

Range Management and Scenic Beauty as Perceived by Dispersed Recreationists

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Abstract

Land management agencies have developed considerable interest in the visual impacts of intensive range management. This study was designed to determine the impact of range management activities on dispersed recreationists and their concept of scenic beauty.

We analyzed the ratings by 241 dispersed recreationists of selected range management activities and ecosystems on the Malheur National Forest in eastern Oregon during the summer of 1978.

Features significantly related to dispersed recreationists' reactions to range management activities were primary recreational activity, place of residence, understanding of the purpose of a National Forest, and number of prior visits to the Malheur National Forest. Respondents reacted favorably to the range management activities examined. A majority, however, indicated that their use of recreational areas would be altered if management intensity increased or became more apparent.

Managers are becoming more aware of the impact intensive management activities have on scenic beauty and recreational activities. This is primarily a result of the public's increased sensitivity to the environment and its greater role in the decision making process. At the same time, society is demanding an increase in such tangible resources as wood fiber, forage, and water. Land managers face difficult decisions, and information is needed to resolve potential conflicts.

The perceived quality of the environment is a recent concept, and much work is being done to develop methods to objectively analyze scenic beauty. Methods that have been developed to assess scenic beauty are either descriptive inventories or preference evaluations (Craik 1975, Daniel and Boster 1976). For descriptive inventories, an inventory is taken of identifiable landscape components and a quality value, based on the presence or absence of a series of features, is assigned. The scenic elements of a landscape are described either verbally or graphically.

There is trend toward development of evaluation methods that better represent the preferences of the public and are more applicable to resource planning. Preference evaluations traditionally use questionnaires to elicit information from the general public, as opposed to descriptive inventories that use professionals (landscape architects, resource managers, etc.). Preference evaluations assume that the ratings refer to both measurable landscape criteria and the personal value placed on it by the respondent. Generally, the relationship is considered to be direct; that is, the higher the rating, the greater the preference, the more scenic the environment. Descriptive inventories are based on professional values and tend to be objective, whereas preference evaluations are based on user values and tend to be subjective.

Photographs, slides, artistic renderings, and field visits are used in preference evaluations in conjunction with questionnaires, surveys, and interviews. Shafer et al. (1969), Shafer and Richards (1974), and Daniel and Boster (1976) have substantiated that

respondents react essentially the same to a scene and a photograph of a scene if the photograph displays most of the variations in the actual scene. There is considerable evidence, however, to indicate that substantial bias can be introduced by both photographic technique and final selection of photos (Daniel and Boster 1976), as well as by question formulation and interview technique.

Much of the past research has developed and validated methods to evaluate scenic beauty (Meganck and Gibbs 1979). The visual impacts of range management were only recently described by Brown and Kissel (1979). But, no one has used these methods to identify public attitudes or their perception of scenic beauty toward range management activities. The purpose of this study was to determine the impact of range management activities on dispersed recreationists and their concept of scenic beauty. Dispersed recreationists are defined as recreationists who are using unimproved campsites that are scattered—dispersed—over the National Forest. This study was part of the Oregon Range Evaluation Project.

Study Area

The Oregon Range Evaluation Project area includes 1.5 million acres of National Forest and adjacent private lands, with a scattering of other federal and state lands, in east-central Oregon. Data collection for this study centered on the headwaters of the Middle Fork of the John Day River on the Malheur National Forest. This area was selected because of its high use by dispersed recreationists. Dispersed recreation use on the Malheur National Forest has risen by approximately 10% annually since 1976. Major recreation uses are hunting, fishing, and camping. Ten distinct ecosystems occur within the study area: Douglas-fir, ponderosa pine, lodgepole pine, larch, fir-spruce, sagebrush, pinyon-juniper, mountain grassland, mountain meadow, and alpine (Kuchler 1964, Garrison et al. 1977).

Dispersed recreationists generally selected camp sites along better developed roads, with some preference for those areas that were also adjacent to the Middlefork of the John Day River or Camp Creek. Most camp sites are distinctly marked by signs of past use.

