

User Perceptions of Appropriate Standards for
Recreation Opportunity Spectrum Criteria
at Steens Mountain, Oregon

by
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Recreation opportunity planning, including use of the recreation opportunity spectrum (ROS), was developed to aid land managers in inventorying, classifying, and managing outdoor recreation resources within an overall planning framework. This planning concept, which combines physical, managerial, and social setting characteristics into an array of recreation opportunities ranging from primitive to modern urban, has been adopted by both the Forest Service and Bureau of Land Management as part of their integrated resource planning process.

The objectives of this research were to identify appropriate standards for two of the ROS criteria used in classifying settings, remoteness from the sights and sounds of man and level of man-caused resource modification, and to examine differences in perceptions of these standards between recreationists local to the study area and nonlocal visitors. The study area, characteristic of semi-arid landscapes, was selected to compare user perceptions of appropriate

standards with existing standards which were developed for us in forested landscapes. Eighty-one users of the Steens Mountain Recreation Area in southeastern Oregon participated in in-home interviews during the summer of 1981.

Results of this study suggest that major changes in ROS standards currently used to classify settings based on remoteness and resource modification are not needed. Users' descriptions of the remoteness of Steens Mountain settings and perceived distance from the sights and sounds of man necessary for opportunities for remoteness generally fell within guidelines presently being used, particularly when viewed within the context of the location and topography of the area. Local and nonlocal users differed in their choice and description of the remoteness of their settings, though they were fairly consistent in perceptions of distances and remoteness of specified settings. It is recommended that current remoteness standards could even be relaxed somewhat, depending on the landscape being analyzed.

Findings suggest that acceptability of resource modification in recreation settings could also be influenced by history and location of these semi-arid areas. Natural-appearing, nonpermanent modifications such as livestock grazing, abandoned buildings, and watering ponds, common occurrences in western semi-arid landscapes, detracted less than permanent, obvious man-made structures such as powerlines and lived-in cabins. It is suggested that when classifying lands based on this criterion that modifications be grouped into these two categories. Local users were more tolerant of all types of modification than non-local users, particularly recreation-related modifications such as campgrounds and roads.

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User Perceptions of Appropriate Standards for
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INTRODUCTION

Recreational use of arid lands in the western United States has increased tremendously since the early 70's, and this growing participation in activities such as camping, hiking, picnicking, off-road vehicle use, nature appreciation, and rock hounding is expected to continue (USDA Forest Service 1981). Recreation is being recognized as an important product of rangelands and public land managers can no longer afford to consider only the biological aspects of land management (Krueger undated). One result of this increased use has been a greater awareness by managers of arid lands of a need for recreation planning and management. Along with managers and planners of forest resources, rangeland managers have been concerned with developing and applying techniques for inventorying the supply of recreation resources (Brown, Driver and McConnell 1978, Burnett and Conklin 1979), for assessing the demand for outdoor recreation (National Academy of Sciences 1975, Rossi and Epp 1979), and integrating this information into land management decision-making and implementation processes (McCurdy and Myers 1978). A planning system, recreation opportunity planning, drawing upon existing inventory techniques and

and advances in recreation research was developed to aid land managers in dealing with these concerns (e.g., Brown 1979, Stankey and Brown 1981).

Recreation opportunity planning, using the recreation opportunity spectrum concept, was developed to assist resource managers in inventorying, classifying, and managing outdoor recreation resources within an overall planning framework (Brown, Driver and McConnell 1978). This planning process involves estimating user demand for recreation opportunities and then combining this expected demand with the capability of the resource to provide certain types of recreation opportunities. Recreation opportunity planning outputs, including explicit management objectives, are integrated with other outputs of resource planning, such as timber and wildlife and alternative plans for resource allocation are developed. Using these management objectives, specific action and project plans can be developed.

The Bureau of Land Management (BLM) has tested and evaluated various components of this system on BLM districts throughout the West and an evaluation team made up of managers and researchers endorsed the use of the recreation opportunity spectrum as a tool for managing recreation opportunities on public lands and making resource allocation decisions (USDI Bureau of Land Management 1980a). Both the Forest Service and Bureau of Land Management have adopted the recreation opportunity planning system (USDI Bureau of Land Management 1980b, USDA Forest Service 1980), resulting in its becoming the standard system used on about one-third of the Nation's land (all land managed by the two agencies).

An integral part of the recreation opportunity planning process is the use of the recreation opportunity spectrum (ROS). The recreation opportunity spectrum defines an array of opportunities that can be provided by land managers to meet the desires of recreationists for a variety of recreation activities, settings, and experiences (J. V. K. Wagar 1951, J. A. Wagar 1966, and W. R. Burch 1964). Various combinations of activities, settings, and experiences are grouped into recreation opportunity classes along the spectrum, with the classes ranging from primitive to modern urban. Specific criteria such as size and remoteness of the area from the sights and sounds of man, are used to identify lands suitable for opportunities at different points along the spectrum. Specific standards for each criterion have been prescribed for each recreation opportunity class. By applying these criterion standards to a tract of land, it is possible to delineate the recreation opportunities provided for recreationists.

Although the BLM and Forest Service are beginning to implement recreation opportunity planning as part of their land management planning responsibilities, most application has not occurred outside temperate, forested areas (Brown, Driver and Berry 1980). With the exception of the BLM test effort (USDA Bureau of Land Management 1980a) and a test application by Manfredo and Brown (1980), systematic study of the applicability of this planning system to semi-arid environments where landscapes are more open and human influence on the natural environment is often times much more apparent, has been scarce. While it has been determined that the features of the environment to inventory (e.g., size and remoteness of the area) are the same in different environments, it has been suggested that the

standards for these criteria might vary (Brown, Driver and Berry 1980). For example, a distance of three miles (or equivalent screening from sights and sounds of man) from roads and trails with motorized use is presently used in forested areas when classifying an area as providing opportunity for primitive recreation experiences. In deserts and grasslands which are much more open, where sounds tend to carry farther, and which might lack the vegetative screening found in forested landscapes, a distance greater than three miles could be needed to minimize or eliminate the sights and sounds of man.

This suggestion that criterion standards might need to be different for semi-arid environments was the fundamental problem studied in this research. The purpose of this study was to examine user perceptions of standards used for two of the land classification criteria employed in recreation opportunity planning. An area which is characteristic of many semi-arid landscapes, the Steens Mountain Recreation Area in southeastern Oregon, was chosen to study user perceptions of appropriate standards for (1) remoteness from the sights and sounds of man, and (2) acceptable types and amounts of human-caused natural resource modification. These two criteria were chosen because of their potential importance in inventorying and classifying lands in semi-arid environments, as opposed to areas having more dense vegetation. Along with potentially greater distances and/or screening requirements needed for remoteness, there are important causes of resource modification such as livestock grazing which are very characteristic of semi-arid landscapes. These modifications might have significant impact on the type of recreation opportunities being supplied. Since this was a study of user perceptions, some examination

of user characteristics which might shape perceptions seemed necessary. Emphasis in this paper is placed on perceptions of local recreation users (people living relatively close to the recreation area) and nonlocal users (those visiting the area but who live outside an established boundary) to determine if residence location and perhaps more familiarity with the recreation area related to perceptions of appropriate criterion standards for recreation opportunities.

Specific objectives were to:

- (1) examine user perceptions of remoteness, as measured by distance from roads and/or equivalent screening, for specific recreation opportunity spectrum classes;

- (2) examine user perceptions of acceptable types and amounts of human-caused resource modification acceptable in specific recreation opportunity spectrum classes; and

- (3) compare perceptions of local users versus nonlocal users concerning appropriate standards for remoteness from the sights and sounds of man and human-caused resource modification.

Recreation Opportunity Planning

Fundamental to recreation opportunity planning is the idea that quality recreation experiences can best be assured by providing a variety of recreation opportunities (Clark and Stankey 1979, Driver and Brown 1978). The basic idea underlying the spectrum approach is that people participate in specific recreation activities such as fishing, camping, and kayaking, in specific settings such as at high mountain lakes, beach-side state parks, or wild whitewater rivers,

in order to attain desired recreation experiences such as attaining solitude, being with family and friends, or taking risks (Driver and Brown 1975, 1978). The recreation opportunity spectrum (ROS) incorporates this thinking into a classification of recreation opportunities which extend from the primitive to the modern urban. The BLM and Forest Service have subdivided this spectrum into six classes: primitive, semi-primitive nonmotorized, semi-primitive motorized, roaded natural, rural, and urban (Appendix A).

This basic approach of specifying recreation opportunities directs all stages of recreation opportunity planning. The major activities in this planning process are:

1. Conducting a demand analysis for recreation opportunities defined along the recreation opportunity spectrum;
2. Conducting a supply analysis consisting of (a) estimating the capability of the planning area to provide different recreation opportunities, and (b) identifying which recreation opportunities are currently being provided;
3. Determining where and how different recreation opportunities should be integrated with other planning area outputs (e.g., timber, wildlife, water); and
4. Allocating and managing lands and resources consistent with decisions made concerning recreation opportunities (Brown 1979).

This planning system is similar to other resource planning systems in that it deals with integrating supply and demand information to make decisions on resource allocation and puts forth a consistent set of management guidelines for managers to follow. Contributions of this planning system include:

1. Recognizing the multidimensional nature of recreation opportunities;

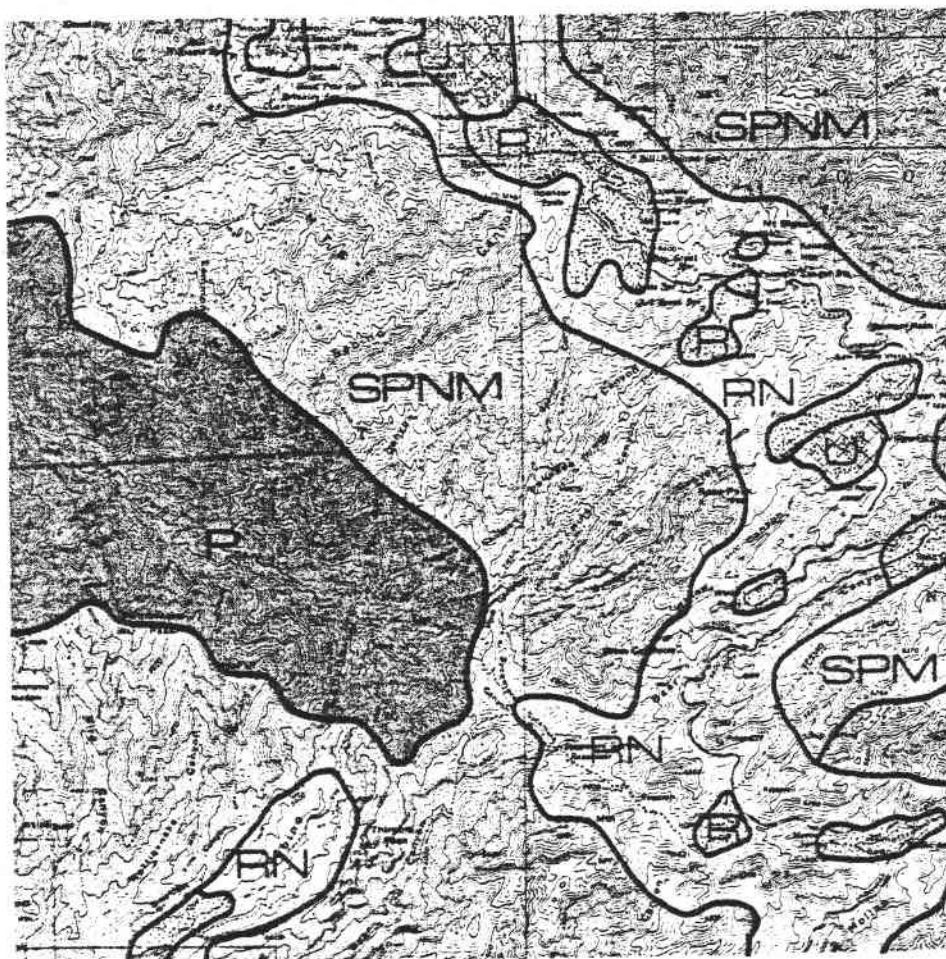
2. Being able to delineate on maps areas capable of providing different types of recreation opportunity;

3. Defining supply and demand in the same terms-- recreation opportunities; and

4. Providing guidelines and standards so that planning and management actions can be judged for consistency with recreation opportunities specified (Brown 1979).

The ability of any tract of land to provide recreation opportunities can be assessed by applying, to features of the environment, standards which define appropriate environmental conditions. The features of the environment examined in recreation opportunity planning to identify type of recreation opportunity are remoteness of the area from sights and sounds of human activities, size of area, extent and visual impact of human-caused resource modifications, social conditions within the area, and management factors such as extent of facilities and degree of management regulation. Assessing demand also requires looking at recreation opportunity in the same way. Demand needs to be articulated in terms of recreation opportunities defined along the spectrum.

The supply aspect of recreation opportunity planning is, at present, more developed than demand analysis (Buist and Hoots 1982). Three areas of concern when discussing the supply of recreation opportunities are type of opportunity, amount of opportunity, and quality of opportunity (Brown 1982). The result of the initial phase of the supply inventory is the delineation on maps of areas capable of providing different types of recreation opportunity as defined by the spectrum (Figure 1). In effect, managers can identify areas having different "recreational habitats" as defined by the physical, social, and managerial components of that setting (Brown 1982).



Source: USDA Forest Service. 1981. ROS User's Guide.
Washington, D.C. 38 p.

Type of opportunity

P	Primitive
SPNM	Semi-primitive nonmotorized
SPM	Semi-primitive motorized
RN	Roaded natural
R	Rural
U	Urban

Figure 1. Map of an area classified using the recreation opportunity spectrum (ROS).

