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Wilderness Visitor Education: Information About Alternative Techniques

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INTRODUCTION

Wilderness areas are places where natural conditions are maintained and natural processes are allowed to operate freely. They also offer outstanding opportunities for primitive and unconfined recreation. Allowing recreational use while preserving natural conditions presents a challenge for managers. The challenge is even greater given the importance of the Wilderness Act's wording emphasizing minimal regulation and "confinement" of recreational use in wilderness.

Visitor education has been widely touted as the most appropriate approach for managing recreation in wilderness (McCool and Lucas 1990). Many wilderness problems are primarily a result of inappropriate behavior (Cole and others 1987). Inappropriate visitor behavior can be changed through education (for example, Roggenbuck and Berrier 1982). Most wilderness visitors are well educated (Roggenbuck and Lucas 1987). Voluntary change seems preferable to change coerced through regulation and enforcement. Although some researchers caution against expecting too much from education (Burke and others 1979; Irwin 1985; McAvoy and Dustin 1983), wilderness education remains a cornerstone of wilderness management (Hansen 1990).

The historical development of educational programs is difficult to trace. Clearly, informal education must have a long history. Early rangers must have attempted to persuade visitors to avoid doing the things that damage wild places. But even such high-impact behaviors as burying garbage or cutting a trench around a tent were generally accepted until a few decades ago. One of the early formal educational programs in low-impact recreation was developed by the National Outdoor Leadership School in the 1960's. At about the same time, agencies began promoting the "pack-it-in, pack-it-out" slogan to reduce litter in backcountry. These efforts evolved over the years, as did knowledge about effective techniques for low-impact recreation. By the late 1970's, the need for wilderness education was accepted widely, at least in theory. At about this time Martin and Taylor conducted their original study (1981). Throughout the 1980's, verbal support for wilderness education increased. Information on appropriate techniques for low-impact recreation was

published (Cole 1989; Hampton and Cole 1988); conceptual approaches to wilderness education were described (Roggenbuck and Manfredi 1990); and educational materials were compiled (USDA FS 1989, 1991). The Forest Service implemented a national Leave-No-Trace educational program. With all this new activity, we felt it would be worthwhile to assess the status of educational programs and the progress made since the late 1970's.

This report consists of three parts. The first part is the assessment of educational programs in wilderness. It describes what is being done to educate wilderness visitors and the changes over the last decade. In addition, it summarizes managers' opinions about the education techniques they are using.

The second part is intended as a reference. It includes detailed descriptions of 25 techniques for educating wilderness visitors. We describe what each technique involves and how it is used. We describe current usage, relative cost, maintenance requirements, and the personnel time required. We discuss the techniques; relative effectiveness, advantages and disadvantages, and finally, tips for their successful application. This information can help managers identify the range of available techniques and decide which mix of techniques would most likely be effective.

In the final part, we describe some emerging technologies and innovative techniques. These techniques are not yet widely used, but they appear to offer promise. In addition, we present some general principles to guide persuasive education. References are included for further information.

STATUS AND CHARACTERISTICS OF VISITOR EDUCATION PROGRAMS IN WILDERNESS

In December 1989, mailback questionnaires were sent to managers of all units of the National Wilderness Preservation System that received regular recreational use. About 20 U.S. Fish and Wildlife Service (FWS) areas that do not receive regular use were excluded. A total of 491 questionnaires were distributed—373 to the Forest Service (FS), 54 to the FWS, 41 to the National Park Service (NPS), and 23

to the Bureau of Land Management (BLM). We sent the questionnaire to ranger districts (FS), wildlife refuges (FWS), national parks (NPS), and district offices (BLM). We asked that the person most knowledgeable about educational programs complete the questionnaire. Respondents included district rangers, public information officers, park superintendents, interpreters, naturalists, wilderness and trails coordinators, resource management specialists, wildlife refuge managers, recreation staff officers, park rangers, and wilderness specialists.

The questionnaire consisted of three pages. The first page listed 25 common educational media. Managers were asked to identify all techniques they used and to estimate the yearly costs and personnel time devoted to each technique. On the second page, managers were asked to rank the effectiveness of each technique they employed, on a scale of 1 to 5. They were asked to rate the effectiveness of the techniques in dealing with each of 10 common problems in wilderness: user conflicts, overcrowding, trail deterioration, campsite deterioration, packstock damage, improper disposal of human waste, water contamination, actions that harm fish and wildlife, litter, and vandalism. These problem categories are described in Cole and others (1987) and Cole (1989). The technique's mean perceived effectiveness for all problems was considered to be a measure of its overall effectiveness. On the third page, managers were asked about any innovative educational programs they were using and about any research that had been conducted on educational programs in the wilderness they managed.

Managers who reported innovative or highly effective programs were interviewed by phone. These interviews were conducted to obtain more detailed information about successful or innovative techniques. This helped us describe the advantages and disadvantages of each technique. It also helped us provide tips for managers who want to try the techniques.

Results

Of the 491 questionnaires distributed, 266 were completed and returned, for a 54 percent response rate. We decided the sample size was adequate, as long as any nonresponse bias was minimal, so we did not send out any follow-up mailings. We were concerned that nonrespondents might manage areas without well-developed educational programs. To test this hypothesis, we conducted telephone interviews with 20 percent of the nonrespondents. We asked them whether they used any of the 25 educational techniques. We found that wilderness managers who did not respond to our survey were just as likely to be using the 25 techniques as managers who did respond. Consequently, we determined the initial sample of 266 was adequate to describe each technique.

Frequency of Use—Six of the 25 techniques are used in more than half of the areas (table 1). Brochures are the most popular educational medium. The other most popular techniques are personnel in agency offices and in the backcountry, maps, signs, and displays at trailheads. Eleven of the 25 techniques are used in less than one-quarter of all areas. All these are media-based techniques, such as radio, television, movies, and periodicals.

Most wilderness areas are using a variety of techniques. Different areas used as few as zero to as many as 20 different techniques. The typical number of techniques being used (the median) was eight.

