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USER PREFERENCES FOR OUTDOOR RECREATION:
THEIR IMPLICATIONS FOR MANAGEMENT OF
THE RATTLESNAKE WATERSHED

by

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B.S., University of Idaho, 1970

Presented in partial fulfillment of the
requirements for the degree of
Master of Science
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1972

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Dec 28, 1972
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TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION	1
II. A BRIEF DESCRIPTION OF THE RATTLESNAKE DRAINAGE	4
Area Description	4
Land Ownership and Use	9
III. PREVIOUS STUDIES	13
Timber	13
Water	14
Amount	15
Management	15
Quality	17
Water and recreation	18
Soils	22
Forage	24
Recreation	25
Wildlife	30
IV. PRIMITIVE AREAS AND PUBLIC DESIRES-- AN UNMET DEMAND	33
Urban-Wilderness Concept	33
The Dissatisfied Wilderness User	37
The Dissatisfied "Recreationist"	39
Existing Urban-Wilderness Areas	40
V. MISSOULA OUTDOOR RECREATION SURVEY	43
Introduction	43
Objectives	43
Description of population	45
Study Methodology	46
Sampling method	46
Sampling area and size	50
Sample selection	52
Interview procedures	53
Method of analysis	55
Accuracy of estimates	56
Pilot Survey	57

Chapter	Page
VI. SURVEY RESULTS	58
Response Rate	58
Outdoor Recreation in Missoula	60
Recreation in the Upper Rattlesnake	71
Population Characteristics	80
VII. IMPLICATIONS FOR MANAGEMENT	85
Major Activity Demands	85
The Role of the Upper Rattlesnake	86
Recreation and Other Resource Values	87
User Conflicts	91
Compatibility and Needs	93
LITERATURE CITED	97
APPENDIX	108

LIST OF TABLES

Table	Page
1. Participation in Selected Outdoor Recreational Activities	61
2. Frequency of Participation in Selected Outdoor Recreational Activities	63
3. When Activity Takes Place Most Often	65
4. Outdoor Activities Spontaneously Mentioned	67
5. Preferences for Selected Outdoor Recreational Activities	69
6. Where Upper Rattlesnake Users Live	72
7. Outdoor Activities Done in the Upper Rattlesnake	74
8. Qualities Enjoyed About the Upper Rattlesnake	76
9. Annoying Influences in the Upper Rattlesnake	78
10. Effect of Road Closure on Users	79

LIST OF FIGURES

Figure	Page
1. Map showing location of the Rattlesnake Watershed	5
2. Aerial view of upper Lake Creek Basin in late March. McKinley Peak in top center	7
3. McKinley Peak and upper Lake Creek Basin . . .	7
4. One of the many beautiful Rattlesnake Lakes	8
5. Map showing upper Rattlesnake study area ownership pattern	11
6. A University of Montana backpacking class near Mosquito Peak in October, 1971	27
7. The "Snowshoe Inn" near Carter Lake-- a welcome sight in winter	27
8. Map showing Missoula Outdoor Recreation Survey sampling area	51

LIST OF APPENDIXES

Appendix	Page
A. Missoula Outdoor Recreation Survey	108
1. Questionnaire	
2. Question-by-question objectives	
3. Survey definitions	
B. 95% confidence intervals (in percent) for sample sizes 180 and 88	120
C. Notes from the log book at "Snowshoe Inn" cabin	122

CHAPTER I

INTRODUCTION

Residents of Missoula, Montana, and nearby communities have long utilized the upper Rattlesnake drainage northeast of the city for outdoor recreational activities. The area's popularity has been due both to its unique resources and its close proximity to Missoula. The value of the Rattlesnake drainage has not been confined, however, to recreational use alone since it has been commercially exploited over the years for its timber resources. In addition, this area also serves as Missoula's municipal watershed. This multiple use has led to increasing user conflict and the pertinent question of the quantity and quality of recreation activity which can be allowed and sustained within this area. The problem of priorities and necessary controls is exacerbated by the fact that the several land owners in the area are uncertain as to which recreational activities should be allowed, desiring those that would be compatible not only with each other and with the other resource uses, but with the land itself. Effective unified management has been further discouraged by the checkerboard land ownership pattern found in the drainage area.

In order to insure the maintenance of compatible resource uses and to obviate confusion and conflict as recreational demands accelerate, it becomes obvious that comprehensive planning is a necessity. The initiation of such planning is far superior to simply allowing illegal or non-compatible uses to occur at random or, by the same token, to allow mass recreation to completely inundate the only back-door natural area left within walking distance of Missoula.

This study is a beginning step toward establishing such a comprehensive plan; its purpose, therefore, is to determine the relative magnitudes of recreation uses in the upper Rattlesnake drainage and to define those which are compatible both with each other and with other resource uses in the drainage and the associated high country.

The primary objective of this paper then, is twofold: (1) to assess the outdoor recreational needs and desires of the people of Missoula and, to a lesser extent, the regional population, and (2) to determine the extent and type of recreation potential to be found in the upper Rattlesnake.

First, the natural features which contribute to the uniqueness of the upper Rattlesnake is discussed. Also covered briefly is the history of ownership patterns and past use. Then, a review is made of existing information on resources in the upper Rattlesnake and similar areas in

order to comprehend the potential use capabilities of this area. This review is devoted to the available literature on the resources of timber, water, soils, forage, recreation and wildlife.

Next, a comparison study is presented of undeveloped areas resembling the Rattlesnake drainage in order to define the impact of recreation user preferences. The concept of "urban-wilderness" is introduced to describe an area where many user preferences and experience levels not widely recognized before can be provided.

Following this is a discussion of the objectives and procedures used to determine: (1) the outdoor recreation demand in the Missoula area, and (2) which recreation and resource uses are in conflict in the upper Rattlesnake. The results of the survey are discussed as they apply to outdoor recreation activities, recreational use of the upper Rattlesnake, and characteristics of the sample population.

After compiling data on relative resource capabilities and recreational demands, an evaluation is then made to determine those recreational uses which are compatible with each other and with other resource uses.

Lastly, these thought patterns are coalesced and discussed relative to the implications they present for effective multiple use management of the upper Rattlesnake drainage, with particular emphasis on recreation potential.

CHAPTER II

A BRIEF DESCRIPTION OF THE RATTLESNAKE DRAINAGE

Area Description

The Rattlesnake watershed is located in Missoula County, Montana, and falls within Townships 13, 14, 15, and 16 North and Ranges 17, 18, and 19 West, Principal Meridian, Montana. The headwaters of the drainage begin approximately 17 miles north and 4 miles east of the city of Missoula and drain southeast into the Clark Fork River at Missoula (fig. 1). The watershed contains about 79.7 square miles or 51,008 acres (Haiges, 1965).

Approximately the northern one-third of the drainage and adjacent lands outside of the drainage are identified by the Northern Region of the United States Forest Service as "High Area Zone", that is, "lofty country, generally above timberline or in the alpine and subalpine forests." Precipitation is heavy, mostly in the form of winter snow, and the growing season is very short. Management direction calls for the Forest Service to protect and maintain the vegetative cover and water-producing qualities of this zone and to allow dispersed use only (U.S. Forest Service, 1967). Winter snow depths of eight feet or more are

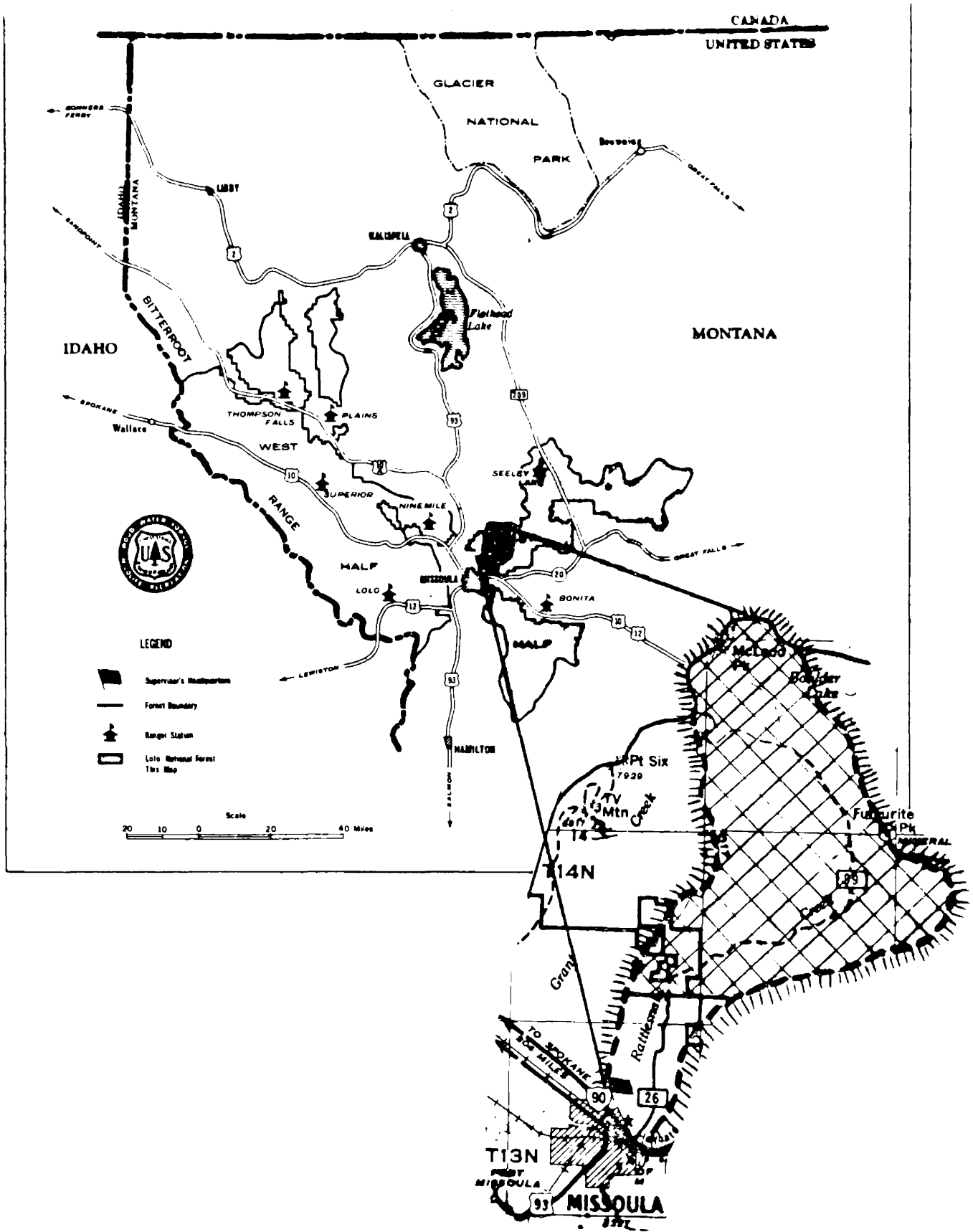


Fig. 1. Map showing location of the Rattlesnake watershed

common in the higher basins and lakes in the area may be ice-covered from October until July (fig. 2). The remaining two-thirds of the drainage are composed of generally well-timbered forest land adjacent to the creek. Elevations vary from 3,400 feet in the valley bottom near Missoula to over 8,600 feet on McLeod Peak at the northern headwaters of the drainage.

The western slopes of the drainage are dominated by rugged, glaciated mountains rising over 3,000 feet above the narrow valley floor (fig. 3) while the eastern slopes are steep and rocky but with a somewhat gentler profile. Beautiful high mountain lakes are found in cirques adjacent to many of the rugged peaks in the area (fig. 4). There are more than forty lakes within the Rattlesnake drainage itself with another twenty-five located in the nearby high areas.¹ While some lakes are barren of fish, others are reported to be "teeming" with trout despite the fact that water levels may fluctuate up to 12 feet in those lakes which have been developed for water storage by the Montana Power Company. Rattlesnake Creek itself is a clear, fast running mountain stream with tributaries renowned for their Cutthroat, Dolly Varden, and Brook trout (Konizeski, 1970).

Wildlife abounds in this area--mule deer and white-tail deer, elk, mountain goats, bobcats, mountain lions,

¹The largest of these lakes are Big, Boulder, and Sanders.



Fig. 2. Aerial view of upper Lake Creek Basin in late March. McKinley Peak in top center.



Fig. 3. McKinley Peak and upper Lake Creek Basin



Fig. 4. One of the many beautiful Rattlesnake Lakes

coyotes, grouse, black bear, and occasionally, grizzly bear and lynx. Most of these species have been or still are hunted regularly each year. During the winter, many of their numbers can be easily seen on the hills above Rattlesnake Creek within one to fifteen miles from the city of Missoula.

Land Ownership and Use

The federal government is the largest single owner in the Rattlesnake watershed with the U.S. Forest Service managing approximately 48% of the land (24,480 acres). This federal domain is intermixed in a checkerboard pattern with the 37.4% (19,074 acres) owned by Montana Power Company.¹ The remainder of the drainage area above Sawmill Gulch is divided in ownership between the Burlington Northern Railroad which owns 1.4% (714 acres), U.S. Plywood-Champion with 1.2% (612 acres), and five small private ownerships of 12% (6,120 acres) (Lolo National Forest, 1972a). Outside of the drainage, the surrounding high area is owned on the east and west by the Forest Service and the Burlington Northern Rail-

¹Montana Power Company purchased the majority of their holdings from the Northern Pacific Railroad which had originally acquired it through federal land grants. All remaining Northern Pacific lands have been transferred to the Burlington Northern Railroad. In the early 1900's several homesteads were established on Rattlesnake Creek in the study area, but these have been purchased by the Montana Power Company.

road, and on the north by the Flathead Indian Reservation. The major owners considered in this paper are the U.S. Forest Service, the Montana Power Company, and the Burlington Northern Railroad (fig. 5).

The Rattlesnake drainage has served as a water source for Missoula since the early 1900's. By utilizing earth filled dams, Montana Power Company has developed eight lakes in the upper drainage (Big, Carter, Glacier, Little, McKinley, Sanders, Sheridan, and Worden) to serve as reservoirs which will be drawn upon as needed.

In the late 1950's timber was harvested from the valley bottoms and lower slopes in the upper drainage on Montana Power Company lands. Much of Lake and Wrangle Creek basins were also logged. Due to the logging operations, the road along Rattlesnake Creek was developed although it has not been maintained or improved since the early 1960's. The Forest Service¹ has not logged their lands except for sanitation-salvage operations.

The Montana Power Company presently controls the major access to the watershed. In an attempt to reduce

¹The Forest Service operated the Franklin Guard Station near the confluence of Rattlesnake and East Fork Creeks but it has since been removed. There is a lookout tower on Mineral Peak on the eastern edge of the area as well as a log cabin in the Lake Creek drainage. This cabin housed the workers who built the dams across the lakes but it now serves as an overnight stopping place for both summer and winter recreationists who visit the area.

R19W

R18W

R17W

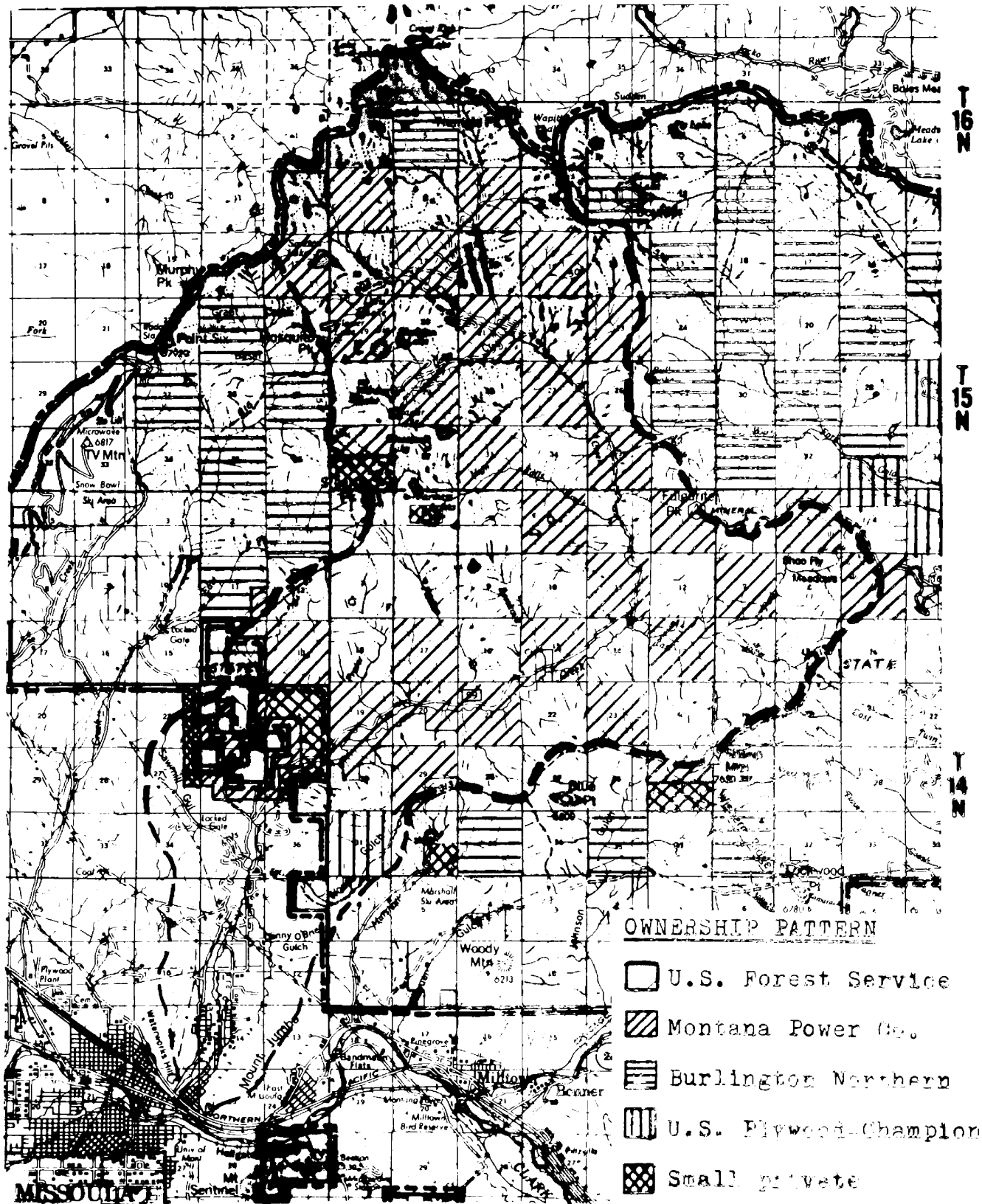


Fig. 5. Map showing ownership pattern in the upper Rattlesnake

littering and possible water pollution, Montana Power Company has closed the road along Rattlesnake Creek to public access via automobile; although hikers, horseback riders, motorcyclists, and snowmobilers are permitted in the area. However, livestock trespassing onto the lower watershed has not been eliminated and presents a serious water pollution threat.

In addition to the Rattlesnake Creek road, there are many Forest Service trails following the ridges and watercourses in the area. These trails are fairly well marked but need maintenance work. Of the nine access points into the drainage, six are within 20 miles of Missoula.

There has been minimal, if any, management or development of Burlington Northern lands. However, in the high area to the west of the drainage a special use permit has been issued by the Forest Service and Burlington Northern for a ski area that operates on a few acres of their lands.

CHAPTER III

PREVIOUS STUDIES

As with many undeveloped areas, existing information on resources and their use in the upper Rattlesnake drainage is scanty. However, the information that is available, and in conjunction with closely related studies elsewhere, can help immeasurably in interpreting the Rattlesnake's potential and in understanding its character. This chapter concentrates on existing studies, reports, and data which can serve as the foundation for resource decisions in the future. Although the information is classified under several topics, these divisions are not mutually exclusive.

