

Information Needs and Communication Theory at Mono Basin Visitor Center

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Introduction

Research about communication behaviors of outdoor recreationists is limited, even though visitor information levels have an effect in the way activities are approached and eventually conducted. An understanding of how and why people use different communication mediums is necessary in order to ensure the appropriate message is crafted and delivered. Information needs and search behaviors vary among recreationists and have been linked to activities, skill level and sociodemographic differences (Williams & Huffman, 1986; Manfredo, 1988; Rogers & Ramthun, 1998; Chavez, 2001).

A study in the Angeles and San Bernardino National Forests found that brochures and flyers were perceived as the most preferred sources for obtaining information about the Forest and the Forest Service (Graefe, Thapa & Absher, 2000). However, the majority of respondents noted that word of mouth from family or friends was the most commonly used source of information. Although satisfied with the accuracy and usefulness of information received through rangers and family and friends, they rated the Internet, radio and television lower. Furthermore, campers were more satisfied than day visitors with the accuracy and usefulness of information received from brochures and flyers. Also, non-whites were more likely to rank brochures/flyers as their most preferred source of information, while those with the lowest incomes were least likely to seek information from rangers or other Forest Service employees. These results are consistent with earlier research conducted in these forests and elsewhere (Chavez, 2001).

In a study conducted in the Allegheny National Forest in Pennsylvania that included the Heart's Content Scenic Area and the Hickory Creek Wilderness, visitors most frequently used maps and signs for sources of information, while television, radio, newspapers, outdoor clubs and sporting goods stores were least often used (Graefe, Absher, Confer & Thapa, 2003). Additionally, use of information sources varied among the user groups as wilderness users and adjacent landowners sought the most types of information from brochures, and campground users generally used fewer sources of information.

Communication theories are widely employed in mass communications and interpersonal communication disciplines, and integrating them into outdoor recreation management is needed. They could be extremely important in outdoor recreation management because many problems can be directly linked to communication and education (Absher, 1998). One example is Uses and Gratifications (U&G) theory, which has been employed over the last 50 years to study the public's perception of gratifications sought and obtained via engagement in mass communications such as television programs, phone usage and print media. U&G have been adapted and pilot-tested in outdoor recreation research, albeit somewhat preliminarily (Absher and Picard, 1998; Absher, 1999). The forest U&G scales include four dimensions (subscales): Orientation, Instrumental, Educational and Reassurance. 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, Educational, as the name implies, refers to seeking information or visiting the forest to learn about various plants, wildlife, and preservation and conservation ideas. 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. Results of recent studies suggest that the U&G dimensions clearly differentiate the use of communication services among various user groups. For example, picnickers were more likely to seek information for reassurance purposes, while campers sought information for instrumental purposes (Absher, 1999). Further work by Graefe et al., (2000) found that nearly all respondents reported seeking information for reassurance purposes such as feeling safer and more confident within the Forest, as well as for orientation purposes such as finding out about activities, events or places to visit within the Forest. Another study showed that Whites were more likely to seek out information for orientation and educational purposes, while Hispanics attributed more importance to instrumental uses, like seeking information about parking facilities, permits and operating hours (Thapa, Graefe & Absher, 2002).

Study Goals and Objectives

The goal of this paper is to further examine various aspects of communication behaviors among visitors at the Inyo National Forest's Mono Basin Scenic Area (MBSA) in California. The objectives are as follows:

- To identify visitors' preferences for information about MBSA obtained from various communication media.
- To identify the level of usefulness of information about MBSA obtained from various communication media.
- To examine visitors' various uses & gratifications (significance and importance placed on different aspects of information, sites, and services).
- To identify visitors' recommendations to improve management of information services at MBSA.

Methods

Study sites included the MBSA Visitor Center and several sites located at various points along the Mono Lake shoreline. The Visitor Center is strategically located along U.S. Highway 395 (a major north-south thoroughfare from Reno, Nevada to southern California), and is above the western shore of the lake adjoining Lee Vining, a small village gateway community to Yosemite National Park. The Visitor Center is equipped with an impressive exhibit, gallery and a small bookstore. The Center also has a small theatre where an orientation film about MBSA is shown periodically throughout the course of the day. A staffed information desk is present to provide information about MBSA and the surrounding areas including Yosemite National Park. The other sites included the largest and the most visited tufa site situated along the southern shore of the lake, approximately 20 miles from the Visitor Center. It is owned by California State Parks and is cooperatively managed with the Forest Service. Additional sites were County Park and Old Marina, situated along the western edge of the lake within close proximity to Highway 395.