U.S. Fish and Wildlife Service wilderness areas typically used the fewest different techniques (median of six), while the FS used the most (median of nine). The primary difference between agencies was in the techniques they tended to use. The FS used signs, displays, and personnel at agency offices and trailheads with high frequency; the FS was relatively unlikely to use displays or personnel at visitor centers, slide shows, or interpreters (table 1). The NPS relied heavily on personnel and displays at visitor centers, and on interpreters; they were unlikely to use displays or personnel at trailheads, personnel at public meetings, or signs. The BLM seldom used signs, displays at trailheads, or personnel in the backcountry; they relied more on slide shows and personnel at public meetings. Finally, the FWS relied heavily on media-based techniques—brochures, radio, television, and slide shows; they were less likely to use personnel, whether in agency offices, trailheads, campgrounds, or the backcountry.

This suggests that the FS orients its education efforts largely toward agency offices and trailheads, using both media-based and personnel-based techniques. The NPS orients its efforts more toward visitor centers, using media-based and personnel-based techniques. The FWS and BLM efforts are less likely to be focused in any particular location. The FWS relies more on media-based techniques and less on personnel-based techniques than the other agencies. The BLM's programs appear somewhat less developed than those of other agencies. That may be because the BLM has managed officially designated wilderness for less than a decade.

With a few exceptions, the popularity of techniques can be compared between 1980 and 1990. The 1990 survey added some new techniques (posters, video, and computers) and also subdivided some of the techniques included in the 1980 survey. Radio was subdivided into agency and commercial radio. Periodicals were subdivided into agency and commercial periodicals, and displays were subdivided by location—at agency offices, visitor centers, or trailheads. Some differences reflect our decision to confine the sample to designated wilderness. Nevertheless, some of the

Table 1—Usage of each educational technique in the National Wilderness Preservation System

Technique	Agency ¹				All agencies n = 266
	BLM n ² = 13	NPS n = 22	FWS n = 21	FS n = 210	
	----- Percent -----				
Brochures	77	73	81	74	74
Personnel at agency offices	62	50	43	75	70
Maps	77	45	62	70	68
Signs	46	45	67	70	67
Personnel in the backcountry	46	68	29	69	65
Displays at trailheads	31	27	33	62	55
Displays at agency offices	31	32	33	52	48
Posters	23	27	14	55	48
Personnel at school programs	15	32	43	50	47
Slide shows	54	36	43	34	36
Personnel at campgrounds	15	27	0	40	35
Personnel at public meetings	46	27	38	34	34
Personnel at trailheads	31	5	5	4	29
Personnel at visitor centers	38	68	33	20	26
Videos	8	27	14	21	21
Agency periodicals	15	23	14	18	18
Displays at visitor centers	8	45	24	15	18
Guidebooks	0	9	14	14	13
Interpreters	15	27	14	9	11
Computers	8	9	14	11	11
Commercial radio	0	5	14	10	9
Commercial periodicals	8	9	5	8	8
Movies	0	5	10	8	7
Commercial television	8	5	10	3	4
Agency radio	0	5	5	1	1

¹BLM (Bureau of Land Management), NPS (National Park Service), FWS (U.S. Fish and Wildlife Service), FS (Forest Service).

²Number of wilderness areas responding to the 1990 survey.

similarities and differences between the two surveys are striking. The five most popular techniques in 1980 remained the most popular in 1990 (table 2). Fifteen techniques were used less frequently in 1990 than they were a decade ago; only six techniques were used more frequently in 1990. The techniques used much less frequently in 1990 were radio, guidebooks, and personnel at visitor centers. The apparent decline in the latter two techniques may be a result of different groups of respondents during the two surveys (for example, the 1990 survey had many more FS respondents; visitor centers are relatively uncommon around FS wilderness areas), rather than a change in use of these techniques. Nevertheless, the decline in use of so many techniques suggests that educational programs did not expand during the decade.

The most optimistic finding was that some techniques were being used much more frequently. The use of displays, personnel in the backcountry, and interpreters increased substantially. The biggest change was in the use of personnel at school programs. This

increased from 6 percent of areas in 1980 to 47 percent in 1990.

Personnel Time and Cost of Techniques—Managers were asked to assess the time their personnel devoted to educating wilderness users and the cost of each technique they used. Some respondents attempted to break out the portion of their information and education programs spent for low-impact recreation education; others included expenses for other types of information and education (such as safety, informing visitors about weather conditions, or campsite availability). For example, some managers included the entire cost of backcountry rangers, even though education was only a portion of their jobs. Consequently, these cost and personnel time estimates are higher than they should be for education about low-impact recreation. This is more often true for personnel-based techniques than media-based techniques.

The median number of person-days per year spent on education in each wilderness area was 55. This

Table 2—Usage of educational techniques in 1980 and 1990

Technique	1980	1990
Brochures	80	74
Personnel at agency offices	72	70
Maps	73	68
Signs	69	67
Personnel in the backcountry	51	65
Displays at trailheads ¹	11	55
Displays at agency offices ¹	11	48
Posters	—	48
Personnel at school programs	6	47
Slide shows	47	36
Personnel at campgrounds	47	35
Personnel at public meetings	38	34
Personnel at trailheads	29	29
Personnel at visitor centers	48	26
Videos	—	21
Agency periodicals ¹	33	18
Displays at visitor centers ¹	11	18
Guidebooks	35	13
Interpreters	5	11
Computers	—	11
Commercial radio ¹	25	9
Commercial periodicals ¹	33	8
Movies	18	7
Commercial television	15	4
Agency radio ¹	25	1

¹These techniques were described more generally in 1980 as radio, periodicals, and displays.

represents about one-quarter of a full-time position. This clearly overestimates the time actually spent on education about low-impact recreation. The median personnel time, in person-days, was 23 for FWS areas, 41 for BLM areas, 60 for FS areas, and 260 for NPS areas. Most of the personnel time at NPS areas was spent staffing visitor centers.

Personnel-based techniques required substantially more time than media-based techniques (table 3). Personnel at visitor centers and in the backcountry required the most time. Media-based techniques such as radio, television, videos, periodicals, and posters required the least time.