Timber

The Lolo National Forest conducted a timber inventory of the Rattlesnake and adjacent drainages in 1956.¹ The Forest Service estimates that about 25% of the lands managed by them in the Rattlesnake support commercial timber stands. They have not logged these lands except for salvage

¹Timber type maps have been printed at the scale of 2 inches/1 mile and are available for Township 15 North, Ranges 18 and 19 West, at Lolo National Forest headquarters in Missoula.

and sanitation cuts and report that due to rocky and steep slopes, most of the drainage cannot be logged under present technology without incurring serious resource damage (Lolo National Forest, 1972a). Montana Power Company, however, has logged much of the commercial timber on their lands, primarily along the creek bottoms in the upper drainage.

A forestry class at the University of Montana (Rattlesnake Study Group, 1971) made a management study of the Rattlesnake drainage. This study included timber harvest possibilities. Their tables show that timber management would not be economically feasible in the drainage. Timber mining (a one cut, non-sustained yield operation), however, would return a profit. Christmas-tree cutting was also suggested as a profit-making operation.

The Lolo National Forest (1972b) estimated timber volumes in 1963 to be 116.8 million board feet (MMBF) on National Forest lands, 86.2 MMBF on Montana Power Company lands, and 7.5 MMBF on other private lands (the latter two categories of land have been logged in the past).

Water

The Rattlesnake watershed furnishes about one-half of the water supply of Missoula, with wells furnishing the remaining one-half. Several studies have been done to gather basic water quality, quantity, and scheduling data in the Rattlesnake watershed, but no in-depth resource

analysis has yet been compiled for this important municipal watershed. Except for a basic study of this water resource executed in a brief Masters thesis by M. L. Haiges in 1965 (in which he described the drainage and did a short hydrologic analysis including the chemical content of the water), little has been done in the interim except for water quality samples taken by several agencies at regular intervals.

Amount.

Forest Service data (Lolo National Forest, 1972b) list the average annual runoff for the Rattlesnake drainage as 22.8 inches. This is roughly equivalent to 96,960 acre feet per year or 134 cubic feet per second (CFS). Of this total, 16,000 acre feet per year are diverted for use by the city of Missoula.

Management.

Apparently the watershed has been managed jointly for several decades by the U.S. Forest Service and the Montana Power Company. Five of the eight dams on the lakes in the upper drainage are on national forest lands. Lolo National Forest (1972a) records indicate that the Forest Service and Montana Power Company negotiated a cooperative agreement in 1931 stipulating that Montana Power Company would:

- a. suppress forest fires.
- b. help the Forest Service in designating camping sites on national forest lands.

- c. contribute if asked by the Forest Service toward improvements to control grazing.
- d. above, only if a similar agreement is made with the Northern Pacific Railroad (owner of 14,020 acres).

During the 1960's the Northern Region of the Forest Service designated municipal watersheds as priority planning projects. The Forest Service management plan for the Rattlesnake Municipal Watershed was to be completed by July 1, 1967, but priorities were changed and it was never complete. (Lolo National Forest, 1972b) The Rattlesnake drainage is now designated as part of a multiple use planning unit for which a management plan is to be completed by 1974.

In 1969 the Missoula District Ranger, Warren Ensign, met with Walter Kelly, Montana Power Company Division Manager, to discuss the watershed. In 1957 the Montana Power Company maintained a locked gate near the bottom of the watershed before the road to the head of the drainage was built. Mr. Kelly was aware of the area's potential and agreed that horseback riding, etc., would not hurt water quality, but he objected to stream fishing because activities associated with fishing--picnicking, swimming, etc.--could contaminate the water. He also opposed better roads or trails in the area (a new trail along Wrangle Creek was built by the Forest Service in 1968) because too much public use might adversely affect water quality.

While "extremely displeased" with the former Division Manager's logging operation and the Company's prior philosophy

of getting whatever values they could out of the land, Mr. Kelly admitted that logging activity would continue on their lands, although more carefully, from a water quality standpoint. In summation, the District Ranger concluded: "I felt they did not want to exclude the public and they would tolerate certain types of recreational use but would not encourage additional use." (Lolo National Forest, 1972c)

Quality.

Samples of several water constituents are taken regularly at several stations on Rattlesnake Creek. Bacterial samples are taken monthly by the Missoula City-County Health Department, physical and some chemical samples are taken monthly by the Forest Service, and other chemical samples are taken semi-annually by the Forest Service and the Montana State Department of Health. In addition, the Montana Power Company takes water quality samples at regular intervals. Records of some water quality samples (and the agencies responsible for them) are kept by the Lolo National Forest (1972c) and indicate that after screening, Montana Power adds chlorine and ammonia to water diverted from the Rattlesnake. Provisions for water filtration were not deemed necessary.

After interviewing Clarence Bruckner, present Division Manager for Montana Power Company, the Rattlesnake Study Group (1971) concluded that it was impossible to determine whether water quality improvement since 1970 was due to closing the watershed to automobile traffic or to installing a cover on

the purification pond.

Water and recreation.

Municipal watersheds in Montana may be open or closed to the public--including fishing use--depending upon the land owner, the State Board of Health, and the individual city's wishes. For instance, St. Ignatius (north of Missoula) opened its water supply to fishing in 1965. Pressure mounted in the late 1950's to open the upper Rattlesnake Creek to fishing, however, it was never done (Whitney, 1966).

Several studies have been made, especially in the New England states, regarding public use of municipal watersheds. An important reference is the Journal of the American Water Works Association. Benedetti (1964) studied watersheds and recreational land use in the Pacific Northwest and concluded that water quality is best maintained by watershed protection, rather than water treatment.

Reigner (1966) draws together many observations and conclusions of the effects of recreation on water quality in municipal watersheds. Hunting, he believes, should have no more ill effects on watersheds than hiking or bird watching, both being activities that are usually allowed. Hunting is generally prohibited for other reasons: to preserve road systems, since hunters will drive wherever they can, and torn up roads are a source of erosion and extra expense; also, hunters often find targets other than game; and, they probably create a greater fire hazard than hikers or bird

watchers. The problem of picnicking as a serious source of contamination to reservoirs or watercourses has been solved by moving picnic areas to pleasant places distant from water supplies. Camping has been allowed with few ill effects, but it can be a sanitary hazard near streams or reservoirs and a fire hazard elsewhere. Horseback and motorbike riding has been allowed on some watersheds. Trails have sometimes been a source of erosion, but they have not contaminated water supplies.

Reigner concludes that we cannot, with present information, say that recreation has had a serious degrading effect on the quality of public water supplies. Reigner's survey is of great importance: it may be difficult to prohibit recreational use in the future and his study indicates that some types of recreation can be handled without serious trouble if adequately controlled.

Kunkle (1967) studied the impact of land use on water quality in a Colorado watershed. Stations were set up in the watershed (elevation 7,600-9,790 feet) to measure flow, water temperature, pH, turbidity, suspended sediment, dissolved solids; and total, coliform, fecal streptococcus (FS), and fecal coliform (FC) bacteria. The FC measurements showed the highest sensitivity to grazing-irrigation pollution. Most of the sediment was found to be from roads, while routine sampling showed that human use in campgrounds,

picnic areas, or cabin sites did not increase sediment in the streams. The impact of heavy campground use during holiday weekends (Independence Day and Labor Day, 1964) was analyzed and it was concluded that "Samples from above and below two campgrounds along streams did not indicate human contamination nor physical pollution."

Microbiological and limited chemical studies have been carried on since 1964 on two adjacent municipal watersheds in the Gallatin National forest south of Bozeman, Montana. Logging is permitted in both of these drainages which furnish drinking water for the city of Bozeman and wildlife (deer, elk, moose, bear) are common to each area (Walter and Bottman, 1967). The 30,080-acre Hyalite Creek watershed is open to public use and is a popular campsite area. Boating, fishing, and swimming are permitted in Hyalite Reservoir (8,000 acre feet storage potential). On the other hand, the 28,160-acre Mystic watershed (along Bozeman Creek)¹ has been closed to the public since 1920 and is fenced and patrolled by city and U.S. Forest Service personnel.

Standard plate, coliform, and enterococci counts were made weekly during the summer on water samples collected at three sites in both drainages as well as in a settling

¹Mystic Reservoir has 675 acre feet of storage potential and lies at an elevation of 6,595 feet.

basin containing a mixture of both water supplies. Chemical analysis indicated differences in the water at each site and between the two watersheds as well. Temperatures rose as the summer progressed, and as the fauna and flora increased, the microbial population increased at each site and progressively downstream also.

Analysis yielded unexpected results. Higher bacterial counts were found in the closed Mystic area "in a rather high percentage of all tests performed each summer." Walter and Bottman (1967) could find "no satisfactory explanation" for the higher microbial counts but postulated that fecal contamination by animals, which are more likely to be present near the water in the closed Mystic watershed, may account for higher counts. Also, since Hyalite drains about twice the Mystic area, the dilution factor may have influenced the results. This study is important because the Mystic watershed may be opened for recreational purposes as is the Hyalite, and as a result, changes can be compared when new data are collected.

To this author's knowledge, the only other studies relating to water in the upper Rattlesnake are now in progress at the University of Montana School of Forestry under the direction of professor Richard Konizeski.

One study will be part of a Masters thesis by Howard Newman who is studying the economics of water management and

use in the drainage. He is focusing on the relative economic benefits of using ground water versus surface water as the municipal water supply. Another facet of the study is to develop a prediction equation for determining total annual water yield based on winter snowfall in the watershed (Newman, 1972).

The other study may become part of a Ph.D. dissertation by Phyllis Marsh who is investigating sedimentation in small Montana reservoirs. She has studied Carter lake in the Rattlesnake drainage to determine sedimentation rates for comparisons.

Soils

Detailed soil surveys do not exist for the Rattlesnake drainage since resource use was not sufficiently intensive in the past to justify the effort. Information on minerals and mining activity is also scarce although the Rattlesnake Study Group (1971) reported that the Montana Bureau of Mines and Geology had done a mineral survey of the area, in which the only significant deposit mentioned was limestone. There are no active mines or exploration presently within the area. A general description of some of the soil types and suitabilities is found in the report of the Rattlesnake Study Group (1971).

The Study Group Report lists two general soil cate-

gories for the Rattlesnake drainage: (1) moderately deep to deep dark colored loam and gravelly loam soils found in the valley bottoms, and (2) shallow to deep forested soils developed over argillite and quartzite bedrock on steep slopes with areas of rock outcrops. The first soil category mentioned is generally suitable for most developments.

However the second category, which covers the majority of the drainage, is rated as being a moderate to severe erosion hazard (depending on slope steepness and soil depth) for recreational facilities such as campgrounds, road construction--almost all developments--with the exception of trails where the coarse fragments in these soils make a stable trail bed.

A broad scale soils reconnaissance of the Rattlesnake drainage was completed in 1968 by E. M. Richlen of the U.S. Forest Service Northern Region Soil and Watershed Division. This resulted in an aerial photograph which mapped the soils in the watershed and also produced a compilation of soil descriptions. The map is presently in the office of the soil scientist of the Lolo National Forest, where the soil descriptions are scheduled for updating within the year (Peterson, 1972). Preliminary analysis of this Forest Service survey reveals that there is a wide variety of soil types in the Rattlesnake drainage due in part to great differences in microclimate resulting from the influences of elevation and

aspect. Most of the soils are derived from the Belt Super-group of Precambrian metasedimentary rocks which are some of the oldest sedimentary rocks on earth. The resulting thin soils on steep slopes covering an "appreciable acreage of the drainage will not lend themselves to motorized use" because of the potential erosion hazard, although they will sustain heavy foot traffic pressure (Peterson, 1972).

Another report on file at the Lolo National Forest (1972a) concerns a 1967 preliminary study of 1 inch/1 mile aerial photos which resulted in the following analysis of the soils and geology of the Rattlesnake area:

There are extensive morainal deposits at the mouth of Rattlesnake Creek where it enters the major Missoula Valley. Landforms are generally unstable (mass failure) on the rangeland, with many areas of slowly permeable soils.

Extensive gravelly terraces extend along the creek from the mouth to about a mile above Spring Gulch. Sewage contamination in this area is a hazard. Above this point and in the upper drainage, bottomlands are dominant with drainage varying from poor to moderately well drained. . . .

The upper watershed has many glacial lakes located in cirque basins with steep talus and rock outcrop on the borders. Glacial "U" shaped valleys below the lakes contain deep soils with variable drainage conditions. Roads into this area will encounter much rock outcrop, and hazardous drainage conditions. . . .

There is much rockland and very steep slopes in the watershed, much of which is along the main Rattlesnake Creek Canyon. . . .

Forage

Lolo National Forest (1972b) files indicate that the Forest Service has never issued livestock grazing permits in

the Rattlesnake drainage but that the Montana Power Company and other private land owners have permitted livestock grazing on their lands in the past. Some private lands in the upper drainage are still used for this purpose. Livestock grazing is generally restricted to the valley bottoms along Rattlesnake and Spring Creeks where an easily accessible dense grass and forb cover is found. The hillsides are generally too dry and rocky for livestock use (Rattlesnake Study Group, 1971).

The forage resources of the Rattlesnake are used predominantly by wildlife rather than livestock. A critical winter range for deer exists on Strawberry (Wallman) Ridge between Spring Gulch and Rattlesnake Creek (Knoche, 1968). It is critical because former winter range areas have been encroached upon by the city of Missoula. This remaining range is a seral one as a result of a 1919 forest fire, and it will return to forest in the future. The upper Rattlesnake drainage supports many species of browse plants important to wildlife; however, the winter climate is too harsh for many animals, except in the lower elevations near Missoula.

Recreation

Insufficient facts regarding recreation use of the upper Rattlesnake have been collected, although several

recreation use proposals have been made. The Lolo National Forest (1972a) has inventoried two potential recreation development sites. Presently there are no recreation developments in the upper Rattlesnake and that recreation which does occur is of the dispersed use type. There is winter as well as summer use, but caution is needed due to avalanche hazard areas in the high valleys.

Most of the dispersed use is near Missoula in the lower valleys but increasing numbers of people are hiking and backpacking into the scenic high country (fig. 6). This growing interest in the higher elevations is evidenced by a log book (Appendix C) found in a cabin located in one of the high basins (fig. 7). Judging by the many entries, this high area is used quite regularly by recreationists, including snowshoers and skiers during the winter months.

It is not known what percentage of those who used the cabin actually made entries in the log book. However, entries were quite frequent during the summer and fall months, averaging about one per week and occasionally several per day.

The log book indicates that summer use of the cabin is dominant although winter use also occurs. Judging from the number of entries over the approximately three year period covered, recreation use of the cabin is increasing each year. Many of those who used the cabin apparently did not



Fig. 6. A University of Montana backpacking class near Mosquito Peak in October, 1971.



Fig. 7. The "Snowshoe Inn" near Carter Lake--a welcome sight in winter.

stay overnight--especially those who said they were traveling by motorcycle. The addresses given indicate that some use was by non-local residents and even out-of-state residents. Many people mentioned the beautiful scenery and the wildlife of the area, while others mentioned the rough and unmarked trails and their fear of becoming lost. Most of the entries appear to be made by local people who just wanted to get out of town and hike and fish for a day or two.

On August 23, 1967, the Forest Service set up a traffic counter on the Rattlesnake road about 2.8 miles north of Sawmill Gulch. Little data were collected in this traffic survey attempt because the road was soon closed due to extreme fire danger. The road was re-opened on September 11 and the traffic counter again set up, this time .2 miles north of Sawmill Gulch. The test period encompassed the weeks of September 12 to September 26. Analysis of this latter traffic count indicated that the average daily traffic for the period was 105 vehicles per day with a weekday average of 74 vehicles and a weekend average of 177. The heaviest traffic period was between 10:00 a.m. and 10:00 p.m. and the greatest traffic for a one-hour stretch was 50 vehicles at 6:00 p.m. on Saturday, September 23 (Lolo National Forest, 1967). These data indicate that the road was well used every day during that period but was used over twice as much on weekends as weekdays.

Several papers have been written by University of Montana students identifying the recreation resources of the upper Rattlesnake and proposing various methods of utilization. One proposal (Conklin, 1971a) calls for dispersed use of the upper Rattlesnake to protect the water supply while capitalizing at the same time on the recreational resources the area has to offer. A follow-up report (Conklin, 1971b) contains a recreation plan with proposed facility developments to provide the experience levels outlined as part of the preceding recreation proposal.

Another proposed plan for the area was offered by two geography students at the University of Montana (Laughrun and Parsons, 1971) who studied recreation in the upper Rattlesnake in the spring of 1971. In addition, several forestry students under the direction of professors Robert Wambach and Richard Behan, wrote senior theses on recreation in the upper Rattlesnake in the spring of 1972 as part of a forestry 482 course in integrated resource management.

Recently a study was completed on winter recreation conflicts in the upper Rattlesnake as part of a Masters thesis at the University of Montana. William Mahoney (1972), a geography student, studied winter recreation activities, patterns, and conflicts in the upper Rattlesnake and Lolo Pass areas near Missoula. He personally surveyed winter recreationists (including snowmobilers, snowshoers, ski tourers and hikers) at the Rattlesnake Road entrance gate at

Sawmill Gulch on selected weekdays and weekends during the winter of 1971-1972. A short questionnaire was designed to determine where respondents went, what activities they did, and how they felt about the other people they saw.

Mahoney concluded that "snowmobiling conflicts with non-motorized winter recreation in an overwhelming majority of cases." He characterized motorized recreationists (snowmobilers) generally as being gregarious and insensitive to crowding. In the upper Rattlesnake he found that travel by trail (as opposed to cross-country) was predominant for all types of recreationists studied, therefore intensifying user conflicts. His recommendations for the upper Rattlesnake drainage included spacial or temporal zoning to help resolve these conflicts and to increase the recreation capacity of the area.

Wildlife

Although there are many interesting and varied wildlife populations in the upper Rattlesnake, abundant information exists only on the ecology of mule deer. White (1958) studied the summer range of the mule deer herd from the summer of 1957 through fall, 1958. Bailey (1960) began in the fall of 1958 to study the behavior of mule deer on their winter range and finished in 1960. Klebenow (1962) and Fairman (1966) studied the mule deer from the fall of 1960 to 1962. Klebenow studied the vegetation of the winter

range and Fairman studied the behavior of the deer on the winter range. Knoche (1968) studied deer-browse relationships in the winters of 1966-67 and 1967-68 and made data comparisons with the earlier mule deer studies.

Other than the mule deer, the only wildlife species that has been studied within the drainage itself is the mountain goat. Nearly twenty-five years ago, Casebeer (1948) studied the food habits of the mountain goats on their winter range on the cliffs south of the mouth of High Falls Creek. At that time he estimated 15-20 mountain goats in his study area.

Rattlesnake Creek and some of its tributaries and lakes sustain fish populations. It is estimated that there are 30 miles of fishable streams within the drainage--all closed to fishing (Lolo National Forest, 1972a). In a recent mountain lake survey completed by the Montana Fish and Game Department (1971), a pontoon equipped helicopter and two men were employed to survey 59 remote mountain lakes to determine the fisheries status of each. They surveyed 40 lakes within the Rattlesnake drainage and 7 lakes in the adjacent high country to the east and west. Nine lakes within the drainage contained trout (rainbow, Westslope cutthroat, or Yellowstone cutthroat). Thirty-one lakes had no fish but of these, 7 were recommended as being suitable for fisheries management. In the adjacent high country, one lake contained

Yellowstone cutthroat trout and 6 lakes had no fish, but of these, 4 were recommended as being suitable for fish. If the total potential is realized in the future, 21 out of 47 lakes could provide recreational fishing opportunities.