A combination of survey methods was employed to collect data during the summer months of 1998. First, subjects were systematically approached as they exited designated sampling sites. The researcher asked them to complete an initial two-page personal interview (under 5 minutes), and later asked them to participate in a follow-up mail survey. Altogether, 360 interviews were conducted at the Visitor Center, 199 at South Tufa, and 39 at the other remote locations. Collectively, 598 surveys were completed and 436 agreed (72.9% compliance rate) to participate in the follow-up mail survey by providing their names and addresses.

One month following the personal interviews, a modified Dillman (2000) approach including three first-class mailings was employed, by first sending a 6-page survey and a self-addressed, stamped return envelope. Second, a follow-up thank you/reminder postcard was sent two weeks after the first mailings. Third, a complete packet (similar to the first mailing) was sent approximately two weeks after the postcard reminder to those subjects that had failed to respond to the first two mailing. Following this process, a total of 270 surveys were returned with a 61.7% response rate, in which 158 surveys represented the Visitor Center, 93 were from South Tufa, while 19 were from other sites.

Results

Visitor profile. Four demographic and one use variable were measured: gender, age, education, income, and visits in the last year. Males constituted 61 percent of respondents. About 42 percent of the respondents were 51 years of age and over, followed by those between 36 and 50 years (35.8%). The majority of respondents reported a college education or more, with only about 24 percent indicating less than a college education. Respondents were fairly affluent as 32 percent noted their total household income before taxes was over \$80,000, while 42 percent indicated between \$40,000-\$79,999. Respondents were also asked to indicate their frequency of visitation to MBSA within the past 12 months. About two-thirds (65 percent) were on their first visit, while 35 percent reported two or more visits. More detail can be found in the main technical report (Thapa, Absher, Graefe & Kyle, 2004).

Preference for communication mediums. Respondents were asked to indicate their preferences for selected communication mediums (brochures/flyers, rangers/information desk staff, ranger walks/talks, trail signs, exhibits in Visitor Center and videos/slide shows) as a means to get information about MBSA. Based on first-rank results, the number one preference was for trail signs (26.8%), followed closely by ranger walks/talks (23.7%) and brochures/flyers (22.4%). However, exhibits at the visitor center and the use of rangers and information desk staff were likely to be secondary choices (see Table 1).

Table 1- Preference for media to obtain information about MBSA

Media	Ranking ¹ in percent (n)						Average
	1	2	3	4	5	6	
Trail Signs	26.8(68)	24.0(61)	15.0(38)	11.0(28)	15.0(38)	8.3(21)	2.9
Exhibits in VC	17.3(44)	18.1(46)	22.4(57)	20.5(52)	17.3(44)	4.3(11)	3.2
Rangers/Staff	13.4(33)	18.2(45)	23.9(59)	19.4(48)	15.4 (38)	9.7 (24)	3.3
Ranger Walks/Talks	23.7(60)	18.2(46)	9.9(25)	14.2(36)	15.4(39)	18.6(47)	3.4
Brochures/Flyers	22.4(55)	12.2(30)	13.4(33)	14.6(36)	13.4(33)	24.0(59)	3.8
Video/Slide Shows	9.0(22)	13.9(34)	15.1(37)	15.5(38)	18.0(44)	28.6(70)	4.1

¹Items were coded such that 1=Highest ranking through 6=Lowest ranking

Usefulness Of information received. Based on their visit to MBSA, respondents were asked to indicate the level of usefulness of information provided through various types of programs or communication mediums. Nine items were listed. Overall, respondents reported the information provided through various programs and communication mediums were all very or extremely useful. Based on the average ratings, the orientation film, exhibits in the visitor center exhibit hall, and patio/trail walks and talks registered the most support with respect to the usefulness of information provided. Signs about site fees at entrances and along roads registered the least support based on the overall means (see Table 2).

Table 2- Usefulness of information received

Source or Type of Media	Usefulness rating ¹					Average rating
	1	2	3	4	5	
Percentage (n)						
Orientation Film (“Of Fire and Ice”)	0.7 (2)	1.8 (5)	11.7 (13)	47.7 (53)	34.2 (38)	4.08
Exhibits in Visitor Center Exhibit Hall	0.5 (1)	3.9 (8)	16.1 (33)	46.8 (96)	32.7 (67)	4.07
Patio and Trail Walks and Talks	2.3 (4)	4.6 (8)	15.5 (27)	43.7 (76)	33.9 (59)	4.02
Photo Exhibit and Gallery	0.0 (0)	7.2 (14)	16.4 (32)	46.7 (91)	29.7 (58)	3.99
Signs/Exhibits on Patio or Nature Trail	0.0 (0)	4.4 (10)	18.4 (42)	52.6 (120)	24.6 (56)	3.97
Information Desk in Visitor Center	1.5 (3)	8.0 (16)	12.6 (25)	48.2 (96)	29.6 (59)	3.96
Bookstore Sales Area	1.5 (3)	8.3 (17)	24.0 (49)	38.7 (79)	27.5 (56)	3.82
Signs about Fees at Entrances and Roads	8.1 (17)	12.3 (26)	35.1 (74)	34.6 (73)	10.0 (21)	3.26