Methods

We used photographs of selected ecosystems, range practices, and management intensities in personal interviews to elicit attitudes of dispersed recreationists concerning management of the range resource on public or private lands and their perception of scenic beauty, or the quality of the visual resource.

Two range management practices were selected: fencing, which represents a physical change in the environment; and cattle grazing, which represents the primary domestic range animals on the study area.

Of the 10 available ecosystems, we selected the mountain grassland, mountain meadow, and ponderosa pine ecosystems for the test photographs. These ecosystems were selected for their sensitivity to range management activities and for their prevalence in the study area.

Each ecosystem was photographically represented by 3 intensities of range management:

1. Environmental management with livestock. The goal was to control the number of livestock within a pasture, but nothing was done to distribute them throughout the pasture. Use of the range by livestock was within the apparent capacity of the resource.

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Investments for range management were applied only to the extent needed to maintain the resource at a stewardship level in the presence of grazing.

2. Extensive management of environment and livestock. The goal was full utilization of the forage by livestock through range management methods that distribute the livestock throughout the pasture. The only range management activities were those needed to obtain relatively uniform livestock distribution and plant use, and to maintain plant vigor.

3. Intensive management of environment and livestock. The goal was to maximize forage production for livestock consistent with environmental constraints, including multiple use, in addition to methods that distribute livestock throughout the pasture. All available technology for range and livestock management was considered, including cultural practices to increase forage production (Forest-Range Task Force 1972).

To illustrate 3 levels of intensity of range management, we varied the prominence of cattle or fences or both in the photographs. Our hypothesis was that as management intensity increased, fences and cattle would be more obvious to the people using the area. Photographs representing the least intensive management level—environmental management livestock—either did not include cattle or fences or they were shown only as a minor feature of the landscape. As management intensity increased, cattle or fences or both were more prominent in the photographs, but the character of the ecosystem was clear and consistent so it was obvious which ecosystem was represented (Fig. 1).

Each ecosystem was represented by 9 photographs carefully selected to reduce visual bias. Questionnaires were designed to obtain the following information: rating of and response to the photographs as a measure of scenic or visual quality; reaction to the range management activities and to general forest management issues; and specific characteristics of dispersed recreationists interviewed.

Interview periods were selected to insure a representative sample of all major recreation activities in the study area. Most dispersed recreationists using this area were fisherman, hunters, or campers. Therefore, our sample periods were selected to emphasize these recreation groups. Sample periods included the Fourth of July, considered to be the beginning of the general recreation season, and the opening and closing of firearm and bow deer hunting seasons. One weekend in August was also randomly selected.

Respondents were chosen at random by an interviewer within randomly determined areas known to be used by dispersed recreationists. When 2 or more adults were in a group, 1 was randomly selected. That person was approached; the interviewer made an introduction, briefly explained the study objectives, and the objectives of the Oregon Range Evaluation Project; and asked if he or she was willing to participate in the survey. If the answer was positive, all 9 photographs of a preselected ecosystem were arranged in a logical sequence. The participant was asked to look at the group of photographs and rate them on a scale of 1 to 5 according to their preference for the scene. A rating of 1 represented a low degree of preference relative to 5 for a high degree of preference. Each questionnaire was preceded to designate the ecosystem used for that interview. This was done to insure that ecosystems were about equally distributed among types of recreationists and for the total sample. After the photographs were rated, the participants were asked if there was anything about photographs that they liked or disliked. This was done to allow the respondents to explain their preferences and to provide information on possible biases that we missed in our selection of the photos.

Most of the respondents were approached at camp sites; however, all were asked where they were staying to insure only dispersed recreationists were included in the analysis.

The *t*-test was used to determine which variables from the ques-

tionnaire were significantly related to the preference ratings of photographs.