After identifying the types of recreation opportunities available on a given area, the amount of opportunity available and quality of opportunity can be evaluated. To determine amount of opportunity, features of the landscape such as vegetation, soils, water location, and topography are evaluated to determine capability areas within the ROS classes delineated on area maps. These are combined with facility capacities and estimates made of the amount of recreation which can be supplied by capability area within each ROS class. The amounts for individual capability areas are then aggregated to determine the total amount of recreation (usually measured in persons-at-one-time or PAOT) for each ROS class in the area (Brown 1982).

Evaluating the quality of recreation opportunity may require more information on attributes of the area such as diversity of landscapes and recreation opportunities available. These kinds of attributes can be used to determine the quality of opportunity within areas and allow for comparison of two areas providing the same type of opportunity (USDA Forest Service 1980).

A major application of the recreation opportunity planning system by managers and planners in the U.S. Forest Service and Bureau of Land Management has been to identify the recreation opportunity tradeoffs associated with proposed management actions (Buist and Hoots 1982). By bringing supply and demand information together, managers are able to consider the effects of recreation on other resource outputs and how management for other outputs affects recreation. Because land areas capable of providing various recreation opportunities are identified based on specific conditions and standards, the effects on those

conditions of proposed management actions for any output can be compared to established standards (Brown 1982).

The recreation opportunity spectrum concept can also be used in coordinating efforts between agencies and the private sector (Buist and Hoots 1982). Overlaps and gaps in providing recreation opportunities can be identified by spectrum class and aid in coordinated resource planning and management. Also, descriptions of recreation settings and the activity opportunities and facilities they contain can be made available to visitors to aid them in selecting appropriate recreation settings.

As recreation opportunity planning and use of the recreation opportunity spectrum increase on public and perhaps private lands, refinement of appropriate standards used to classify lands has occurred, though directed mainly towards use on forest landscapes. The intent of this study was to investigate the need for further refinement of standards for use of the recreation opportunity spectrum in semi-arid landscapes where distances and evidences of humans may warrant special consideration.

Differences Among Local and Nonlocal Users

The choice of recreation setting and how users perceive that setting is undoubtedly affected by many factors. It is important for land managers to recognize that variation does exist among recreationists in their preferences for settings and the activities and experiences available there (e.g., Brown and Ross 1981, Knopp et al. 1979, Schreyer and Nielson 1978, and Lime 1971).

One factor which might influence perceptions of the acceptability of environmental conditions, and one that has received little attention in the recreation literature, is the effect of location or residence of recreationists on how these recreationists perceive that environment or setting. According to Mercer (1971, p. 60), "The relative location of an individual to a set of recreation opportunities certainly seems to have an influence on his awareness of and attitude towards, these opportunities." If this observation is valid, then looking at differences between local and nonlocal groups might provide insight for selecting appropriate setting classification standards. Simply, if there are differences, then average perceptions are inappropriate and we need to know the conditions deemed appropriate by various groups.

Most research related to this question has examined the effect of rural/urban differences on attitudes toward the natural environment and participation in recreation activities. To some extent users of the Steens Mountain Recreation Area match this rural-urban dichotomy in their local-nonlocal division. The local area is generally rural while most of the nonlocal users come from the urbanizing Willamette Valley. Therefore, we might look at the rural-urban literature to see if it provides further justification for expecting perceptual differences between locals and nonlocals.

Studies of users of Wilderness areas and wildlife refuges point out differences in attitude, of preservation versus utilitarian, between visitors from urban and rural backgrounds, respectively (Hendee et al. 1968, Hendee 1969a).

In studying the relationship between rural/urban residence and outdoor recreation participation, Mueller and Gurin (1962) pointed out

that because of the "increased homogeneity" of our culture, many of the value and interest differences between city and country people are disappearing and this is also being reflected in decreasing differences in outdoor leisure patterns. Along this same line, Hendee (1969b) noted that differences in participation patterns between rural/nonrural groups were small compared to other demographic variables such as age and socio-economic status.

Studying recreation activities of tourists and local users in northern Utah, Hunt and Black (1964) found that tourists tended to pursue activities reflecting an intellectual or learning interest in the resource while local users were generally active in a more physical relationship with the resource. This same tendency was reported by Tocher and Kearns (1962) in their research on visitors in Logan Canyon, Utah. In a similar study of tourist characteristics compared to characteristics of local users in the Bear Lake area of Utah and Idaho, Hunt (1968) also found that tourist parties sampled preferred "non-active" physical experiences such as photography and visiting roadside attractions and historic sites. Tourists were defined as "individuals visiting an attraction or area for recreation ... who reside outside of an established limit or boundary" and local users as "individuals who visit an attraction or area relatively close to their homes." Tourists contacted expressed a reluctance to leave main designated routes for sightseeing or other activities. Although camping parties were generally willing to venture further from their main route than noncamping tourists, there was a general reluctance to deviate, particularly when off-route access was not paved. Tocher (1968) noted differences between local and nonlocal park visitors. For example, nonlocal

visitors were described as passive, venturing out only on designated trails and being highly dependent on "ecological site quality." Visitors from a local neighborhood participate in "consumptive" activities and are motivated by socialization opportunity rather than the natural environment.

Local recreation users in closer proximity to a particular area may develop feelings of possessiveness and "territorism" for that area due partly to familiarity with the area (Tocher 1968). In discussing conflict in outdoor recreation, Jacob and Schreyer (1980) proposed that a person well acquainted with a recreation place has definite expectations about the type and variety of experience found in that area. Through tradition and memories, even though the physical qualities of the environment may not seem all that unique, this area becomes a focal point of recreation participation and a sense of possession is developed, viewing those unfamiliar with the area as "outsiders." Mercer (1971) put forth a similar idea in that persons familiar with a certain recreation place may tend to see its qualities as commonplace but indicated that visitation may be primarily because of convenience. Others less familiar with the environment may see that same recreation place as possessing unique qualities.

Feelings of possessiveness by local users was noted by Napier and Bryant (1977) in their study of the feelings of local rural people in Central Ohio toward uses to be made of a newly constructed lake. Even though respondents had favorable attitudes toward the lake for flood control and fish and wildlife conservation, there were definite negative attitudes toward recreational use of the lake because of the potential for attracting nonlocals to the area.

In a study more closely related to the one being reported here, Sonnenfeld (1966) found differences between natives and nonnatives studied in Delaware and Alaska (defining natives vs. nonnatives by residence) in their preferences for landscape environments. Native populations generally preferred landscapes similar to their home environments, while nonnatives showed more extreme landscape preferences. Natives appeared to be more adaptable to environments and more tolerant of crowding while nonnatives, having brought with them more variable experiences and values, were less tolerant and never really satisfied with their environment.

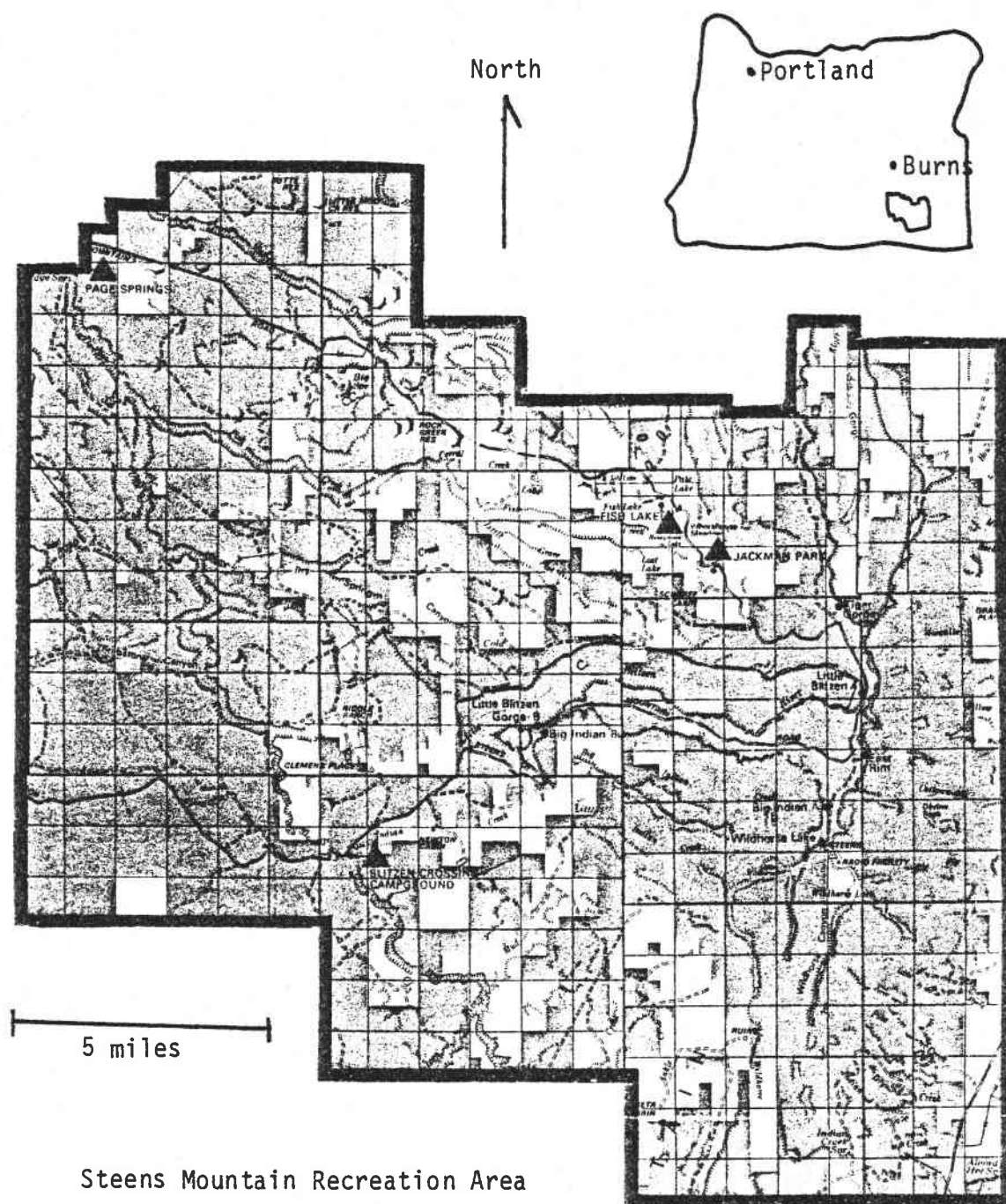
As the literature appears to suggest, there is reason to expect differences in setting descriptions and perceptions of appropriate standards for classifying those settings between local and nonlocal visitors to the Steens Mountain Recreation Area. If indeed site quality is more important to nonlocal users, this might be reflected in their feelings toward remoteness of their settings and desire to minimize contact with factors affecting site quality. Feelings of possessiveness and familiarity with the area of local users could be reflected in their attitudes toward resource modification in the area.

By comparing perceptions of local and nonlocal recreationists, insight can be gained into the need for adjustments not only in land classification standards but indirectly in appropriate planning and management actions for providing recreation opportunities based on these two user groups.

METHODS

The study area is located in southeastern Oregon and is part of the Burns District of the Bureau of Land Management (Figure 2). The surrounding area is predominantly rangeland with several ranches scattered throughout the area. Burns, the nearest community (approximately 4,000 people) is 60 miles north of Steens Mountain. Major metropolitan areas of the Willamette Valley are approximately 350 miles away. Steens Mountain rises roughly one mile from the desert floor and is dissected by several large U-shaped gorges, remnants of former glaciation. Vegetation is predominantly sagebrush, scattered juniper, and aspen at lower and middle elevations; treeless subalpine vegetation at higher elevations; and aspen, cottonwood and willow in the gorge bottoms (Figure 3).

Along with spectacular scenery, Steens Mountain offers opportunities for many recreation activities. The relatively few roads in the area are unpaved and provide access to several semi-developed campgrounds, lake and stream fishing and swimming areas, and several scenic overlooks. Other parts of the mountain, though less accessible, offer opportunities for hiking, fishing, and backpacking. Use figures for the area indicate approximately 20,000 recreation visits per year with most visitors being Oregon residents (D. Vickstrom, pers. comm.).



Steens Mountain Recreation Area

Bureau of Land Management

Burns District

Figure 2. Steens Mountain study area.

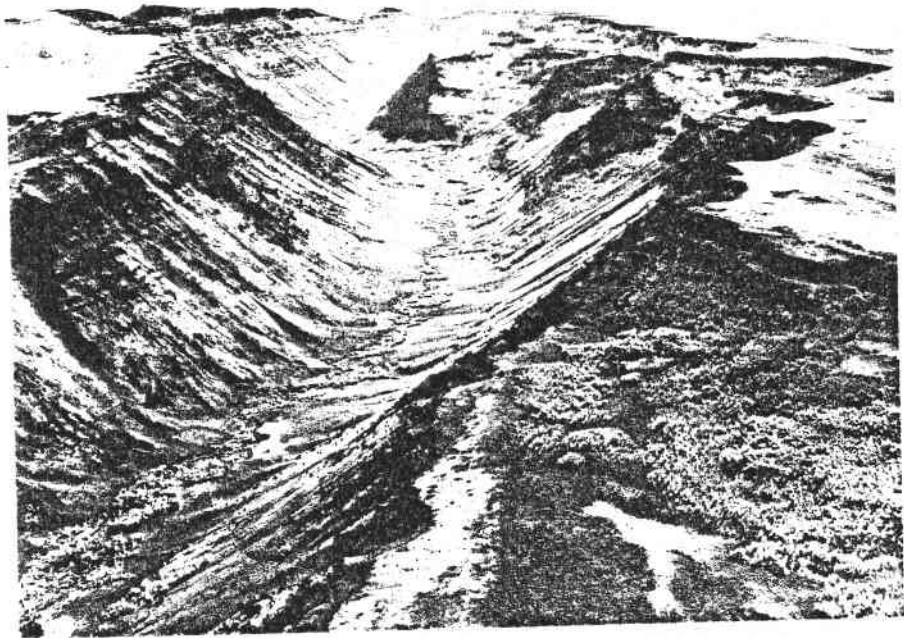


Figure 3. Kiger Gorge, Steens Mountain Recreation Area.