A summary of the existing information on many of the Rattlesnake's wildlife populations was compiled as part of a proposed wildlife management plan for the area (Conklin, 1971c). A unique proposal for wildlife management is presented in the plan which contains several tables and maps indicating wildlife habitats, populations, trends, food habits, and hunter harvest. The proposal calls for wildlife management within the area to be dedicated to preserving a variety and abundance of fish and wildlife (of all species) so that the public may easily observe and photograph wild animals in their natural habitats. This will involve habitat manipulations to provide for the variety and abundance desired, possible elimination of predator hunting, a reduction or postponement of hunting seasons, and facilities and trails to enable the public to observe wildlife while keeping conflicts to a minimum. At present, nowhere in Montana has non-consumptive use of wildlife dominated management considerations except in national parks and some wildlife refuges.

CHAPTER IV

PRIMITIVE AREAS AND PUBLIC DESIRES--

AN UNMET DEMAND

Research and administrative investigations of the needs and desires of outdoor recreationists indicate that a significant demand exists for a type of recreation area lying between that of strict wilderness concepts and conventional mass-recreation facilities and areas (Snyder, 1960; Wildland Research Center, 1962; Lucas, 1964; Mills, 1967; Hendee, et al., 1968; Stankey, 1971).

Urban-Wilderness Concept

With the population explosion and ensuing crowded urban conditions, more people are seeking outdoor experiences which bring them closer to nature and away from crowds. But for varying reasons, an extended wilderness trip is not the answer for everyone. A happy medium is required to provide these seekers of a recreational experience with a level they can handle.

Since there is a dearth of intermediate recreation levels, picnickers are beginning to use more environmentally pleasing auto campgrounds for their activities and crowded

auto campers are moving into classified wilderness areas. Neither of these categories--auto campgrounds or wilderness areas--was meant to serve members of the other and must not be allowed to do so. There is a definite need for a land use classification between that of motorized use and wilderness. Lands in this type could be designated "pioneer areas," "backcountry areas," "roughing areas," "primitive areas," or "semi-wilderness areas." For the purpose of this paper, the term "urban-wilderness area" is used to impress upon the reader where the need for this type of land class is most acute and to indicate the types of users for which the planning of these areas should be geared. Urban-wilderness then, refers to a relatively undeveloped area in proximity to an urban population, one in which nature prevails but is modified to provide experience levels desired by the urban dweller.

The Outdoor Recreation Resources Review Commission (ORRRC) Report No. 3 (Wildland Research Center, 1962, p. 11) recommends three functions for this area type:

- (1) to provide an uncrowded recreation environment without complete withdrawal of commercial resources from use;
- (2) to provide a camping environment for those desiring to avoid roadside camping environments but with lesser demands than are satisfied by wilderness; and,

- (3) to reduce the recreational demands on classified wilderness areas.

What characteristics should an area possess in order to attract people seeking "urban-wilderness" recreation? Foresters responsible for recreation management in several national forests are of the opinion that people are seeking recreation areas within an easy hike from good access roads or areas possessing trails geared to foot and horseback travel. Desired characteristics include intensive trail signing, firegrills and stoves, tables, toilets, shelters, separate campsites for horsemen and hikers, and interpretive facilities. Few are concerned with the ecological history of the area, a high degree of solitude, or any other forest activities, so long as these other facets do not interfere with their interests. They are looking primarily for roadless areas where scenery and natural beauty are protected and wildlife values enhanced or maintained (Mills, 1967; Worf, 1970). They are willing to accept carefully planned and controlled resource uses such as timber harvesting, livestock grazing, water impoundments, sites modified to provide recreation opportunities, wildlife habitat manipulations, and administrative use of vehicles and roads within the area (Wildland Research Center, 1962, p. 303).

People are increasingly turning to designated wilderness areas as an outlet when the opportunities are lacking for the experience level they desire. For this group and

for those who are unable to utilize the wilderness area outlet, there must be an alternative provided. There are large and small undeveloped and unroaded tracts of public lands across the United States that could be used in many ways to satisfy the need outlined above. The ORRRC study (Wildland Research Center, 1962, Chap. 2) shows that adjacent to reserved wildernesses alone there are almost 7 million acres of undeveloped and unreserved lands. Much of this and other separate tracts of public land may remain unroaded or undeveloped in the future because of rough topography, fragile soils, harsh climate, low resource values, or even high resource values that would be destroyed by too much or the wrong kind of development. Yet these same lands can produce a multiplicity of goods such as wildlife, forage, water, sometimes timber--and almost always, recreation.

The concept of providing recreation opportunities between that of wilderness and conventional motorized recreation is not a new one. It has been developing over the years and may soon reach fruition. Many others have followed the early proponent of this idea, Robert Marshall (1933), founder of the Wilderness Society. These disciples have defined and refined the concept (Carhart, 1961; Wildland Research Center, 1962, p. 11, 303; ORRRC, 1962, p. 71; Lucas, 1964; Hendee, et al., 1968; Stankey, 1971, p. 277)--nurturing it until it could stand by itself and be recognized

as a valid objective in outdoor recreation planning.

The Dissatisfied Wilderness User

Studies of wilderness users have found significant numbers of people who are dissatisfied with their experience or are seeking experiences which are inimical to wilderness preservation. For example, in an administrative study of a portion of the High Sierra Wilderness Area in California (Snyder, 1960), it was found that out of 182 parties interviewed, 149 listed a purpose of their trip as fishing; 138, camping; 80, hiking; and only 26 listed solitude. In a study of wilderness users in four National Forest wilderness areas, Stankey (1971) found that almost half (48%) were not seeking solitude and only 40% of the visitors were seeking an experience that was coincident with wilderness management objectives.

A study of three wilderness areas in the Pacific Northwest, Hendee, et al. (1968) reported that many visitors preferred facilities and developments that were essentially prohibited in these areas by the Wilderness Act. Visitors to the three different areas showed little variation in their attitudes. Their findings also suggest (p. 33) "that nature-oriented attitudes do thrive among those raised in urban settings and that continued urbanization of our society is likely to increase, not decrease, the preference of many

for wilderness-type recreation." Their attitude study suggests that there is a continuum of users from the wilderness-purist to the urban-oriented and that many wilderness visits are only an escape from the artificiality of contemporary environments into untarnished natural settings that are emotionally gratifying.

Lucas (1964) found in his study of the Boundary Waters Canoe Area in northern Minnesota that remoteness from access points had little to do with the canoeist's idea of wilderness. Also, other resource uses such as logging seemed much more compatible with their "wilderness" concept than did crowding and conflicting types of recreation. Several gravel roads open to the public were even within many of the visitors' concept of "wilderness."

Merriam and Ammons (1967) in their study of wilderness users in three Montana areas (Mission Mountains Primitive Area, Bob Marshall Wilderness, and Glacier National Park) reported that although most visitors frowned upon motorboats and motorcycles, several interviewed in each area didn't find motorcycles objectionable. Surprisingly, although roads were "loudly opposed," radio--and even television for some--seemed less objectionable than the presence of motorized vehicles in the wilderness.

Some of these same studies indicate that much wilderness use may be presently escape oriented visits of short

duration. For example, Merriam and Ammons (1967) found that average length of stay varied from 8 to 2 days between areas depending on size, available opportunities and access. Handee, et al. (1968) characterized their average respondent as taking over six wilderness-type trips a year but averaging only a little more than two days per trip.

In a test of visitor sampling procedures in the Mission Mountains Primitive Area in 1968, it was found that the average length of stay was only 14 hours. And surprisingly, over 80% of all groups (almost all were hikers) left wilderness the same day they entered (Lucas, et al., 1971). The Mission Mountains Primitive Area is long and narrow, with many lakes, good access, and only a few hours drive from several population centers.

The Dissatisfied "Recreationist"

Many recreationists look upon outdoor recreation as a means of experiencing nature but still remain among the "mechanized-motorized" crowd. Hendee and Campbell (1969) studied the developed campground user in Washington State and reported that the majority of campers who use highly developed campgrounds do so primarily because of social rather than environmental aspects of the experience. Nevertheless, they report an increasing minority of recreationists prefer an environment-oriented camping experience and that

primitive sites off the beaten track might be best preserved for them.

A user evaluation of auto campgrounds in Michigan was conducted by Lucas (1970). He found that most visitors judged a campground by rating its general environmental quality which was essentially scenery. Although half of the people said they were not interested in the available hiking trails, about two-thirds of those at campgrounds without trails said they wanted them. Interestingly, the very small campgrounds (3 to 6 units) had the most satisfied customers and those who favored campground expansion the least.

In regards to hiking opportunities, in another paper Lucas (1971, p. 119) says, "The greatest need at this time, however, is for day-use opportunities, which must be close to or even inside major population centers. This is clearly the kind of hiking and the sort of location where the demand is greatest and the opportunities are most limited."

Existing "Urban-Wilderness" Areas

The need for the "Urban-Wilderness" area definitely exists but there are few, if any, areas designated as such in the United States today. There are several "semi-wilderness" areas in existence but their facilities, location, access and size are not geared presently to the urban needs.

An example of this type of area is given by Lucas (1964) in describing the Boundary Waters Canoe Area. Here, a relatively primitive environment exists in the minds of the recreationists, yet in some areas motorboats are used, camp facilities such as toilets, tables, and firegrills have been provided, and logging and other resource uses are practiced concurrently. However, the primary purpose of the area is not urban-wilderness recreation and some uses and facilities may have to be terminated.

Several areas in the Northern Rocky Mountains have been designated specifically to provide "roadless recreation opportunities for people of varying ages, physical conditions and interest" but for the most part, these also lack the proper requisites for urban-wilderness recreation. One of these areas is the Mallard-Larkins Pioneer Area east of St. Maries, Idaho. Facilities here are non-existent, trails low-standard, access poor, and the area is over 100 miles from any significant urban population. The same can be said for several "scenic areas" in northwestern Montana.

There is presently one area in Montana, however, that comes close to meeting the definition of an urban-wilderness area. This is the 15,349-acre Jewel Basin Hiking Area. Motorized equipment is ~~now~~ allowed, nor are horses, but basic facilities such as firegrills and toilets are provided. Access is good and the area is only 17 miles east of the

city of Kalispell and 18 miles south of Columbia Falls. The area attracts nature-oriented campers and day-hikers, fishermen, and wildlife enthusiasts. Recreation use is carefully controlled to prevent pollution, erosion and possible watershed damage, and to protect mountain goat habitat. Jewel Basin, though, lacks several characteristics that other areas possess (notably the upper Rattlesnake drainage near Missoula) which would contribute to urban-wilderness recreation. First of all, the area is not varied or large enough for a continuum of facility developments from the broad bicycle path and log cabin shelter to the primitive backpacker camp. Secondly, although Jewel Basin is close to an urban area, it is not within walking distance and has little access except during the summer when the roads are dry. Consequently, it cannot provide a daily, after-work escape area that is necessary to the urban dweller.

CHAPTER V

MISSOULA OUTDOOR RECREATION SURVEY

Introduction

One of the best and most direct ways to find out what people do and what they want to do is to ask them. Direct observation may at times give a more accurate picture of what people actually do, but this technique can only be applied on a limited scale and only where the activity takes place. Therefore, a telephone survey was designed to sample a random number of Missoula area residents to determine their outdoor recreational activities. The survey was formulated to gather the following types of information.

Objectives.

The purpose of the survey was to assess the outdoor recreational needs and desires of the people in the Missoula area, who are all potential users of the upper Rattlesnake. In this manner it was possible to determine what people do or want to do most and thus perceive the relative demands that may be placed on the upper Rattlesnake to fulfill these needs. The first objective, then, was to classify selected recreational activities as to relative frequency

of participation. In order to get a more refined estimate of participation, it was desired also to classify activities as to when they were done as well as how often. The next objective was to establish, if possible, relationships between specific types of activities and several socio-economic characteristics in order to determine the characteristics which best distinguished participants from non-participants. Another objective was to determine which activities people said they enjoyed the most, regardless of what they did the most.

The questionnaire was designed also to provide specific information on the upper Rattlesnake Creek watershed. It was designed to identify the types and relative amounts of recreational use of the watershed and visitor opinions of recreational use conflicts and the area itself.

A secondary objective when designing the questionnaire was comparability with other outdoor recreation surveys so that information might be compared with state and national survey results. Although many surveys were studied, the primary guides used in this respect were the surveys by Kirkpatrick and Barth (1971) and Mueller and Gurin (1962).

Accompanying the Missoula Outdoor Recreation Survey Questionnaire in Appendix A are the Question-by-Question Objectives which attempt to clarify the intent of each ques-

tion. Also in Appendix A is a list of definitions of recreational activities adapted from the Bureau of Outdoor Recreation (1967). It must be kept in mind that these definitions and their interpretation are what the respondent perceives them to be from the information on the questionnaire only. Further clarification using these definitions was given only when the respondent requested it or otherwise indicated some confusion about the meaning.

Description of population.

Review of U.S. Bureau of the Census (1971a) data for the Missoula County population (which includes the population sample utilized in this paper) indicates a rapid increase of over thirty percent in the last decade. Most of the 58,263 inhabitants are white with less than two percent being Negro or other races. About one-third of the population is under 18 years of age and nearly eight percent is 65 years of age or older. Over sixty-one percent of those 14 years of age and older are married. Slightly less than one-half of those over 18 years of age are males--the ratio of males to females is sharply declining statewide during this century. The data also show that for 1970 there were 18,012 households within the county, an increase of 33.4% during the last decade. A median of approximately three persons per household was reported.

Census data (1971b) also indicate that Missoula County

is quite urbanized with almost seventy-five percent of its residents living in an urban setting with a population of 2,500 or more. The median school years completed for persons 25 years of age and older is 12.6, or a little more than high school. Of those employed, 52.5% were in white-collar occupations; 24.4% in government; and 12.1% in manufacturing industries. The median family income was \$9,066 per year with 16.7% having a family income of \$15,000 or more.

Study Methodology

Sampling method.

The survey was designed to be conducted by telephone. Several biases were to be expected, as outlined below, but they appear to be as few in number as would result from other methods of contact. Other than the fact that there are households without telephones or with unlisted numbers, the one major drawback to this survey was that the survey took place for a very short period of time (three weeks), yet the respondent was asked to recall information covering the entire year, including seasonal activities.

Increasingly widespread ownership of telephones¹

¹Statewide surveys conducted in Missouri in 1968 and 1969 showed that about 10% of the respondents did not have a telephone as compared to 22% for Missouri reported in the 1960 Census of Housing (Leuthold and Scheele, 1971). Nationally, homes without telephones decreased from 25% in 1960 to 19% only five years later (U.S. Bureau of the Census, 1965, p. 5).

coupled with the relatively low cost of telephone surveys has spurred a renewed interest in this survey method. As mentioned above, however, several biases must be recognized when choosing a sample from a telephone directory. There are many without telephones. Leuthold and Scheele's data (1971, p. 251) indicate that the highest rate of nonpossession of telephones is among those who are low in income and high in isolation. "Isolation" includes those who are psychologically or physically isolated from the mainstream of community life.

The incidence of unlisted numbers (Leuthold and Scheele, 1971) showed no correlation with income or occupation. The two characteristics that did stand out with regard to having an unlisted number were being black and being a big city dweller (over 50,000 population).¹

The above study also revealed that samples based on telephone directories "will exclude one-third or more of the blacks, the separated and divorced, and service workers, and one-fourth or more of the large city-dwellers" (p. 254).

¹Unlisted numbers were comparatively high among apartment dwellers, younger people, the divorced and separated, labor union members, households with only one adult and children, and service workers, such as policemen. The major reason mentioned (38%) for wanting an unlisted number was obscene or crank phone calls. This was especially mentioned by blacks and elderly women. Twenty-five percent did not want salesmen to call them at night, 11% wanted to avoid disturbances that would wake children or nighttime workers, and 14% gave miscellaneous reasons.

People in rural areas are more likely to be listed in a telephone directory than those living in the large cities. Leuthold and Scheele's data (1971, p. 255) also indicated "that 90% or more of some groups are listed in telephone directories, including residents of medium-sized towns."

It appears from the above discussion that the Missoula telephone directory may include a relatively complete listing of households in the local telephone exchange area, as there are very few blacks, and no large city in the area. Some younger people who would otherwise be left out of the sample were chosen from the University of Montana telephone directory. Some of the other groups above, such as the low income group, were possibly underrepresented in the sample.

Personal interviews and mail interviews were considered, but they would not remove all of the above biases and would also have biases that the telephone interview would avoid. Contacts are more difficult and more expensive to make with personal or mail interviews and non-respondents cannot be contacted later as easily as with a telephone interview. It is estimated that personal household interviews cost around \$25-\$35 per interview, while telephone surveying is least expensive at less than \$5 per interview (Fight, 1969, p. 16). Another study (Leuthold and Scheele, 1971) estimated that interviewing costs for telephone inter-

views were only one-third as much per interview as compared to the personal interview.

Telephone surveys, to be effective, must be short. According to Fight (1969, p. DD-7), about 15 minutes is the maximum average interview time. On longer interviews, the reliability of the answers falls off rapidly and respondents begin to get irritated and hang up. For the purposes of this survey, a 10-minute telephone interview was sufficient to obtain the desired information.

The time available to complete the survey was short, namely, a few weeks. However, in order to minimize the time-of-year bias on activity recall, the survey was planned for the spring, between the two different activity seasons of summer and winter.

In summation, for the purposes of this study, the advantages of a telephone survey far outweighed its disadvantages. It was the least costly, the least time-consuming, a random sample was relatively easy to obtain, and personal contact helped to promote understanding and insure a more reliable response. Finally, the telephone interview has not been used widely in recreation research and, consequently, there is a need to use and develop this technique and determine its benefits and weaknesses.

Sampling area and size.

Since the study is based on local recreational needs and opportunities, the sampling area must also be local in nature. Missoula County was first considered as a possible sampling area but the county extends beyond any concept of "local" in the minds of Missoula residents. For example, many residents in the Swan Valley area of Missoula County actually maintain closer ties with Kalispell than with Missoula.

The sampling area, therefore, was chosen to coincide with the local Missoula telephone exchange, as it represented a more reasonable local population. Also, statistics on the number and location of telephones within the Missoula telephone exchange area are kept by the Mountain Bell Telephone Company. A map of the sampling area is shown in figure 8. Within the area sampled are the cities and towns of Missoula, East Missoula, Milltown, Bonner, Lolo and Florence, with a total population of approximately 54,249. This was estimated by subtracting the Seeley Lake-Blackfoot, Frenchtown-Evaro, and one-half of the Bonner-Clinton division populations from the total county population estimated in 1970 (U.S. Bureau of the Census, 1971a).