Results and Discussion

During the summer and fall of 1978, 241 usable questionnaires were received from 262 dispersed recreationists that were interviewed. Only a very small number of those approached refused to participate in an interview. Fishermen were the most reluctant because they were actively pursuing their recreational activity. The results represent only the responses of dispersed recreationists using the study area and do not indicate anything about those who chose not to recreate in the area. Ratings were generally high, indicating that the respondents reacted favorably to the scenes depicted in the photos (Table 1); however, 58% of the sample stated

Table 1. Mean photo rating scores by primary activity for 45 fishermen, 97 hunters, and 78 campers, Malheur National Forest, 1978¹ (1=least scenic; 5=most scenic).

Ecosystem and respondents	Management intensity			Mean
	Environmental	Extensive	Intensive	
Ponderosa pine:				
Fishermen	3.3	2.9	2.3	2.8
Hunters	4.0	3.9	3.8	3.9
Campers	4.0	3.4	2.9	3.5
Overall mean	3.8	3.4	3.0	3.4
Mountain meadow:				
Fishermen	4.0	3.3	3.3	3.5
Hunters	4.8	4.0	4.0	4.3
Campers	4.6	4.2	4.3	4.4
Overall mean	4.5	3.8	3.4	4.1
Mountain grassland:				
Fishermen	4.0	2.8	2.5	3.1
Hunters	4.2	4.0	3.5	3.9
Campers	4.6	4.0	3.0	3.9
Overall mean	4.3	3.6	3.0	3.6
All ecosystems				
Fishermen	3.8	3.0	2.7	3.2
Hunters	4.3	4.0	3.8	4.0
Campers	4.4	3.9	3.4	3.9
Overall mean	4.2	3.6	3.3	3.7

¹An additional 21 respondents indicated other activities as their primary purpose for visiting the Malheur National Forest.

that their recreational use would be negatively altered as management intensity increased or became more apparent. The average rating of the scenes photographed for all management intensities, ecosystems, and activities was 3.7 out of a total possible rating of 5. As management intensity increased, ratings decreased for all ecosystems. Overall means indicate that the users interviewed were less satisfied with grazing practices in the ponderosa pine forest (3.4), than in the other 2 ecosystems tested (mountain meadow, 4.1; mountain grassland, 3.6) (Table 1).

Ratings were significantly related ($P = 0.05$) to primary recreational activity, place of residence, perception of the purpose of a National Forest, and number of prior visits to Malheur National Forest. The variables—group composition, number of years respondents had visited Malheur National Forest, perception of multiple use and of more intensive range management, and overnight location—were not significant.

Fishermen consistently rated photographs lower than did campers or hunters (Table 1). Fishermen were also the most vocal in responding to the subjective portions of the questionnaire. Nearly 70% of the fishermen indicated that their recreational experience would be altered by management activities that they thought had a negative impact on the riparian habitat. Among "unacceptable" practices commonly noted were grazing near riverbanks, alteration of upstream vegetation resulting in increased siltation, herbicide