The Sample

A stratified random sample of users was drawn from names and addresses of those Steens Mountain recreationists who had participated in a mailback questionnaire survey conducted during the fall of 1980.¹ From data obtained in that previous survey it was found that Steens Mountain users were predominantly male (75%), averaged 40 years old, had more than 15 years of formal education and were generally (60%) from communities of less than 25,000 population (Table 1).

Users were stratified according to residence, with Harney County in eastern Oregon serving as the boundary to define local users, and the Willamette Valley in western Oregon representing the residence of nonlocal users of Steens Mountain. Strata were randomly sampled proportional to size, with thirty-eight names chosen from Harney County residents (local) and 70 from Willamette Valley residents (nonlocal).

Data Collection

An interview schedule (Appendix B) was developed and the sample of users contacted by mail to inform them of the purpose of the study and ask for their cooperation in an upcoming interview. In-home interviews were conducted during the summer of 1981 and a total of

¹ Visitors were contacted on-site during the summer of 1980. Front-end data were collected and visitors asked for their participation in the mail questionnaire survey. Names and addresses were collected and that fall participants were sent a questionnaire in the mail. Data have been analyzed and the final report of that study is in progress.

Table 1. Demographic information for all users of Steens Mountain Recreation Area.^a

		All users
Sex:	Male	75%
	Female	25%
Community size:		
	100,000+	20%
	25,000 - 99,999	19%
	5,000 - 24,999	28%
	below 5,000	22%
	farm	11%
		<u>Means</u>
Age		40 years
Education		15.2 years

^a Data obtained from 1980 study of Steens Mountain recreationists. Final report is in progress.

81 users contacted, which was 74 and 75 percent of the local and nonlocal visitors in the sample.

The interview schedule was divided into two parts, the first asking questions about the remoteness from the sights and sounds of man of various Steens Mountain settings and the second part asking about the acceptability or unacceptability of a variety of man-caused modifications in Steens Mountain settings. These questions were directed toward criterion standards for the four recreation opportunity spectrum classes represented in the Steens Mountain Recreation Area--primitive, semi-primitive nonmotorized, semi-primitive motorized, and roaded natural (Figure 4).

To gain a clear understanding of users' perceptions of the standards for the remoteness and resource modification criteria, several different questions were used in investigating each criterion. Respondents were asked to indicate on a map and give a brief description of a particular site where they had spent time and could remember the setting. Users were given written descriptions, representing each of the recreation opportunity spectrum classes being studied, for remoteness and resource modification (Table 2), and asked which of the statements best described the setting where they had been. Respondents were asked to give their perceptions of appropriate distances from the one main road in the Steens Mountain area using (1) distance measured in miles from the road and (2) distance in amount of time spent walking away from the road, as measures of remoteness from the sights and sounds of man, for each of the four remoteness descriptions.

Using a topographic map of Steens Mountain and relying somewhat on users' familiarity with the area, recreationists were asked to

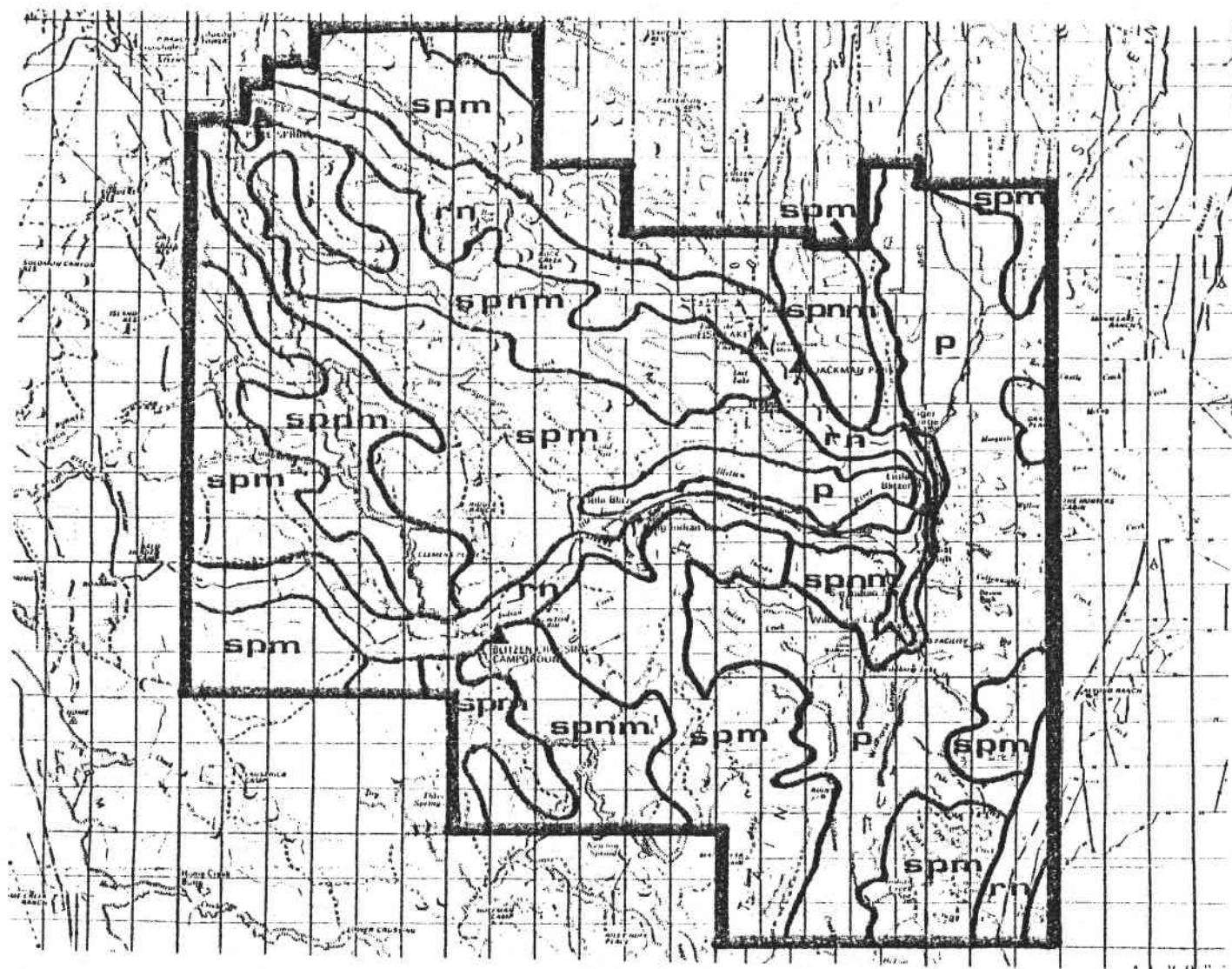


Figure 4. ROS classification of Steens Mountain Recreation Area.

Table 2. Setting descriptions used to indicate recreation opportunity spectrum (ROS) classes for remoteness and resource modification.

Remoteness

- Setting 1: Man-made developments, including motorized vehicles, cannot be seen or heard (P).
- Setting 2: Most man-made developments, including motorized vehicles, can seldom be seen or heard (SPNM).
- Setting 3: Few, but some, man-made developments, including motorized vehicles, can be seen and heard (SPM).
- Setting 4: Man-made developments, including motorized vehicles, are common (RN).

Resource Modification

- Setting 1: Essentially unmodified natural environment. Resource uses which alter the natural environment do not occur (P).
- Setting 2: Predominantly unmodified natural environment. Some resource uses which alter the natural environment do occur (e.g., designated overlooks, grazing) (SP)^a
- Setting 3: Generally natural-appearing environment, developed recreation facilities may be present, other resource uses which alter the natural environment (e.g., water developments, grazing, roads, etc.), are quite evident (RN).

^a Semi-primitive nonmotorized and semi-primitive motorized classes were grouped together into one semi-primitive classification.

compare two predetermined locations in the bottoms of two of the gorges in Steens Mountain, one having a primitive jeep road in the bottom and the other only accessible on foot or horseback, to determine which location was perceived to be more remote and why. Using the same topographic map, users were asked to indicate their perceived remoteness of a particular setting location that had been classified according to existing ROS standards.

Respondents were asked to indicate their feelings toward seeing various types of resource modification such as cattle and sheep grazing, fences, old buildings, and powerlines in the setting they had previously indicated on the map. Photographs were used to illustrate four different types of resource modification and users asked to determine which of three recreation opportunity spectrum descriptions of modification levels best described the pictured setting. Respondents were also asked to indicate proportions of the area on which specific resource modifications could occur for the setting they had previously indicated on the Steens area map. Each interview lasted from 45 minutes to one hour.

Data Analysis

Frequency, cross-tabulation, and content analyses were used to obtain general descriptive and summary statistics for where Steens Mountain area visitors recreated and for their descriptions of those settings.

In meeting the first objective of the study, frequency analyses were performed to examine user descriptions of the remoteness of both

their chosen settings and selected setting locations as well as their perceptions of distances required for varying levels of remoteness. Cross-tabulation analysis was used to compare user descriptions and recreation opportunity spectrum classes of chosen settings.

Frequency analyses were also used to identify perceptions of acceptable types and amounts of resource modification, the second study objective. Cross-tabulation, using the Chi-square statistic, was used to point out associations between these types and amounts and selected ROS setting classes.

Analysis of variance and the Chi-square statistic produced through cross-tabulation analyses were used to test for differences between perceptions of local and nonlocal users, the third objective of the study.

All analyses were performed using the Statistical Package for the Social Sciences (SPSS) (Nie et al. 1975) on the Oregon State University Cyber 172 computer.

Limitations of the Study

During progress of the study, several possible limitations became apparent that should be considered in interpreting the results of this study. Some of these limitations stem partly from the exploratory nature of some of the questions asked.

Effectiveness of the survey instrument may have been hindered by possible variation in semantic interpretation among different respondents. For example, variation in the connotation of the terms

"remoteness" and "resource modification" may have occurred. Respondents may have had difficulty in visualizing proportions of settings in describing amount of modification acceptable, resulting in a wide variation in responses, although these responses were not highly inconsistent with those to other modification questions.

A second possible limitation is the lack of measurement of the respondents' past experiences in the study area. Past experience could have an effect on perceptions of setting remoteness and acceptable types and amounts of resource modification. For example, it could be hypothesized that a relatively frequent user of the area, or a user who had been to the area recently, would have more realistic perceptions of distances in the study area and have a different tolerance for various types of resource modification than other users because of greater familiarity with the area. This could also be important in comparing responses of local and nonlocal users in explaining why these differences occurred.

A third limitation is that one group of Steens Mountain users was not sampled in this study, those nonlocal users living outside the Willamette Valley. These data represent only Willamette Valley and Harney County visitors, and caution should be taken in expanding these data to represent all Steens Mountain Recreation Area users.

RESULTS

Chosen Setting Characteristics

Recreationists were asked to indicate on a map of the Steens Mountain area a specific setting or location where they had spent the most time or with which they were most familiar. A wide variety of locations in the Steens Mountain area were chosen, the majority being designated campgrounds and overlooks within a half mile of the main loop road. When asked to describe their chosen settings, the majority of respondents described these locations as being natural to extremely natural-appearing, with minimal to no development, and a few or no other people there. Appendix C contains a complete listing of Steens Mountain settings chosen and a summary of users' descriptions of those chosen settings.

Remoteness Criterion

Several questions were used in attempting to meet the first objective of the study, that of identifying users' perceptions of remoteness

of various settings in the Steens Mountain area. These findings can be compared with existing standards for classifying lands using recreation opportunity spectrum guidelines. Current ROS standards for both remoteness and resource modification are listed in Appendix A.

When asked to indicate the importance of their being in a remote setting, the majority of respondents (60%) indicated that it was either very important or extremely important (Table 3). Nearly 30 percent indicated it was only moderately important.

Table 3. Importance of being in a remote setting (N=81).

Importance	Percent of users
Not at all important	5
Slightly important	7
Moderately important	28
Very important	35
Extremely important	25

Given four setting descriptions representing the varying degrees of remoteness of the four recreation opportunity spectrum classes being examined, users were asked to indicate which of these best described their selected Steens Mountain setting location. Most respondents (80%) described their chosen setting as being fairly remote and removed from the sights and sounds of man and man-made developments. These

responses were compared to ROS classification of those same settings using existing standards for remoteness (Table 4). Users tended to perceive their settings as being more remote than as zoned using existing ROS standards. For instance, of the 31 respondents describing their setting as being semi-primitive motorized, more than half were in settings zoned by ROS as being less remote. Also, half of all respondents were in settings zoned as roaded natural (RN) using existing standards for remoteness and 65 percent of users in those settings described them as being more remote than RN, although none indicated primitive remoteness.

A majority of respondents (72 percent) were less than 1/2 mile from the main road in the Steens Mountain area (as measured from their chosen setting on the map), and yet 83 percent of the recreationists indicated they were in settings described, in terms of remoteness, as primitive, semi-primitive nonmotorized (SPNM), and semi-primitive motorized (SPM). A distance of greater than 1/2 mile from a road is the standard for remoteness currently used to classify settings as SPNM and SPM (Appendix A).

Using the same four descriptions of remoteness representing the four ROS classes examined, recreationists were asked to indicate how far from the main road in the Steens they would need to be to experience each varying degree of remoteness described. The question was asked in terms of distance in miles and also in time spent walking away from the road. Sixty-four percent of the respondents felt at least two miles was needed for remoteness as defined in a setting classified as providing primitive recreation opportunities (Table 5).

Table 4. User perceptions of setting remoteness compared with the same settings zoned using existing recreation opportunity spectrum (ROS) criteria and standards (N=81).