¹Variable coded on 5–point Likert type scale where 1=Not at all useful, 2= Somewhat useful, 3= Moderately useful, 4= Very useful and 5=Extremely useful

Uses and Gratifications Scales. Next, nine items based on U&G theory were adapted from a previous empirical study (Absher, 1999; Thapa, et al., 2002). The recreation U&G scale was originally designed with four dimensions: Orientation, Instrumental, Educational and Reassurance. However, in this study only the first three dimensions were used. The items were randomly ordered with a 5–point Likert scale format, ranging from strongly disagree to strongly agree. In

the original development of the U&G scales alpha reliabilities ranged from .74 to .88; however in this shortened implementation for MBSA the reliabilities were .50 for Instrumental (because only two of four original items used this is the inter-item correlation), .77 for Orientation (three of four items used) and .73 for Educational (all four items used).

Initially, the U&G items were analyzed using basic frequencies, and the overall U&G subscales were calculated (Table 3). The highest rated subscale was Education (avg.= 4.08). The highest rating was for geology and ecology of the lake, followed by high ratings for other purposes such as to learn about plants, wildlife, and conservation concerns. The Orientation subscale was next highest with an overall 3.89 average. This dimension includes purposes such as finding out about places to go and things to see within the area. Finally, respondents' average rating of the Instrumental subscale was 3.32, which is still mostly "agree." The highest rated instrumental item refers to the hours or dates facilities are open.

Table 3- Frequency distributions for Uses & Gratifications items

I use Mono Basin Scenic Area sites...	Response scale ¹					Avg. (n)
	1	2	3	4	5	
	Percent (n)					
Instrumental items						
to obtain needed permits (e.g. wilderness, woodcutting, etc.)	19.9 (49)	21.5 (53)	24.8 (61)	18.3 (45)	15.4 (38)	2.89 (246)
to learn about the hours or dates facilities are open	4.4 (11)	11.5 (29)	8.3 (21)	56.7 (143)	19.0 (48)	3.75 (252)
Instrumental subscale ($\alpha = .50$)						3.32
Orientation items						
to find out about places to go and things to see	2.7 (7)	4.7 (12)	5.4 (14)	49.2 (127)	38.0 (98)	4.15 (258)
to find location locations for FUTURE recreational activities	5.1 (13)	14.6 (37)	21.3 (54)	39.8 (101)	19.3 (49)	3.54 (254)
to learn about programs or events offered at the Scenic Area	1.2 (3)	5.9 (15)	10.2 (26)	54.7 (139)	28.0 (71)	4.02 (254)
to get information about a specific place or event	3.1 (8)	7.5 (19)	16.1 (41)	49.8 (127)	23.5 (60)	3.83 (255)
Orientation subscale ($\alpha = .77$)						3.89
Educational items						
to get information about forest plants and wildlife	0.8 (2)	5.0 (13)	5.8 (15)	52.3 (135)	36.0 (93)	4.18 (258)
to get information about conservation/preservation	1.1 (3)	6.9 (18)	11.5 (30)	54.8 (143)	25.7 (67)	3.97 (261)
to get information about the geology and ecology of the lake	0.8 (2)	0.4 (1)	1.2 (3)	41.9 (109)	55.8 (145)	4.52 (260)
Educational subscale ($\alpha = .73$)						4.08

¹Variable coded on a 5-point Likert type scale where 1=Strongly disagree, 2=Disagree, 3=Not sure, 4=Agree and 5=Strongly Agree

A comparative analysis of the U&G subscales was conducted using one-way ANOVA with variables that measured gender, age, income, education and first/repeat visit. Differences between genders were significant for two of the three U&G dimensions; i.e., there were significant F-values for orientation and educational purposes (see Table 4). There were no significant differences by age among the U&G subscales. The findings suggest that regardless of age, visitors use MBSA for instrumental, orientation and educational purposes similarly. Comparing among income categories, one of the three U&G subscales (Educational) was significantly different. Comparing education subgroups, all three of the subscales were significantly different from one another, suggesting that knowing the educational level of site visitors is important to serving their information needs well, especially for orientation. There were significant differences for two subscales (instrumental and orientation) between those who were visiting for the first time and those who had

visited numerous times during the past 12 months. The difference was especially strong for instrumental purposes, suggesting the need for a different approach to first time visitors for this type of information. More detail including rating scores, etc. for individual subgroups from this ANOVA table are available in the extended report from this study (Thapa, et al., 2004).