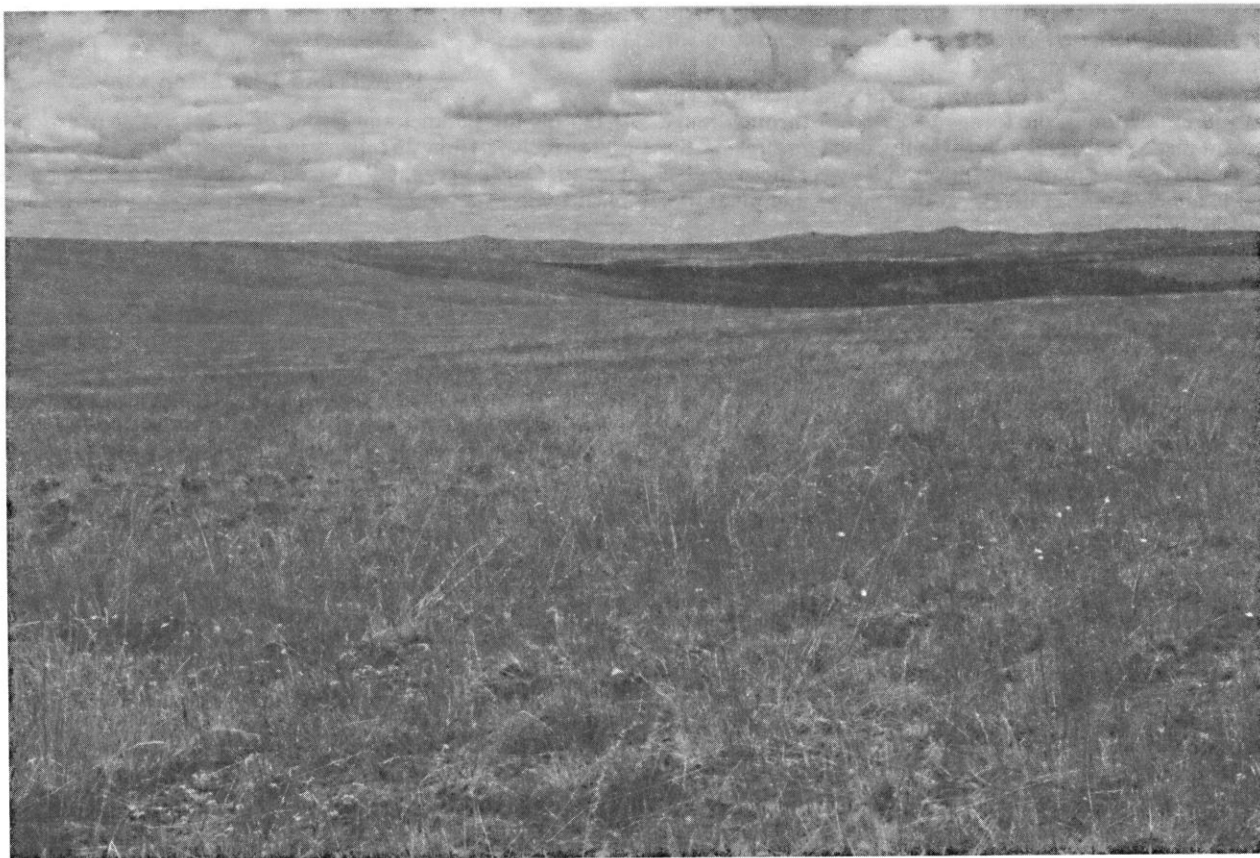




Fig. 1. An example of photographs used to evaluate range management for the mountain grassland ecosystem: A. Environmental management with livestock, B. Extensive management of environment and livestock, and C. Intensive management of environment and livestock. Photographs used in interviews were 8- by 10-inch color photographs.

spraying, and improved river access for recreationists. Consequently, fishermen were most sensitive to the relationships between livestock grazing and the riparian environment. They reacted more positively to fences than other groups because fences are considered vital to the maintenance of the fishery by excluding cattle, even though they may impede public access.

Fishermen also participated in far fewer secondary activities, such as hiking or taking photographs, than did campers or hunters. This may be partially explained by the fact that a majority (56%) of this group was from the local area and therefore primarily day users. The low ratings of photographs by fishermen were correlated with their single purpose recreation. This general relationship was also found by Levine and Langenau (1979) in their study of forest recreationists' attitudes toward clearcutting in Michigan where greater diversity of interest in recreation was positively related to agreement with clearcutting and similar management practices on state lands.

Hunters were consistently high in their ratings of photographs. Mountain meadow was rated considerably higher than either of the other 2 ecosystems. This may be partially explained by the high hunting success in this area. Also, many management practices that improve forage for cattle also benefit wildlife, including deer and elk.