User description of setting remoteness	ROS class ^b				Total
	P	SPNM	SPM	RN	
- - - - number of users - - - -					
Man-made developments, including motorized vehicles, cannot be seen or heard (P) ^a	6	7	2	0	15
Most man-made developments, including motorized vehicles, cannot be seen or heard (SPNM)	1	2	13	5	21
Few, but some, man-made developments can be seen and heard (SPM)	0	4	6	21	31
Man-made developments, including motorized vehicles, are common (RN)	0	0	0	14	14
Total	7	13	21	40	81

^a Labels P, SPNM, SPM and RN were not included in descriptions given to respondents.

^b P - primitive, SPNM - semi-primitive nonmotorized, SPM - semi-primitive motorized, RN - roaded natural.

Table 5. Distances from road necessary for each of four remoteness descriptions (N=81).

Distance from main road	Remoteness description ^a			
	P	SPNM	SPM	RN
- - - - percent of users - - - -				
< 1/2 mile	5	10	32	81
1/2 - 1 mile	14	26	30	17
1 - 2 miles	17	25	21	1
2 - 3 miles	27	22	9	--
3+ miles	37	17	8	--
- - - - -				
Time walking from main road				
< 1/2 hour	9	15	38	88
1/2 - 1 hour	25	44	44	10
1 - 2 hours	30	23	14	1
2+ hours	37	17	4	1

^a See Table 1 for descriptions used.

The current standard used for primitive classification is at least 3 miles from a road--35 percent of the respondents indicated a distance of 3 miles or greater was necessary. Seventy-three and 60 percent of the users indicated a distance of between 1/2 and 3 miles (the range used in existing standards for classifying areas as SPNM and SPM) was needed for semi-primitive nonmotorized and semi-primitive motorized remoteness descriptions, respectively. Eighty-one percent of respondents felt that less than 1/2 mile (the standard currently being used) was sufficient to describe an area as roaded natural.

Responses given in terms of time spent walking away from the main road were generally similar. Assuming a person walks approximately two miles in one hour, 57 percent of the users indicated one or more hours (2+ miles) was needed for primitive classification, 59 and 92 percent felt that less than one hour (2 miles) was adequate for classification as SPNM and SPM, respectively, and 88 percent felt that less than 1/2 hour was necessary in describing roaded natural. Again, though somewhat inflated, these distances are fairly consistent with responses given in miles and with current ROS standards for measuring remoteness.

This general consistency continued in user responses to questions concerning the remoteness of three predetermined Steens Mountain settings. Respondents were shown a topographic map of part of the Steens Mountain area and a specific location, Lost Lake, pointed out. They were asked to indicate their perception of the remoteness of that setting, choosing from the descriptions of the four ROS classes being studied (Table 6). This particular location is approximately 1.25 miles from the main road and classified as providing SPNM recreation opportunities using existing ROS criteria and standards. Seventy-three

percent of the recreationists felt it was a setting as remote or more remote than as classified using existing standards. These findings are in agreement with distances described by users as necessary to define primitive and semi-primitive setting opportunities and again are only slightly inconsistent with current standards.

Table 6. Perceived remoteness of Lost Lake setting in Steens Mountain ^a (N=81).

Remoteness description ^b	Percent of respondents
Primitive	38
Semi-primitive nonmotorized	35
Semi-primitive motorized	25
Roaded natural	3

^a Lost Lake is approximately 1.25 miles from the main road and zoned as SPNM using existing standards for remoteness. It is separated from the main road by somewhat rolling topography and is screened by vegetation.

^b See Table 1 for descriptions used.

To examine the value of using roads as an indicator of the sights and sounds of man and the influence of their presence on perceptions of remoteness, recreationists compared two settings in the bottoms of two of the broad U-shaped gorges, one (Big Indian Gorge) having a primitive jeep trail in the bottom and the other (Blitzen Gorge) accessible only by foot or on horseback. Both gorges are visible from the main Steens Mountain loop road and thus most respondents were

familiar with these locations. The setting location in the gorge without the jeep trail was seen as being the more remote of the two locations by 73 percent of respondents (Table 7). The major reason given for their response was the road present or available access. Topography and being able to see or not see people were also other reasons given. Even though the jeep trail is primitive and may not be used a great deal, users seemed to feel that the presence of the road has an influence on their perception of the remoteness of those particular settings.

Resource Modification Criterion

The resource modification criterion was also examined using several questions to determine both the types and amounts of modifications acceptable or unacceptable to Steens Mountain users.

User responses to a question about the importance of avoiding areas containing modifications of the natural resource showed a wide range of responses, from not at all important (6%) to extremely important (20%) (Table 8).

Users were asked to indicate which of three descriptions of varying levels of resource modification best described their chosen Steens Mountain setting. Thirty percent of respondents felt they were in an essentially unmodified setting and 44 percent perceived their settings as being predominantly unmodified. Comparing these user classifications of their chosen settings with ROS classification of those same settings, users described levels of modification consistent with allowable modification of these settings using ROS (Table 9). Standards

Table 7. Comparison of the remoteness of two Steens Mountain setting locations (N=81).

	Percent of respondents
Blitzen Gorge ^a setting more remote	73
Big Indian Gorge ^b setting more remote	5
Both settings equally remote	22
Reasons given for response:	
Road/access	54
Terrain (steepness),	16
Seeing/not seeing people	21
Others ^c	9

^a Zoned as primitive--accessible only by foot or horseback.

^b Zoned as SPM--has a primitive jeep trail in the bottom.

^c Private vs. government land, both are gorges, distance from civilization.

Table 8. Importance of avoiding settings containing modifications (N=81).

Importance	Percent of users
Not at all important	6
Slightly important	18
Moderately important	27
Very important	29
Extremely important	20

Table 9. User perceptions of chosen setting modification compared with the same settings zoned using existing recreation opportunity spectrum (ROS) criteria and standards (N=81).

User description of chosen setting	ROS class ^b			Total
	P	SP	RN	
- - - - number of users - - - -				
Essentially unmodified natural environment. Resource uses which alter the natural environment do not occur (P). ^a	6	14	4	24
Predominantly unmodified natural environment. Some resource uses which alter the natural environment do occur (SP).	1	19	16	36
Generally natural-appearing environment, developed recreation facilities possibly present, other resource uses which alter the natural environment are quite evident (RN).	0	1	20	21
Total	7	34	40	81

^a Labels P, SP, and RN were not included in descriptions given to respondents.

^b P - primitive, SP - semi-primitive (semi-primitive nonmotorized and semi-primitive motorized were combined for comparison), RN - roaded natural.

for measuring resource modification defined by the recreation opportunity spectrum are stated in terms of maximum acceptable change. Classification of settings using ROS is based primarily on the remoteness criterion, with other criteria such as resource modification used to adjust or reclassify settings if acceptable limits are exceeded. Visitors in most Steens Mountain settings described levels of modification equal to or below levels defined by existing ROS standards. ROS-classified semi-primitive or roaded natural settings were particularly described as being much less modified, with many respondents describing these settings as primitive and semi-primitive, respectively.

When users were asked to indicate the effect on their recreation experience of seeing various types of recreation modification in their chosen setting locations, responses varied according to the type of modification (Table 10). Items associated with western semi-arid or desert landscapes, such as cattle grazing or abandoned buildings (old cabins), were seen as having a less negative effect, even somewhat positive, for users describing their settings as primitive in terms of resource modification to being neutral to moderately adding to recreation experiences of users in settings described as roaded natural (RN). More obvious signs of civilization and man-caused modification such as lived-in cabins, powerlines, and four-wheel drive roads were seen as detracting from recreation experiences by all respondents. Users in settings described as primitive were the most negatively affected by the modifications listed, as one might expect, especially permanent modifications such as lived-in cabins, developed campgrounds, powerlines, and roads. Seeing old abandoned buildings did slightly add to their experiences, however. Users in areas described as

Table 10. Effect on recreation experience of seeing various types of resource modifications in chosen Steens Mountain settings (N=81).

	Setting description ^a					
	Primitive (N=24)		SP (N=36)		RN (N=21)	
	Mean ^b	S.D.	Mean ^b	S.D.	Mean ^b	S.D.
Cattle grazing	4.9	1.4	4.7	1.8	5.0	1.7
Evidence of cattle	4.6	.9	4.5	1.6	4.6	1.5
Sheep grazing	4.8	2.0	4.6	1.7	4.3	2.0
Evidence of sheep	4.3	1.2	4.6	1.6	4.5	1.7
Powerlines	2.3	1.3	2.7	1.3	2.9	1.5
Abandoned buildings	6.2	1.7	6.6	1.6	6.7	1.6
Campfire rings ^c	4.0	1.2	4.6	1.4	5.1	1.4
Cabins (lived-in) ^c	2.4	1.2	3.3	1.6	3.7	1.6
Rustic campsites	4.5	1.7	4.8	1.7	5.0	1.1
Developed camp-grounds ^c	2.5	1.5	3.7	2.3	5.0	2.0
Radio repeater	4.3	1.9	4.6	1.2	5.1	1.2
Reservoirs	4.1	1.5	4.9	1.5	5.2	1.8
Fences	3.4	1.5	4.0	1.1	4.0	1.4
Windmills	4.3	1.7	4.9	1.7	4.8	1.8
Car-passable roads ^c	3.8	2.5	5.0	1.9	6.3	2.0
4-wheel drive roads	3.2	2.1	3.7	1.7	4.1	1.9

^a See Table 1 for descriptions used.

^b Based on a 9-point scale: 9 = most strongly added, 8 = strongly added, 7 = moderately added, 6 = slightly added, 5 = neutral, 4 = slightly detracted, 3 = moderately detracted, 2 = strongly detracted, 1 = most strongly detracted.

^c Differences among setting descriptions statistically significant at < .05 level.

semi-primitive (SP) were overall less negatively affected, although developed campgrounds, fences, powerlines, four-wheel drive roads, and lived-in cabins slightly to moderately detracted from their recreation experiences. Seeing abandoned buildings moderately added. Recreationists in areas they described as roaded natural (RN) were neutral for almost all modifications listed, although seeing powerlines moderately detracted from their experiences. Abandoned buildings and car-passable roads added to their experiences. These RN area users were located mainly in campgrounds and overlooks along the main road, and may have viewed this road as an important access to reach desired settings. When asked if they would avoid locations containing each of the types of modifications listed, the presence of powerlines, lived-in cabins, developed campgrounds, or four-wheel drive roads were seen by respondents as a reason to avoid a particular location (Table 11).

These perceptions are consistent with responses given when users were shown four photographs, each illustrating a particular type of resource modification (Figure 5) and asked to indicate which resource modification description best described the type of modification shown in the photograph. As presented in Table 12, cattle grazing (photograph 1) and a primitive road crossing a meadow (photograph 3) were described as being "predominantly unmodified" (SP) environments by a majority of respondents (69 and 61 percent, respectively). Photographs of a moderately developed campground (photograph 2) and a powerline and fences (photograph 4) were described as being modified, but "generally natural-appearing" (RN) by 88 and 68 percent of respondents, respectively. Given their description of the setting modifications shown in each photograph, users were then asked to

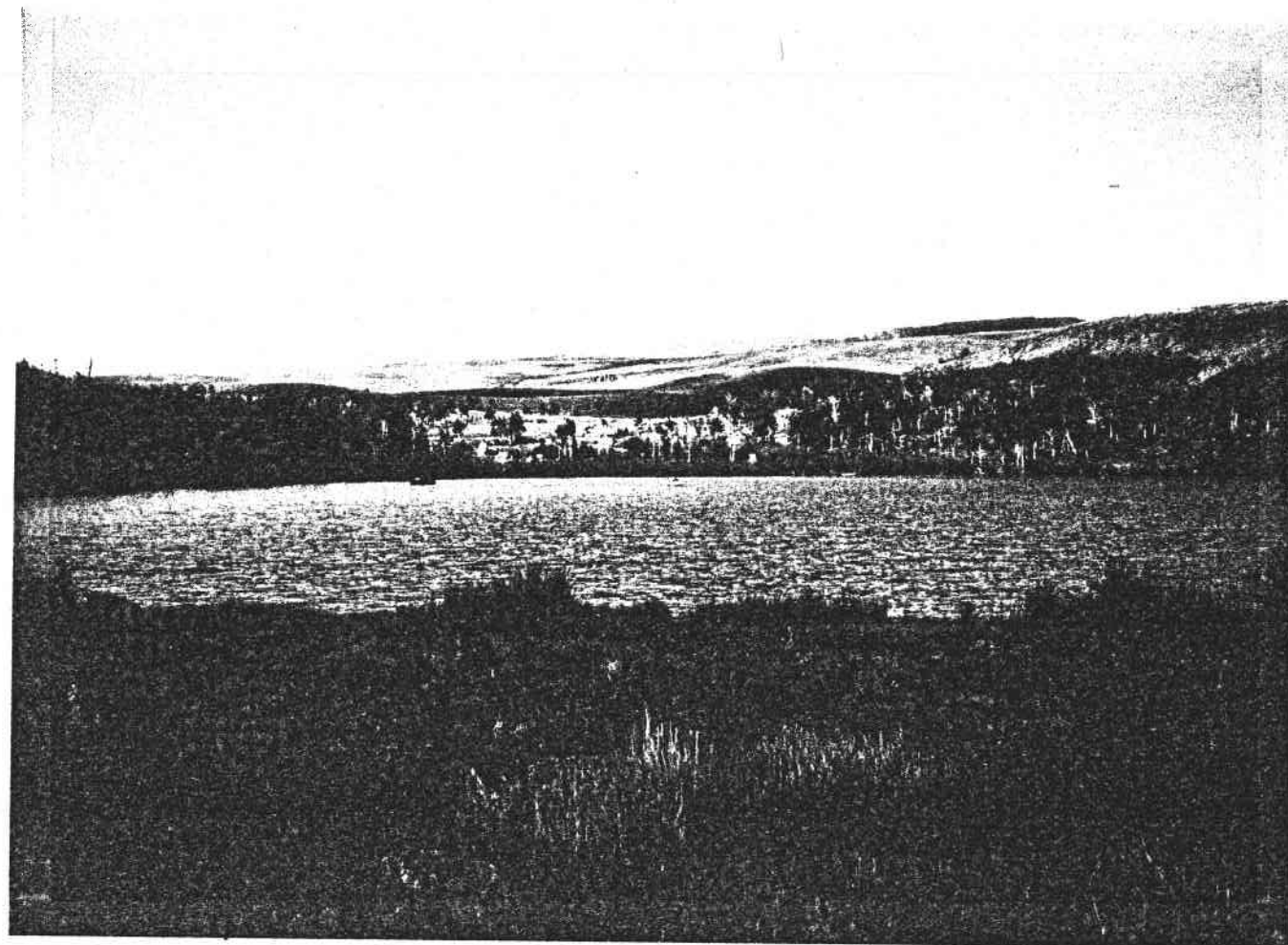
Table 11. Steens Mountain users' avoidance of settings containing various types of resource modification (N=81).