The median amount of money spent yearly on wilderness visitor education was about \$4,900. The cost ranged from nothing to \$200,000. The higher estimates appeared to include much of the cost of staffing a visitor center and patrolling the backcountry. Median costs by agency were \$3,000 for FWS areas, \$4,000 for BLM areas, \$5,000 for FS areas, and \$10,000 for NPS areas. Costs were substantially higher for personnel-based techniques than for media-based techniques (table 4). Generally, techniques requiring the most personnel time cost the most. Although the survey did not ask whether funding was adequate, a large proportion of respondents said a lack of funding greatly limited their programs.

Effectiveness of Techniques—Managers were asked to rate the effectiveness of each technique in reducing 10 common management problems. They were asked to respond only for problems prevalent in their area. This question was intended to identify techniques that were particularly effective in dealing with specific problems. Unfortunately, managers had difficulty assigning different levels of success to specific problems. For example, on a scale of 1 (not effective) to 5 (highly effective), the mean effectiveness of any technique rarely varied by more than about half a unit among problems. The greatest difference was 1.4 units. Personnel at visitor centers were given an effectiveness rating of 3.8 for reducing overcrowding; their effectiveness rating for reducing vandalism was only 2.4 (table 5). While this could mean that each technique was equally effective for different problems, it probably means managers weren't comfortable assigning different rankings to individual problems.

Nevertheless, managers thought that certain techniques were more effective than others and that certain problems were more likely to be solved with education. The mean effectiveness of all educational techniques was below 3.0 (the midpoint for the rankings). Mean effectiveness of educational techniques was greatest

Table 3—Personnel time requirements for each educational technique

Technique	Person-days per year		
	1-10	11-90	>90
	----- Percent -----		
Commercial periodicals	100	0	0
Commercial television	100	0	0
Agency radio	100	0	0
Videos	96	2	2
Posters	95	5	0
Guidebooks	94	3	3
Displays at agency offices	93	6	1
Agency periodicals	92	6	2
Commercial radio	91	9	0
Displays at visitor centers	90	8	2
Brochures	88	10	2
Displays at trailheads	88	11	1
Movies	88	6	6
Personnel at public meetings	87	12	1
Slide shows	85	14	1
Personnel at school programs	85	14	1
Signs	83	16	1
Maps	82	15	3
Computers	75	14	11
Personnel at campgrounds	57	34	9
Personnel at agency offices	55	34	11
Personnel at trailheads	54	38	8
Interpreters	52	29	19
Personnel at visitor centers	42	23	35
Personnel in the backcountry	22	45	32

Table 4—Annual costs for each educational technique

Technique	Annual cost		
	<\$500	\$500-\$5,000	>\$5,000
	----- Percent -----		
Commercial radio	92	8	0
Commercial periodicals	90	10	0
Commercial television	90	10	0
Guidebooks	88	9	3
Displays at agency offices	86	12	2
Movies	84	16	0
Posters	81	19	0
Videos	81	17	2
Personnel at public meetings	79	20	1
Slide shows	76	23	1
Personnel at school programs	73	25	2
Brochures	73	24	3
Displays at visitor centers	72	28	0
Computers	72	14	14
Agency periodicals	69	29	2
Maps	68	29	3
Agency radio	66	34	0
Displays at trailheads	65	33	2
Signs	57	41	3
Personnel at campgrounds	55	38	7
Interpreters	45	41	14
Personnel at agency offices	40	43	16
Personnel at trailheads	38	56	6
Personnel at visitor centers	27	42	30
Personnel in the backcountry	15	47	38

for reducing activities that harm fish and wildlife and reducing litter (2.8). Perceived effectiveness was lowest for dealing with water contamination and vandalism (2.4). Some results in table 5 appear to be contradictory. For example, although managers generally considered movies below average in effectiveness, they consider them among the most effective ways to reduce activities that harm fish and wildlife. Displays and personnel were generally considered to be more effective when located at trailheads than at visitor centers; however, managers felt that overcrowding problems could best be reduced with displays and personnel at visitor centers.

In both 1980 and 1990, managers believed personnel-based techniques were more effective than media-based techniques (table 6). Only three techniques were rated above average in effectiveness: personnel in the backcountry (3.8), interpreters (3.6), and personnel at trailheads (3.3). The least effective techniques were considered to be maps (2.1), computers (1.9), and commercial radio (1.9). Brochures—the most commonly used technique—were intermediate in effectiveness (2.5).

Managers' ratings of the effectiveness of different techniques generally declined between 1980 and 1990 (table 6). The question was asked precisely the same

way each time. The relatively high effectiveness ratings for personnel at trailheads and visitor centers in 1980 declined greatly in 1990.

These effectiveness ratings are only opinions. They are not the result of empirical studies. Managers reported that research on information and education techniques had been conducted in only four of the 266 areas within the past 5 years. In fact, only about 10 studies have evaluated the effectiveness of educational programs intended to reduce ecological problems or overcrowding in wilderness. Even though managers continually report that personal contact is the most effective means of educating visitors, some research suggests that brochures, which allow recipients to process information at their own pace, are just as effective for some groups (Roggenbuck 1992).

Summary

Our initial reason for repeating the survey reported in Martin and Taylor (1981) was to assess changes in wilderness visitor education programs during the 1980's. Our results suggest the programs have changed relatively little. The most popular techniques in 1980 continue to be the most popular in 1990.