The sample size tentatively decided upon for the survey was 190. This represented approximately a 1% sample of

MISSOULA OUTDOOR RECREATION SURVEY
SAMPLE SUB-AREAS

- | | | |
|---------------------|------------------------|-------------------|
| 1.--north Missoula | 3.--Rattlesnake Valley | 6.--west Missoula |
| 2.--Missoula Valley | 4.--E. Msla.--Milltown | 7.--Lolo-Florence |
| | 5.--southeast Missoula | |

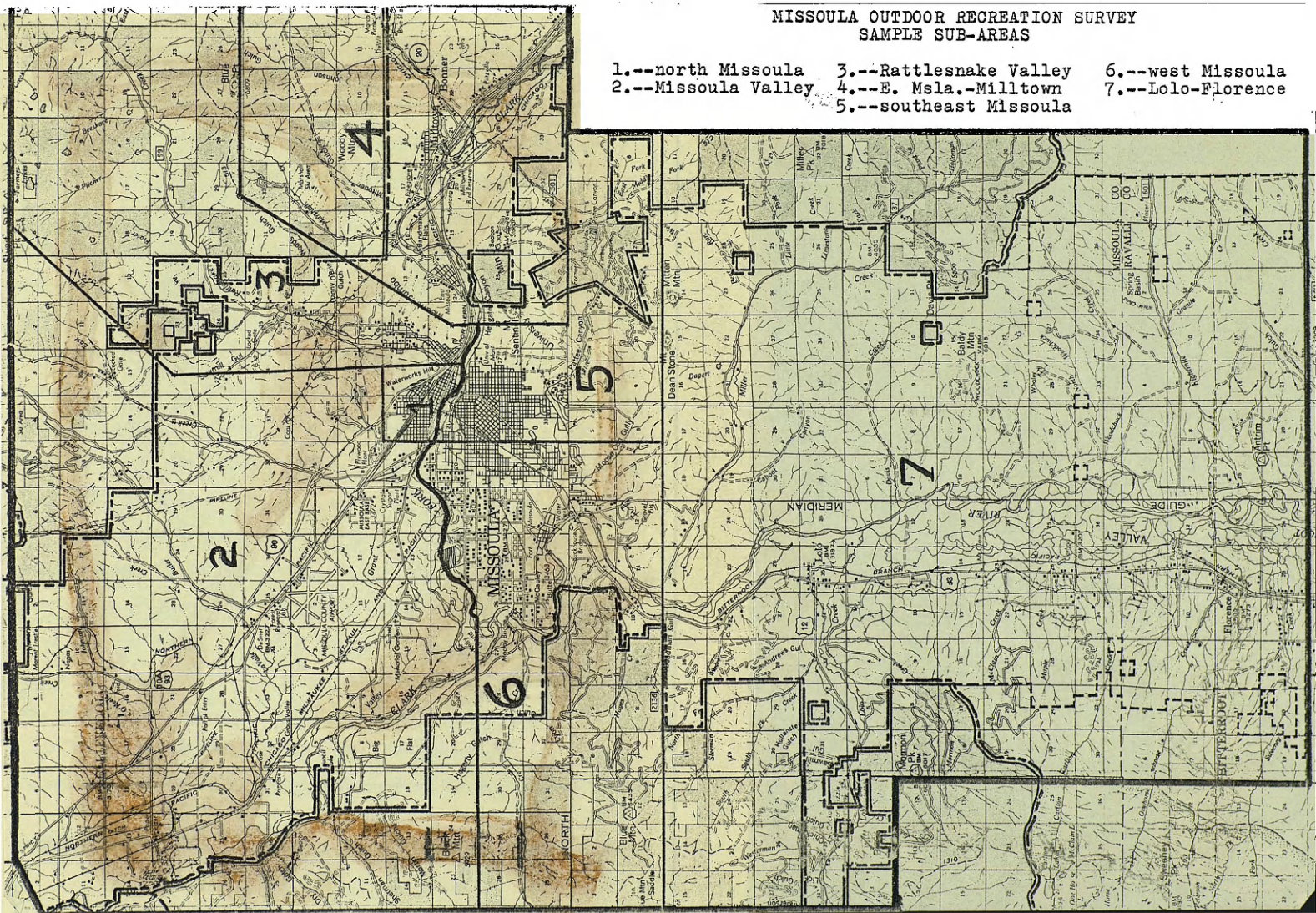


Fig. 8. Map showing Missoula Outdoor Recreation Survey sampling area

the non-business phone listings in the local telephone exchange. Data compiled by Mountain Bell Telephone Company (1972) using the 1971 Missoula Telephone Directory, lists 16,738 local exchange resident phone numbers and 2,667 business phone numbers. They have no records of the number of unlisted phones or residences without telephones but estimate about 2,500 residences with phones that are left unconnected. Figuring an average of 3 persons per residence, the local sample population represents approximately 50,000 residents, or 4,000 less than the estimated total sampling area population. From these estimates it appears that the number of residences not listed in the telephone directory may be quite small.

Within the local population are approximately 2,000 students who reside on the University of Montana campus that are not represented in the Missoula Telephone Directory. They are, however, listed in a campus telephone directory and a 1% sample (about 20) of the campus households (figuring one person per household) was added to the 1% sample (about 170) of the local households, for the total of 190. This represented .35% of the estimated sampling area population.

Sample selection.

The sample was selected from the 1972 Missoula Telephone Directory and the Fall 1971 University of Montana Cam-

pus Directory using random sampling procedure. Random number tables were used to pick the page, column, and entry number from the Missoula Directory. As for the university campus residents, their names were selected randomly from a list of campus residents before their phone numbers were located in the campus directory. This procedure eliminated the possibility of selecting off-campus students twice, since they were listed in both directories.

Business listings and telephone numbers that were already interviewed on a prior selection were not selected and another random number was chosen. It was decided to interview whoever answered the telephone as long as the respondent was 12 years old and a household member. A specific student was requested when interviewing university campus residents. The sampling was done on an individual rather than family group basis since comparisons can more easily be made between individuals than between different family groups.

Interview procedures.

The sampling was done at the rate of approximately 9 interviews per day (63 per week) for a period of 21 days (3 weeks). Telephone numbers were chosen randomly in advance at the rate of approximately 8 from the Missoula Directory for each one university resident.

Interviewing took place between the hours of 9:00 a.m.

and 9:00 p.m. each day. On week days at least 5 of the 9 interviews were completed after 5:00 p.m. to insure contacting the head of the household and older children as much as possible. Those respondents not reached on the first call were called again later the same day, once the next day, and again not less than 5 days later before they were dropped from the sample. This procedure helped in contacting those who may have been on vacation.

Telephone numbers which had been disconnected or which proved to be non-residential numbers were eliminated from the sample and others chosen. All persons who lived in the Missoula area long enough to be included in the 1972 telephone directory (5 months) were considered residents for the purpose of this survey.

Once the desired respondent was contacted, the interview began unless the respondent refused to be interviewed or indicated that he would rather be called at a later date. Each situation was noted on the questionnaire and the interviewer proceeded on to other numbers. Small children were asked to call their "mom or dad" to the phone.

Answers were not suggested to the respondent. If uncertain about an activity, the definition was read to him. If reluctant to answer a question, the purpose and confidentiality of the survey was repeated. Beyond that, non-response was accepted and recorded. Information that was given which

was not specifically requested or not allowed for within the questionnaire design was written in the margins of the questionnaire.

Immediately following the interview, the questionnaire was checked for blanks and illegibility. Comments were recorded and any unusual answers, combinations, no answers, or blank spaces were explained in the margins of the questionnaire at that time. The telephone number of the completed interview was checked off in the telephone directory and at the end of each day, the interview information was transferred onto a tally sheet. The interviews recorded on the tally sheet were then marked with a check.

Method of analysis.

After completion of the survey, all questionnaire answers were transferred onto an IBM coding form, except for some multiple answers which were left on the tally sheet. Answers were coded numerically according to a code sheet made up before the survey. One computer card was key-punched for each questionnaire using the numbers recorded on the coding form. The use of computer cards made it possible to use an automatic card sorting machine for fast tabulations and cross-tabulations of the questionnaire data.

Presentation of the data in this paper is mostly in the form of tables and lists showing either the percentages of responses in different categories or the actual number of

responses. Percentages prevail, however, because they are easier to interpret and can be expanded upon to infer attributes of the total population. Estimates of sampling errors are calculated for most of the data, and medians are calculated for some of the socio-economic data. When relationships between certain variables or attributes are tested, the test used is noted.

Accuracy of estimates.

Sampling errors have been estimated by computing the standard error of a percentage for a simple random sample using the formula:

$$S_p = \sqrt{\frac{(p)(1-p)}{n}} \quad (\text{similar to Dixon and Massey, 1969, p. 100})$$

Where:

p = sample percentage possessing some attribute

n = sample size

The formula was solved for 2 standard errors, or a 95% confidence interval. This means that if the survey were repeated, 95 times out of 100 any percentage reported will fall within the specified confidence interval.

Tables are presented in Appendix B showing the confidence intervals for selected percentages for the total sample of 180 and for the sub-sample of 88 who were upper Rattlesnake users. Percentages given in the tables in

Chapter VI generally can vary by chance within the intervals listed in Appendix B. The largest sampling errors are associated with the 50th percentile where the error can be a maximum of about $\pm 7.45\%$ for the sample size of 180, and $\pm 10.66\%$ for the sub-sample of 88.

Pilot Survey

A pilot survey was conducted in February and March of 1972. The objective was to show up residual weaknesses in the questionnaire design and permit the author to get a "feel" for this type of interview. A secondary objective was to roughly establish the relative magnitude of the expected response for each category to determine if greater or fewer categories were required. One hundred interviews were completed, 76 by a class at the University of Montana and 24 by calling randomly dialed phone numbers. Further explanation of the pilot survey and the results obtained are given in a report for a sociology class at the University of Montana by Conklin and Kipp (1972).

CHAPTER VI

SURVEY RESULTS

Response Rate

A total of 260 telephone numbers were called during the survey. Of these, 180 completed interviews were obtained or about 69% of all numbers called. Out of 202 people actually talked to, only 22 (or about 11%) refused to be interviewed. Twenty-six numbers were phones that had been disconnected and 32 numbers did not answer on the fourth call. A large majority of those who refused to be surveyed were females (73%). The following reasons were given for not wanting to be part of the survey:

not interested	9
don't want to participate	6
don't want to answer any questions	3
don't feel well	2
no reason given	2

Most of those who refused, reacted as though the survey was a ploy to try to get them to buy something. Quite a few just did not want anyone to bother them or use their time. Some felt their privacy was being invaded and did not want to answer any questions about themselves. A few were even quite abusive on the phone! The overwhelming majority, however, gladly participated in the survey. Some

said it was fun and others who were busy at the time of the call even offered to call as soon as they were free.

Attention was called to the survey about two weeks before it began through a news release in the local newspaper explaining the purpose and benefits of the survey. The objective of the news release was twofold. First, it prepared potential respondents for the survey by telling them what to expect and that the survey was for the public good and not private gain. Also, the news story was mentioned to respondents when introducing the survey over the phone. This served to inform those who did not read the article that the survey was in the public spotlight.

The news release fulfilled both objectives quite well. Some respondents mentioned that they had read the article or may have read it. Others said that they had not read it, but seemed impressed by the fact that there was one. The news story might have been recalled by more respondents if it could have been published only a day or two before the survey began. A follow-up news article during the survey might have improved the response rate also.

Most of the questions on the survey form were readily answered. The most sensitive questions, as expected, were those relating to socio-economic factors. It was debated whether to ask the respondent's age early in the interview as a screening question, but results show that no one

refused to answer this question. The most sensitive question, by a large margin, seemed to be the one of income group. Thirteen percent of those interviewed did not answer this question (which was the last question asked) although some non-response was due to members of the household who did not know what the family income was. It is possible that this question may have been most sensitive because people finally refused to answer after answering several questions which were becoming more and more personal in nature.

Outdoor Recreation in Missoula

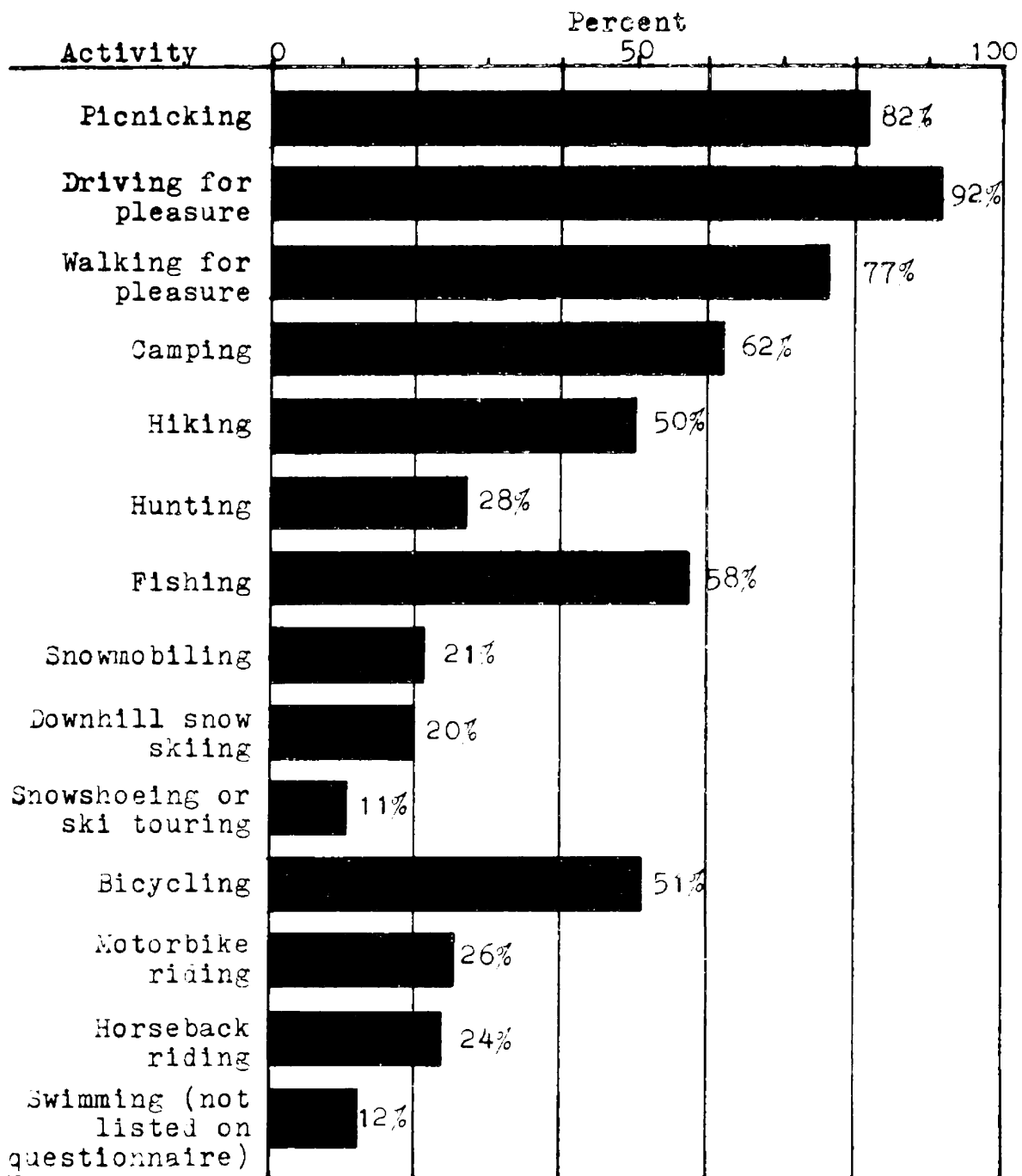
In order to predict what demands may be placed on the upper Rattlesnake area to provide outdoor recreation, it is necessary to determine what activities people are interested in doing. The telephone survey has yielded important information in this regard. Several tables and graphs were prepared to present the information gathered during the survey. The percentages given are rounded off to the nearest one percent to keep the tables simple and easy to read.

Table 1 shows the overall participation rates for fourteen outdoor recreational activities. Over half of those interviewed participated in at least 7 of these activities during the last 12 months.

Leading the list are the three activities that lead

TABLE 1

PARTICIPATION IN SELECTED OUTDOOR RECREATIONAL ACTIVITIES



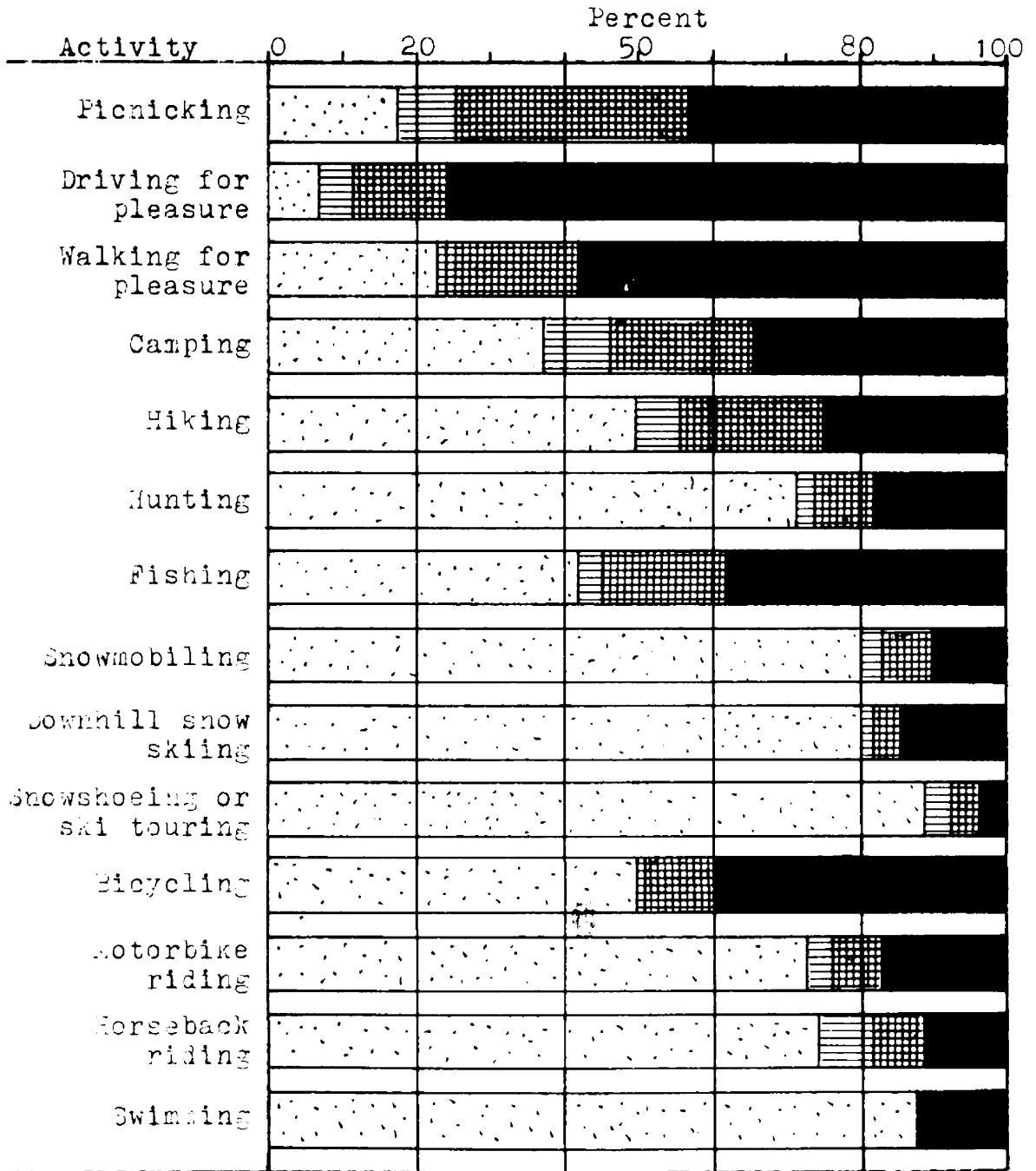
most outdoor recreation lists--driving for pleasure, picnicking, and walking for pleasure. Swimming, near the bottom of the list, is much more important than indicated because it was not even one of the activities mentioned to the respondent. When asked, "Is there any outdoor activity you like a lot that I didn't mention?" swimming was mentioned over twice as often as any other activity.

It appears that the most popular activities are those which require the least skill and special equipment and those that can be done in many places and seasons. Those activities that require a certain place, season, or special skills or equipment apparently attract fewer participants.

Table 2 shows the frequency of participation in the above 14 activities during the past 12 months. Here, too, the activities which require little skill or advanced preparation and are not restricted as to place or time were participated in more often than others. Most people went snowshoeing or ski touring four times or less while most swimmers went five times or more and no one mentioned going swimming only once. Driving for pleasure was overwhelmingly done five times or more in the last 12 months.

