

ASSESSING INFORMATION NEEDS AND COMMUNICATION BEHAVIORS OF NATIONAL FOREST SUMMER VISITORS

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Abstract: Information needs and satisfaction with various media are studied on the San Bernardino National Forest. Personal contact with rangers or staff is preferred, and about one-third to one-half of all visitors reported using various print media (brochures, maps, etc.). Least used were websites or mass media. Second, an adaptation of communication theory, uses and gratifications, is tested. Results suggest that the uses and gratifications scales are reliable and stable, and that visitors want orientation, reassurance and educational messages, in decreasing order of importance. Each of these topics was compared between day and overnight visitors.

Introduction

Participation in various outdoor recreation activities has significantly increased over the past decade. Increases have been particularly high in forestlands that are adjacent to urban areas. Of particular concern is the knowledge that visitors from these areas may have about natural resource management policies or proper use of forestlands for recreation. One approach is to study the communications between recreation area managers and current or potential visitors. Included would be an investigation into visitors' information needs and communication behaviors (Absher, 1998). Upon knowing visitors' information needs and communication behaviors, managers would be able to enact more effective and efficient ways to reach out to visitors, and better focus management efforts in terms of environmental education, minimal impact information, alerting visitors of policy changes, or simply assuring that visitors are able to achieve the highest quality experience.

Group Differences

Visitor communication in resource management has typically employed various print and non-print communication media such as interpretive bulletin boards, flyers, and brochures. Often the task has been to instill awareness, generate interest, and influence or modify behavior. Programs are only effective if the information positively influences recreationists' attitudes, and more

importantly, creates an acceptable behavioral ethic during and after the visit to a recreational setting (Cole, 1999). For example, Oliver, Roggenbuck and Watson (1985) identified a fifty percent decrease in tree damage and litter in a campground as a result of creating awareness among campers via brochures about low-impact camping. Correspondingly, Cole, Hammond and McCool (1997) found that hikers exhibited a significant increase in knowledge after exposure to environmental messages encouraging low-impact practices.

However, the overall effectiveness of various print and non-print communication media is questionable, as the message is constrained due to the inability to reach all recreationists (Cole et al., 1997). Face to face communication can be much more effective, due to the credibility of the source of information (Knopf & Dustin, 1992; Vander Stoep & Roggenbuck, 1996), as in the case of a backcountry ranger informing a backpacker about the risks involved in the backcountry. Roggenbuck and Berrier (1982) found greater effectiveness with the combination of brochures and personal contacts among campers. Similarly, Olson, Bowman and Roth (1984) noted an increase in visitors' knowledge and attitudes via the use of brochures and direct personal communications, while the use of signs was much less effective among visitors. When given a choice, forest visitors seem to prefer face-to-face interaction to written or displayed information (James, Absher & Blazey, 1999).

However, visitor communication is typically concentrated on-site where the learning environment is informal and attention to the educational message is optional. It has been suggested that specific user groups with low awareness, knowledge or experience should be targeted with offsite communications (Confer, Mowen, Graefe & Absher, 2000). If information is received prior to site visitation or activity participation, there is the possibility that users will be more aware of appropriate behaviors and will choose to visit the 'right' place/setting (Vander Stoep & Roggenbuck, 1996). To achieve this objective, it is essential to understand the process of information search, as well as preferences for communication media among visitors (Brown, McCool & Manfreda, 1987).

Finally, information needs and communication behaviors often lack homogeneity across all users because they are dependent upon various factors such as level of experience, proximity to the destination, ethnic background, and activity participation. First time visitors are more likely than repeat visitors to seek information about a new setting. Hence, they might be more inclined to read the information provided by management, such as interpretive bulletin boards, flyers, and brochures. They might also be expected to seek basic and additional information about the setting (Rogers & Ramthun, 1998). On the other hand, more experienced visitors or skilled recreationists may be more likely to pursue personal contacts to gather information about the setting, or may in fact feel comfortable in acting on incomplete or inaccurate information. For example, Williams and Huffman (1986) noted a difference in the process of information use by more and less experienced

visitors; wherein specialized hikers demonstrated a greater propensity to seek additional information than non-specialized hikers. Finally, ethnic or group composition variables may be a factor. Parker and Winter (1996) reported that Hispanics were less likely to approach a management agency for information, and more likely to obtain information about a recreation area via family or friends. Also, Hispanics have shown a greater proclivity to learn about the rules and regulations, while their preferred medium of communication was print media (Winter & Chavez, 1999). In summary, information needs and behaviors may vary by user group.