Table 5—Mean perceived effectiveness of each educational technique for reducing various wilderness management problems, on a scale of 1 (not effective) to 5 (highly effective) as rated by wilderness managers

Technique	Management problem									
	User conflicts	Overcrowding	Trail deterioration	Campsite deterioration	Pack-stock damage	Human waste	Water contamination	Fish/wildlife impacts	Litter	Vandalism
Commercial periodicals	2.5	2.3	2.2	2.6	2.2	2.4	2.3	2.5	2.8	2.4
Agency periodicals	2.1	2.0	2.3	2.4	2.4	2.4	2.2	2.4	2.5	2.1
Brochures	2.4	2.4	2.4	2.6	2.7	2.9	2.5	2.6	2.8	2.1
Maps	2.5	2.7	2.1	2.0	1.9	1.9	1.7	2.2	2.0	1.6
Posters	2.2	1.9	2.3	2.6	2.4	2.4	2.2	2.5	2.7	2.1
Signs	2.3	2.2	2.4	2.6	2.4	2.2	2.1	2.6	2.5	2.1
Guidebooks	2.6	2.8	2.4	2.5	2.3	2.8	2.3	2.5	2.5	2.3
Displays at trailheads	2.4	2.3	2.5	2.7	2.7	2.9	2.6	2.6	2.8	2.2
Displays at agency offices	2.1	2.1	2.1	2.3	2.3	2.5	2.3	2.6	2.6	2.2
Displays at visitor centers	2.0	2.5	2.0	2.5	2.0	2.5	2.0	2.5	2.5	2.0
Movies	2.4	2.4	2.4	2.9	2.4	2.6	2.4	3.5	2.8	2.5
Videos	2.6	2.3	2.7	2.9	2.6	2.8	2.3	2.9	2.8	2.4
Commercial television	2.5	1.7	2.4	2.4	2.4	1.6	2.1	2.9	3.0	2.3
Slide shows	2.8	2.9	2.9	3.2	2.9	2.9	2.6	3.0	3.2	2.8
Commercial radio	2.3	2.2	1.6	1.8	1.8	1.5	1.3	1.7	2.2	2.1
Agency radio	2.5	2.5	2.0	2.3	2.0	2.5	2.0	2.5	2.5	1.5
Computers	1.8	2.1	2.0	2.1	1.7	1.9	1.7	2.0	2.0	1.6
Personnel at trailheads	3.5	3.6	3.3	3.4	3.3	3.3	2.9	3.0	3.5	3.2
Personnel at agency offices	3.2	3.3	2.6	2.6	2.5	2.7	2.5	2.9	2.7	2.3
Personnel at visitor centers	3.2	3.8	2.9	3.0	2.7	3.0	2.7	3.3	2.9	2.4
Personnel at campgrounds	3.0	3.1	2.7	3.0	2.6	2.9	2.5	2.8	3.4	3.1
Personnel at public meetings	3.2	2.8	2.6	2.7	2.8	2.9	2.6	3.1	2.8	2.6
Personnel at school programs	2.8	2.6	2.7	2.9	2.4	3.1	2.7	3.1	3.5	3.1
Personnel in the backcountry	3.9	3.8	3.7	4.1	3.9	3.8	3.5	3.7	4.1	3.7
Interpreters	3.6	3.7	3.4	3.6	3.4	3.6	3.7	3.8	3.6	3.6
Mean for all techniques	2.7	2.6	2.5	2.7	2.5	2.6	2.4	2.8	2.8	2.4

Table 6—Mean perceived effectiveness of educational techniques, on a scale of 1 (not effective) to 5 (highly effective) as rated by wilderness managers

Technique	1980	1990
Personnel in the backcountry	4.0	3.8
Interpreters	3.6	3.6
Personnel at trailheads	3.8	3.3
Personnel at visitor centers	3.6	3.0
Slide shows	2.8	2.9
Personnel at campgrounds	3.5	2.9
Personnel at school programs	3.1	2.9
Personnel at public meetings	2.6	2.8
Personnel at agency offices	2.9	2.7
Movies	2.5	2.6
Videos	—	2.6
Displays at trailheads	2.4	2.6
Brochures	2.6	2.5
Guidebooks	2.5	2.5
Displays at visitor centers	2.4	2.5
Commercial periodicals	2.5	2.4
Agency radio	2.4	2.4
Signs	2.6	2.3
Posters	—	2.3
Commercial television	2.8	2.3
Displays at agency offices	2.4	2.3
Agency periodicals	2.5	2.3
Maps	2.5	2.1
Computers	—	1.9
Commercial radio	2.4	1.9
Mean of media-based techniques	2.5	2.4
Mean of personnel-based techniques	3.4	3.1
Mean of all techniques	2.9	2.6

Most educational techniques appear to be used less frequently today than in 1980. However, this finding may reflect the large number of wilderness areas designated during the 1980's (included only in the 1990 survey), rather than decreased activity in the areas that were using educational programs in 1980. Use of personnel in the backcountry, the technique managers considered most effective, increased over the decade. In addition, use of personnel at school programs, a relatively new idea in 1980, has been widely adopted.

Investment in educational programs remains low. The typical (median) wilderness devotes no more than 55 person-days and \$4,900 annually on education. Many respondents reported that the effectiveness of their wilderness management program was hindered by a lack of funding for education.

Finally, managers do not consider any of these techniques to be highly effective in dealing with management problems. Effectiveness ratings declined over the last 10 years. Personnel-based techniques are considered most effective, but they are also the most costly and require the most staff. In addition, only three of the eight personnel-based techniques were rated above

average in effectiveness. All of the media-based techniques were rated below average.

Managers generally had difficulty rating the effectiveness of various techniques for dealing with specific problems. This suggests they may have trouble targeting educational programs. Targeting is one of the most important principles of effective education. Research on the effectiveness of educational programs is meager at best. If education is to be a cornerstone of wilderness management, as some have suggested, increased investment in research and program development is clearly needed.

DESCRIPTIONS OF EDUCATIONAL TECHNIQUES

The following section describes characteristics of 25 educational techniques, drawing heavily on the opinions of managers and their tips for using the techniques. A summary of some of the characteristics is provided in table 7. Information is provided in the following categories:

Description—Describes the technique, how it is used, and where it is commonly used.

Production—Describes skills needed to develop and use the technique, as well as the process involved (applies only to media-based techniques).

Current Usage—Rates how frequently the technique was being used in 1990. Ratings are low (if used in less than 25 percent of areas), moderate (if used in 25 to 50 percent of areas), and high (if used in more than 50 percent of areas).

Cost—Rates annual costs to use the technique. Costs were considered high if more than 25 percent of areas spent at least \$5,000 annually. Costs were considered moderate if more than 25 percent of areas spent at least \$500 annually (but not more than \$5,000). Costs were considered low otherwise.

Personnel Time—Rates the amount of personnel time required annually to implement the technique. Ratings were high (if more than 25 percent of areas required at least 90 person-days per year), moderate (if more than 25 percent of areas required more than 10 person-days per year), and low otherwise.