The participation rates for driving for pleasure, bicycling, and motorcycle riding are probably influenced by the fact that some people did not distinguish between riding strictly for pleasure and riding to work, on errands, or to

TABLE 2
 FREQUENCY OF PARTICIPATION IN SELECTED OUTDOOR
 RECREATIONAL ACTIVITIES



 0 Times
  1 Time
  2 - 4 Times
  5 Times or more

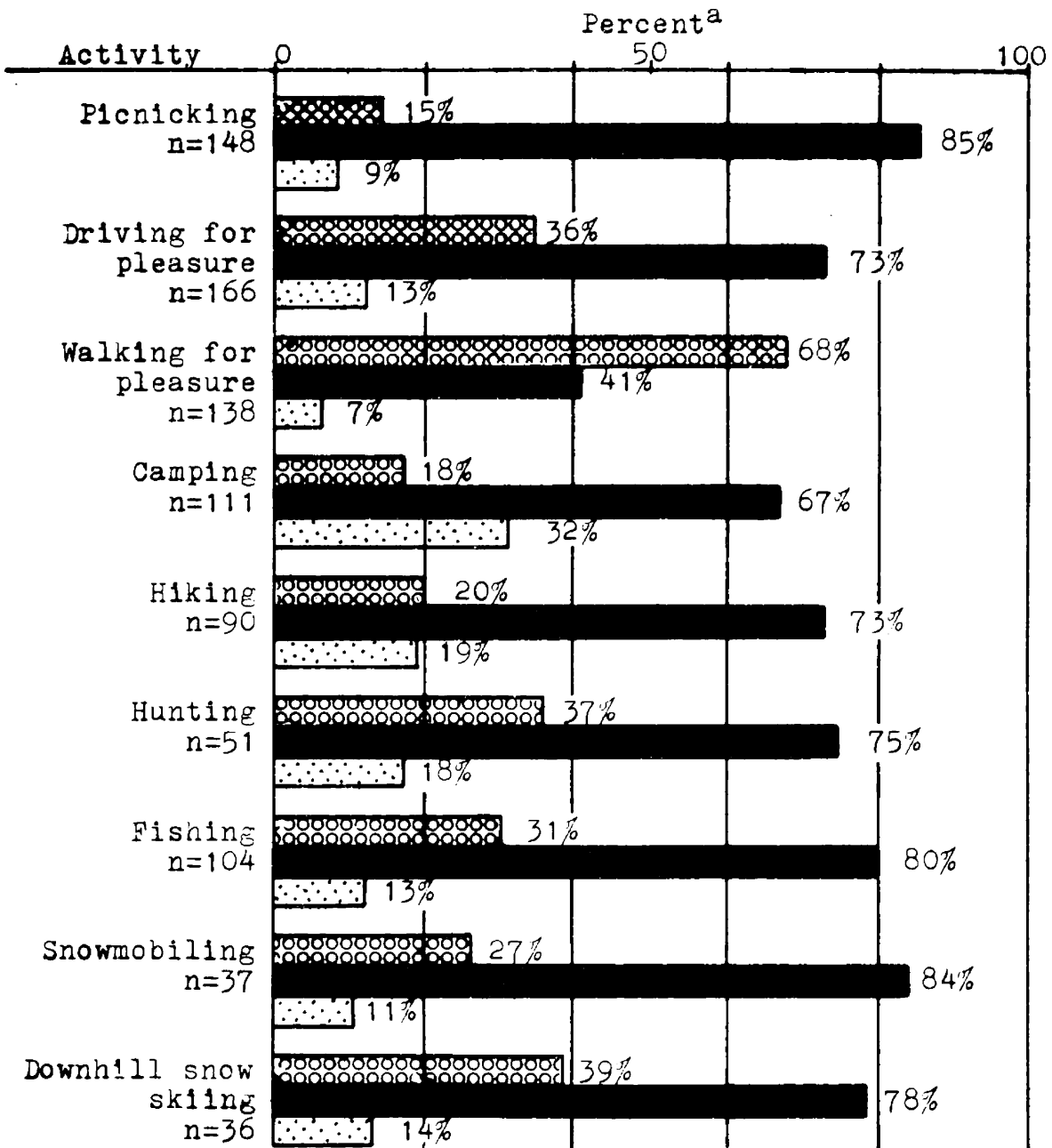
the store.

Table 3 shows when each of the 14 listed activities took place most frequently. Although most respondents chose a particular time period when they most often did an activity, some said they participated equally during the week, on weekends, and on vacations, or other combinations for some activities. The analysis reflected this by counting each time period mentioned as a "most often" if there were more than one. As can be seen, most activities are done on the weekend time period. Two notable exceptions are walking for pleasure and bicycling which are done considerably more often during weekdays. Motorbike riding is done as much if not more on weekdays as on weekends. Swimming appears to be popular on vacations as well as weekdays and weekends. Camping was popular on vacations but over twice as many people said they did it most often on weekends. This may indicate where, when, and how local campgrounds will be used now and in the future.

Prior to mentioning any activities, the question was asked, "Is there any particular outdoor activity that you enjoy doing a lot in your spare time?" Table 4 lists the activities the respondents said they enjoyed a lot, regardless of their actual participation. It should be kept in mind while reading the results that interviewing was conducted late in the spring. When replying to open-ended

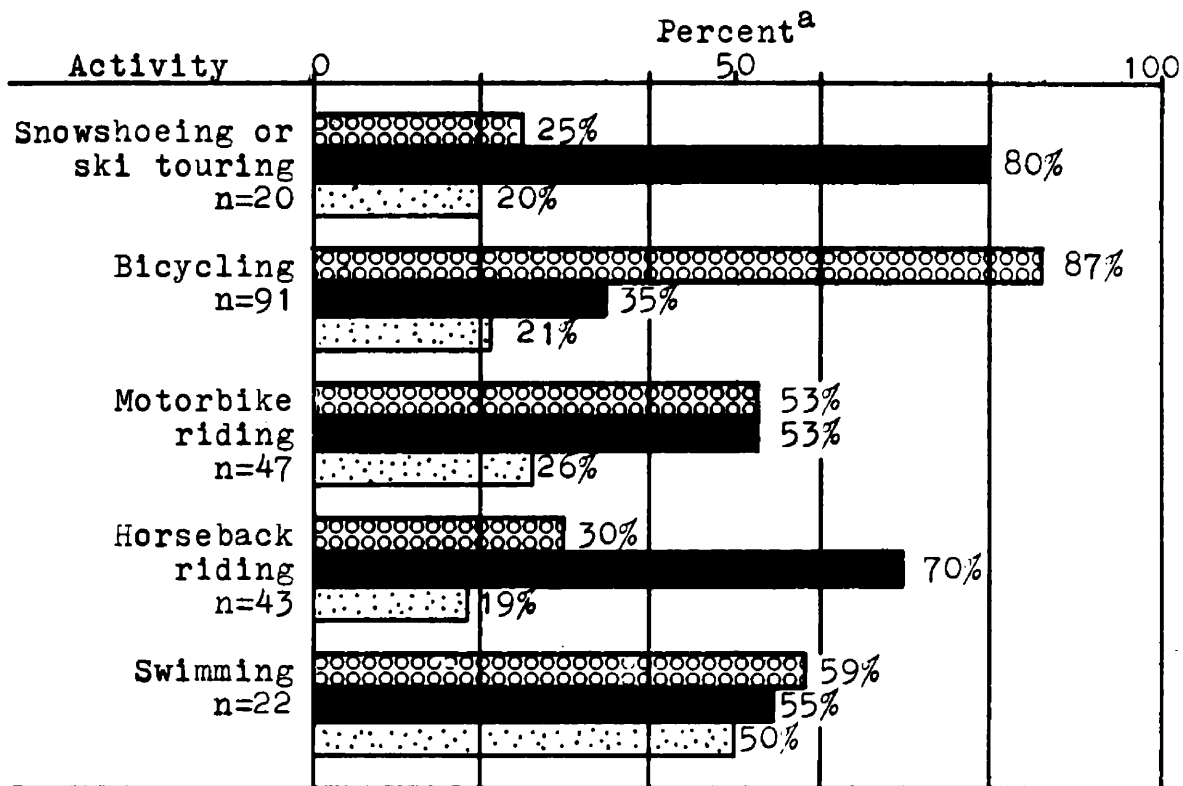
TABLE 3

WHEN ACTIVITY TAKES PLACE MOST OFTEN



continued on next page

TABLE 3--Continued



^a Sometimes multiple answers were given, therefore totals will exceed 100 percent.


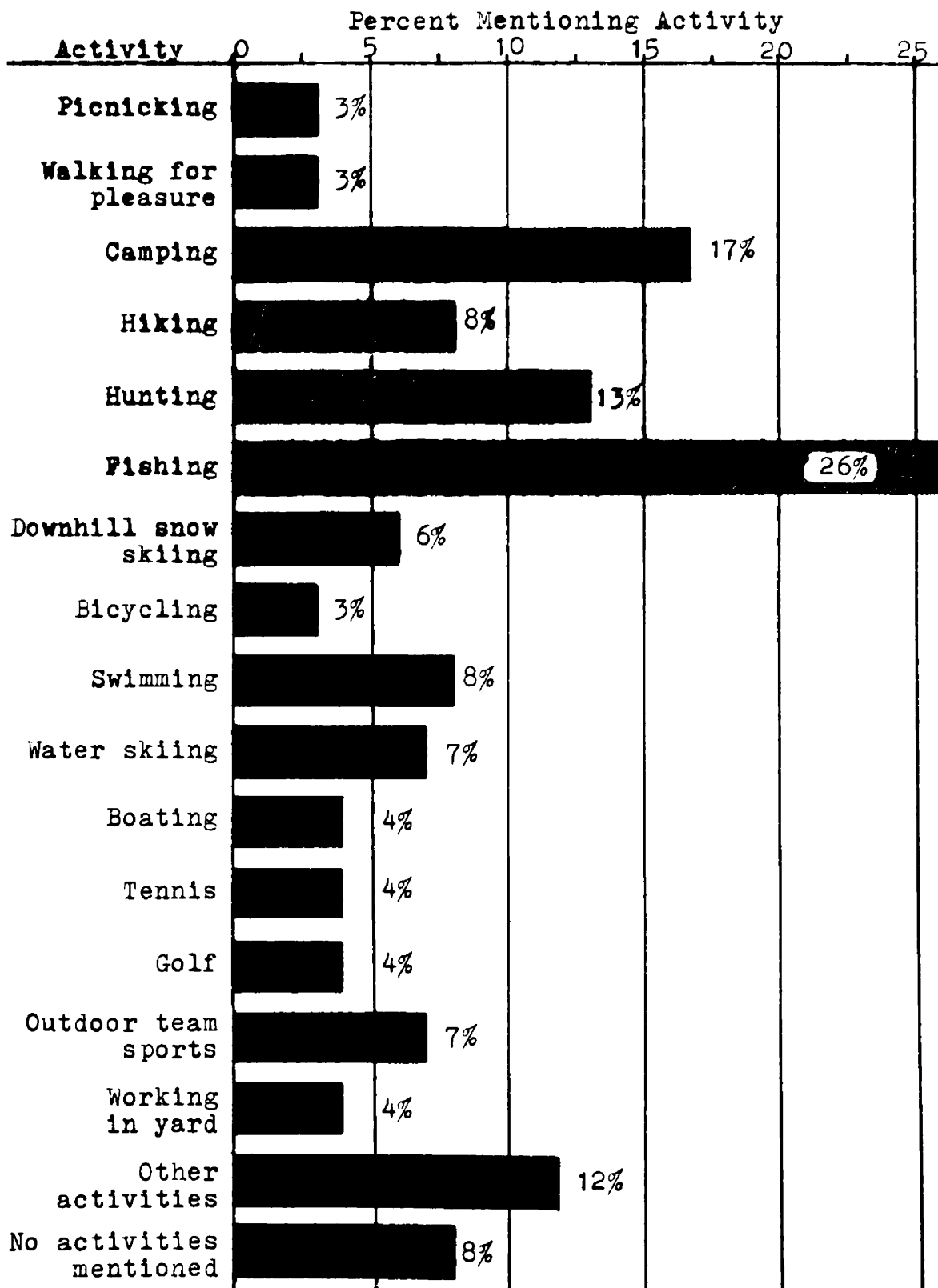
 During the Week
  On Weekends
  During Vacation

TABLE 4

OUTDOOR ACTIVITIES SPONTANEOUSLY MENTIONED

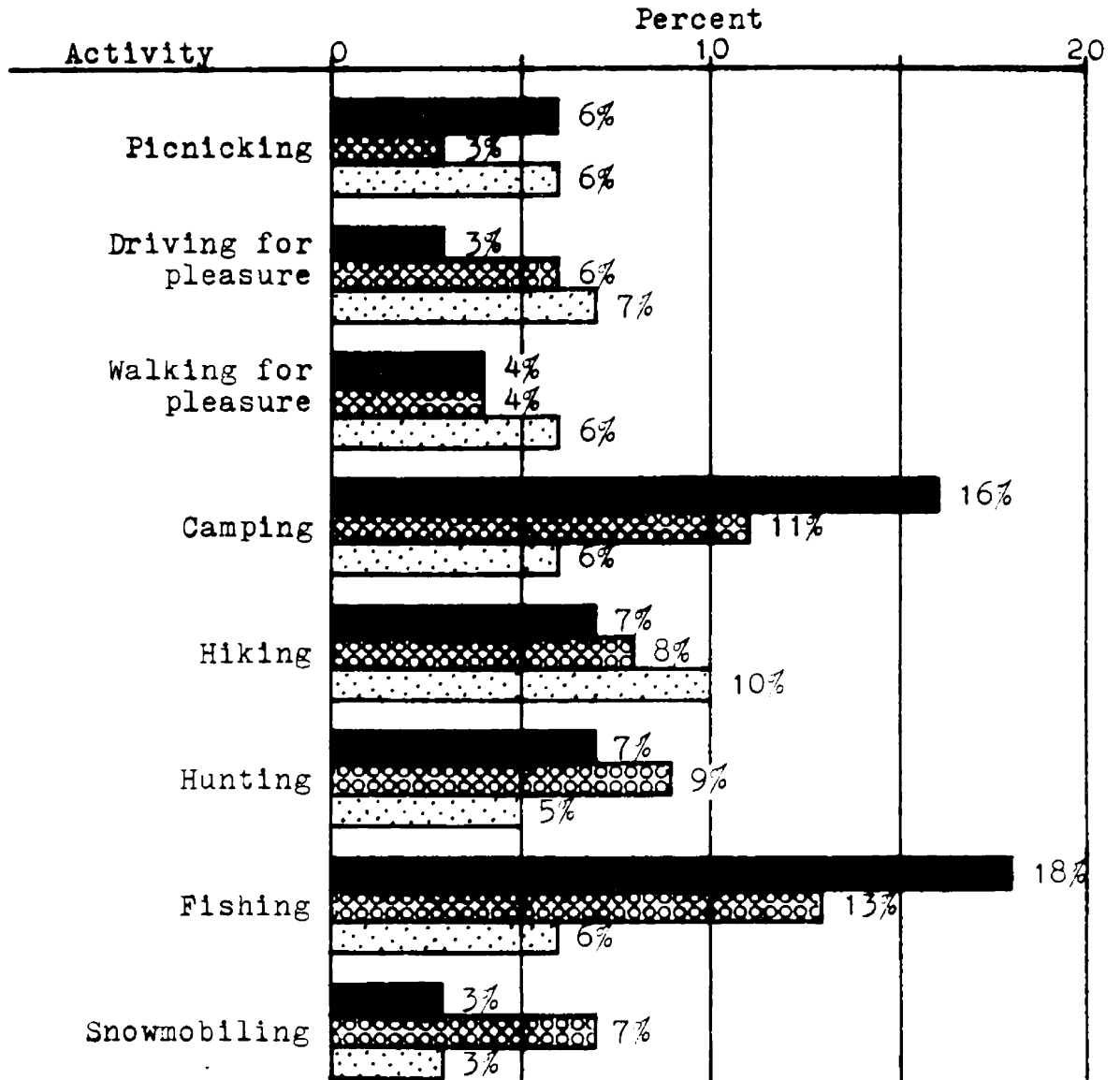


questions, people tended to mention what was most salient in their minds at the time.

The results are quite interesting as none of the three most frequently participated in activities were mentioned by more than 3% of the respondents. Driving for pleasure, with a 92% participation rate, was mentioned by only 2 people. The natural environment type activities of fishing, camping, and hunting led the list by a good margin.

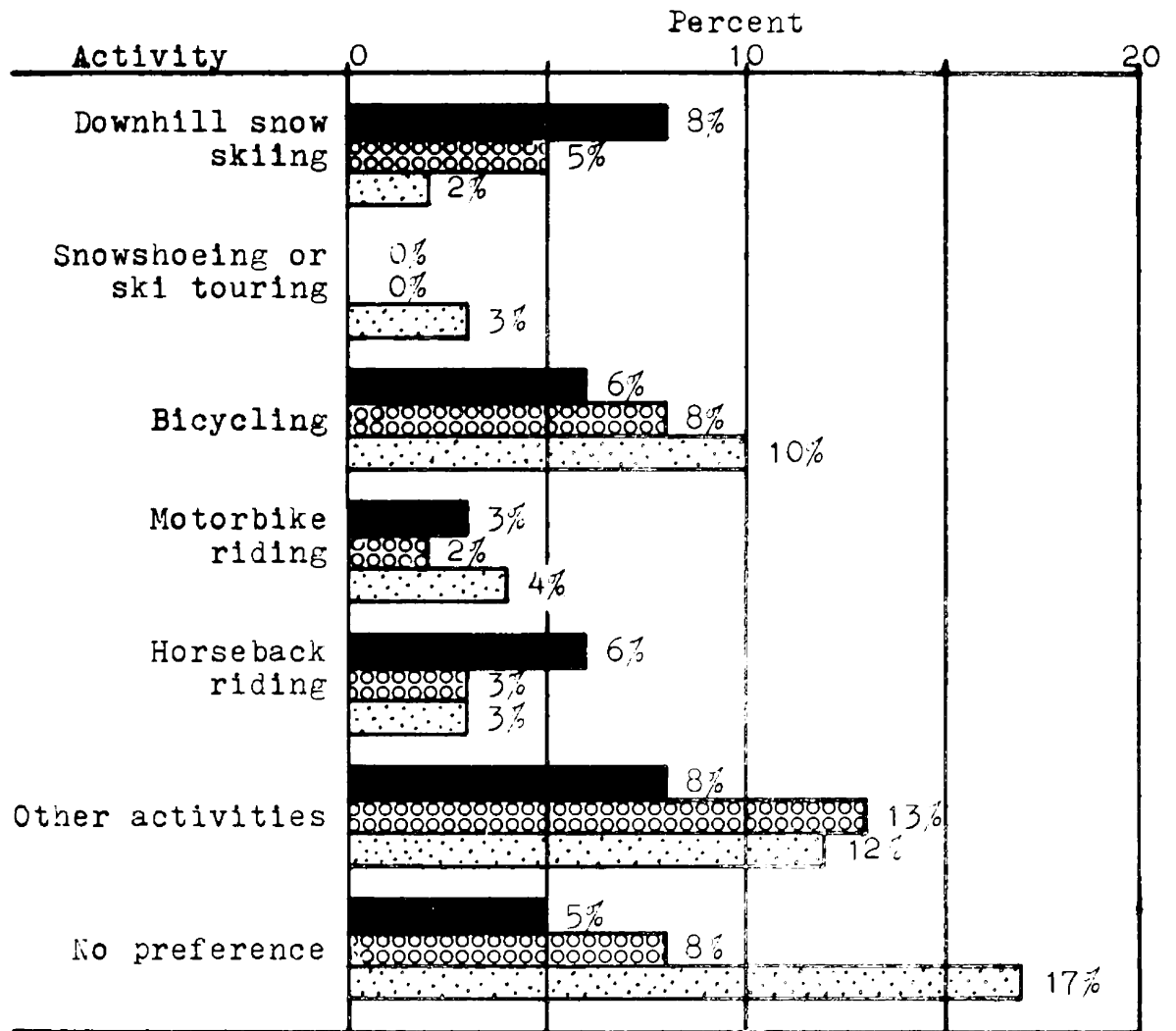
After the outdoor activities had been mentioned to the respondents, they were asked which ones they liked best, next best, and third best. Table 5 shows the results. Again, driving for pleasure was not very popular although Table 2 shows it was done 5 times or more during the last 12 months by 76% of the respondents. It was picked as a second or third choice, however. Fishing and camping were the first and second most preferred activities. Many who did not pick them as a first preference, did as a second or third. Hiking and bicycling apparently were not very exciting first choices, but were picked many times as a second choice and very often as a third. While downhill snow skiing was liked best quite often, snowshoeing or ski touring was rarely mentioned at all. This is probably due to the fact that relatively few people participate in this form of recreation, since facilities for the sport--such as signs, trails, and shelters--are almost non-existent.