Communications Approach

Based on the above review, it is apparent that information services may be critical links enabling managers to communicate effectively with a broad range of visitors. Information needs and communication behaviors have been a relatively new subject of study within the outdoor recreation field, and research has primarily focused on the application of social psychological theories, notably persuasion theory and/or close variants of theories of reasoned action (Absher, 1998). Although the use of social psychological theories offers a valuable way to understand communication behaviors, research should incorporate other existing theories from various disciplines to further extend our understanding of communication patterns. To be clear, the dismissal of currently used theories, notably socio psychological derivatives, is not advocated here. Rather a more integrated interdisciplinary approach is encouraged — one that may complement, advance or provide a more complete assessment (Absher, 1998).

A relatively untested approach to deciphering information and communication behaviors comes from the mass communication field. A popular theory known as “uses and gratifications” (U&G) has been employed over the last 50 years to study the public’s perception of gratifications sought and obtained via engagement in mass communications across a variety of modalities such as television programs, phone usage and print media. It is important to note that gratifications sought and gratifications obtained are not synonymous. Gratifications sought (GS) are defined as ‘needs, expectations, or motivations for media use,’ while gratifications obtained (GO) reflect ‘actual fulfillment’ of the gratifications sought (Dobos, 1992, p. 30). The causal link between gratifications sought and gratifications obtained is important because, if sought after gratifications are not obtained during the process of media engagement, then the likelihood of further engagement is reduced, and future communication opportunities may be lost.

Basically, the U&G approach assumes that viewing audiences differ in the gratifications they seek and obtain while engaged in the mass media (Vincent & Basil, 1997). Also, this theory assumes that viewing audiences are not passive receivers but rather are actively involved in making a conscientious and motivated attempt to seek various

gratifications (Anderson, 1987; McQuail, 1983). It is due to the various purposes or gratifications sought by the audiences that the outcome of the viewing experience fluctuates among individuals engaged in similar mass media outlets (Anderson, 1987).

That said, U&G might vary by setting. In other words, various media outlets may be sought for different gratifications. For example, newspapers were sought for sociopolitical knowledge and self-understanding was obtained by books, while broadcast media such as interpersonal channels, film, and television programs granted ‘more affective gratifications’ when compared with newspapers (Katz, Gurevitch & Haas, 1973 in Dobos, 1992, p. 31). Recently, Vincent and Basil (1997) indicated that newspaper reading resulted in better knowledge of current events when compared with newsmagazine reading among college students. It is evident that individuals resort to various media types to seek and fulfill various gratifications. It is unclear at this time which information needs are fulfilled in outdoor recreation settings.

Even though U&G has been extensively employed in media studies (mass communications), rarely has there been an attempt to incorporate this theory or other mass communication theories in the context of outdoor recreation, although the applicability is implicitly evident and strongly recommended (Absher, 1998). To date, a few exploratory studies have been conducted (Absher & Picard, 1998; Absher, 1999).

Uses and Gratifications Scales for Outdoor Recreation

The basic U&G principles were adapted and pilot-tested among Forest visitors to establish theoretical validity by Absher and Picard (1998). Based on this work this study focused on a four-dimension implementation of U&G scales: *Orientation*, *Instrumental*, *Educational* and *Reassurance*. Each dimension highlights one practical aspect of the outdoor recreation experience. The first dimension, *Orientation*, refers to seeking information about forest activities, events and various places within the forest. The second dimension, *Instrumental*, refers to visiting the Forest or Forest Service sites to gather logistic information about parking facilities, day-use permits and operating hours. The third dimension is *Educational*. As the name implies, it refers to seeking or visiting the forest to learn about various plants, wildlife, and preservation and conservation ideas and concerns. The fourth dimension, *Reassurance*, refers to the use of information to avoid getting lost, avoid potentially dangerous situations, and know where to get help if the need arises. A total of 24 uses and gratifications items were randomly arranged using a six-point, Likert scale format, ranging from strongly agree to strongly disagree. The dimensions demonstrated reliability alpha values ranging from .78 to .87. Analysis based on these scales indicated clear differences in the use of communication services across users groups (Absher, 1999).

Objectives

The work reviewed above provides a platform to build upon in terms of better understanding of visitor communications and further refinement of the U&G scales. Information services use needs to be systematically investigated. This involves various media as well as new measurement scales. Following from Absher and Picard (1998) and Absher (1999) the U&G scales need to be further tested to determine reliability among various user groups. Thus, the objectives of this paper are to:

1. Apply U&G theory to the assessment of information needs, preferences and uses among two major segments of National Forest summer visitors (overnight and day users), and
2. Assess the use of and satisfaction with various information sources (media) by these user groups.

Methods

Data were collected within the Angeles and San Bernardino National Forests, both located in Southern California. Both of these National Forests offer a diverse array of recreational opportunities including camping, hiking, swimming, boating, picnicking, sightseeing and fishing. A sampling plan was designed to target users on six days during the months of July, August and September 1997. The sampled sites included ten campgrounds and nine day-use areas.