Maintenance—Describes the maintenance needed for media-based techniques.

Training—Describes training needed for personnel-based techniques.

Effectiveness—Rates managers' perceptions of a technique's effectiveness in reducing management problems. Ratings were based on a scale of 1 (not effective) to 5 (highly effective). If the mean effectiveness rating exceeded 3.5, the rating was considered

Table 7—Relative usage, personnel time, cost, and effectiveness of alternative educational techniques

Technique	Current usage	Personnel time	Cost range	Effectiveness of technique
Media-based				
Commercial periodicals	L ¹	L	L	L
Agency periodicals	L	L	M	L
Brochures	H	L	M	L
Maps	H	L	M	L
Posters	M	L	L	L
Signs	H	L	M	L
Guidebooks	L	L	L	L
Displays at trailheads	H	L	M	M
Displays at agency offices	M	L	L	L
Displays at visitor centers	L	L	M	L
Movies	L	L	L	M
Videos	L	L	L	M
Commercial television	L	L	L	L
Slide shows	M	L	L	M
Commercial radio	L	L	L	L
Agency radio	L	L	M	L
Computers	L	L	M	L
Personnel-based				
Personnel at:				
Agency offices	H	M	M	M
Visitor centers	M	H	H	M
Trailheads	M	M	M	M
Campgrounds	M	M	M	M
Public meetings	M	L	L	M
School programs	M	L	M	M
Backcountry	H	H	H	H
Interpreters	L	M	M	H

¹L = low; M = moderate; H = high.

high. The highest mean rating was 3.8. Techniques with mean ratings between 2.5 and 3.5 were considered moderately effective, while those below 2.5 were given a rating of low. Where appropriate, this section mentions the management problems each technique is most suited to address.

Advantages and Disadvantages—Summarizes each technique's positive and negative attributes.

Tips—Provides general comments about effective ways to use each technique.

Examples—Gives examples of materials and programs, where possible, along with addresses where more information can be obtained.

MEDIA-BASED EDUCATIONAL TECHNIQUES

This section describes 17 media-based techniques that generally require little personnel time.

Commercial Periodicals

Description	Feature articles and informational columns can be published in local, regional, and national magazines and newspapers. Articles may describe practices for low-impact recreation, or messages can be subtly worked into a more general article.
Production	Personnel with a special interest and good writing skills may write an article and submit it to a magazine or newspaper. Alternatively, information can be supplied to a qualified journalist. A press release can be written to announce a special event or occasion and sent to selected newspapers. Managers can target a specific audience by sending material to newspapers in specific locations or to magazines with specific types of subscribers.
Current Usage	Low.
Cost	Low. The only costs are salary costs for employees who encourage articles to be written or those who write the articles in-house. Typically, there is no cost for submitting an article to a newspaper or magazine.
Personnel Time	Low. The amount of time varies with the need for research and the time needed to polish the writing. Keeping journalists informed about wilderness issues and events requires little time.
Maintenance	None.
Effectiveness	Low. Managers believe commercial periodicals describing minimum-impact camping techniques have helped improve some problems, particularly campsite deterioration and litter. Well-written and widely distributed articles on the natural history and behavior of fish and wildlife have helped reduce activities that harm them. Managers have received positive comments from recreationists about such articles.
Advantages	A consistent message is provided to a large number of people, including many who never stop at visitor centers or agency offices. The message also will reach many people when they are planning their trips, a time when they are particularly receptive. Issues can be covered in depth.
Disadvantages	The message may miss most visitors, including the target audiences. There is no opportunity for discussion—questions and answers. Messages may not leave a lasting impression—and may be forgotten or ignored.
Tips	Determine which types of visitors cause problems and where they come from. Target periodicals that will reach them. If possible, find out which periodicals visitors turn to for information. Keep the article and its message clear and interesting. Use high-quality photographs to enhance the message if possible. Post copies of published articles where visitors might find time to read them (such as trailheads, visitor centers, and equipment stores). Try to coordinate articles with television and radio coverage.
Examples	An article on techniques for low-impact recreation was the cover story of a recent issue of "Outside" magazine (Royte 1992).

Agency Periodicals

Description	Feature articles and informational columns can be included in newsletters published by the local agency office. Alternatively, newsletters and newspapers published by agency headquarters can include information on wilderness.
Production	If newsletters are regularly published, managers only need to write the article. If the periodical is a special printing, managers will also need to lay out the publication and arrange for printing.
Current Usage	Low. This technique is used most commonly in NPS areas.

Cost	Moderate. Costs can include (1) salary to research and write the article and (2) the costs of layout and publication. Bulk printing and distribution decreases the cost per copy. Having an article published can be very inexpensive if a central agency prints periodicals.
Personnel Time	Low. Most time is involved in researching and writing the article.
Maintenance	None, unless printing equipment is purchased. In this case, the equipment must be cleaned and repaired.
Effectiveness	Low. Similar to commercial periodicals. Agency periodicals may appear more or less credible than commercial periodicals, depending on the visitor's disposition. Agency periodicals aren't as likely to have widespread distribution as commercial periodicals, but may be more likely to reach the target audiences.
Advantages	The primary advantage is mass distribution at relatively low cost. Moreover, the location and timing of distribution can be controlled to increase efficiency. Periodicals can be included in any package of materials sent to potential or previous visitors. Issues can be covered in depth.
Disadvantages	As with commercial periodicals, the target audience may be missed. Messages may not leave lasting impressions. In some cases, this technique may require equipment and a facility for production.
Tips	Similar to commercial periodicals, except you have additional opportunities to customize articles and distribute periodicals to target audiences. For example, you could send copies to permit recipients or trailhead registrants. This technique might be particularly helpful if repeat users were common at the wilderness area you manage.