TABLE 5
 PREFERENCES FOR SELECTED OUTDOOR
 RECREATIONAL ACTIVITIES



continued on next page

TABLE 5--Continued



First Preference
 Second Preference
 Third Preference

Recreation in the Upper Rattlesnake

Almost half (49%) of the respondents said that they had been to the upper Rattlesnake. Fifty percent said that they had never been there and 1% either said they were not sure or did not answer the question. This indicates the proportion of the population who have used and may continue to use the area. It was not expected that such a high percentage of the population would be users, although a pilot survey made in March of 100 people showed almost the same result (48%).

In an effort to determine if recreational use of the upper Rattlesnake drainage was limited to those who live adjacent to it, the sample area was divided into the 7 sub-areas shown in figure 8 (Chapter V). Questionnaires were coded 1 to 7 according to the address listed for the phone number. It was then determined how many respondents in each sub-area said they visited the upper Rattlesnake. Table 6 shows the results.

It came as no surprise that a majority of those who live in the lower Rattlesnake Valley use the area most heavily. What was surprising, though, was that a fair proportion of those in every sub-area were users of the upper Rattlesnake as well.

Analysis reveals that the upper Rattlesnake has been overwhelmingly a day-use area up to now. As shown below, nine out of ten people said they usually did not spend the

TABLE 6
WHERE UPPER RATTLESNAKE USERS LIVE

Sample Sub-area	Percent Who Have Visited Upper Rattlesnake	Number of Samples
1. north Missoula	48	21
2. Missoula Valley	29	7
3. Rattlesnake Valley	80	15
4. E. Msla.-Milltown	60	10
5. southeast Missoula	41	75
6. west Missoula	51	49
7. Lolo-Florence	50	2
Unknown	--	1

night in the area.

<u>Average Length of Visit</u>	<u>Percent</u>
Part of a day	90
One night	8
More than one night	2

This high percentage is influenced by the fact that the area has no recreation facilities and thus visitors are discouraged from staying overnight. Also, the area is used by many people for activities of short duration such as afternoon walks and picnics.

Almost half, or 48%, of those who have been to the upper Rattlesnake visited the area at least once during the

last 12 months (even though the road was closed to automobile traffic), as shown below:

<u>Visits During the Last 12 Months</u> <u>(June 1971 to May 1972)</u>	<u>Percent</u>
Not at all	51
1 time	15
2 to 4 times	18
5 times or more	15
No answer	1

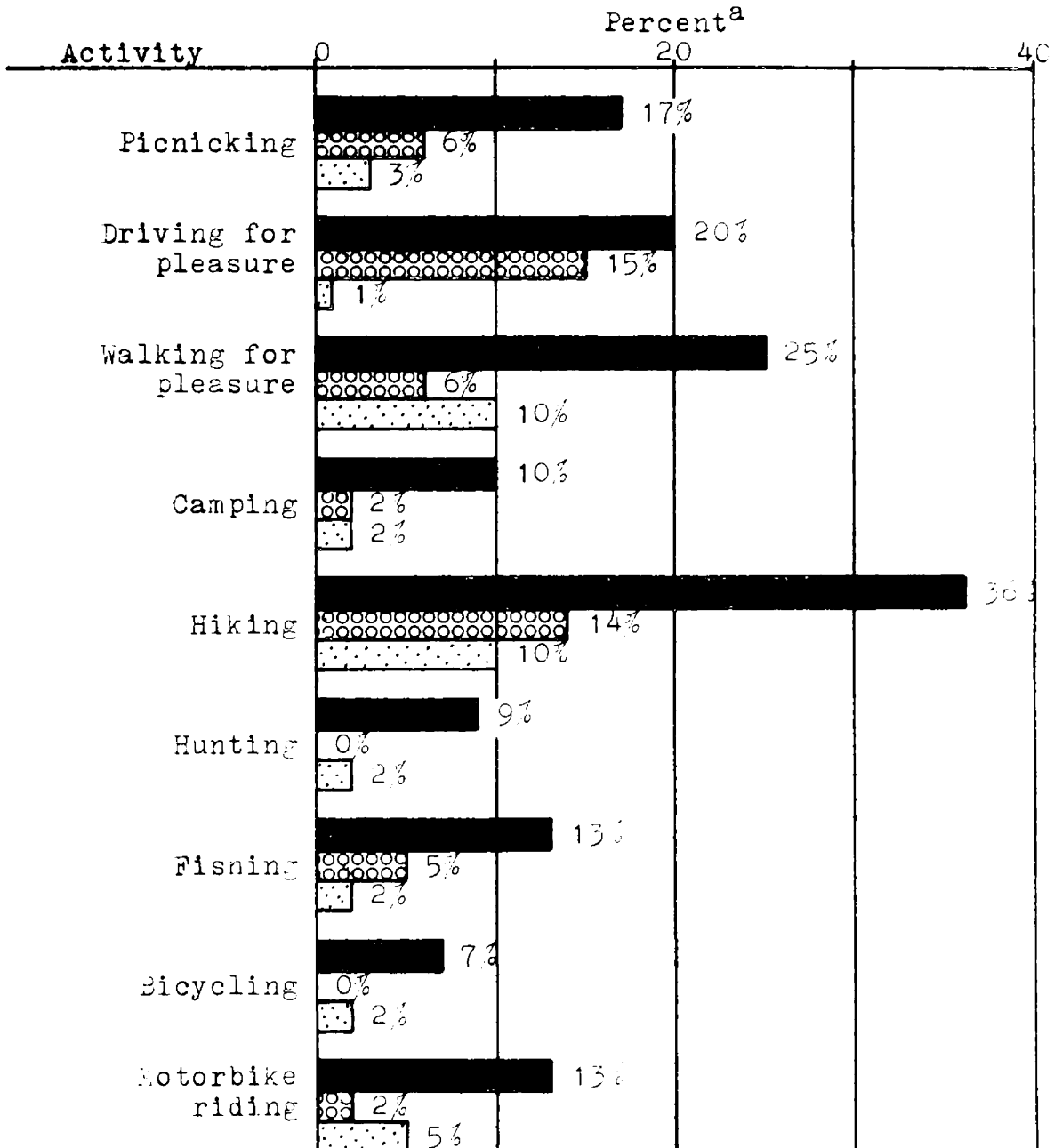
Many people who use the area apparently do so regardless of their not being able to drive a car up the valley.

Table 7 shows the outdoor activities most commonly engaged in while visiting the upper Rattlesnake. People were asked what activities they usually did and all activities mentioned were tabulated. Cross-tabulations were also made to determine if different activities were done by visitors who have visited the area within the last 12 months (during which the access road was closed to automobile traffic) than by visitors who have not.

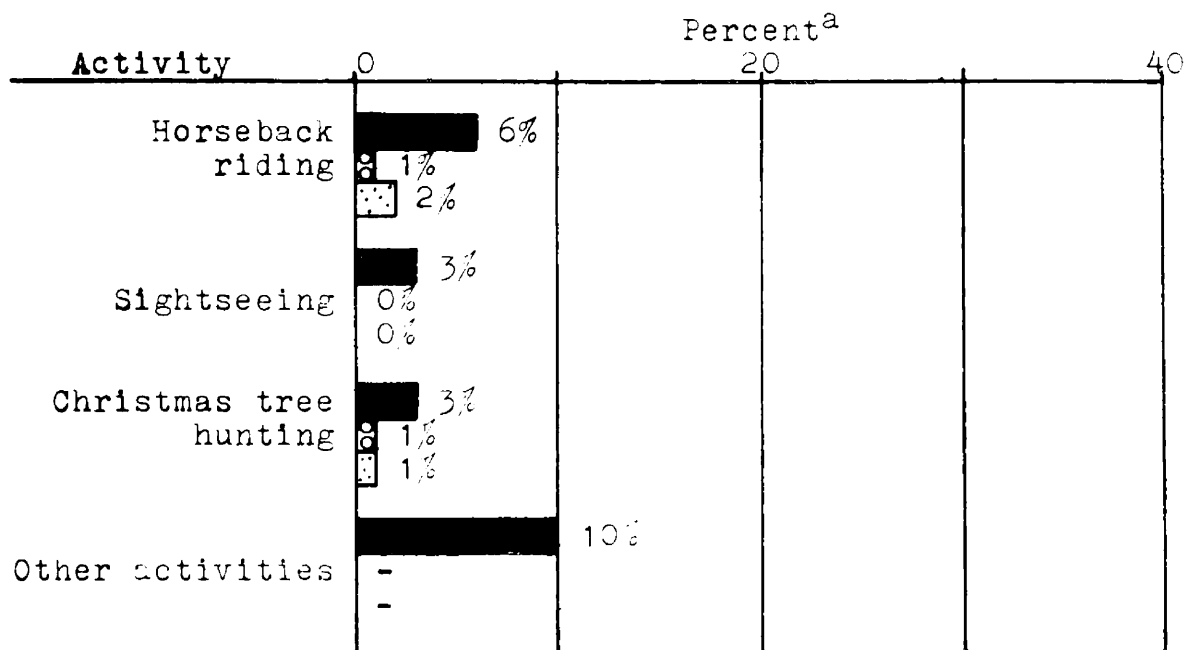
Hiking and walking for pleasure were the most frequently mentioned activities. These two similar activities combined were mentioned by over 60% of the respondents when asked what they usually did in the upper Rattlesnake. Barely anyone mentioned snowmobiling, or snowshoeing or ski touring. This may be due to the rough terrain and lack of facilities in the area. Driving for pleasure, overall, was more popu-

TABLE 7


OUTDOOR ACTIVITIES DONE IN THE UPPER RATTLESNAKE

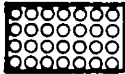


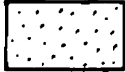
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TABLE 7--Continued

^a Sometimes multiple answers were given, therefore totals will exceed 100 percent.

 Total users mentioning activity

 First activity mentioned by users who have not visited in last 12 months

 First activity mentioned by users who have visited in last 12 months

lar apparently than motorbike riding but, as expected, these activities have done an about-face during the last 12 months since automobiles have been banned from the area. Some of those who have not visited the upper Rattlesnake within the last year may not have liked the recreation activities available in the area then or now, did not return, and thus have different recreation preferences than those who still use the area.

Visitors were also asked what they liked and didn't like about the area. Below in Table 8 are qualities that visitors said they particularly enjoyed.

TABLE 8
QUALITIES ENJOYED ABOUT THE UPPER RATTLESNAKE

Quality Particularly Enjoyed	Percent Mentioning Quality ^a
Beautiful scenery	44
Landscape features--lakes, mountains, meadows, etc.	16
Peace and quiet (solitude)	10
Not many people	9
Close to town	8
Wildlife	7
Place to get away to	6
Being outdoors	3
Nothing particularly enjoyed	19

^aSometimes several qualities were mentioned, therefore, total exceeds 100 percent.

It was amazing that almost half of all the visitors mentioned the beautiful scenery of the area presumably as a

quality they wish to see augmented or preserved. In fact, the natural features of the area (streams, wildlife, scenery, etc.) were mentioned by over two-thirds of the users. These are eye-opening statistics when you realize that this was an open question where the respondent was free to express any thought he desired. Almost one-third of the respondents enjoyed the area because of qualities which allowed them to relax and escape for a while the pressures of the city (quiet, place to get away to, close by). Only 19% of the visitors did not particularly enjoy something. The large percentage of users mentioning environmental qualities indicates that the upper Rattlesnake is not just "a place to go."

Attesting to the feeling that the upper Rattlesnake is an enjoyable area at present is the fact that nearly two-thirds of the respondents said that they found nothing particularly disappointing or annoying about the area. Table 9 shows the influences that were particularly annoying to the users.

The two most annoying influences, motorbikes and the road being closed to autos, were only mentioned by 15% of the users. While some objected to the road closure, others felt that there were already too many people in the area.

All respondents were asked the question, "Are you aware that the road into the upper Rattlesnake is closed to automobile traffic?" The response was as follows:

<u>Group</u>	<u>Percent</u>		<u>Group Size</u>
	<u>Yes</u>	<u>No</u>	
Total sample	41	59	179
Those who <u>have</u> visited there	64	36	88
Those who <u>have</u> <u>never</u> visited there	20	80	90
No answer	--	--	1

TABLE 9

ANNOYING INFLUENCES IN THE UPPER RATTLESNAKE

<u>Annoying</u>	<u>Percent</u> <u>Mentioning Annoyance^a</u>
Road closed to autos	8
Motorbikes and/or associated noise .	7
Rough road	5
Litter	5
Too many people	3
Creeks closed to fishing	2
Other	13
Nothing particularly annoying . . .	61

^aSometimes several annoyances were mentioned, therefore, total exceeds 100 percent.

Over one-third of those who have visited the area were not aware of the road closure. Presumably these are people who have not visited since the road was closed or a few who use alternate access routes.

Those who did use the upper Rattlesnake were asked their opinion of the road closure and responses were as follows:

<u>Opinion</u>	<u>Percent</u>
Agree	50
No opinion	24
Disagree	26

Almost twice as many users agreed with the road closure as disagreed with it. Many said they did not know the purpose of the closure but agreed with it if opening the road would endanger the water supply. Many of those who had no opinion were those who had not visited the upper Rattlesnake recently and were not aware of the closure.

All users were then asked if the road closure had affected the way in which they used the upper Rattlesnake. The results are listed in Table 10.

TABLE 10
EFFECT OF ROAD CLOSURE ON USERS

<u>Effect</u>	<u>Percent^a</u>
Can't drive my car there anymore	10
Don't go there anymore	9
Too far to walk up there now	3
Don't go up there as often now	2
Can't take my family with me anymore	2
Hard to get up there now	2
Have to use my motorcylce now	1
Road closure does not affect me	74

^aSometimes more than one effect was mentioned, therefore, total exceeds 100 percent.

Nearly three-fourths of the users said that the road closure did not affect them. Some said that the closure

didn't affect them because they presently were not users of the upper Rattlesnake. The effect most mentioned, as expected, was that it is no longer possible to drive up there in a car. Only 9% said specifically that they just did not use the area anymore because of the closure. Most effects were access difficulties rather than non-use.

Population Characteristics

A description of the demographic and socio-economic characteristics of the sample population can serve as a basis for comparing this with other samples of the same population now and over a period of time. Many characteristics are also predictors of recreational behavior to some extent.

The sex of the respondent was determined at the end of the interview after listening to the respondent's voice. Results show that 40% of the respondents were male and 60% female. Females seem to have been somewhat overrepresented in the survey as Census data (1971a) show that in 1970 in Missoula County, 49.9% of those over 18 years of age were males. The Census data are probably closest to the truth. This survey includes those 12 years of age or older and may be more representative of the local sampling area population in 1972. The Missoula area is the most urbanized in the county and Census figures show that the females to

males ratio sharply increases in urban areas over rural areas. The results could, however, be a chance sampling error, but more probably a bias if women or housewives tend to answer the phone more often than husbands. The difference between the sex ratios reported in this survey and the Census data were not significant at the 95% level when tested by Chi-square.

The median age of the sample population was 32 and the percent in each age group was as follows:

<u>Age Group</u>	<u>Percent</u>
12 - 14	2
15 - 24	33
25 - 34	22
35 - 44	11
45 - 64	23
65 or older	<u>9</u>
Total	100

In order to sample young people as well as adults, anyone 12 years of age or over was interviewed. However, not many young people answered the phone and only 2% of those interviewed were under 15 years old as compared to one-third of the county population who were under 18. Census data for 1970 show that about 8% of the Missoula County population was 65 years of age or older. Similarly, 9% of the respondents to this survey were in that age group.

The median school years completed by respondents of the survey was about 13, or high school plus a year of post

high school education. A little over half of the respondents had some post high school education as shown below:

<u>School Completed</u>	<u>Percent</u>
Less than grade school5
Grade school (6th grade) . . .	21
High school (12th grade) . . .	26
Some college or professional school (1+ years)	33
College or professional school degree	11
Graduate work	8
No answer	<u>.5</u>
Total	100.0

All respondents were asked what the head of the household's occupation was. The answers were then classified into the following nine categories:

<u>Occupation</u>	<u>Percent</u>
1. Professional, technical, and kindred workers	16
2. Managers, officials, and proprietors, incl. farm . .	14.5
3. Clerical	3
4. Salesworkers	3
5. Craftsmen, foremen, opera- tives and kindred workers .	16
6. Laborers	5
7. Service workers, including private household	8

(continued)

8. Student	19
9. Other (unemployed, retired)	14.5
No answer	<u>1</u>
Total	100.0

About 36% of the respondents said the head of the household was employed in a white-collar occupation. Students, though, made up the largest single group.

Lastly, respondents were asked which of the following groups they thought their family income was in for the year of 1971. Their responses were as follows:

<u>Income</u>	<u>Percent</u>
Less than \$3,000	3
\$3,000 to \$6,999	17
\$7,000 to \$9,999	19
\$10,000 to \$14,999	26
\$15,000 to \$24,999	15
\$25,000 or more	7
No answer or don't know	<u>13</u>
Total	100

The median family income was \$10,957 for last year with 22% having a family income of \$15,000 or more. This compares with the Missoula County Census estimate in 1970 of \$9,066 per year and 16.7% with family incomes of \$15,000 or more. These figures indicate that this survey was probably somewhat biased toward the higher income groups in the Missoula area.

This survey will help provide some of the information

needed to plan for outdoor recreation and the preferences of local residents in the Missoula area. It may be quite interesting to compare this information with the soon-to-be compiled information gathered by the Montana Resident Recreation Survey in 1971 and 1972.

CHAPTER VII

IMPLICATIONS FOR MANAGEMENT

This chapter attempts to summarize the recreational information reported in this paper and explore recreational patterns, compatibilities, conflicts, and needs in relation to the upper Rattlesnake watershed. Adequate planning for the highest and best multiple uses of the watershed must necessarily consider recreation, and facts as well as opinions are required for decision making.

Major Activity Demands

Survey results show that Missoula area residents are very active outdoor recreation participants. Use patterns indicate that participation in most activities occur during the free time on a weekend or each day, thus restricting many uses to nearby areas.

Of the activities listed on the questionnaire (activities which are currently possible in the watershed), participation is greatest in driving for pleasure, picnicking, walking for pleasure, camping, fishing, bicycling, and hiking. All of these activities are done significantly more often during the week or on weekends than on vacations. This means that local opportunities will be of extreme

importance in providing for future needs in this area. Camping was the only one of these activities that was done significantly more often during vacations, but this was by less than one-third of the participants.

A majority of these activities are done most often on weekends and thus destinations must probably be within one to two hours from home. However, actual distance differs greatly, depending on whether the activity is driving for pleasure or hiking, for example. Activities such as walking for pleasure or bicycling, done most often during the week, require areas within only a few minutes of home.

The activities that apparently yield the greatest satisfaction (those mentioned spontaneously and preferred) to participants, however, are fishing, camping, hunting, and hiking. All of these are activities which can be done weekend after weekend and during the week too if facilities are provided nearby.

