness to water, solitude, scenic view, forest shelter, and levelness are the basis for campsite selection in the Maroon Bells - Snowmass Wilderness. One addition to the list that was discussed earlier is nearness to the main trail.

Without a doubt, water and especially impounded water, holds the greatest attraction for wilderness campers. Its scenic beauty in the high country coupled with its utility (and necessity) in campsite domestic activities plus the added attractions of fishing, bathing, swimming, and sometimes boating make it the number one priority in



campsite locationing. This is not to say that there will be no campsites located away from a water source or that other attractions will never outweigh the need for water near the campsite. This is certainly not the case with many mountaineering parties. But such locations are usually so dispersed and infrequent as compared with most wilderness camping that they cannot be considered part of the concentrated use and resource deterioration problem.

It is easy to understand why solitude and scenery rate high with wilderness visitors. Few people hike the rugged backcountry just for the exercise. The scenery from most camping areas in the Maroon Bells - Snowmass is truly breath-taking, and most people would like to enjoy the scenery from their campsite. Solitude is another basic goal of wilderness hiking. Solitude usually comes very cheaply at Willow Lake, and it is often unobtainable at any price at Snowmass. But no matter where people were camping they sought solitude, even small fragments of it.

Campers seek comfortable places to rest, sleep, cook and carry out other necessary activities. They devote much of their attention in selecting a campsite to soft, smooth level parcels of ground.

They also actively seek the shelter of a forest, or the roominess, view and wind connected with open areas. Forty-one of the parties interviewed (73 percent) were camping either in the forest proper or among scattered mature trees. Campers locating along the edge of a forest (such as in location one at Snowmass Lake) can enjoy the view, roominess and breeze connected with open sites and at the same time have fuel, shelter and shade from the forest. An ideal camping area should undoubtedly contain some forest, some open spaces, and zones of scattered forest cover.

Using the findings of this report a wilderness manager should be able to estimate the capacity of established camping areas and the potential of alternate areas or areas along new trail systems (backcountry). He might start by viewing a region stereoscopically using aerial photographs and noting level areas with some forest cover or scattered trees adjacent to streams or lakes near a main trail. A ground inspection of the areas noted on the aerial photographs would provide information on level, cleared, smooth spots in a nice setting and further define the area's suitability, capacity, and scenic attractiveness.

Camping is one of the major activities of backcountry visitors and it causes by far the greatest impact on the wilderness resource. It is hoped that wilderness managers will be able to use the findings presented in this report to lessen the resource impact caused by concentrated recreation use and help preserve our basic wilderness resource.

## A SELECTED BIBLIOGRAPHY

- Brown, Perry J., and John H. Schomacker. 1974. Final report on criteria for potential wilderness campsites. Institute for the Study of Outdoor Recreation and Tourism, Utah State University. 51p.
- Burch, William R., and Wiley D. Wenger. 1967. The social characteristics of participants in three styles of family camping. Pac. Northwest For. and Range Exp. Stn. USDA For. Serv. Res. Pap. PNW-48, 29p.
- Frissell, Sidney S., and Donald P. Duncan. 1965. Campsite preferences and deterioration. *Journal of Forestry*, 63 (4): 256-260.
- Hendee, John C. 1974. A scientist's view on some current wilderness management issues. *Western Wildlands*, 1 (2): 27-32.
- Hendee, John C., William R. Catton, Larry D. Marlow, and C. Frank Brockman. 1968. Wilderness users in the Pacific Northwest--their characteristics, values, and management preferences. Pac. Northwest For. and Range Exp. Stn. USDA For. Serv. Res. Pap. PNW-61, 92p.
- Hendee, John C., and George H. Stankey. 1973. Biocentricity in wilderness management. *Bioscience*, 23 (9): 535-538.
- Lime, David W. 1970. Research for determining use capacities of the Boundary Waters Canoe Area. *Naturalist*, 21 (4): 8-13.
- \_\_\_\_\_. 1971. Factors influencing campground use in the Superior National Forest of Minnesota. No. Cent. For. Exp. Stn., For. Serv. Res. Pap. NC-60. 18p.
- Lucas, Robert C. 1963. Visitor reaction to timber harvesting in the Boundary Waters Canoe Area. Lake States For. Exp. Stn., St. Paul, Minn. USDA For. Serv. Res. Note LS-2, 2p.
- \_\_\_\_\_. 1964. Wilderness perception and use: the example of the Boundary Waters Canoe Area. *Nat. Resour. J.*, 3 (3): 394-411.
- \_\_\_\_\_. 1971. The challenge and the response to Forest Service wilderness management in the northern Rockies. *Naturalist*, 22 (3): 2-5.