Brochures

Description	These can range from single sheets of paper to folded sheets, or even small booklets with information specific to wilderness. They usually are distributed free to visitors, either in information packages sent before a trip, or at agency offices, visitor centers, or trailheads. Brochures are usually produced in response to public demand or a problem.
Production	Most work on brochures is typically performed in-house. Information personnel or wilderness managers usually develop the concept and write the text. Design, graphics, and layout may be done in-house, at an agency headquarters, or commercially. Printing can be done commercially or by an agency printing office. A new brochure takes from 1 to 12 months to produce, with the average time being about 6 months. Time is spent researching and writing the brochure, reviewing drafts, checking proofs, and waiting for the brochure to be printed.
Current Usage	High. This is the most popular educational technique. Some managers were concerned that brochures are used too frequently, with too little thought given to their effectiveness.
Cost	Moderate. Brochures are relatively inexpensive per copy, and become increasingly so if large numbers are printed. The cost of a large printing, however, may be thousands of dollars. Costs also include salaries for the time employees spend developing the brochure. Costs can be reduced by designing brochures for use in a number of different wilderness areas. For example, the FS, NPS, and BLM pooled funds and expertise to produce the brochure, "Leave No Trace Land Ethics."
Personnel Time	Low.
Maintenance	Brochures must be revised and updated periodically. Some wilderness managers use a formal review process to estimate the effectiveness, accuracy, and cost of a brochure before determining whether to reprint, revise, or discontinue it.
Effectiveness	Low. Some managers say brochures have been particularly effective in reducing problems with human waste disposal, damage caused by packstock, and water contamination. They are an effective means of describing "step-by-step" procedures for reducing recreation impacts and have been used to disperse use more widely (Lucas 1981). Some managers feel a brochure's effectiveness increases when it is given to visitors after a one-on-one discussion of the topic.
Advantages	Consistent information can be provided, at a relatively low cost, before, during, or after a trip. Brochures can be mass distributed or targeted to specific user groups and locations.

Visitors can take brochures with them. They are easily referred to and can provide thorough and detailed information.

Disadvantages Many visitors will not read brochures or will ignore their advice. Brochures may end up as trailside litter. If the subject matter is misunderstood, there is no way to get additional information. The significance of certain information can be lost if the brochure is too cluttered, or if the visitor picks up too many different brochures.

Tips Define the specific messages that should be communicated so you can decide whether or not a brochure will be effective. Look at other brochures to get ideas about the text, illustrations, and layout. Keep the text concise and the message simple. Have managers, including field personnel, review the text. This is especially true if the brochure is intended to convey information visitors may not seek themselves, such as regulations. Use open space and good illustrations to make the brochure attractive. Large blocks of text can intimidate readers. Whether printing is done in-house or by a commercial firm, make sure the layout, printing, and paper are of professional quality. You can reduce costs by printing in bulk. Brochures should be small enough to be carried easily into the wilderness.

Examples (1) "Leave No Trace Land Ethics." USDA Forest Service, Southwestern Region, 517 Gold Avenue SW, Albuquerque, NM 87102; (2) "Horse Sense on National Forest Pack Trips." USDA Forest Service, Northern Region, P.O. Box 7669, Missoula, MT 59807; (3) "Touch the Wilderness Gently." USDI National Park Service, North Cascades National Park, 800 State Street, Sedro Woolley, WA 98284; (4) "NOLS Conservation Practices." National Outdoor Leadership School, P.O. Box AA, Lander, WY 82520.

Maps

Description Maps are generally printed on accordion-folded paper, sometimes coated with plastic to make them waterproof. They usually contain information on topographic features, trails, and campsites. Many also include information on regulations, as well as educational messages. In this regard, they are similar to brochures. They can be provided free or at low cost at agency offices, visitor centers, and equipment stores. Permanent, water-resistant maps can also be posted at trailheads.

Production Producing a new map is a major undertaking, so the decision to do so should come only after careful evaluation of the need. A simple map—with only a boundary, trails, and a few features—can be developed quickly in-house. A more detailed map, with accurate topography, is a complex product. Skilled professionals and field staff work from a topographic base, using aerial photographs to locate trails, campsites, and other cultural features. Drafters and designers prepare materials that can then be printed in government print shops or at a commercial firm. In-house staff prepare the written messages on the map.

Current Usage High. Most wilderness areas have maps that can be distributed to visitors; most of these contain written messages.

Cost Moderate. The greatest expense of producing a map is the printing; graphics and layout are generally less expensive. Map sales can offset much of the cost.

Personnel Time Low. Time requirements increase when the map is produced in-house.

Maintenance Periodic review and updating is needed to maintain accuracy.

Effectiveness. Low. Maps are considered most effective in dealing with overcrowding and user conflicts. They have been used to disperse use more widely. The map for the Eagle Cap Wilderness in Oregon, for example, identifies heavily used lakes. The entire reverse side of the map is a cartoon illustrating techniques for minimum-impact recreation, as well as the undesirable consequences of high-impact behaviors.

Advantages Many visitors want to have maps. They keep them. Therefore, they can read messages before, during, or after trips. When maps are carried into the wilderness, they can reinforce messages presented before the trip. They can be distributed at relatively low cost.

Disadvantages	Many visitors cannot read maps. Others are only interested in the information on trails and topographic features. Space is limited on the front of the map. Messages on the back can easily be ignored.
Tips	Make sure the map is accurate and attractive. Keep trail information up to date, even though this can be a challenge. Design maps so they are small enough to fit in a pack or pocket. You can help visitors by water proofing maps used in damp climates. Some managers suggest printing no more than a several-year supply. Review accuracy one year before supplies run out then decide whether to revise or reprint the map.