The Role of the Upper Rattlesnake

The upper Rattlesnake provides opportunities for all of the activities mentioned above, as well as for others. Until now, the four preferred recreational activities in the area have been hiking, walking for pleasure, driving for pleasure, and picnicking. Hiking was number one by a good margin, but these are all activities which

can be done where there are few facilities such as in the Rattlesnake. Since the upper Rattlesnake is so close to Missoula and because it lacks recreational development, it continues to be primarily a day-use area. Traffic counter records indicate that the area is used daily but that heaviest use occurs on weekends. With proper facility development, opportunities exist to expand weekend use to include more overnight use in the activity spectrum.

The qualities users said they enjoyed and those that annoyed them support the contention that the upper Rattlesnake is already considered by many as an urban-wilderness area--a place where one can escape for a moment the sights and sounds of the mechanized world and enjoy the serene beauty of nature. As with the studies reviewed in Chapter IV which concluded that many people were seeking a new recreation experience, this study reveals (Tables 4 and 5) that the many activities associated with this intermediate experience level (fishing, camping, hiking, etc.) may also be the most satisfying. Thus, with proper planning and control, the upper Rattlesnake is in a position to provide a highly pleasurable recreation experience for many.

Recreation and Other Resource Values

Recreation is not the only--and possibly not the highest--resource value in the upper Rattlesnake watershed

and as time passes, the potential for conflict between recreation and other resource values becomes greater. At present, however, there appears to be only two significant conflicts: that of recreation and wildlife, and recreation and the municipal water supply. Happily these conflicts can both be reconciled with proper planning and good management.

The recreation-wildlife conflict, particularly involving the deer population, occurs primarily during the winter when these animals are forced onto restricted winter range areas near the city. Due to their concentrated numbers and weakened condition during this season, they are susceptible to multiple types of depredations as recreation pressure increases. Deer are killed each year by dogs, target shooters, predator hunters, and trappers. Others are killed indirectly by being frightened by snowmobiles, trail-bikes, shooting, and shouting. They may seek refuge in less hospitable or deep snow areas, where they are threatened with death by exposure, malnutrition, exhaustion, and, in addition, where unborn fetuses may be aborted due to stressful conditions.

Each of these effects serves to reduce the effective wildlife resource available to the visitor through direct population reduction or even decreased visibility, which in turn reduces the esthetic benefits to be had from this valuable unique resource. Reduction of this recreation-

wildlife conflict may be as simple as identifying key winter range areas and controlling all or certain types of recreational use within them during a few months of the year. The elimination or reduction of predator hunting within the area may also be necessary in order that coyotes and other small carnivores can become part of the visible attractions in this area once again.

The conflict between recreation and the municipal water supply may be more difficult to solve because the management of each resource costs money and managing for both of them will probably require a greater expenditure than the management of one alone. Public benefits are rarely maximized by single-use management (which may be less expensive in the short run) but usually by compatible multiple use of resources.

Chapter III demonstrated that many types of recreational activities are compatible with the objectives of municipal watershed management. In general, these are dispersed-use activities such as those that are now popular in the upper Rattlesnake. Concentrations of people, especially near water intake points, are to be avoided. To eliminate pollution, all activities in or near watercourses should be prohibited within a certain distance upstream from the municipal water intake point. Several miles upstream, though, activities could be allowed near streams if controlled properly and some activities, like fishing, could also be allowed

in the streams.

Since the major potential for water quality degradation would be from concentrated recreational use in the lower watershed, this key area must be protected. Possibilities for protection include:

- (1) restricting access by eliminating motorized vehicles;
- (2) controlling access by road location away from watercourses;
- (3) controlling access by fencing along the access road; and
- (4) limiting access to carefully planned designated facilities.

A point to remember is that the easier the access, the heavier the use. Possibly peripheral access points should be developed away from the major watercourses, reserving the lower valley for dispersed use by hikers and nature enthusiasts.

There should be a continuum of management objectives ranging from maximum watershed protection in the lower valley near the water intake point to increasing recreation opportunities as the distance from the water supply increases.

Another less discussed but equally feasible alternative for totally eliminating the recreation-water conflict is to eliminate the need for municipal water from the upper

Rattlesnake by developing other water supply systems utilizing underground sources (Konizeski, 1972). Underground systems in the Missoula Valley may be more economical in the future as the local population expands, and it should be kept in mind that the watershed characteristics of the upper Rattlesnake probably cannot be easily manipulated to produce much more water than at present.

User Conflicts

The actions and reactions of recreationists are sometimes difficult to predict. If something else does not drive them out of an area, they often will drive each other out. This predilection further illustrates the need to insure that recreational uses within a given area are compatible with each other. If this is not taken into account, and no matter how much total use there is, each type of user will be cheated out of the full benefits that should be provided by that particular activity.

There has been little or no planning for recreation in the upper Rattlesnake. As a consequence, the enjoyment of some activities is in direct conflict with the enjoyment of others. A well known example, and one which is debated often in the letters to the editor column of the daily Missoulian, is the issue of motorcyclists versus hikers. This conflict was indicated in this paper's survey by those who

signified that they particularly enjoyed peace and quiet and were annoyed by noisy motorbikes.

It is suspected that the greatest conflict has emerged between motorized users (motorcycles, automobiles, snowmobiles, etc.) and non-motorized users (hikers, walkers, snowshoers, horseback riders, etc.). Usually the resentment is one-sided with the non-motorized users finding the motorized users highly objectionable. Lucas (1964) and others have found that this conflict exists in many areas across the country.

This particular problem as it affects the upper Rattlesnake is discussed by Mahoney (1972) in his Masters thesis. His study (reviewed on page 29) revealed that three out of four complaints against snowmobilers were about noise and gas fumes. This is similar to many of the complaints against motorbike riders in the upper Rattlesnake. Most non-motorized recreationists, he found, desired no snowmobiles but were quite tolerant as to the number and kinds of non-motorized recreationists present.

Mahoney's data (page 50) indicate that although over three-quarters of the skiers in the upper Rattlesnake skied off the trail, only one-half were off for over 10% of the time (probably due to narrow, confining valleys and steep slopes). Hikers usually stayed on trails but snowshoers all spent some time off trails (since that is what

snowshoes are for). He found that the distance travelled from entrance points was greatest with snowmobilers, followed in order by ski tourers, snowshoers, hikers and sledgers. One conclusion was that conflicts are apparent, and since trail travel is predominant, these conflicts are becoming more acute.

To guarantee a quality recreation experience, these conflicting uses will have to be zoned to separate areas or some of them excluded entirely. If they are zoned to separate areas, care must be exercised that only compatible types of recreation will coexist within each area, otherwise this conflict will flare up again.

Compatibility and Needs

Since all recreational activities are not compatible with watershed management objectives or even with each other, some activities must necessarily be discouraged within the upper Rattlesnake.

The concentrated use of roads and facilities such as large picnic or campgrounds and residential developments has a great potential for creating water pollution problems. Easy access to the lower drainage has been provided by the road along Rattlesnake Creek. This road, however, already appears to be a constant erosion hazard and sediment source to Rattlesnake Creek. Increased use, especially by motorized

vehicles, will not only further degrade the road but will also present human contamination hazards as a result of increased visitation near Rattlesnake Creek. Since the Rattlesnake Valley is highly accessible to Missoulians, perhaps the answer is to construct a trail system to disperse and direct use, with peripheral roads reserved for most motor access points.

In the lower valley, motor vehicles are not compatible with water management objectives. Survey results show that most people accept the present road closure, especially if they know that its purpose is watershed protection. The need for the closure and the reasons for its location must be justified, however, before acceptance of a permanent closure can be guaranteed.

The survey results indicate several recreational activities that are in great demand locally. Not all of these activities are compatible nor do equal opportunities exist for participation. The key then is NEED! Where and what opportunities are needed the most? If two activities are incompatible, which opportunity is needed more? Are provisions already adequate for certain activities and, if so, what are they?

The purpose of Chapter IV was to outline a level of needs that have not been provided for locally. These and other needs--as well as demands--should be studied carefully

before recreation commitments are made in the upper Rattlesnake. For example, driving for pleasure was a very popular activity in the upper Rattlesnake and elsewhere; however, since opportunities for this activity in western Montana are already among the greatest in the nation, to develop the upper Rattlesnake for this particular activity would preclude development of much more needed opportunities.

Motorbike riding is only moderately popular at present within the upper Rattlesnake drainage, since opportunities for this activity also exist elsewhere with participants often utilizing both roads and trails as well as overland travel. Unlike walkers or hikers, motorized users are able to utilize areas much farther from home; consequently, if due to conflict with non-motorized users, this motorized activity is excluded from the upper Rattlesnake, the motorbike enthusiast will still have ample recreational opportunities elsewhere.

Hiking and walking for pleasure were very popular activities, especially in the upper Rattlesnake; yet little or nothing has been done to make these activities available to the people. The upper Rattlesnake is probably the greatest asset that Missoula has in response to these activity demands. In fact, there is so much that could be done to improve these experiences locally that the point of diminishing returns (which may have already been exceeded with driv-

ing for pleasure), may not be reached for quite some time.

It was surprising that bicycling was popular in the upper Rattlesnake as well as locally, since this activity also has been ignored in recreation planning up to now. There is definitely a need for expansion of opportunities for this activity.

It is of utmost importance that recreation planning for the upper Rattlesnake include public participation. To further this end, guidelines for consideration have been given in this paper. Attitudes, opinions, and preferences gathered from the people at large are presented here for thought and contemplation in an attempt to narrow and define possible management objectives. In the final analysis, the decision as to the recreational future of the upper Rattlesnake should be a popular choice made by informed citizens aware of the consequences of each alternative.

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^a(R) denotes upper Rattlesnake reference.

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APPENDIX A

Missoula Outdoor Recreation Survey

1. Questionnaire
2. Question-by-question objectives
3. Survey definitions

Page 1

Interview No. _____

MISSOULA OUTDOOR RECREATION SURVEY
(Spring 1972)

Telephone No. _____ Times called _____ (1-4)

Date _____ Time of day _____

Address _____

SPEAK TO WHOMEVER ANSWERS:

(IF CHILD, ASK: can I talk to your parents, please?)

Hello, is this (phone no.)? My name is (David Conklin) and I'm making a survey of outdoor recreation in the Missoula area. This is part of a study by the Forestry School at the University of Montana. You might have read about it in the newspaper a few days ago. I need your opinions about outdoor recreation so better plans can be made for the future.

Your number was picked at random from the telephone book and all answers are strictly confidential. May I have 10 minutes of your time to ask you a few questions?

(IF NOT, ASK: can I call back later?)

1. First of all, about how old are you?

(IF UNDER 12, ASK FOR PARENTS)

() 12-14 () 25-34 () 45-64
() 15-24 () 35-44 () 65 or older

General Recreation

2. Is there any particular outdoor activity that you enjoy doing a lot in your spare time?

() NO
() YES, What? _____

Now, I'll read you a list of outdoor activities. Would you please tell me how often you did each of these things during the last 12 months, in your spare time? (NEXT PAGE)

3. A. How many times have you gone *** during the last 12 mos.? B. When did you go *** most often?

	1 TIME	2-4 TIMES	5 TIMES OR MORE	DURING THE WEEK	ON WEEKENDS	DURING YOUR VACATION
1) <u>Picnicking</u>						
2) <u>Driving for pleasure</u>						
3) <u>Walking for pleasure</u>						
4) <u>Camping</u>						
5) <u>Hiking</u>						
6) <u>Hunting</u>						
7) <u>Fishing</u>						
8) <u>Snowmobiling</u>						
9) <u>Downhill snow skiing</u>						
10) <u>Snowshoeing or ski touring</u>						
11) <u>Bicycling</u>						
12) <u>Motor bike riding</u>						
13) <u>Horseback riding</u>						
Is there any outdoor activity you like a lot that I didn't mention? 14) _____						

4. Which activity that I mentioned do you . . .
 like best 1) _____
 next best 2) _____
 and
 third best 3) _____

(READ LIST ONLY ON REQUEST)

Upper Rattlesnake

Now I would like to ask you some questions about the upper part of Rattlesnake Creek north of Missoula, beyond the last houses in the Rattlesnake Valley. I mean the area along upper Rattlesnake Creek including the mountains surrounding it. Is it clear to you the specific area I'm talking about? (EXPLAIN IF NOT CLEAR) Have you heard of Stuart Peak and the Rattlesnake Lakes? These are in the area, too.

5. Have you ever been to the upper Rattlesnake?
 NO (IF NO, SKIP TO QUESTION NO. 11)
 YES
6. How long did you stay, on the average?
 part of day one night more than 1 night
7. About how many times, approximately, have you been to the upper Rattlesnake DURING THE LAST 12 MONTHS?
 not at all 2 to 4 times
 1 time 5 times or more
8. What outdoor activities do you usually do in the upper Rattlesnake?

 Are there any others? _____
9. Is there anything about the upper Rattlesnake that you particularly enjoy?
 NO
 YES, What? _____
10. Is there anything that particularly disappoints or annoys you?
 NO
 YES, What? _____
11. Are you aware that the road into the upper Rattlesnake is closed to automobile traffic?
 NO
 YES

(IF HAVEN'T BEEN TO UPPER RATTLESNAKE, SKIP TO NO. 14)

12. How do you feel about the road closure? Do you . . .
agree (___) have no opinion (___) or disagree (___)

13. Has the road closure affected the way in which you use the upper Rattlesnake?

(___) NO

(___) YES, How? _____

Demographic

And now just a few questions about yourself. This is all strictly confidential, of course. The information will be used to make comparisons with other recreation studies.

14. First off, how much school have you completed? . . .

(___) NO ANSWER

(___) high school? (12th)

(___) LESS THAN GRADE SCHOOL

(___) some college? (1+)

(___) grade school? (6th grade)

(___) college degree?

(___) graduate work?

15. What is the head of the household's occupation?

_____ (___) NO ANSWER

16. Could you please tell me which of the following income groups your family was in before taxes for the year of 1971? Was it . . .

(___) \$25,000 or more

(___) 3 up to \$7,000

(___) 15 up to \$25,000

(___) less than \$3,000

(___) 10 up to \$15,000

(___) 7 up to \$10,000

(___) NO ANSWER or DON'T KNOW

17. SEX: (___) MALE (___) FEMALE (___) UNDETERMINED

Thank you very much for your time. You have been very helpful.
... TERMINATE.

QUESTION-BY-QUESTION OBJECTIVES

1. Establishes the age of the respondent and also serves as a screening question to eliminate anyone under 12 years of age from the sample since they might have difficulty understanding the questions.
2. Lists activity (or activities) which the respondent feels is an outdoor activity that he enjoys a lot, regardless of his frequency of participation. What he says he enjoys a lot can then in most cases be compared to what he says he does a lot. This question also allows for activities which are felt to be important that are not listed as part of the questionnaire.
3. A. Establishes participation frequencies for the past 12 months to the best of the respondent's memory for selected outdoor activities.
B. Determines if there is a pattern of use for each activity, and if so, whether it is mostly daily, weekend, vacation, or some combination of the above.

Out of the numerous outdoor recreational activities that could have been selected, time and space permitted a list of only a few. The thirteen activities listed were chosen to be representative (although not all-inclusive) of the types of activities that can be done

in the Upper Rattlesnake. Winter as well as summer activities were chosen and space was left to record other activities that the respondent felt were important. Care was taken to list when possible well-recognized activities for which information exists from other surveys.

4. Establishes which activities are liked best, now that selected activities have been read to the respondent, to be compared with participation frequency and activity mentioned in question No. 2.
5. Separates Upper Rattlesnake users from non-users and provides an estimate of the relative proportion of the population who are users.
6. Establishes user's average length of stay which in turn affects the activities he engages in.
7. Provides information on amounts of use in the past twelve months, during which the road has been closed to automobile traffic. It may be possible to compare lengths of stay in question No. 6 of those users who haven't been to the upper Rattlesnake since the road has been closed, to those who have.
8. Provides information of the kinds of activities done in

the upper Rattlesnake, and relative amounts of participation. Types and amounts of activities listed here can be compared to those listed in questions 3 and 4.

9. User opinions on qualities they wish to see preserved or augmented in the Upper Rattlesnake.
10. User opinions on qualities they wish to see minimized or eliminated in the Upper Rattlesnake.
11. Determines whether non-users do not use the upper Rattlesnake because the road is closed, or for some other reason. Also determines how many users are not aware of the road closure.
12. User opinion regarding the fact that the road is closed to automobile traffic.
13. User perception of the effect of the road closure on his activities in the upper Rattlesnake.
14. Establishes educational levels for comparisons. This refers to the respondent himself.
15. Establishes occupational categories for comparisons. This refers to the head of the household.
16. Establishes income levels for comparisons. Family income was chosen rather than individual because most researchers

SURVEY DEFINITIONS (from B.O.R. 1965 survey)Activities

1. Picnicking--An outdoor activity where the primary purpose is the preparation or eating of a meal out of doors. This would include cookouts and barbecues in neighbor's yards but not in one's own yard.
2. Driving for pleasure--Driving or riding in an automobile, but only when the purpose is primarily for pleasure.
3. Walking for pleasure--Any walk where the primary purpose is pleasure, which has not been included under hiking and which lasted 30 minutes or more.
4. Camping--Living out of doors overnight using for shelter a bed roll, sleeping bag, trailer, tent, or a hut open on one or more sides, if the person takes his bedding, cooking equipment, and food with him. This does not include formal camps for teenagers such as Boy Scout camps or formal family camps such as church camps.
5. Hiking--Walking of a substantial nature in which a pack containing provisions and/or shelter is carried by at least one member of the party.
6. Hunting--The search for, or stalking of, animals in order to kill with bullets, arrows, etc., but excluding commercial hunting and the trapping of animals.

7. Fishing--The catching of fish for noncommercial purposes.
8. Snowmobiling--Noncompetitive recreational use of snowmobiles.
9. Downhill skiing--Any noncompetitive recreational use of skis on snow at a designated ski area.
10. Snowshoeing or ski touring--Noncompetitive recreational use of snowshoes or skis on snow at places other than those developed for downhill snow skiing.
11. Bicycling--Any bicycle riding done only for pleasure, but not including riding to work or school.
12. Motorbike riding--Any motorbike riding done only for pleasure, but not including riding to work or school or competitive racing.
13. Horseback riding--Any riding on horseback which is done for recreation only and not a part of one's job as, for example, a cowboy.

Passive activities--Nos. 1-3

Backwood activities--Nos. 4-6

Water oriented activities--No. 7

Winter activities--Nos. 8-10

Active activities--Nos. 11-13

feel that it is a better indicator of recreational preferences and family income information can be compared with other surveys.

17. Establishes the sex of the respondent for comparisons.

Socio-Economic Variables

Education--School was defined as that which leads toward an elementary or high school diploma or a college, university, or professional school degree. Attendance was accepted for full or part time day or night school. If the person was still in school, his level of attainment.

Occupation--Tentative categories are:

Professional, technical, and kindred workers

Managers, officials, and proprietors, including farm

Clerical

Salesworkers

Craftsmen, foremen, operatives and kindred workers

Laborers

Service workers, including private household workers

Student

Other (unemployed, retired)

Family income--Family income includes wages and salaries, business profits, net farm income, pensions, rents, and any other money or income received by the members of a family according to the total family income during the past 12 months. ("up to" does not include the higher number)

Sex--The respondent's sex, either male or female.

APPENDIX B

APPENDIX B

95% CONFIDENCE INTERVALS (IN PERCENT)

for Sample Sizes 180 and 88

Percentage Observed	Sample Size	
	180	88
5	2 - 8	0 - 10
10	6 - 14	4 - 16
15	10 - 20	7 - 23
25	19 - 31	16 - 34
35	28 - 42	25 - 45
50	43 - 57	39 - 61
65	58 - 72	55 - 75
75	69 - 81	66 - 84
85	80 - 90	77 - 93
90	86 - 94	84 - 96
95	92 - 98	90 - 100

APPENDIX C

Notes from the Log Book at
"Snowshoe Inn" Cabin

July 16, 1969

REGISTER BOOK--placed by: Mark Everingham, Mark Latriehe, Dan Gould, Mark O'mekah.