Hunters were generally less aware than fishermen or campers that they were in an area being manipulated for range management purposes. Volunteered responses, such as "I don't care what the Forest Service does as long as it does not interfere with my chances of bagging a deer," were regularly noted. Hunters related adversely to certain other management practices, such as closure of areas to vehicles and establishment of more "wilderness," which were not part of the overall management of the range resource. Such comments were more frequently noted by individuals who had hunted

in these areas before closures were instituted and, therefore, were directly affected. This type of response could be expected and is supported by other research. Langenau et al. (1977) and Thomas et al. (1973) reported that hunters' attitudes toward clearcutting depended partially upon emotional or territorial attachment to the site. It is likely that once hunters perceive a change in management of the range resource, such as more fences and cattle, there will be some negative reaction even if the deer or elk habitat is improved. Hunters also felt that limiting access by vehicles to previously accessible areas reduced their chances for hunting success and, therefore, they reacted negatively to the closures.

Campers, in general, felt that cattle were more appropriate for the mountain meadow and mountain grassland ecosystem than in the pine forest. Perhaps this was because they reacted to the open spaces as pasture environments and the forest as an area for camping. "I don't mind looking at cows from a distance but wouldn't want to camp with them," was a frequent reaction. One individual noted that he had to spend more than 2 hours cleaning up the results of cattle at his favorite campsite before it could be used. Many campers claimed they would not enjoy camping in the open when compared to camping in the forest. Understandably, this group felt comfortable with fences because they perceived them as a means of separating campsites from livestock.

There was a direct relationship between the increasing number of prior visits to the Malheur National Forest and the higher acceptance rating of scenes in the photographs (Table 2). Levine and Langenau (1979) reported local landowners that made several trips to a state forest for different recreational purposes (diversity) were more in agreement with clearcutting than those that made fewer trips. They theorized that individuals who have more diverse forest recreation experiences have more positive and negative

landscapes about clearcutting than those who do not use forest lands. Their theory states that "diversity is the vehicle for getting information about relevancy of clearcutting to recreation." User diversity was not a consideration in this study. Therefore, it is not clear if the number of visits was acting independently or in concert with another opinion-forming factor.

Place of residence is also important in predicting reaction of dispersed recreationists to range management activities. Recreationists from eastern Oregon, who are probably more familiar with ranching activities, are either willing to recreate in an altered environment or do not perceive the measured range management practices to be significant enough to alter their perception of a scenically desirable landscape (Table 2). A majority of western

Table 2. Average preference scores for photographs grouped by 241 recreationists, by number of previous visits to the Malheur National Forest, place of residence, and primary purpose of a National Forest, 1978. (1=least scenic; 5=most scenic).

Visits, residence, and purpose of National Forest	Average score	Recreationists	
		Percent	Number
Number of visits by recreationists:			
0	3.3	44	107
1-5	3.4	25	60
6-15	3.7	17	42
16-50	3.9	7	18
50+	4.0	6	14
Place of residence of recreationists:			
Eastern Oregon	4.1	34	81
Out of State	3.5	12	29
Western Oregon	3.4	54	131
Preception of the primary purpose of a National Forest:			
Multiple use	4.0	10	25
Timber	3.9	16	38
Don't know	3.9	18	43
Other ¹	3.8	11	27
Recreation	3.5	15	36
Preservation	3.1	30	72

¹Wildlife management, wilderness, grazing, mining, and hunting.

Oregon (73%) and out-of-state (61%) respondents indicated that their recreation experience would be altered by the range management strategies represented in the photographs. "I didn't come to camp with cattle," or "All the fences seem to imply keep out," were frequently recorded comments during the survey.

Some additional information was gathered in relation to the primary purpose of a National Forest. Nearly 30% of the people sampled associated the underlying purpose of National Forests with preservation. Subjective responses indicate that *preservation* meant "a natural place without large clearcuts or noticeable man-made objects or impacts," or "the absence of development." It is evident that a substantial number of people do not have a clear perception regarding the multiple use objectives of the National Forests (Table 2).