- \_\_\_\_\_. 1974. Forest Service wilderness research in the Rockies--what we've learned so far. *Western Wildlands*, 1 (2): 5-12.
- ORRRC. 1962. Wilderness and recreation--a report on resources, values, and problems. Study Rep. 3, 352p. Wash., D.C.: Gov. Print. Off.
- Stankey, George H., and David W. Lime. 1973. Recreational carrying capacity: an annotated bibliography. Intermountain For. and Range Exp. Sta. USDA For. Serv. Gen. Tech. Rep. INT-3, 45p.
- Stankey, George H., Robert Lucas, and David W. Lime. 1974. Patterns of wilderness use as related to congestion and solitude. Paper presented at annual meeting Assn. Am. Geographers, Seattle, Washington. 17p.

APPENDIX

FIELD SURVEY FORMS

SURVEY

Party Number \_\_\_\_\_

TRAVEL MODE

\_\_\_\_\_ Pack/Riding Stock User

\_\_\_\_\_ Hiker

GROUP SIZE

\_\_\_\_\_ Number in Party

\_\_\_\_\_ Number of Tents (0, 1, 2, 3, etc.)

CAMPING MODE

\_\_\_\_\_ Blanket or Bag Only

\_\_\_\_\_ Tent

INTERVIEW

1. Any specific campsite features in mind?

\_\_\_\_\_ Yes \_\_\_\_\_ No

If yes, which features?

---

---

---

---

---

---

---

---

---

---

2. What, about this spot, caused you to choose it?

---

---

---

---

---

3. Fishing?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

4. Years backpacking?

\_\_\_\_\_ Number

5. OLS or Outward Bound Courses?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

If yes, which ones?

---

---

---

6. Books or magazines?

\_\_\_\_\_ Yes

\_\_\_\_\_ No

If yes, which ones?

---

---

---

---

---

---

7. Conservation organizations?

\_\_\_\_\_ Yes \_\_\_\_\_ No

If yes, which ones?

---

---

---

---

8. Forest Service administered restrictions on where you may camp?

\_\_\_\_\_ Yes \_\_\_\_\_ No

If yes, which ones?

---

---

---

---

---

---

---



QUESTIONNAIRE

## Campsite Consideration

Please rate by number the 4 most important features or conditions which you usually consider in selecting a spot on which to camp. Just number your top four choices (1, 2, 3, 4) in order, next to the appropriate descriptions.

\_\_\_\_\_ Solitude - a location away from other wilderness campers.

\_\_\_\_\_ Nearness to a good fishing spot.

\_\_\_\_\_ A scenic view.

\_\_\_\_\_ Nearness to forage for packstock.

\_\_\_\_\_ The shelter from wind, rain, cold or other conditions provided by trees or a forest.

\_\_\_\_\_ Levelness of the camping spot.

\_\_\_\_\_ A spot only a short distance from the main trail.

\_\_\_\_\_ Nearness to water.

\_\_\_\_\_ The absence of fire rings, trampled vegetation or other signs of use at the campsite.

\_\_\_\_\_ Dry ground.

\_\_\_\_\_ A preference for re-using old fire rings or a well established campsite.

\_\_\_\_\_ An absence of rocks or unevenness on the ground where you plan to sleep.

\_\_\_\_\_ A location away from cold air drainage.

\_\_\_\_\_ A spot with good early morning sunshine.

\_\_\_\_\_ Any other \_\_\_\_\_

\_\_\_\_\_ Any other \_\_\_\_\_

\_\_\_\_\_ Any other \_\_\_\_\_

VITA

James Marshall Gleckler

Candidate for the Degree of

Master of Science

Thesis: WILDERNESS USER CAMPSITE  
SELECTION

Major Field: Forest Resources

Biographical:

Personal Data: Born in Tulsa, Oklahoma, February 23, 1947, the son of Mr. & Mrs. Floyd Dennis Gleckler.

Education: Graduated from Will Rogers High School, Tulsa, Oklahoma, in May, 1965; received a commission in the United States Army upon graduation from Artillery Officer Candidate School, Fort Sill, Oklahoma, in May, 1967; attended University of Maryland campus in Heidelberg, Germany, from September, 1970, to May, 1972; received Bachelor of Arts degree in Sociology from University of Tulsa in May, 1974; completed requirements for Master of Science degree at Oklahoma State University in May, 1977.

Professional Experience: Graduate teaching and research assistant, Department of Forestry, Oklahoma State University, 1974-76; member, Society of American Foresters; member Xi Sigma Pi; Service Forester, Oklahoma Forestry Division, 1976- .