Posters

Description	Posters are single sheets of paper ranging from letter size (8.5 by 11 inches) to 18 by 20 inches or larger. Effective posters typically convey one or a few important messages about appropriate use. They may be displayed on walls or bulletin boards at visitor centers, agency offices, trailheads, and equipment stores. They can also be distributed to visitors, if they are attractive enough.
Production	Posters are usually produced in-house or at agency headquarters. Information specialists and managers usually develop the poster, preparing text, graphics, and layout. Design, layout, and printing can be completed at a commercial firm or at an agency printing office. It is critical to keep the poster simple and attractive.
Current Usage	Moderate. Posters are used most frequently in FS areas.
Cost	Low. Many poster themes are sufficiently generic to warrant using posters developed elsewhere.
Personnel Time	Low. The time involved will vary with staff skills and the proportion of the work done in-house.
Maintenance	Periodic updating, reprinting, and replacing.
Effectiveness	Low. Managers considered posters to have been somewhat effective in reducing problems with campsite deterioration, human waste disposal, and packstock impact. They felt posters have been quite effective in reinforcing the pack-it-in, pack-it-out antilitter campaign.
Advantages	Posters provide consistent information in a simple and attractive format. They are easy to distribute, relatively inexpensive, and can be used at a variety of locations. Generic posters can be developed at central offices can be distributed to many different areas.
Disadvantages	Posters can convey only a few messages. Attempts to get too many messages on one poster, or to display many different posters, are counterproductive. Posters may not be read by most visitors. Visitors cannot take them along. Consequently, the messages can be quickly forgotten. The messages may be overly simplistic.
Tips	Make posters for outdoor displays from durable waterproof material, such as Lexan. Keep text to a minimum. Limit the amount of material on each poster and the number of posters displayed together. Decide the one or two most important pieces of information to convey at any single location.
Examples	(1) "Minimize Your Impact." USDA Forest Service, Northern Region, P.O. Box 7669, Missoula, MT 59807; (2) "Minimum Impact Camping." Recreational Equipment Inc., P.O. Box C-88126, Seattle, WA 98188.

Signs

Description	Signs made of wood, metal, fiberglass, or plastic can provide information to visitors when they are traveling or after they have reached their destination. Messages are necessarily brief, written to reinforce regulations or suggest proper behavior (such as staying on the trail instead of cutting switchbacks, or staying out of areas being revegetated). The most common use of signs, of course, is to point out directions.
Production	Signs may be made from a wide variety of materials. They can be carefully designed and constructed to last for many years. In other cases, simple signs may be crudely fashioned for temporary use. Many agencies have specific guidelines for signs and well-developed procedures for producing them.

Current Usage	High. Many respondents may have been referring to trailhead displays or to directional signs, rather than to signs with messages about low-impact recreation.
Cost	Moderate. Well-constructed, durable signs can be costly. Flimsy signs that must be replaced frequently are also costly. There should be relatively few situations where educational signs are appropriate in wilderness.
Personnel Time	Low. Except where there is an extensive network, signs should require little time. More time may have to be spent on signs in heavily used destination areas with designated recreation sites, areas being revegetated, closed trails, and toilets.
Maintenance	The degree of maintenance depends on the type of material used to construct the signs and their design. Theft and vandalism are problems, as is physical deterioration. Basic maintenance involves checking signs, documenting their condition, assuring their accuracy, and repairing or replacing them where needed.
Effectiveness	Low. Managers consider signs to have been somewhat effective in reducing problems with campsite and trail deterioration, packstock, and litter. Signs may be spaced along the trail near a trailhead to deliver messages on low-impact recreation. Signs have been quite effective in keeping people away from sensitive areas (such as areas that are being revegetated) or in confining traffic to a small number of routes (such as a trail to the toilet).
Advantages	The visitor receives simple messages, often at the exact location where that message is most important. Messages can reinforce regulations or provide general information. They are relatively inexpensive.
Disadvantages	The obtrusiveness of signs is a major disadvantage in wilderness. They are particularly inappropriate in the wilderness interior. Their limited space and impersonality are also disadvantages. Signs provide no opportunity for questions or additional information. Finally, signs require periodic maintenance and are subject to vandalism.
Tips	Keep the message short and simple. Make sure the signs are durable and attractive. Use positive phrasing and a friendly tone. Regularly inspect the condition of signs, be prepared to maintain them, and keep an inventory of replacement signs.
Examples	Mount Jefferson Wilderness. Eleven small signs were located just outside the wilderness, along a trail into the wilderness. The signs were placed about 50 feet apart, each giving a short message about appropriate behaviors and reasons for the behaviors (USDA FS 1991).

Guidebooks

Description	Although primarily intended to provide general information about wilderness areas and potential travel routes, guidebooks can also provide information about low-impact camping. Although generally included as a separate section, guidelines for low-impact recreation can be interspersed throughout such books. Guidebooks range from brochures to books of several hundred pages. Most guidebooks are written commercially; however, some are developed by managing agencies.
Production	With commercial guidebooks, the primary concern is making certain the book contributes to management programs rather than detracting from them. Managers should try to stay in touch with guidebook authors to suggest changes or add material on techniques for low-impact recreation. Managers should be concerned about the trails and destination areas that are mentioned or photographed, as well as comments about regulations and suggested behaviors. In-house guidebooks will require considerable time for research, writing, graphics, layout, and production. Publication of a guidebook may take 2 to 3 years. The need for a wilderness guidebook should be carefully evaluated, due both to the cost of production and potential concerns about the appropriateness of agency-produced guides to wilderness.
Current Usage	Low.
Cost	Low. Contributing to a commercially produced guidebook is inexpensive. In-house production can be expensive, but costs may be offset by book sales.
Personnel Time	Low.

Maintenance	Guidebooks become outdated quickly, due to changes in routes, conditions, and regulations. Periodic updating is necessary. For example, one trail club tries to publish an updated edition of its hiking guide every 3 years.
Effectiveness	Low. Some managers feel guidebooks have been effective in reducing crowding and user conflicts by informing visitors about alternative travel routes and camping areas. Others feel the beautiful pictures and glowing accounts of selected places and trips have contributed to overcrowding. Guidebooks are one way to discuss wilderness ethics and low-impact techniques in a publication visitors won't throw away. Some managers feel inclusion of educational material in guidebooks has reduced problems with disposal of human waste and deterioration of campsites and trails.
Advantages	Many wilderness visitors want a guidebook. They keep them and can refer to them when planning their trips.
Disadvantages	Guidebooks can detract from the discoveries that are a part of the wilderness experience. They may increase use, and they are likely to alter the distribution of visitor use in ways that may be harmful. The book's messages about low-impact recreation may be ignored by visitors interested primarily in route information.
Tips	Keep the guidebooks easy to understand, concise, and simple. Use high-quality graphics, an attractive layout, a professional presentation, and accurate maps. Make guidebooks available to visitors when they are planning their trips and when they reach facilities near the wilderness. Distribute or sell guidebooks at visitor centers, agency offices, and equipment stores.
Examples	"A Users Guide: Frank Church-River of No Return Wilderness." USDA Forest Service, Intermountain Region, 324 25th Street, Ogden, UT 84401.