Those who identified "multiple use" as the primary purpose of a National Forest rated the photographs higher than any other group; however, those who stated "timber harvest" or who apparently did not know the primary purpose of National Forests rated the photos nearly as high. The groups deviating the most were recreationists and preservationists (Table 2). Respondents who thought that the primary purpose was preservation likely felt that manipulation of the environment was not an appropriate resource activity and therefore undesirable. Nearly 60% of respondents who thought that preservation and recreation were the primary purposes felt that their recreation experience would be compromised by the management practices represented in the photos, whereas less than 10% of those who thought timber and multiple use were

the primary purpose responded similarly.

Forest users were also asked if they had heard the term "multiple use." The majority of the recreationists interviewed indicated they had not heard the term, and those who were familiar with it still did not recognize it as being a primary forest management strategy (Table 3). Of those familiar with "multiple use," 80% correctly

Table 3. Distribution of recreationists who had heard of "multiple use," by number of visits to the Malheur National Forest, 1978.

Number of visits	Percent who had heard of multiple use	Number of recreationists
0-5	27	167
6-15	55	42
16+	81	32
All	39	241

defined its meaning. There is a direct relationship between familiarity with "multiple use" and the number of times a person had visited the Malheur National Forest. Eighty-one percent of the users who had visited the Forest more than 16 times had heard the term *multiple use*, compared with only 27% for users who had fewer than 5 total visits.

Finally, participants were asked if they knew what the concept "more intensive management of the range resource" meant. Slightly more than 1% defined it as the application of techniques to improve the quantity and quality of range forage. Ninety-one percent of the users had no idea of its meaning. The remainder simply stated that it meant the practice of grazing a greater number of cattle per unit of land.

Implications

We realize that this methodology, along with others, has some subjective limitations. For example, the population we dealt with chose to use relatively primitive recreation areas. We do not know anything about the preferences of those that chose John Day or Portland as their recreational preferences.

The sampled population had 2 characteristics that limit the application of results (these limitations are inherent in virtually all surveys). First, most questions asked recreationists for their response as to what action they would likely take (or inferred action) given a management scenario. These observations of what they "may" do will likely differ from what they would do given the actual circumstance. Second, the sample excludes those recreationists who chose not to visit the Malheur National Forest. The reason for not visiting may be related to existing or previous range management practices. We do not view either of these biases as critical to the interpretation of the data, but they should be recognized.

Despite these shortcomings, analyses of respondent's views give some strong clues regarding the public's perception of intensification of range management practices.

The results indicate several relationships between range management activities, the visitor, and the scenic qualities of the visual resource. First, it is apparent that dispersed recreationists do perceive differences in the visual resource. Subjective comments indicate a high degree of awareness by the users to both the general environment and the specific environmental demands of their primary activities. Several respondents made recommendations to help improve "how the forest looked," including removing underbrush, using split-rail fencing instead of barbed wire, and oiling the roads to keep the roadside vegetation free of dust.

Second, the findings suggest that perception of scenic beauty or visual quality differs among subgroups of recreationists interviewed. For instance, fishermen tended to be more sensitive to management practices, whereas hunters did not object to them. Some people placed a great emphasis on the visual resource; others did not.

Third, the findings indicate a direct relationship between the familiarity with National Forests, as measured by the number of

prior visits, and a willingness to accept intensive management practices. For example, the data indicate that respondents with 16 or more visits to the Malheur National Forest were more likely to accept intensive range management than those with fewer visits. There is probably a correlation between use and proximity to the National Forest. Consequently, these respondents were probably more familiar with forest and range management activities; some probably recognized their indirect dependence on the National Forest for their financial security.

Fourth, the public in general is not aware of the requirements for efficiently managing a forest-range environment for increased forage. Questions were frequently asked about why cows were grazing in a National Forest, as well as why certain portions of a stream were fenced off from public access—not understanding that the fences were primarily to control livestock.

The results definitely indicated that intensive range management activities have an impact on dispersed recreationists. Resource managers and land use planners should take heed and use this information to balance the demand for forest-range products by society with the perceived needs dispersed recreationists require for a satisfactory outdoor experience.

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