Interviewers attempted to sample all users at each site on the designated sampling periods. A single member of each group was requested to respond to the interview questions, which took about ten minutes to complete. A total of 633 subjects were approached, of which 566 users completed a questionnaire and 67 refused to be interviewed, yielding an 89 percent response rate. There were 379 respondents that were sampled at campgrounds and 217 in day-use areas. The three-page survey instrument was administered onsite, and a Spanish version was also available. The Spanish version was needed because California has a high Spanish speaking population and some of those users might feel more comfortable responding in their native tongue.

Respondents were asked about their frequency of visitation to National Forests within the last 12 months, and the primary activity undertaken during the course of their trip. A total of 16 items related to information needs and communication behaviors based on U&G theory as adapted by Absher and Picard (1998) were employed. As explained earlier, the U&G scales was conceptually designed with four dimensions that demonstrated to be reliable based on Cronbach's alpha values: *Orientation*, *Instrumental*, *Educational* and *Reassurance*. The original scales had 24 items, but 8 items were dropped due to redundancy or lack of statistical power, as recommended by Absher and Picard (1998). The remaining 16 items, four for each U&G sub-scale, were randomly ordered on the questionnaire with a six-point Likert type scale format, ranging from strongly agree to strongly disagree. These variables were subsequently reverse coded so that higher levels of agreement resulted in higher U&G scores.

Other sections of the questionnaire asked respondents to indicate the media sources they used in planning their trip and their satisfaction with the same media in terms of their usefulness. Basic sociodemographic and recreation use questions completed the questionnaire.

Results

Profile of Subjects

Among the 566 respondents, 65% reported they were White/Caucasian, 22% claimed to be Hispanic, and below 13% classified themselves into other ethnic groups (Black/African American, Native American or Alaska Native, Asian or Pacific Islander). About 39% reported incomes between \$40,000 and \$75,000, 28% indicated between \$20,000 and \$39,999, 13% reported below \$20,000, and about 20% noted above \$75,000. Visitors were predominantly from the Southern California region (97%), with about 3% from other states.

Within the past 12 months, 23 percent of the respondents indicated they visited the National Forest six or more times, while an equal number (23%) reported one visit. During their current visit, 23 percent reported a stay of 1 day or less (day users), while 77percent were overnight visitors. This data is the result of an intentional stratification in the sample, and should not be used as a general estimate of the day use proportion in the forest. This variable was used to define the two analysis groups below.

Activities pursued at the forest varied with visitor ethnicity. About half of the day users (51%) were White, compared to nearly three-quarters of the overnight users (72%). Hispanics were twice as prevalent among day users (34%) than among overnight users (16%). About one-eighth of both campers (12%) and day users (15%) were members of other minority groups.

Information Needs and Communication Behaviors

Table 1 shows that the most used information sources were family/friends (60% of the respondents), followed by maps (55%), brochures and flyers (54%), and rangers/staff (53%). Next came three moderately used media: trail/road signs (49%), bulletin boards (42%) and guidebooks (37%). Only the World Wide Web (Internet) and radio/TV/newspapers/magazines registered low usage (13% each).

Independent of how often the various media were actually used, respondents were asked to rate their satisfaction with the sources they did use. Technologically newer and conventional mass media, such as the World Wide Web (Internet) and radio/TV/magazines/newspapers, registered low levels of satisfaction as well as relatively low use levels. Information from rangers or other Forest Service employees, and from family and friends, received the highest levels of satisfaction. These are, of course, the two personal media on the list. Maps, brochures & flyers, bulletin boards, guidebooks, and signs along roads or trails (all print media) seem to fall in the middle in terms of satisfaction.

Table 1. Communication Media Use and Usefulness (Satisfaction) by Group

Variable	Day User	Overnight User	All	Significance Test
1. Media used ²				
Brochures/flyers	53.8%	53.7%	53.7%	.535 ²
Rangers/ FS employees	44.5	55.5	52.9	.023
Bulletin boards/notices at sites	42.0	42.0	42.0	.539
Signs along roads/trails	52.1	47.6	48.6	.224
Maps	47.1	57.8	55.3	.026
Websites	7.6	14.2	12.7	.034
Radio/TV/newspaper/magazines	15.1	12.7	13.3	.296
Guidebooks	32.8	32.2	36.9	.169
Family/friends	57.1	60.6	59.8	.287
2. Medium usefulness (satisfaction) ³				
Brochures/flyers	3.34	3.34	3.33	.964 ¹
Rangers/ FS employees	3.69	3.69	3.62	.459
Bulletin boards/notices at sites	3.54	3.38	3.41	.131
Signs along roads/trails	3.51	3.26	3.31	.024
Maps	3.55	3.39	3.42	.192
Websites	3.00	2.94	2.95	.732
Radio/TV/newspaper/magazines	3.23	2.90	2.99	.028
Guidebooks	3.49	3.37	3.39	.296
Family/friends	3.50	3.59	3.56	.427

¹ This section is based on a t-test between groups.