Modification	Avoid locations	
	Yes	No
	- - percent of users - -	
Cattle grazing	11	89
Evidence of cattle	6	94
Sheep grazing	11	89
Evidence of sheep	10	90
Reservoirs/ponds	7	93
Fences	10	90
Windmills	11	89
Abandoned buildings	1	99
Cabins (lived-in)	44	56
Powerlines	36	64
Rustic campsites	5	95
Campfire rings	2	98
Developed campgrounds	43	57
Radio repeater	5	95
Car-passable roads	26	74
4-wheel drive roads	36	64



Photograph 1

Figure 5. Illustrations of four types of resource modification.



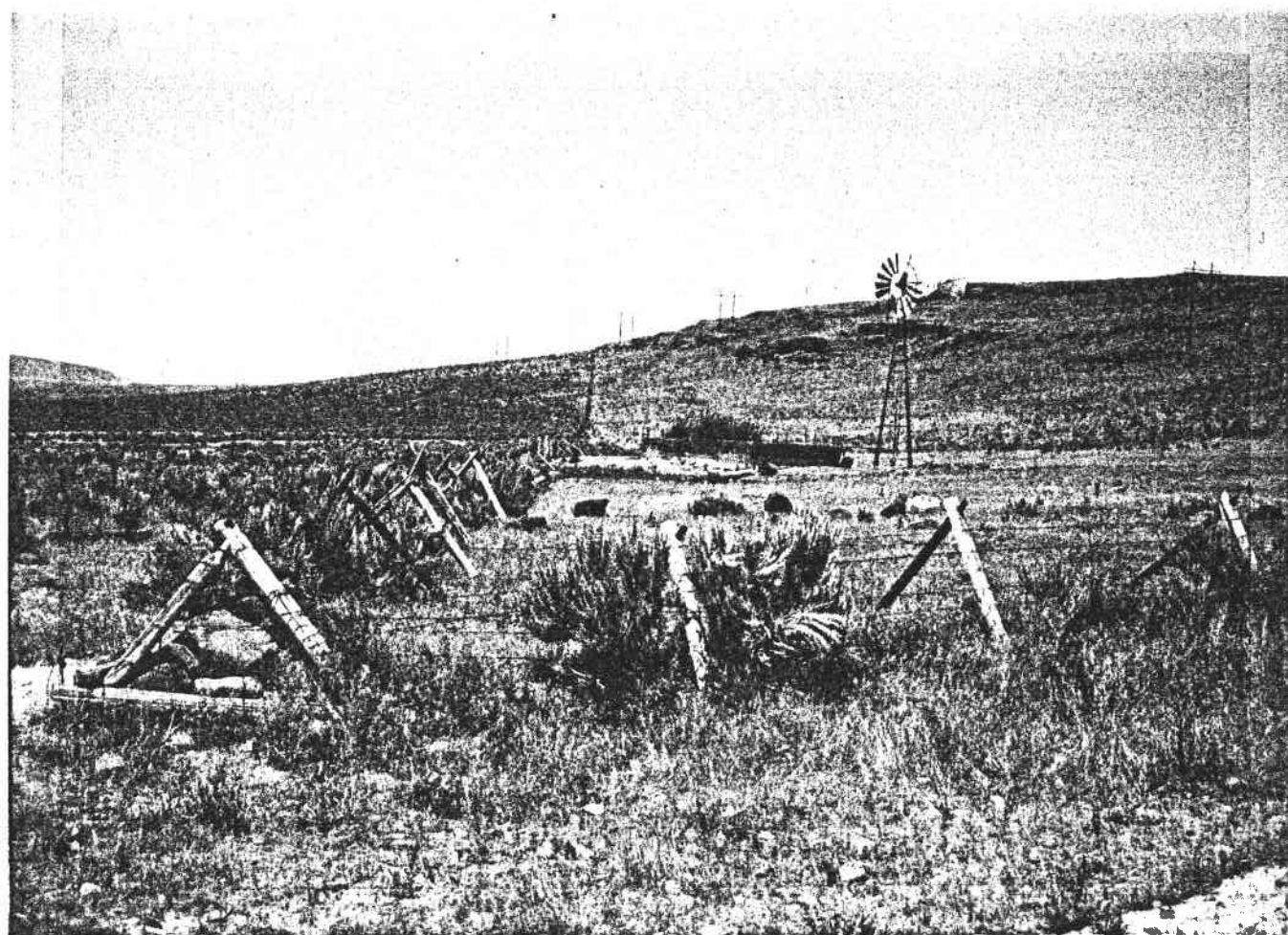
Photograph 2

Figure 5. Continued.



Photograph 3

Figure 5. Continued.



Photograph 4

Figure 5. Continued.

Table 12. Users' descriptions of photographs illustrating four types of resource modification (N=81).

Setting modification description ^a	Photograph 1 Cattle grazing	Photograph 2 Campground	Photograph 3 Primitive road crossing meadow	Photograph 4 Fence, windmill, powerline
- - - - - percent of users - - - - -				
Primitive	21	1	30	1
Semi-primitive	69	11	61	38
Roaded natural	10	88	10	68

^a See Table 1 for descriptions used.

give their perceptions of what it would take (e.g., an increase/decrease or something besides the modification illustrated) to move that setting into the next closest, more or less modified, ROS class. For example, they were asked what would it take to cause a setting described as primitive in terms of the type of modification being illustrated to be described as semi-primitive? In response, users said that to move a setting described as primitive to semi-primitive and even to roaded natural required something besides more roads and cattle grazing. This was also true for changing semi-primitive to roaded natural classification--more recreation development was required, not simply more cattle and fences. To change a setting classified as roaded natural to semi-primitive meant less modification, either no road or a more primitive one, half or no recreation development, and fewer cattle. To reclassify roaded natural or semi-primitive settings as primitive, the majority of users suggested there could be no modifications like those pictured.

In an effort to examine not only the types of modifications acceptable or unacceptable, but also what amounts were acceptable, respondents were asked to estimate what percent of the area of their chosen setting could contain various groups of resource modifications and still be acceptable to them. Realizing the difficulty involved in visualizing setting proportions containing modification, responses were surprisingly consistent with those for prior questions (Table 13). High levels of livestock grazing in particular were tolerated by all users, even those in settings described as primitive or essentially unmodified, though the majority of all users indicated that less than 1/3 of the area of their chosen setting could contain even the most

Table 13. Acceptable percentages of modification in users' chosen recreation settings (N=81).

Modification and percent of setting	Setting description ^a		
	P (N=24)	SP (N=36)	RN (N=21)
- - - percent of users - - -			
Livestock grazing			
0 - 5%	38	22	24
6 - 15%	13	22	24
16 - 30%	25	25	24
31 - 100%	25	31	29
Recreation-related modifications			
0 - 5%	75	39	5
6 - 15%	17	28	52
16 - 30%	8	19	14
31 - 100%	--	14	29
Old buildings			
0 - 5%	79	33	38
6 - 15%	17	42	43
16 - 30%	4	14	10
31 - 100%	--	11	10
Other man-made structures			
0 - 5%	92	72	62
6 - 15%	8	14	29
16 - 30%	--	14	5
31 - 100%	--	--	5
Reservoirs/ponds			
0 - 5%	67	33	29
6 - 15%	25	31	19
16 - 30%	8	22	24
31 - 100%	--	14	29
Roads			
0 - 5%	88	47	38
6 - 15%	4	33	43
16 - 30%	4	8	10
31 - 100%	4	11	10

^a See Table 1 for descriptions used.

tolerated modifications such as livestock and reservoirs and ponds. Visitors in semi-primitive or roaded natural settings indicated higher accepted setting proportions than those in primitive settings for all other groups of modifications, with man-made structures such as power-lines being least acceptable in all chosen settings.

Differences in Perceptions Among Local
and Nonlocal Users of Steens Mountain

The sample of Steens Mountain recreationists was stratified by local and nonlocal users based on residence location. Determining how these two groups differed in their setting descriptions and perceptions of remoteness and resource modification was the third objective of the study.

Local and nonlocal respondents averaged approximately the same age and years of schooling (Table 14), with nonlocal users slightly younger (43 vs. 45 years old) and averaging a year more schooling (15 vs. 14 years).

Table 14. Comparison of mean age and education between local and nonlocal users of Steens Mountain.

	Local (N=28)	Nonlocal (N=53)	T value	Significance
Age (years)	45	43	.64	NS
Years of schooling	13.8	15.0	-1.86	NS

Comparing the classification of setting locations indicated by these local and nonlocal respondents using current recreation opportunity spectrum criteria and standards revealed significant differences ($p \leq .05$) between these two groups (Table 15). None of the settings chosen by local users were in areas classed as providing primitive recreation opportunities, while 13 percent of nonlocal user settings were classified as such. Conversely, the majority of local users (64 percent) indicated settings classed by ROS as roaded natural (RN), while 41 percent of nonlocal users were in areas classified as RN.

Table 15. Recreation opportunity spectrum (ROS) classification of Steens Mountain settings chosen by local and nonlocal users.

ROS classification	Local ^a (N=28)	Nonlocal ^a (N=53)
	- - - percents - - -	
Primitive	0	13
Semi-primitive nonmotorized	7	21
Semi-primitive motorized	29	25
Roaded natural	64	41

^a Significant differences in Chi-square analysis at $p \leq .05$.

Remoteness

Given that the majority of nonlocal users indicated settings classified as either primitive or semi-primitive, it made sense that a larger percentage of nonlocal users than local users indicated it was very or extremely important to be in a remote setting (Table 16). Local users indicated that it was less important to be in a remote setting, though 51 percent felt it was moderately or very important.

Table 16. Comparison of the importance of being in a remote setting between local and nonlocal Steens Mountain users.

Importance	Local ^a (N=28)	Nonlocal ^a (N=53)
Not at all important	7	4
Slightly important	14	4
Moderately	39	23
Very important	32	36
Extremely important	7	34

^aDiffered significantly in Chi-square analysis at $p < .05$.

Differences between local and nonlocal users were statistically significant when users' descriptions of the remoteness of their chosen settings were compared (Table 17). Again, as reflected in the ROS classification of these same settings, nonlocal users described their

settings as being primitive (28 percent), while no local users described their settings as such. Thus, in general, local users described their settings as being less remote than did nonlocal users.

Table 17. Comparison of local and nonlocal users' descriptions of the remoteness of their chosen Steens Mountain settings.

Setting remoteness description ^a	Local ^b (N=28)	Nonlocal ^b (N=53)
	- - - - percents - - - -	
Primitive	0	28
Semi-primitive nonmotorized (SPNM)	32	23
Semi-primitive motorized (SPM)	43	36
Roaded natural (RN)	25	13

^a See Table 1 for descriptions used.

^b Differed significantly in Chi-square analysis at $p < .05$.

When comparing local and nonlocal users' perceptions of appropriate distances from the main road for each of the four remoteness descriptions, measured both in miles and in time walking, no statistically significant differences were found (Table 18). Local and nonlocal users appeared fairly similar in their perceptions of appropriate distances necessary to achieve the varying degrees of remoteness described, although nonlocal users almost always preferred somewhat greater distances and more hours walking to reach described levels of remoteness than did local users.

Table 18. Comparison of appropriate distances from road needed for each of four remoteness descriptions between local and nonlocal Steens Mountain visitors.

Distance from main road	Remoteness description ^a							
	P		SPNM		SPM		RN	
	Local	Nonlocal	Local	Nonlocal	Local	Nonlocal	Local	Nonlocal
- - - - - percent of users - - - - -								
< 1/2 mile	4	6	7	11	29	34	71	87
1/2 - 1 mile	14	13	25	26	18	36	25	13
1 - 2 miles	11	21	21	26	25	19	4	0
2+ miles	71	60	46	36	29	11	0	0
- - - - -								
Time walking from main road								
< 1/2 hour	4	11	7	19	25	45	82	91
1/2 - 1 hour	25	25	36	49	50	41	14	7
1 - 2 hours	25	32	32	19	18	11	0	2
2+ hours	46	32	25	13	7	2	4	0

^a See Table 1 for descriptions used.

Local and nonlocal visitors also responded similarly in their descriptions of the remoteness of Lost Lake, the setting location in the Steens Mountain area indicated on a topographic map (Table 19), and when asked to compare the remoteness of two setting locations in the bottoms of two gorges, one having a primitive jeep trail and the other accessible only by foot or on horseback (Table 20). A larger percentage of local users than nonlocal users (25 percent versus 18 percent, respectively) felt that the two gorges were equally remote. This could possibly account for the larger percentage of locals than nonlocals (75 percent versus 72 percent, respectively) who indicated Blitzen Gorge was the more remote of the two.