July 21, 1969

Milton, Mark and Lyle Westgard.

July 21, 1969

G. B. Searigth - Missoula, Duane Searigth - Great Falls.

July 26, 1969

Mark Phau visited here. Robin Pfau visited here.

August 2, 1969

Mike and Rita Hansen, Dan Marceau. Damn the mosquitos!

August 6, 1969

Mark Williamson, age 7, Olney, M.D., Nancy Williamson, Smily Williamson.

August 9-10, 1969

Bobbie Dvorak, Ron Granger--Missoula. Louise Granger--Seattle. Thank you Mark E., Mark L., Mark O., and Dan. Great Job!

8:30 p.m.--Pack string headed home at full gallop. One horse caught at creek. Rider and horse ran 'till horse dropped. Rider ran on, caught string (4) on ridge above McKinley. 11:00--All finally secure in camp. Moral: never think an old plug (21 yrs.) can't run.

August 10-13, 1969

Bob Heffrnan, Bob Cote

August 12, 1969

Mike Brown

August 12-14, 1969

Rattlesnake Riders: Ron Granger, Jo Sterling, Mark Brown, Sarah Hansen, Wendy Loring, Luanne Green, Mrs. Roy Sexton, Buddy Sexton, Cindy Kay Folsom, N. W. Brandenberger, Vicky Wirth, Rick Urquhart, Kathy Evans, Sue Hartong, Vandy Red Bug, Matthew, Chinook, Equus, Cortez, Mike Star, Lady.

August 17, 1969

Lost one shoe near Snow Shoe Inn. If anyone finds this shoe please contact me at my home in Missoula. Thank you. Yours truly, Dan Caplis. P.S. Look hard please.

August 17, 1969

Ken Dauenhauer . . . chased by a black bear 1 mile north of here. Almost didn't make it. Get out while you can. Gotta go now I see him coming this way. P.S. BEWARE-- we were then held hostage by the bear.

Sharon Reidy. I have finally come to the conclusion that all of Kenny Dauenhauer's senses have left him. He is now a raving maniac.

August 24, 1969

Don Russell. Hot! The wind blows now and then though to cool it off. I left my camera up at McKinley Lake and for the 6th time up here I have never taken a picture of the Snowshoe Inn.

August 24, 1969

Vicky Truett. Hot. Well I made it. Don't know if I'll get back though. Boys in this cabin are sure sloppy. Pretty country.

Hi--Bob, Randy, Judy, Dennis, Tom, Ken.

August 27-28, 1969

Esta S. Swan, Mary and Carol . . . Anne and Elizabeth, Turan and Oriol Bessac.

September 15, 1969

Mike and Joel Prezeau

October 13, 1969

Charlotte and Willis Heron. 3 inches of snow.

October 22, 1969

Dan Gould, Rex Palmer. Came S.G. (Spring Gulch) trail, covered with snow at top, lakes frozen over.

November 8-10, 1969

Turiko, Mary, Leonard and Terry Thompson stayed here on the nights of 8th, 9th, 10th. 4 inches of snow and snowing.

November 10, 1969

Andy McKane visited here (Monday). Drove within 1/2 mile in a Land-rover. 6 inches of snow on ground and snowing hard at 12:30 p.m. I will leave pen on window sill for future entries. Cabin makes a nice place to stay and rest. Animal tracks, bear and deer all around. Come visit the Heidelberghaus.

November 22, 1969

Great place for a honeymoon, but we wouldn't want to live here. B. Scarlin and friend.

November 22, 1969

Only 35 days until the big day. We will then live happily ever after as man and wife. Been waiting for 3 1/2 damn long years. . . Michael A. Doherty and Z. Appelman.

November 26, 1969

Walked in over Stuart Peak. Hell of a walk. We will never follow that route again. Found the cabin just as it was getting dark. Very nice place. John Otava, Barb Otava, Richard Langdon, Karin Stephens.

March 27-28, 1970

Snowshoed in from Missoula via Rattlesnake Creek. Arrived at dark. Hike in was pure torture, never do that again. 9 feet of snow. Bill Koeppen, Don Russell, Lucky? Simpson.

April 18, 1970

Snowshoed Inn to Snowshoe Inn! Cabin completely covered by snow. Came in Spring Gulch. We got semi-lost and wandered around behind the cabin several miles. Was good to see a large bump from the back telling us of our location. Was good day--partly cloudy. Climbed Stuart (Peak) on way in. Got here 5:30 p.m., left end of (Spring) gulch road 6:30 morning. Someone stole a bunk bed. Leaving tomorrow. Dan Gould, Rex Palmer.

June 9-11, 1970

Came in on cycle to within 2 miles then walked from Rattlesnake Creek. Still quite a bit of snow here. 4 feet in some places; mostly 2 feet. McKinley lake is still froze. I came in when it was raining and windy. Except for the wind it is turning into a pretty fair day.

June 10--Pretty miserable day. Walked over to Big lake and got caught in a blizzard. Saw elk and goat tracks.

June 11--Snowing to beet hell. But I guess I will have to leave. Hope I don't get lost, but I doubt that. Don Russell.

June 22-24, 1970

Hike all day. Started from Spring Gulch road at 8:00. Lot of snow on trail. Didn't think we were going to make it. Skied down mountain behind lake McKinley, arrived at cabin 5:30. One hell of a walk.

June 23--Heard bear last night. Not much done today, mostly slept. Friend came in and was welcomed.

June 24--Skied down mountain, went swimming in the lake--COLD. Left at 2:30, plan on getting back Friday. Bob Cote, Don Kinney.

June 23, 1970

Visited for 10 minutes. Came in Grant Creek cross-country, camped at Lake McKinley, visited other lakes and saw cabin. Paul, John, Robert Schultz, Mike Green.

June 23, 1970

Arrived 1:30 p.m. Drove cycle in easy. Bear visited friends last nite. We'll get him tonite. Seeya, Mike Stephens.

June 23, 1970

Passed through from Rattlesnake Creek on way to Stuart (Peak). Good to be home again. Dave Pattin.

June 23, 1970

Hiked in via Spring Gulch road and trail. Started at 6:00 a.m., arrived at 1:00 p.m., left at 10:45 a.m. next day. Dan and Greg Gould.

July 5, 1970

Came in from Stewart Peak Trail on cycle. C. Snyder; Brad Snyder, age 7; Lesly Snyder, age 9.

July 5, 1970

Cycled to Stuart Peak. Hiked down from there. Lots of traffic. A few snow banks. Had a few good trips on them. Lon Thomas, Don Russell.

July 5-9, 1970

Hiked in through spring gulch. Lots of porcupines and one deer at night. Bob Cote, Dan McKinney, Tom Brown, Henery Borgstede.

July 8-9, 1970

David Everingham, Mike Evars, Mark Huguet, Greg Gould (not in cabin all the time).

July 11-12, 1970

Went to Little Lake, Glacier, then Sanders on 11th.
Spent night at Sanders then came over here to Big lake.
No fish, still snow left. Dale Brevik, Jim Stevanson.

July 15, 1970

Rode cycle in with girl friend . . . Lots of misgeatos
. . . Mike Stephens, Sherry Lee Skaja.

July 16, 1970

Rode cycle in with girl friend . . . Rained to beat
hell last night. Deer and bear outside cabin. Don
Kinney.

July 20, 1970

No place to stay in Missoula finally--so I took a walk.
Been over at Twin lakes after hiking up Spring Gulch.
Stayed two nights. Lots of bugs, porcupine, deer tracks,
chipmonks, a duck or two, but I had to get moving. Maybe
I'll stay the night but since (?) lots of daylight maybe
I'll move on--but first a look around. Looks like
there's an interesting walk ahead so I'll leave this:
Found a cabin, ~~didn't~~ know it was there; refuge for lovers,
snowshoers, cyclers, horse riders and even an old wander-
ing (?) bum like me. Dave Thomas.

August 9, 1970

This guy over there didn't know the correct date. Slid
down the mountain and lost an apple. If you ever find
it please return. And hey who ran off with my book?
Beautiful day for hiking, rode partway in on cycle (by)
way of Spring Gulch. Going back tonight. Vicky Truelt,
Don Russell.

August 9, 1970

Tony Hahn

August 24-30, 1970

Beautiful weather, and the fish in McKinley, Wow! We
caught the granddaddy in the lake--about 18 inches. Caught
two guys snooping in our gear. I had a gun and they
didn't. Took license number of bikes . . . Out of smokes
and grub from town 27th. Our diet is fish, coffee and
huckleberries. Where the hell are the deer when you
need them? This is a cool place. Have fun. Rick
Urquhart, Dean Skrivseth--mountain men.

September 27, 1970

Wes Ostheller, Kalispell.

October 2, 1970

Nice day to hike. Bob Gordon.

October 11, 1970

It was an answer to a prayer. I want to thank the person here. It's God I thank. Praise the Lord. Mike Newton.

October, 1970

If all the people of the world could get along like everyone that has stayed up here, we all would have a better world. Mike Stephens.

June 14, 1971

Rode cycle in to 1/2 mile below Carter Lake. Caught a couple of fish in Carter, five in McKinley. Still lots of snow on way over to Worden. McKinley is frozen over except at mouth of creek. This could be a nice cabin if the mice were to outlaw people. M. Dunnington--Missoula.

June 23-26, 1971

Still drifts of snow but beautiful weather. Nature understands all of us. Respect her rights. Cindy Folsom, Kathy Evans, P.S. There's a . . . pack rat in here (help).

June 25, 1971

Greg Cottier fell down glacier, got all snowy, went down face of McKinley Lake. Rainy day but lost the trail coming in because of snow. Found it on McKinley Lake by the ridge--real hard hiking. Raining hard, lucky we got the cabin out of 2 other groups. Bob Evans, Mike Evans, Greg Cottier.

June 25-27, 1971

We arrived. It is raining. Leaving 27th. We went to Mosquito Peak the 26th. Climbed down a steep rocky face to Worden Lake. Fought our way cross-country to cabin. Came across swamp to north. Good exercise. Marv almost fell off cornice straight down 300 feet. It's hair raising looking down off Mosquito (Peak). Paul Beaufait, Allen James, Todd Neel, Marvin McDonald.

June 26, 1971

We fixed the stove and the pipe. KEEP IT IN GOOD CONDITION. Mike, Bob Evans, Greg Cottier, Marvin McDonald, Allen James, Paul Beaufait, Todd Neel.

June 29-July 7, 1971

Started from Missoula June 29. Walked the road at night. Saw a bear, came to the cabin the 30th of June. Climbed the cliff over Roosevelt Lake and Misgeato Peak and saw all the lakes. Stayed at the cabin 8 days. Leaving out spring gulch trail July 7. Henry Borgstede, Bob Cote.

July 13, 1971

Came in spring gulch trail. It was an easy hike but my feet got sore and my pack a little heavy. Heading out for Sanders Lake in the morning. Mosquitoes and gnats by the bags. Weather is beautiful but the lakes are cold. We (like the many others) also saw a bear. We killed our butts coming down the face--slid all the way. Some rude animals kept us awake all night sitting outside our door--they were porcupines or skunks. Now we're leaving for Sanders. Greg Gould, Rick Martin.

July, 1961

Mr. and Mrs. Russell T. Graham, Sundance, Wyoming.

July 30, 1971

Good fishing, bugs are bad. Very rainy, hiking out today. Greg Cottier, Mike Evans.

August 3, 1971

Came in on horse by Stuart Peak route. Cut cross-country part-way to make it faster. Hot up here. Went swimming 2 days at Carter, once at Big Lake. Go back Thursday morning. Bugs are bad. Sue Hartong, Vandy Red Bug.

August 14, 1971

Monte Logan.

August 14, 1971

Cycled in for the day, almost too old to climb up here. Plan to come back yet this year and spend weekend. Where did the mattress go? (Cabin) still in good shape since 1965--our last trip up here. Brian Russ, Phil Russ.

August (first part), 1971

Hope our left-overs help. We're git en the hell outa here (if we can). Steve Wicks, Wayne Keating.

August 15-18, 1971

Lyle E. Westgard.

Good weather. Came in by spring gulch, "rough"! We ate very well. Pork Pine nawed at cabin all nite, tried to do him in, no luck! (with a shovel). Went to Carter lake, half nude, and tried to find a log to float on.

Had some unwelcome company. We moved the pot, good luck finding it south of cabin, past old one. P.S. water very cold. Going out by road because too full of food to fit on trail. April Anderson, Ann Lucas, Tina Westgard.

August 18-19, 1971

Stayed one night. Got 6 fish in Big Lake. Porcupines kept us awake all night. Gary and Darl Staat.

August 26-28, 1971

Thursday--Came in via trail bike (7:30 p.m.). Unloaded then walked to Worden Lake. It was really down but fish were jumping so caught dinner. T'was dark when I returned. Fried fish in foil as I didn't see the frying pans.

Friday--Went to Big and Sheridan lakes, measured discharge from lakes. Returned and fished Worden. Caught my supper. Used frying pan this time. It's nice to see a little extra grub here. Could help some fella this fall. Just be careful with the mayonaise. You could leave in worse shape if it's bad.

Saturday--Lot of shooting going on up high toward McKinley Lake. The bear don't have a chance. Hope they leave a few. Got to pull out at noon--I dread the ride back. Would rather walk but have too much gear. Howard Newman, Missoula. P.S. Someone needs to rake the yard.

August 31-September 3, 1971

Came in by bikes up Rattlesnake. Just beat the rain. The cabin was a tad dirty and the wood that was left wouldn't go into the stove. It rained tonight and snowed Wednesday morning. It rained most of Wednesday and Thursday. Fishing was slow in all lakes. Had several good hail storms. Lots of rain, we were wet constantly. Are pulling out Friday afternoon but will be back Saturday A.M. Howard Newman, Jess Wilson.

September 4-6, 1971

In again via bikes. This time with wife. Found that mice had moved back in and they liked our candy bars. Fished McKinley, Big and Worden Lakes. Did OKAY. Someone pulled a two-pounder (rainbow) out of Roosevelt Lake the 5th. Jesse and Vicki Wilson came in the afternoon of the 5th and stayed with us. A mule deer (doe) visited the cabin the morning of the 6th. Are leaving a few things behind in hopes it will help the next traveler. The Newmans and the Wilsons, Missoula.

September 9-14, 1971

Hiked in via Rattlesnake and Triangle Creek roads. Long hike. Reached here about sunset--pretty weary. Was good to reach the cabin as it brings back fond memories. Fixed a rice dinner and sat around drinking tea. A nice two-point buck walked across the meadow, grazing as he passed. The 5th deer we've seen since we hit the canyon. Plan to fish and chop wood on the morrow. Saw glowing objects at night, got cold and ended up sharing sleeping bags. But that's nice.

Friday--Got up early this morning and tried to fix pancakes for breakfast--big flop! Decided to go fishing at what we think is Roosevelt Lake. Got up there and as we didn't have a reel or anything decided to wade out. Waded up to waist only to have hook snag and pole break in the middle--brrrr! No trout dinner so we settled for huckleberry pancakes. Weather is beautiful, serene and peaceful. We were visited today by numerous chipmunks--a red bird and his mate.

Saturday--Got up early this morning to go fishing with a pole borrowed from 2 horseback riders. They are spending the night here with us. It was too bitterly cold to stay for more than a 1/2 hour or so. Thought it was going to snow, got very cold and rained. Sun came out later in the evening. Saw a 3-pt. buck in front of the cabin (a doe last night), were visited again by the red bird and his mate, fed them oats.

Sunday--Got up early and hiked up to some of the peaks in front and to the right of the cabin. The view was spectacular. Ran across some small animals 4-5 that we thought to be mink or otter--something of that sort. Looked a little grey out tonight. Saw no deer, but were visited as always by the chipmunk--I call road runner, the red bird and his mate.

Monday--Very cold today. Did go fishing and caught 3. One was just barely able to fit in largest fry pan, minus head and tail. Spent most of the day inside.

Tuesday--Cold again today. Windy, very bitter. Went fishing (didn't catch a thing). Watched chipmunk lining his hole with moss. Heading off tomorrow.

Wednesday--Leaving! So sad. Going off to U. Wish we could stay and stay and stay. Watched a mule doe about 15 feet from the front of the cabin come to bid us good-bye for a while. Love, luck, laughter to all who come. Sue and John Schubert.

September 18, 1971

Suy ourd'hue est un peu diffeer'ent . . . T.R., K.K.

September 19, 1971

Rode cycles in from Spring Gulch. Cold day, gonna go out cruel. Mark Williamson, Smiley Williamson.

September 25, 1971

Darlene Solberg. Mark Williamson.

October 12, 1971

Tuesday--Came in yesterday by bike. Cabin was a mess. Filthy dishes and silverware, filthy floor, beds broken down and food missing. I don't mind folks using the food if they are in need but winter isn't here yet. Fall travelers should plan a little better. A shrew just crawled onto a paper plate and is eating this morning's egg off of it. I hope to return to this cabin at least once before winter sets in. I hope it won't be as depressing as this visit was. Howard Newman, Missoula.

October 24, 1971

Hiked in with backpacking class from the U. of Montana (8 of us). Came up Grant Creek Trail and saw a fresh bear den beside the trail. Stayed last night at Sanders Lake. One foot of snow on ground and snowed 3 inches last night--cold and cloudy. Glacier, McKinley, Roosevelt, Carter, Worden, Twin lakes all have ice sheets on them--no fishing this trip! Will stay in cabin tonight and hike out via Stuart Peak and Spring Gulch tomorrow. Kind of crowded in here. We cut and split wood for whomever might hike in this winter. Dave Conklin, Missoula.

October 31, 1971

Happy Halloween. Six of us came in Spring gulch road. Hit 6 inches on 1st ridge (snow) and a foot as we got to the cabin. Places drifted about 2 1/2 feet. Jane Tremper, Mark Ferguson, Loma Siegford, Moose and Pete Wisneski.

February 20-22, 1972

The Imense Journey--Started our assault on Sat. 20 from spring gulch, 2 hour delay and much difficulty on first day. Some sickness within party. Spent first night in snow 1/4 mile down southside of ridge. Night was rather strange--heard at least 10 bears. Next day ridge very foggy and blizzard. 2 members of party left for home, 3 continued. Made it to cabin 1:30 on Sunday cross-country skiing. Once over ridge snow and fog were behind us--was great skiing. Got to cabin at least 9 feet of now. Lit fire--snow in stack almost died of smoke inhalation. Hunt mice all night. Next day beautiful, sunny--aileujah.

May 7, 1972

Rode bike to point just above the Franklin bridge-- walked rest of way in. Began walk 9:30 a.m., arrived cabin 4:00 p.m. I had to dig my way into cabin--estimate 7 1/2 feet of snow, 2 inches fresh. Snow covered smoke stack but it wasn't plugged. I dug out two holes by windows to let light in. It worked well--was light past 8:30 p.m. I will leave tomorrow. I expect a much easier trip out. Snowshoe rabbit tracks were all around the cabin--so are mine. Left noon Monday. Snowed all morning and is still going at it. Put a pan over chimney to keep it clean. H. Newman.

May 12, 1972

Stayed the night after a long snowshoe trip over Stuart Peak from Spring Gulch. Snow is well-packed and still over the roof of the cabin. About 7 or 8 feet deep on the level--30 or more in drifts! The weather is fantastic--sunny and 75 degrees. I got a sunburn yesterday. We will walk out down Rattlesnake Creek. Lakes are all frozen with about 3-4 feet of snow on top. The only wildlife visible are birds--and bear hunters on motorcycles in the lower valley where the roads are free of snow. Took log book out to copy it and put in new paper. Dave Conklin, with Howard Newman, and Dick Konizeski, Missoula.