² This section reports the percentage that used the medium listed, and significance test is based on Chi-square test (Fisher's exact) of groups by use percentage.

³ Scale is 1= "Not at all satisfied" to 5= "Extremely satisfied."

In order to better understand these results, they were compared between the day and overnight groups. The significance tests in Table 1 show that there were few differences. Overnight visitors reported using three media sources more often than their day use counterparts: rangers/employees, maps, and websites. And they rated their satisfaction (usefulness) with signs along roads/trails and radio/TV/newspaper/magazines lower.

Uses and Gratifications Scales

The items within each U&G dimension were subjected to a Cronbach's alpha reliability analysis to identify their internal consistency (see Table 2). The first dimension, Orientation, had a standardized alpha of .78; the second dimension, Instrumental, registered .78; the third dimension, Educational, had .87, while the fourth dimension, Reassurance, was .83. These reliability values are considered good to very good, and are consistent with the earlier works of Absher and Picard (1998) and Absher (1999), with no one scale differing by more than .05 from the pilot test. This suggests that the U&G scales are stable and reliable at least for this user population.

As far as the actual needs these scales measure, the Instrumental scale was the lowest rated at 2.78 out of 5. Then came Educational (2.86), Reassurance (3.07) and finally Orientation (3.30), the highest rated of the four. This suggests that orientation concerns are the predominant need followed by reassurance and educational functions.

To check this further, the day and overnight users were compared with a t-test of the mean scores (Table 2). The differences for each scale were relatively small, ranging from .06 to .13 scale points. None of the group comparisons were statistically significant, which suggests that the information needs are the same for each group. Apparently it makes no difference whether they are day users or longer term visitors in terms of the kinds of information visitors are seeking.

Summary and Conclusions

In summary the results show that visitors reported personal interaction (family/friends or rangers/staff) when communicating about outdoor recreation more than other forms of communication. Printed media (bulletin boards, guidebooks, maps, brochures, and signs) were in the middle range of use, and mass media outlets (Internet, radio, TV, newspaper, magazines) were used relatively infrequently.

There were some differences between those who stayed overnight and day users, with overnight users always reporting more use of those media that were significantly different (rangers/employees, maps, and websites). One management implication from these results is that personal services are highly valued. Whether they are provided by a staffed office, roving patrols, or non-agency employees such as volunteers or partners (e.g., chambers of commerce), the users rate these information sources highly.

Table 2. Uses and Gratifications Scales, Alpha Reliability and Group Comparisons

U&G Subscales ¹	<u>Cronbach's Alpha:</u>		<u>Mean Scores and Group Comparison:</u>				
	Standardized Item Alpha	Previous Alpha ²	Overall Mean (Std. Dev.)		Overnight Users' Mean	Day Users' Mean	t-test Signif.
Orientation Scale	.83	.78	2.70	(1.46)	2.71	2.65	.92
Instrumental Scale	.74	.78	3.22	(1.18)	3.23	3.17	.89
Educational Scale	.85	.87	3.14	(1.22)	3.18	3.06	.15
Reassurance Scale	.88	.83	2.93	(1.26)	2.97	2.84	.33

¹ Questions used a six-point Likert Scale format, reverse coded, so that 6= Strongly Agree and 1= Strongly Disagree.

² Compared to pilot study results (Absher, 1998).

The print media are also being accessed by many visitors (roughly a third to a half of all visitors). Managers will need to more carefully assess the impact of these media to assure effectiveness in message delivery. The websites and mass media are not being used much and in some cases are low rated in terms of usefulness. The application of these technologies/media would need to be improved if they are to be more successful for a broad range of visitors.

The U&G scales were shown to be reliable and consistent for these forest visitors. Orientation concerns were the top rated need, followed by reassurance and educational functions. Moreover, there were no significant differences in these needs between the two groups studied. Managers may want to review the mix of messages they, and perhaps their partners, provide through various media to ensure that these functions are met in ways that are accessible to both day and overnight users.

Finally, this study provides only a brief account of U&G scale performance. The original U&G development work intended to produce scales that could be used broadly in outdoor recreation, and the results from this application of the scales is encouraging. Nonetheless, they should be more fully tested across a variety of outdoor recreation settings and activity types to gauge their suitability and impact in general use.

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