Table 19. Comparison between local and nonlocal users' descriptions of the remoteness of Lost Lake.

Lost Lake remoteness description ^a	Local (N=28)	Nonlocal (N=53)
- - - percents - - -		
Primitive	39	38
SPNM	36	34
SPM	21	26
RN	4	2

^a See Table 1 for descriptions used.

Table 20. Comparison of local and nonlocal users' perceptions of the remoteness of two Steens Mountain locations.

	Local (N=28)	Nonlocal (N=53)
	- - - percents - - -	
Blitzen Gorge setting more remote	75	72
Big Indian Gorge setting ^a more remote	7	4
Both settings equally remote	18	24

^a Setting with primitive jeep trail.

Resource Modification

Local and nonlocal respondents differed in their desire to avoid settings containing resource modification in general, and also in their descriptions of the amount of modification present in their chosen settings in the Steens Mountain area. As shown in Table 21, the majority of nonlocal users (56 percent) indicated it was very or extremely important to avoid modified settings, compared with the majority of local users (77 percent) feeling it was moderately or very important.

No statistically significant differences were found when comparison was made of descriptions of the modification of chosen settings, although nonlocal users tended to describe their settings as having fewer, less obvious modifications (as described by P and SP classes) than did local respondents (Table 22).

Table 21. Comparison between local and nonlocal users of the importance of avoiding settings containing resource modifications.

Importance	Local ^a (N=27)	Nonlocal ^a (N=53)
	- - - - percents - - - -	
Not at all important	11	4
Slightly important	11	21
Moderately important	44	19
Very important	33	26
Extremely important	0	30

^a Differed significantly in Chi-square analysis at $p < .01$.

Table 22. Comparison of descriptions of resource modification of chosen recreation setting between local and nonlocal Steens Mountain users.

Description of setting modification ^a	Local (N=28)	Nonlocal (N=53)
	- - - - percents - - - -	
Primitive	21	34
Semi-primitive	39	47
Roaded natural	39	19

^a See Table 1 for descriptions used.

A comparison between local and nonlocal respondents on the effect of seeing various types of resource modifications on recreation experiences is shown in Table 23. Local users were consistently more tolerant than nonlocal users, especially of such modifications as lived-in cabins, developed campgrounds, the radio repeater located on the top of Steens Mountain, reservoirs and ponds, and car-passable and 4-wheel drive roads. Even though local users indicated that seeing many types of modifications would detract from their recreation experience, these feelings were less negative than those of nonlocal users. Local visitors, perhaps having had more exposure to many of these different modifications mentioned and being more familiar with the area than nonlocal users, may view such things as stock watering ponds, cattle grazing, even the roads in the Steens Mountain area as common occurrences and necessary in the area. Both local and nonlocal users indicated that seeing old abandoned buildings added to their experiences in the Steens Mountain area. Car-passable roads added slightly for local users, possibly reflecting a desire for access to campgrounds and overlooks in the area.

A more positive acceptance of varying types of resource modification by local users over nonlocal users was also evident when comparing modification descriptions of the photographs illustrating four types of resource modification--cattle grazing, a campground, a primitive road, and powerlines and fences. No statistically significant differences (tested at the .05 level) were found between local and nonlocal responses, although local users consistently described scenes of modifications illustrated as being more primitive and less modified than did nonlocal users, particularly the scene of cattle grazing

Table 23. Comparison of mean effects of seeing resource modification between local and nonlocal users of Steens Mountain Recreation Area.

Modification	Means ^a		F value
	Local	Nonlocal	
Cattle grazing	5.3	4.6	3.59
Evidence of cattle	4.8	4.4	1.44
Sheep grazing	5.0	4.4	2.45
Evidence of sheep	4.9	4.3	2.56
Powerlines	3.0	2.5	2.99
Abandoned buildings	6.6	6.5	.17
Campfire rings	4.9	4.4	3.13
Cabins (lived-in)	4.3	2.5	29.79 ^b
Rustic campsites	4.9	4.7	.22
Developed campgrounds	4.4	3.3	4.89 ^c
Radio repeater	5.2	4.4	12.58 ^b
Reservoirs and ponds	5.3	4.5	5.02 ^c
Fences	4.1	3.7	1.47
Windmills	4.8	4.6	.13
Car-passable roads	5.8	4.5	6.10 ^c
4-wheel drive roads	4.2	3.3	4.00 ^c

^a Based on a 9-point scale: 9 = most strongly added, 8 = strongly added, 7 = moderately added, 6 = slightly added, 5 = neutral, 4 = slightly detracted, 3 = moderately detracted, 2 = strongly detracted, 1 = most strongly detracted.

^b $p \leq .001$.

^c $p \leq .05$.

(Table 24). Both groups tended to view permanent, obvious structures such as campgrounds and powerlines and fences as being part of more developed, modified environments, and less obvious things such as cattle grazing and the primitive road as being characteristic of less modified settings.

Finally, local and nonlocal users were compared in their perceptions of an acceptable percentage (of a setting location) for several groups of resource modifications (Table 25). Local users indicated higher percentages were acceptable for all groups of modifications mentioned than did nonlocal users. The only statistically significant difference ($p \leq .05$) was found for recreation-related modifications, with 55 percent of nonlocals indicating 0 - 5% as being acceptable and 14 percent of local respondents indicating 0 - 5%. Both local and nonlocal users indicated fairly high acceptable proportions for livestock grazing and reservoirs and ponds, items commonly associated with semi-arid landscapes of the West. The smaller percentages of old buildings, seen in prior questions as adding to recreation experiences, reflects an idea that too many buildings or other man-made structures could become unacceptable, whether old cabins, recreation developments, or powerlines. The potential difficulty for users being able to visualize percentages of setting locations containing modifications should be considered in interpreting these data, though trends shown are important.

Table 24. Differences between local and nonlocal Steens Mountain users' descriptions of modifications illustrated by four photographs.

Pictured modification and setting description ^a	Local (N=28)	Nonlocal (N=53)
- - - - percents - - - -		
Picture 1 - Cattle grazing		
Primitive	36	13
Semi-primitive	57	76
Roaded natural	7	11
Picture 2 - Campground		
Primitive	4	0
Semi-primitive	18	8
Roaded natural	78	92
Picture 3 - Primitive road		
Primitive	43	23
Semi-primitive	50	66
Roaded natural	7	11
Picture 4 - Powerlines, fences		
Primitive	4	0
Semi-primitive	39	26
Roaded natural	57	74

^a See Table 1 for descriptions used.

Table 25. Comparison of acceptable percentages of modification groups between local and nonlocal visitors to Steens Mountain Recreation Area.

Modification and percentages	Local (N=28)	Nonlocal (N=53)
- - - percent of users - - -		
Livestock grazing		
0 - 5%	14	34
6 - 15%	21	19
16 - 30%	25	24
31 - 100%	39	23
Recreation-related modifications ^a		
0 - 5%	14	55
6 - 15%	46	23
16 - 30%	21	11
31 - 100%	18	11
Old buildings		
0 - 5%	32	57
6 - 15%	46	28
16 - 30%	14	7
31 - 100%	7	7
Other man-made structures		
0 - 5%	61	83
6 - 15%	29	9
16 - 30%	11	6
31 - 100%	0	2
Reservoirs/ponds		
0 - 5%	29	49
6 - 15%	21	28
16 - 30%	29	13
31 - 100%	21	9
Roads		
0 - 5%	39	66
6 - 15%	32	24
16 - 30%	14	4
31 - 100%	14	6

^a Differences between local and nonlocal users significant in Chi-square analysis at $p < .01$.

DISCUSSION AND RECOMMENDATIONS

Discussion of the Results

Recreationists appear to view settings in the Steens Mountain Recreation Area as being mostly undeveloped, natural-appearing, and uncrowded. Their perceptions of the remoteness and acceptability of modifications of these settings are generally consistent with existing recreation opportunity spectrum (ROS) standards for classifying lands.

Differences in responses between local and nonlocal users were not as pronounced as expected. Local and nonlocal visitors selected noticeably different settings, as classified using current ROS criteria and standards, and also described these chosen settings differently. Though they selected different settings, in most cases local and non-local users were in agreement when describing appropriate distances, in describing specific settings, and in evaluating types of modifications.

Remoteness

Being in a remote setting was important to all visitors to the Steens Mountain area, though more important to nonlocal than local users. Users tended to describe their chosen setting locations as being equally or more remote than when zoned using the recreation opportunity spectrum. Even though most recreationists were in settings

less than 1/2 mile from the main road, 83 percent described the remoteness of these settings as being primitive and semi-primitive. Currently a distance of greater than 1/2 mile from a better than primitive road is used to classify semi-primitive and 3 miles from any road for primitive remoteness. The gorges and rolling topography of Steens Mountain may substitute for the lack of screening vegetation in providing more remote opportunities. The rather isolated location of the area may also compensate somewhat for these differences between perceived setting remoteness and existing standards. Because this area is some distance from major population centers and only accessible by an unpaved road, just being in the area itself may be seen as being in a remote location, particularly by nonlocal visitors. No local users described their chosen settings as primitive, compared to almost 30 percent of nonlocal users describing their chosen setting as primitive. No local users were in ROS-classified primitive settings, while 13 percent of nonlocal users were in settings classed as providing primitive recreation opportunities. These local users chose settings closer to the road, while nonlocals were in settings further from the road and the sights and sounds of man.

Though local and nonlocal visitors differed in their choice and descriptions of settings, they were quite similar in their perceptions of appropriate distances from a main road which are needed to describe four degrees of remoteness. Appropriate distances were not greater than those used in existing standards, contrary to what was expected in this more open and exposed semi-arid landscape. This again may be due to the topography and general isolation of the Steens Mountain area.

Local and nonlocal users were also in agreement in their perceptions of the remoteness of Lost Lake, a setting on Steens Mountain zoned as providing semi-primitive nonmotorized (SPNM) recreation opportunities using current standards. Seventy-three percent of all users described this location as providing either semi-primitive nonmotorized or primitive recreation opportunities.

The importance of using roads as representative of the sights and sounds of man in describing opportunities for remoteness was reinforced by users' comparisons of the remoteness of settings in two gorges, one with a primitive jeep trail. The presence of a road and what it represents--the potential of seeing or hearing other people--had an influence on user descriptions of setting remoteness. The majority of users felt the setting without the road was more remote. By closing roads or limiting vehicle access, managers may change opportunities for remoteness. For example, an area classified as semi-primitive motorized because of a primitive road could be reclassified as semi-primitive nonmotorized with the closure of that road, and that area then seen as providing increased opportunities for remoteness with fewer possibilities for encountering other users and motorized vehicles.

Resource Modification

The importance of avoiding areas containing resource modifications ranged from slightly to extremely important, with nonlocal visitors to Steens Mountain expressing greater importance than local visitors. Most users described their chosen settings as essentially or predominantly unmodified, and when compared with the ROS classification of the

same settings (based primarily on their remoteness), user descriptions were well within limits of acceptable change established by existing ROS resource modification criteria.

The three approaches used to examine perceptions of acceptable and unacceptable types and amounts of resource modification revealed similar results. Users were more accepting of less obvious, natural-appearing modifications such as cattle grazing and old abandoned buildings, and least tolerant of permanent, obvious man-made structures such as powerlines and lived-in cabins. Besides having an effect on perceptions of remoteness, the location and past history of the Steens Mountain area, and other similar areas, might influence acceptance and tolerance of modification. This view is reflected in a statement by Brown and Kissell (1979) that "Because of the historical significance associated with cattle ranching, range management activities are not considered a major visual impact nationally." Livestock, especially cattle, are usually thought of as a natural part of past and present western semi-arid landscapes. Visitors to these areas may be more tolerant of this use of the resource than visitors in forested Wilderness areas, for example, who may view livestock as highly incompatible with desired recreation experiences. Cattle, watering ponds, and old abandoned cabins are as much a part of these semi-arid areas as cowboys and sagebrush. Old cabins may especially attract those interested in western history.

There was lack of agreement between local and nonlocal users in the effect of seeing various types of resource modification on their recreation experiences, though these differences were not as great as expected. Local users were more tolerant of all types of modifications

than nonlocals, particularly lived-in cabins, developed campgrounds, and car-passable roads. Seeing abandoned buildings added to the experience for both groups, while cattle grazing, reservoirs/ponds, and car-passable roads also added for local users. Local users, perhaps having had more exposure and being more familiar with the area could be more accurate in their description of settings and evaluation of the necessity of particular types of modifications. This could also be reflected in their less extreme perceptions of the remoteness and modification of their chosen settings.

Differences in acceptability between nonpermanent-natural-appearing and obvious-permanent modifications was also evident from user descriptions of photographs illustrating four types of modifications. Local users were again more tolerant, though differences in responses were not statistically significant.

Comments on the comparative amount of each of the modification types which were pictured found in their chosen settings were consistent with previous setting descriptions as well as ROS classification of those same settings. A large majority of users who described their settings as being primitive, or essentially unmodified, indicated there were no modifications like those pictured. Settings described as being semi-primitive contained some recreation development and the majority had roads similar to the one shown, but contained no powerlines or fences or contained fences alone. Most users describing their settings as roaded natural indicated there was about the same amount of recreation development as illustrated in the photograph (the photograph was of the most heavily used campground in the area), a road similar to the one shown, and fences but no powerlines.

User estimates of the amount of modification acceptable also confirmed differences in acceptability between natural-appearing and more intrusive groups of modifications. Livestock grazing was equally tolerated in settings described as primitive as in settings described as being more modified. Again, this may be explained partly by the location and past history of Steens Mountain. As one might expect, users in settings described as being roaded natural (RN) accepted higher percentages of almost all types of modifications than users in settings described as primitive and semi-primitive. Because most users describing their settings as roaded natural were within 1/4 to 1/2 mile from the main road and it is within this area that the campgrounds are located, it seems probable that these users would be willing to accept higher proportions of recreation-related modifications and roads within their setting locations than users in areas further away from the main road and recreation development.