Table 4- One-way ANOVA comparison of Uses & Gratifications subscales across selected variables

	Instrumental F-value	Orientation F-value	Educational F-value
Gender: Female vs male	1.48	7.07**	9.15**
Age: <35, 36–50, >50 yrs	2.87	2.31	1.56
Income: <\$40k, \$40–79k, >\$80k	.70	.10	4.10*
Education: <college, college grad, post-grad.	4.27*	8.87**	3.96*
Prior visits: First time vs repeat	9.63**	4.14*	2.03

* significant at .05 level; ** significant at .01 level

Recommendations To Improve Management Of Information Services: Respondents rated six items representing ways to spend user fee revenue to improve MBSA information services. The items were randomly assigned with a 5–point Likert type scale format ranging from strongly oppose to strongly support. Based on the overall means associated with each item, respondents moderately supported each potential management action except one. Respondents offered the most support (avg.=3.93, or 75.3% support) for the reinstatement of funding for MBSA’s interpretive and environmental education programs. At the other extreme, 62.5 percent of respondents opposed (avg.= 2.33) the use of user fee revenues for the design and installation of interpretive exhibits along Lee Vining Creek Trail, Panum Crater and other recreation sites (see Table 5).

Table 5- Recommendations to improve management of information services

Management Action	Opposition–Support scale ¹					Average (n)
	1	2	3	4	5	
Reinstate funding for Scenic Area interpretive and environmental education programs	0.4	4.6	19.8	52.5	22.8	3.93 (263)
Update and expand written materials, handouts and maps	0.8	4.9	26.8	55.5	12.1	3.73 (265)
Develop interpretive media, highlighting restoration of creeks and waterfowl habitat that includes video, exhibits and environmental curricula	1.9	9.1	25.1	49.4	14.4	3.65 (263)
Improve and expand signs in the Scenic Area	4.2	9.1	27.0	3.7	16.0	3.58 (263)
Improve visitor services through extension of Visitor Center hours and expansion of informal resources	3.1	9.6	30.4	42.3	14.6	3.56 (260)
Design and install interpretive exhibits along Lee Vining Creek Trail, Panum Crater and other recreation sites	16.7	45.8	27.3	8.0	2.3	2.33 (264)

¹Variables coded on a 5–point Likert type scale where 1=Strongly Oppose, 2=Oppose, 3=Neutral, 4=Support and 5=Strongly Support

Conclusion

Information needs and communication behaviors of outdoor recreationists have been found to be dependent upon associated variables such as their chosen activity of participation, skill level or demographic differences. To further this

line of inquiry we sought to extend the search for explanatory variables by looking at visitors' perceptions of the usefulness and role of various types of interpretive and educational mediums, and to tie these into existing communication theories. Thus, this study examined various aspects of information use and communication behaviors among visitors to Mono Basin Scenic Area (MBSA), California. The results yielded a better understanding of visitors' preferences for communication media, media usefulness, and the significance and importance placed on different aspects of information, sites, and services.

Respondents' most preferred source of information was trail signs, followed closely by ranger walks/talks, and brochures/flyers. However, other mediums such as exhibits from the visitor center and the use of rangers and information desk staff were also ranked fairly high, while video/slide shows was consistently ranked low. Overall, respondents reported the information provided through various programs and communication mediums were all very or extremely useful. Information provided through the orientation film ("Of Fire and Ice") and from the exhibits in the visitor center exhibit hall received the highest support, while signs about the fee program at entrances and along roads registered the least support.

The U&G scales further added to our understanding of how to serve MBSA visitors' needs. Respondents reported using MBSA information most for educational purposes, followed closely by orientation and instrumental purposes. An ANOVA analysis also showed that sociodemographic and prior visit variables were differentially linked to the U&G scales (notably gender, education and prior visits). Overall, this suggests the need to track various types of information needs across known user groups.

Recommended improvements to the management of information services at MBSA through the expenditure of user fee revenues included the reinstatement of funding for MBSA's interpretive and environmental education programs and updating and expanding written materials. There was some opposition to the design and installation of interpretive exhibits along Lee Vining Creek Trail, Panum Crater and other recreation sites.

Results about the most preferred source of information was mixed. Signs at trailheads or along the trails received the most top rankings and brochures/flyers received the highest average ranking. Therefore, efforts to improve communication might be concentrated on these. However, other results reported above also suggest that visitors place a low priority on spending fee revenue for some signage or exhibits. The exhibits in the visitor center exhibit hall and the orientation film received excellent ratings for usefulness, and they appear to be effective in their role of educating the visitors about MBSA.

Overall, information needs were generally being met at MBSA. However, there are still some areas to improve upon, especially signage. Other areas such as orientation and educational needs appear to have been met and respondents are supportive. The use of user fees for various managerial actions with respect to information services should be directed toward improvement and expansion of both general and specific signs. Ratings of information mediums and the U&G scales contributed significantly to a better understanding of site use and management. Various demographic variables and frequency of visitation further aided a better understanding of how the U&G scales help communications at MBSA. Similar studies elsewhere will help managers achieve success in informing and communicating with visitors by being more cognizant of the nature of needed or preferred information and how to present it.

References

- Absher, J.D. (1999). The utility of a uses and gratifications approach to assess the information needs of Forest visitors: An activity-based market segmentation test. In H. Vogelsong (comp.), *Proceedings of the 1998 Northeastern Recreation Research Symposium*, (p. 93-96). Gen. Tech. Rep. NE-255. Radnor, PA: US Department of Agriculture, Forest Service, Northeastern Forest Experiment Station.
- Absher, J.D. (1998). Parables and paradigms: An introduction to using communication theories in outdoor recreation research. In H. Vogelsong (comp.), *Proceedings of the 1997 Northeastern Recreation Research Symposium*, (p. 36-39). Gen. Tech. Rep. NE-241. Radnor, PA: US Department of Agriculture, Forest Service, Northeastern Forest Experiment Station.
- Absher, J.D., & Picard, R. (1998). Applying a communication theory to National Forest recreation use. Paper presented to the 7th International Symposium on Society and Resource Management, May 27-31, Columbia, MO.
- Chavez, D.J. (2001). Managing outdoor recreation in California: Visitor contact studies 1989-1998. Gen. Tech Rep. PSW-GTR-180. Albany, CA: US Department of Agriculture, Forest Service, Pacific Southwest Research Station.
- Dillman, D.A. (2000). *Mail and internet surveys: The tailored design method*, 2 ed. New York: John Wiley & Sons.
- Graefe, A.R., Absher, J.D., Confer, J.J., & Thapa, B. (2003). Communication needs and approaches for visitor management: A case study of the Allegheny National Forest. Unpublished technical report. Riverside, CA: USDA Forest Service, Pacific Southwest Research Station, RWU-4902.
- Graefe, A.R., Thapa, B., & Absher, J.D. (2000). Applications of uses and gratifications theory in a recreation context: The case study of users at the Angeles and San Bernardino National Forests, California. Unpublished technical report. Riverside, CA: USDA Forest Service, Pacific Southwest Research Station, RWU-4902.

- Manfredo, M.J. (1988). An investigation of the basis for external information search in recreation and tourism. *Leisure Sciences*, 11, 1: 29–45.
- Rogers, J., & Ramthun, R. (1999). A study of information search by visitors to the Blue Ridge Parkway. In H. Vogelsong (comp.), *Proceedings of the 1998 Northeastern Recreation Research Symposium*, (p. 86–92). Gen. Tech. Rep. NE–255. Radnor, PA: US Department of Agriculture, Forest Service, Northeastern Forest Experiment Station.
- Thapa, B., Graefe, A.R., & Absher, J.D. (2002). Information needs and search behaviors: A comparative study of ethnic groups in the Angeles and San Bernardino National Forests, California. *Leisure Sciences*, 24,1: 87–107.
- Thapa, B., Absher, J.D., Graefe, A.R., & Kyle, G.T. (2004). Communication and information needs at Mono Basin National Forest Scenic Area. Unpublished technical report. Riverside, CA: USDA Forest Service, Pacific Southwest Research Station, RWU–4902.
- Williams, D.R., & Huffman, M.G. (1986). Recreation specialization as a factor in backcountry trail choice. In R. Lucas (Ed.), *Proceedings in National Wilderness Research Conference: Issues, state of knowledge, future directions*, (p. 339–344). GTR–INT–212. Ogden, UT: USDA Forest Service, Rocky Mountain Research Station.