The only statistically significant difference found in responses to the amount of modification acceptable between local and nonlocal users was for recreation-related modifications, where local users indicated higher acceptable levels in their settings. These local users were mainly in settings near the road, most likely in campgrounds or overlooks, and it makes sense that they would be more tolerant of these types of modifications than nonlocal users who tended to choose settings further from designated recreation areas.

Recommendations

What are the implications of these findings for managers involved in recreation opportunity planning using the recreation opportunity spectrum? Though the following recommendations may not be applicable for recreation opportunity planning on all areas throughout the semi-arid landscapes of the western United States due to the diversity of landscapes and varying management objectives, they can serve as examples of appropriate standards and setting characteristics for remoteness and resource modification when inventorying and classifying these areas using the recreation opportunity spectrum.

The results of this study do not suggest major changes in standards currently used to classify areas based on remoteness and resource modification. These semi-arid areas may well contain sufficient diversity in topography and be sufficiently remote in location to compensate for a lack of screening vegetation to minimize man's influence on recreation opportunities. However, several suggestions for adjusting current standards did emerge from these data.

The data suggested that, depending on the area being inventoried, current standards for remoteness could be relaxed. It may be that 1/4 mile from a road, as suggested by Brown, Driver and McConnell (1978) in earlier work on the recreation opportunity spectrum, is sufficient to delineate roaded natural areas, with semi-primitive areas being greater than 1/4 mile from the road, rather than 1/2 mile which is the present Forest Service and BLM standard.

Results indicate that two miles from a road, rather than the current remoteness standard of three miles, could be adequate to classify an area as providing primitive recreation opportunity. Even in a relatively open area, topography, lack of development, and area location increase opportunities for remoteness. Therefore, in some areas even two miles might be greater than is needed. Thus, the analyst might use two miles as a general standard but adjust it where conditions permit.

Based on findings of this study, it is recommended that when classifying lands or adjusting land classes based on resource modifications, two groups of modifications should be identified:

(1) natural-appearing, less obvious items which are congruent with the natural history and surrounding landscape, and (2) permanent, obvious modifications that appear less consistent with surrounding landscape features. Specific modifications in each group could vary according to the settings being inventoried.

A second recommendation to aid in defining both types and amounts of modification present in recreation settings is based on study results and standards suggested in the early development of the recreation opportunity spectrum concept (Brown, Driver and McConnell 1978) and suggests that managers and planners look at actual proportions of areas containing various types of human modification of the environment when classifying recreation opportunity settings. ROS standards currently used by the Forest Service and Bureau of Land Management to measure "evidence of humans" are very general and difficult to quantify. By establishing thresholds of acceptability

for both non-permanent and permanent groups of modifications, a more firm basis for land classification using the recreation opportunity spectrum could be formed. Standards would be more consistent and modifications more accurately assessed, while allowing for flexibility in the judgement of the analyst.

Apart from the implications for recreation planning using ROS criteria, findings of this study suggest that managers might capitalize on user tolerance of and interest in present and past uses of semi-arid western rangelands when managing lands for both livestock grazing and recreation opportunities--a challenge facing managers of much of the land in the West. There is potential for interpreting traditional uses of the land and increasing visitor awareness and understanding of these traditional uses.

It is recommended that further study be done on differences in recreation preferences between users considered local to a particular recreation area and those considered nonlocal users, particularly in light of experience and familiarity with the area of both groups. Identifying these differences could be especially important in focusing on these two user groups as part of the public involvement process in land management planning. As shown by data presented here, both types of visitors describe settings similarly, yet they prefer different settings. Investigation of preferences for recreation activities, management actions, and setting characteristics would add to understanding differences in recreation opportunities desired by different groups of users.

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APPENDICES

APPENDIX A
ROS Criteria Used by U.S. Forest Service
and Bureau of Land Management

Remoteness Criteria*					
Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
An area designated at least 3 miles from all roads, railroads or trails with motorized use	An area designated at least ½-mile but not further than 3 miles from all roads, railroads or trails with motorized use; can include the existence of primitive roads and trails if usually closed to motorized use.	An area designated within ½-mile of primitive roads or trails used by motor vehicles; but not closer than ½-mile from better than primitive roads.	An area designated within ½-mile from better than primitive roads, and railroads.	No distance criteria.	No distance criteria.

*The criteria can be modified to conform to natural barriers and screening, or other relevant features of local topographic relief and vegetative cover. This fits the criteria to the actual Forest landscape.

Source: USDA Forest Service 1981. ROS User's Guide. Washington, D.C. 38 p.

TABLE 1

Physical Setting - Remoteness Criteria

Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Pural	Modern Urban
An area which is at least 3 miles from all roads or railroads	An area which is at least 1/2 mile from all roads or railroads	An area which is within 1/2 mile of primitive roads and is at least 1/2 mile from better than primitive roads and railroads	An area which is within 1/2 mile of better than primitive roads and railroads	No distance criteria	No distance criteria

Instructions:

- (1) Distances listed in this table are to be used only as a general guide. Adjust area lines to reflect topographic and vegetative features which affect the perception of remoteness. See "Setting Opportunities" and "Experience Opportunities" for additional guidance.
- (2) A "better than primitive road" is one which is suitable for use by sedans and other highway type vehicles. A primitive road requires a high clearance or four-wheel drive vehicle. Routes which are abandoned or which rarely receive use should not be considered to be roads for purposes of the remoteness analysis.

Source: USDI Bureau of Land Management. Manual 8320--Recreation Planning. Washington Office. 75 p. Draft

Evidence of Humans Criteria					
Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
Setting is essentially an unmodified natural environment. Evidence of humans would be unnoticed by an observer wandering through the area.	Natural* setting may have subtle modifications that would be noticed but not draw the attention of an observer wandering through the area.	Natural* setting may have moderately dominant alterations but would not draw the attention of motorized observers on trails and primitive roads within the area.	Natural* setting may have modifications which range from being easily noticed to strongly dominant to observers within the area. However from sensitive** travel routes and use areas these alterations would remain unnoticed or visually subordinate.	Natural* setting is culturally modified to the point that it is dominant to the sensitive** travel route observer. May include pastoral, agricultural, intensively managed wildland resource landscapes, or utility corridors. Pedestrian or other slow moving observers are constantly within view of culturally changed landscape.	Setting is strongly structure dominated. Natural or natural appearing elements may play an important role but be visually subordinate. Pedestrian and other slow moving observers are constantly within view of artificial enclosure of spaces.
Evidence of trails is acceptable, but should not exceed standard to carry expected use.	Little or no evidence of primitive roads and the motorized use of trails and primitive roads.	Strong evidence of primitive roads and the motorized use of trails and primitive roads.	There is strong evidence of designed roads and/or highways.	There is strong evidence of designed roads and or highways.	There is strong evidence of designed roads and or highways and streets.
Structures are extremely rare.	Structures are rare and isolated.	Structures are rare and isolated.	Structures are generally scattered, remaining visually subordinate or unnoticed to the sensitive** travel route observer. Structures may include power lines, micro-wave installations and so on.	Structures are readily apparent and may range from scattered to small dominant clusters including power lines, microwave installations, local ski areas, minor resorts and recreation sites.	Structures and structure complexes are dominant and may include major resorts and marinas, national and regional ski areas, towns, industrial sites, condominiums or second home developments.

*In many southern and eastern forests what appears to be natural landscapes may in actuality have been strongly influenced by humans. The term natural-appearing may be more appropriate in these cases.

**Sensitivity level 1 and 2 travel routes from Visual Management System USDA Handbook 461.

Source: USDA Forest Service. 1981. ROS User's Guide. Washington, D.C. 38 p.

TABLE 3

Physical Setting - Evidence of Human Use Criteria

Primitive	Semi-Primitive Nonmotorized	Semi-Primitive Motorized	Roaded ↳ Natural	Rural	Modern ↳ Urban
Setting is essentially an unmodified natural environment.	Setting may have subtle modifications.	Setting may have subtle modifications.	Setting includes moderate evidence of human modification. alterations do not dominate the setting and generally harmonize with the natural landscape.	Natural setting is substantially modified. Culturally modified landscapes are constantly in view. May include pastoral, agricultural, or intensively managed wildland landscapes.	The natural setting is clearly subordinate to culturally modified landscapes.
Evidence of surface or vegetative disturbance is extremely rare and disturbed areas are small. Trails are acceptable, but should not exceed standard suited for primitive non-motorized use.	Evidence of surface or vegetative disturbance is limited and disturbed areas are small. There is little or no evidence of primitive roads or motorized use.	Evidence of surface or vegetative disturbance is limited and disturbed areas are small. Primitive roads and motorized use are present.	Surface and vegetative modifications are common. Constructed roads and highways are present.	Surface and vegetative modifications are typical. Constructed roads and highways are present. Cultivated lands are common.	Surface and vegetative modifications are extensive. Exotic vegetation and surface paving are common. Roads, highways, and parking areas able to support intensive vehicle use are available.
Structures are small and extremely rare.	Small, isolated structures may be present.	Small, isolated structures may be present.	Structures are generally scattered, remaining visually subordinate. Structures may include small reservoirs, power lines, microwave installations, etc. Recreation facilities are generally small and rustic.	Structures are readily apparent and may include small dominant clusters. Structures may include reservoirs, power lines, farm or ranch buildings, and large, developed recreation facilities.	Structures and structure complexes are dominant. These may include towns, second home developments, industrial sites, major resorts, etc.

Source: USDI Bureau of Land Management. 1980. Manual 8320--Recreation Planning. Washington Office. 75 p. Draft.

APPENDIX B

Steens Mountain Study Interview Schedule

Department of Resource
Recreation Management



Corvallis, Oregon 97331 (503) 754-2043

We are continuing our study of people who recreate in the Steens Mountains. This phase of the study concerns user's satisfaction and preference for recreation settings in the Steens. As an individual who visited that area last summer, you have been selected.

We will be conducting in-home interviews in your area within the next week or so. An interviewer will either be calling you by phone to set up an appointment, or stopping by. Altogether the interview should take about 45 minutes. If by some chance our interviewer calls at an inconvenient time, we'll be glad to make other arrangements.

Your help and that of other Steens Mountain users in this effort to better understand what people want and need from recreation settings, is essential to the study's success. Your assistance will be greatly appreciated.

This study is being jointly sponsored by the Bureau of Land Management, Forest Service, and Oregon State University. If you have any questions, please do not hesitate to ask the interviewer.

Sincerely,

Perry J. Brown
Project Leader

PJB:rr

Name _____	Appt. date _____
Address _____	Call back date _____
_____	Time _____
Phone _____	Length _____
ID Number _____	Local _____ Nonlocal _____

We appreciate your willingness to help us look further at the preferences of Steens Mountain users. A relatively small sample of users was drawn, and so your responses will be especially helpful.

We'd like to learn more about the kind of recreation setting you prefer. The setting you're in can have an effect on the type of recreation experience you might have in that particular place. For instance, you might expect to have a much different kind of experience at a forested, highly developed, crowded campground than you would at a high mountain lake where there are no facilities and only a few other visitors.

Mark on this map the place in the Steens you feel was most important to you when you were there last summer, i.e., for some it was the place they spent the most time, for others it was where they camped, hiked, etc.

In your own words, describe this setting in terms of the amount of development, the numbers and behavior of other people, naturalness of the environment, and the remoteness of this setting from the sights and sounds of non-recreational human activities.

We would like to talk about two specific characteristics that might have an influence on the type of recreation experience you could expect in a particular setting. These two characteristics are remoteness and resource modification. We'll discuss each separately.

I. We are concerned about how far one needs to travel to gain a feeling of remoteness from the sights and sounds of human activity and development. By remoteness we mean isolation--a feeling of being away from both seeing and hearing the activities of people. For example, if you were down in the bottom of Kiger Gorge out in the Steens, you might have a much stronger feeling of remoteness than if you were camped at Fish Lake Campground. Different kinds of settings are capable of providing varying degrees of remoteness--ranging from a setting where you could usually see and hear other people, such as at Fish Lake (not very remote) to a setting where you might occasionally see or hear a few other people (somewhat remote) to a setting where you wouldn't see or hear anybody else, such as in Kiger Gorge (very remote). The same kind of variation would apply to developments (e.g., roads, cabins, fences, powerlines). There are some places where there are no developments nearby, as well as places where one is in the midst of developments, such as at Fish Lake or the town of Frenchglen.

1. First of all, how important was being in a remote setting to your recreation experience in the Steens? Was it ...

Not at all important	Slightly important	Moderately important	Very important	Extremely important
1	2	3	4	5

3

2. Four different settings are described here, each representing a degree of remoteness. Which of these four settings best describes the setting in the Steens you marked on the map? CARD A 1 2 3 4

- Setting 1: Man-made developments, including motorized vehicles, cannot be seen or heard.
- Setting 2: Most man-made developments, including motorized vehicles, can seldom be seen or heard.
- Setting 3: Few, but some, man-made developments, including motorized vehicles, can be seen and heard.
- Setting 4: Man-made developments, including motorized vehicles, are common.

3. In terms of actual distances, how far from a primary road, the Loop Road in the Steens for example, do you feel you would need to be, in the relatively open rolling country of the Steens, to sense the degree of remoteness described in each of those same four settings? CARD B KEEP A

Setting 1:	1	2	3	4	5	6	7
Setting 2:	1	2	3	4	5	6	7
Setting 3:	1	2	3	4	5	6	7
Setting 4:	1	2	3	4	5	6	7

- Distances:
- 1 - less than 1/2 mile
 - 2 - 1/2 mile or greater, but less than 1 mile
 - 3 - 1 mile or greater, but less than 2 miles
 - 4 - 2 miles or greater, but less than 3 miles
 - 5 - 3 miles or greater, but less than 4 miles
 - 6 - 4 miles or greater, but less than 5 miles
 - 7 - 5 miles or greater

4

4. This is a topographic map of the Fish Lake area in the Steens. Here is the campground at Fish Lake, here is the Loop Road, and here are Blitzen and Big Indian Gorges. Let's imagine you are at this particular spot. Using these same four settings, which of the settings do you feel best describes what your feelings of remoteness might be at that particular spot? 1 2 3 4

If you started moving towards/away from Fish Lake, or the Loop Road, indicate on the map at what point you feel you'd move into setting class _____

Township _____ Quadrant 1 2 3 4 setting class _____

Township _____ Quadrant 1 2 3 4

Assume you are here in the bottom of Big Indian Gorge. Compared to this spot here in the bottom of Blitzen Gorge, do you think you would feel:

- 1 more remote than in Blitzen Gorge
- 2 less remote than in Blitzen Gorge
- 3 equally as remote as in Blitzen Gorge

Why?

5

5. Another way to measure remoteness is to use time. Again, for each of the four settings mentioned (CARD A), if you were travelling on foot, beginning at a main road (i.e., the Loop Road), how long do you feel you might have to walk, in the relatively open, rolling country of the Steens, before you'd experience the degree of remoteness described in each setting? *CARD C*

Setting 1:	1	2	3	4	5	6	7
Setting 2:	1	2	3	4	5	6	7
Setting 3:	1	2	3	4	5	6	7
Setting 4:	1	2	3	4	5	6	7

Times:

- 1 - less than 1/2 hour
- 2 - 1/2 hour or more, but less than 1 hour
- 3 - 1 hour or more, but less than 2 hours
- 4 - 2 hours or more, but less than 3 hours
- 5 - 3 hours or more, but less than 4 hours
- 6 - 4 hours or more, but less than 5 hours
- 7 - 5 hours or more

II. Man-caused changes in an environment might also have an effect on our recreation experiences. Some of us might not mind seeing temporary, non-permanent modifications such as those caused by cows or sheep grazing, but seeing permanent modifications such as powerlines, fences, or small reservoirs, may detract from our experiences. On the other hand, for some of us, these changes may not affect us at all, or they may even enhance our recreation experiences by providing such things as places for wildlife to congregate, for example.

We are interested in learning how much modification of the environment is acceptable to you as a recreationist. We want to learn whether or not these changes affect your experience, and if they do, at what point they begin to have positive or negative effects on your recreation experiences. Remember, we are interested in learning about recreation settings, not in changing the Steens Mountain area.

6

Think back to the area in the Steens where you were last summer, the place you marked on the map. We would like to learn your reactions to different modifications in that particular setting and the acceptability or unacceptability of them.

1. Overall, how important was avoiding, or minimizing the presence of resource modifications to your recreation experience in the Steens? Was it . . .

Not at all important	Slightly important	Moderately important	Very important	Extremely important
1	2	3	4	5

2. We'd like your feelings about seeing different types of modifications. I'm going to read a list of items. Please indicate (1) if you saw any of these where you were, and (2) indicate what effect they had, or would have had if you had seen them. CARD D

	Did you see them		Effect on your experience									
-cattle grazing	Y	N	MSA	STA	MA	SLA	MND	SLD	MD	STD	MSD	
-evidence that cattle had been in the area	Y	N	MSA	STA	MA	SLA	MND	SLD	MD	STD	MSD	
-sheep grazing	Y	N	MSA	STA	MA	SLA	MND	SLD	MD	STD	MSD	
-evidence that sheep had been in the area	Y	N	MSA	STA	MA	SLA	MND	SLD	MD	STD	MSD	
-powerlines	Y	N	MSA	STA	MA	SLA	MND	SLD	MD	STD	MSD	
-abandoned buildings	Y	N	MSA	STA	MA	SLA	MND	SLD	MD	STD	MSD	
-fire rings	Y	N	MSA	STA	MA	SLA	MND	SLD	MD	STD	MSD	
-cabins	Y	N	MSA	STA	MA	SLA	MND	SLD	MD	STD	MSD	
-rustic campsites	Y	N	MSA	STA	MA	SLA	MND	SLD	MD	STD	MSD	
-developed campgrounds	Y	N	MSA	STA	MA	SLA	MND	SLD	MD	STD	MSD	
-radio repeater	Y	N	MSA	STA	MA	SLA	MND	SLD	MD	STD	MSD	
-small, man-built reservoirs	Y	N	MSA	STA	MA	SLA	MND	SLD	MD	STD	MSD	
-fences	Y	N	MSA	STA	MA	SLA	MND	SLD	MD	STD	MSD	
-windmills	Y	N	MSA	STA	MA	SLA	MND	SLD	MD	STD	MSD	
-car-passable roads	Y	N	MSA	STA	MA	SLA	MND	SLD	MD	STD	MSD	
-4-wheel drive or motorbike roads	Y	N	MSA	STA	MA	SLA	MND	SLD	MD	STD	MSD	

7

3. As I read each one again, would you please tell me whether or not you would deliberately avoid areas if you knew there were some of these things there? The first one is . . .

Yes	No	
1	2	cattle grazing
1	2	evidence that cattle had been in the area
1	2	sheep grazing
1	2	evidence that sheep had been in the area
1	2	powerlines
1	2	abandoned buildings
1	2	fire rings
1	2	cabins
1	2	rustic campsites
1	2	developed campgrounds
1	2	radio repeater
1	2	small, man-built reservoirs
1	2	fences
1	2	windmills
1	2	car-passable roads
1	2	4-wheel drive or motorbike roads

4. In terms of modifications, which of these three settings best describes the setting in the Steens you marked on the map? CARD E

1 2 3

- Setting 1: Essentially unmodified natural environment. Resource uses which alter the natural environment do not occur.
- Setting 2: Predominantly unmodified natural environment. Some resource uses which alter the natural environment do occur (e.g., designated overlooks, grazing).
- Setting 3: Generally natural-appearing environment, developed recreation facilities possibly present, other resource uses which alter the natural environment (e.g., water developments, grazing, roads, etc.) are quite evident.

8

5. This next group of questions pertains to 4 different pictures, each showing various types and degrees of development or modification. KEEP CARD E

Picture 1: In your opinion, which of the 3 settings does this picture

best represent? 1 2 3 (dev)

How much more, or less, of this same kind of modification would

it take to make the setting pictured here into setting ____? ____

Would it take ... setting ____? ____

1 - 1/2 as many cows

2 - no cows

3 - half again as many cows

4 - twice as many cows

5 - something other than cows

How does the setting pictured here compare with where you were

in the Steens, in terms of the type of modification shown?

Did where you were have ...

1 - no cows

2 - 1/2 as many cows

3 - about the same number

4 - half again as many cows

5 - twice as many cows

Picture 2: In your opinion, which of the 3 settings does this picture best represent? 1 2 3 (dev)

How much more, or less, of this same kind of modification would

it take to make the setting pictured here in to setting ____? ____

Would it take ... setting ____? ____

1 - 1/2 that much recreation development

2 - no recreation development

3 - half again as much recreation development

4 - twice as much recreation development

5 - something other than recreation development

How does the setting pictured here compare with where you were

in the Steens, in terms of the type of modification shown?

Did where you were have:

1 - no recreation development

2 - 1/2 as much rec. development

3 - about the same amount

4 - half again as much rec. development

5 - twice as much rec. development

6. You indicated that setting class ____ best describes where you were in the Steens last summer. Try and visualize how much of the total area of that setting could contain modifications and still be acceptable to you.

HAND CARD F Here are a few examples of percentages. I will read 6 groups of modifications--please indicate what you feel would be an acceptable percentage for the setting you were in. The first one is . . .

- a. domestic livestock grazing _____ percent
- b. recreation-related modifications (campgrounds, overlooks) _____ percent
- c. old buildings _____ percent
- d. other man-made structures (powerlines, repeater) _____ percent
- e. small reservoirs and ponds _____ percent
- f. roads _____ percent

III. This last set of questions deals with some things about you. Your answers will be held confidential and you personally won't be identified in the results of the study. Even though you may have answered some of these before, we'd appreciate you answering them again.

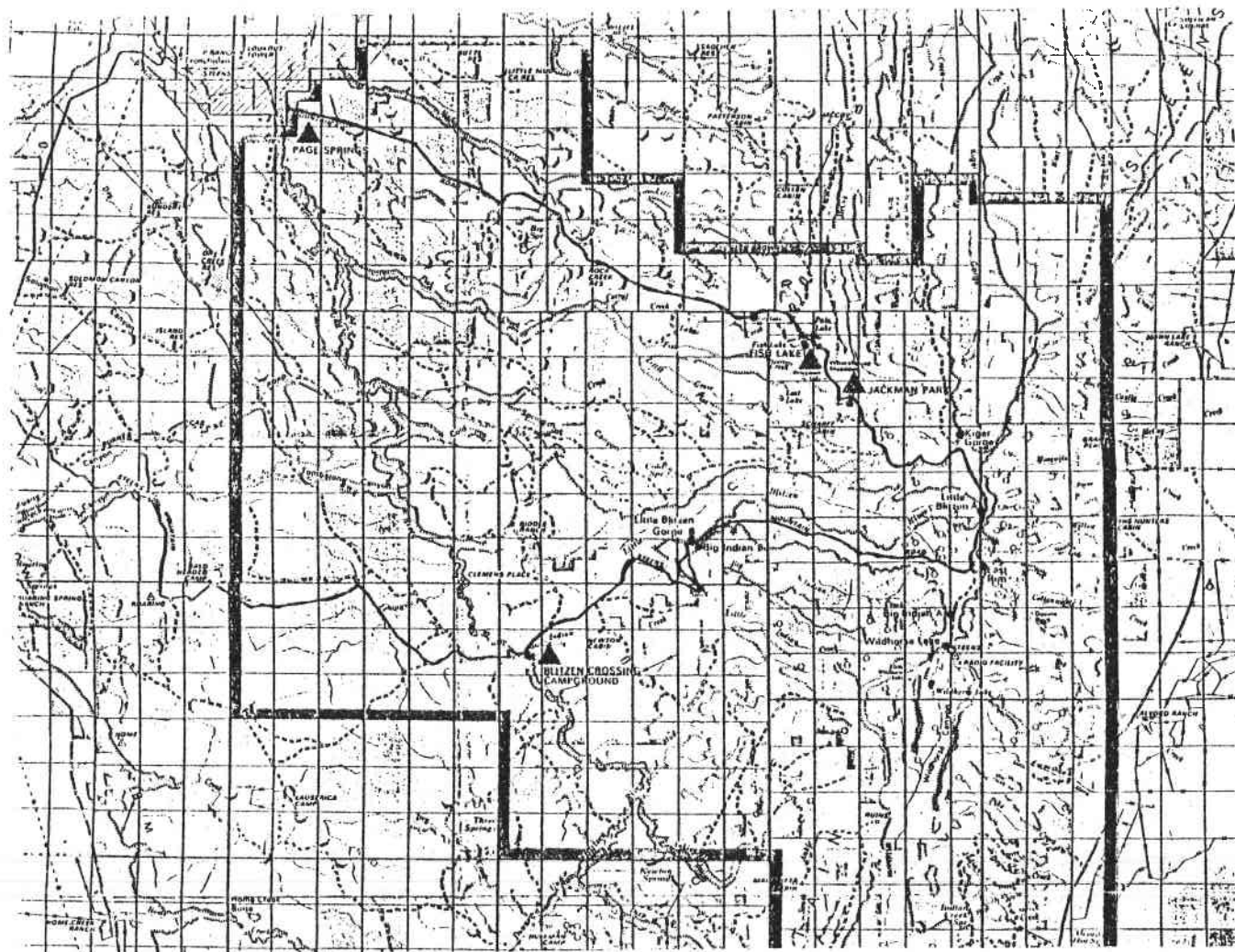
Age at your last birthday _____ years

What is the highest year of formal schooling you have completed?

Elementary	1	2	3	4	5	6	7	8
High school or vocational school	9	10	11	12				
College or technical school	13	14	15	16				
Graduate school	17	18	19	20	21	22		

Type of vehicle(s) you drove to Steens Mountain

☐ car, without trailer
☐ pickup truck (without camper)
☐ motorhome
☐ pickup with camper
☐ car/truck pulling a trailer



APPENDIX C
Settings in Steens Mountain Recreation Area
Open-Ended Setting Descriptions

Table 26. Settings chosen by users in Steens Mountain Recreation Area.

Setting location	Frequency	Percentage
Fish Lake Campground	22	27
Kiger Gorge Overlook	14	17
East Rim Overlook	6	7
Kiger Gorge	5	6
Wildhorse Lake	4	5
Page Springs Campground	3	4
Blitzen River	3	4
Whorehouse Meadow	3	4
Little Indian Gorge	3	4
Lily Lake Campground	2	3
Blitzen Crossing Campground	2	3
South of Blitzen Crossing Campground	2	3
Blitzen Gorge	2	3
Pruit's Camp	2	3
Pate Lake Campground	2	3
Jackman Park Campground	1	1
Fish Creek	1	1
Honeymoon Lake	1	1
Big Indian Gorge	1	1
Loop Road Overlooks	1	1
North of Jackman Park	1	1

Table 27. User descriptions of numbers of people, development, and naturalness of chosen settings.

	Frequency	Percentage
People		
A few, not many	32	41
No people there	24	30
Not too crowded	10	13
Quite a few, lots	7	9
Crowded	3	4
Too many	2	3
Development		
No development	33	48
Minimal, primitive	17	25
Adequate	13	19
Moderately	3	4
Not many facilities	2	3
Not overly developed	1	1
Naturalness		
Pretty natural, natural	37	56
Extremely natural	9	14
Very natural	8	12
Isolated, remote	4	6
Pristine, primitive	3	4
Not very natural	2	3
Wilderness	2	3
Moderately developed	1	2