Displays at Trailheads

Description	Displays at trailheads can contain information about regulations and techniques for low-impact recreation, as well as information on trail conditions, natural history, and other items of interest. Typewritten messages, posters, newspaper articles, photographs, or other materials may be displayed. These items can be stapled to a board or placed in waterproof cases. Displays are related to posters and signs.
Production	Production complexity can vary greatly. With more elaborate displays, cases may be constructed to offer some protection from weather and vandalism. The layout must be developed. Most of the materials—posters, photographs, and so on—should require little additional work. Many are readily available from agency offices. If displays are cluttered, visitors are not likely to read the material. The most important messages may differ at trailheads that receive different types and amounts of use.
Current Usage	High. This technique is most commonly used at FS areas.
Cost	Moderate. The initial costs for materials can be substantial, but costs are low once displays are in place.
Personnel Time	Low. Time is spent gathering materials and constructing the display cases or boards. Additional time is required to maintain and update the information. Little time is required after the initial development stage, if display maintenance is a part of other patrol duties.
Maintenance	Displays that are not protected from vandalism and the weather may require frequent attention. Otherwise, the only maintenance involves cleaning and updating the display materials.
Effectiveness	Moderate. This is the primary opportunity to educate visitors who do not contact the agency or are not contacted by a ranger. Some rangers feel displays have been effective in reducing many different kinds of problems. Trailhead displays advocating pack-it-in, pack-it-out policies appear to have reduced litter. Managers feel displays have helped reduce problems with campsite deterioration, packstock damage, human waste disposal, and water contamination.
Advantages	Consistent, easily updated information can be made available at low cost. Messages are presented before the visitor enters the wilderness.

Disadvantages In some cases, the information comes too late for the visitor to modify behavior (for example, to bring a stove rather than rely on a fire). Visitors ready to “hit the trail” may not take the time to read the display. Visitors leave the messages behind once they leave the trailhead. Messages are often impersonal, overly simplified, and likely to be ignored or forgotten. There is no way for visitors to ask questions that might explain confusing messages.

Tips Minimize the number of messages. Keep each message as simple and concise as possible. Keep displays attractive; for example, use photographs and illustrations rather than relying solely on text. Mix messages with information most interesting to visitors (such as natural history) with messages that may not be as interesting but are important for the agency, such as messages about low-impact recreation. Reduce maintenance by building durable displays. Keep posted information current. Keep displays clean and attractive. Avoid advertising specific wilderness destinations. Keep the message positive.

Displays at Agency Offices

Description	Displays at agency offices can include simple poster arrangements, bulletin board postings of articles, agency announcements, and maps. These displays may be outside, in weatherproof cases, or inside. These displays may be similar to those at trailheads, although they may contain substantially more information. Visitors viewing these displays are looking for more information and may spend more time viewing the display than visitors at a trailhead.
Production	For outdoor displays, cases are constructed offering some protection from weather or vandalism. The display layout must be developed. Most of the materials—posters, photographs, maps, and so on—should require little additional work. Many are readily available from agency offices. Brochures, maps, and guidebooks can be provided in conjunction with displays at agency offices.
Current Usage	Moderate. This technique is commonly used in FS areas.
Cost	Low. Much of the cost involves production of other educational materials, such as posters and maps.
Personnel Time	Low. Time is spent gathering materials and perhaps in constructing the display case. A little additional time is required to maintain and update the information.
Maintenance	Displays that are not protected from vandalism and the weather may require frequent attention. Otherwise, the only required maintenance is some cleaning and updating.
Effectiveness	Low. Most visitors do not contact agencies before entering the wilderness. Consequently, this method is entirely ineffective for those users. It is an inexpensive means of communicating with visitors who do visit agency offices—an inexpensive supplement to a broader communication effort.
Advantages	Consistent, easily updated information can be provided at low cost. Visitors may take the time to read the information if encouraged to do so by personnel or an attractive display. There may be opportunities for visitors to ask questions if they are confused or would like additional information. Messages are presented before the visitor enters the wilderness.
Disadvantages	The small proportion of visitors likely to be contacted at agency offices is the primary disadvantage. In some cases, the information comes too late for the visitor to modify behavior (for example, to bring a stove instead of relying on a fire). As with other displays, too much information may be presented. Visitors may simply overlook all but the specific information they are seeking.
Tips	Minimize the number of messages. Keep each message simple and concise. Keep displays attractive; for example, use photographs and illustrations to augment text. Mix messages about low-impact recreation with information most likely to interest the visitor (such as natural history). Take advantage of opportunities to distribute brochures so messages can be reinforced at a later date. Make personnel available to answer questions. Locate displays in highly visible areas.

Displays at Visitor Centers

Description	Visitor centers often have long-term displays that include simple poster arrangements, articles posted on a bulletin board, agency announcements, or maps. In addition, they may include slide shows, movies, or three-dimensional models. Compared with displays at trailheads or agency offices, a wider range of material is offered. More effort is invested in the presentations. Informational displays are usually supplemented by brochures, maps, and books, and by trained personnel at information desks. Information on practices for recreation would typically be interspersed with information on natural and cultural history, as well as information on specific destinations.
Production	Managers will usually draw on the special skills of in-house information staff to conceive and produce attractive displays. Elaborate displays may need to be produced at a central office or by commercial firms.
Current Usage	Low. Except in national parks, few visitor centers serve wilderness areas.
Cost	Moderate. The development of displays may be expensive. Thereafter, costs are relatively low. The primary reason for the visitor center will always be to dispense information other than techniques for low-impact recreation. Consequently, the additional costs of providing that information should be low.
Personnel Time	Low. Some time is spent initially in gathering materials. Little additional time is required to maintain and update the displays.
Maintenance	Minimal; primarily periodic revision of displays and materials distributed at the center.
Effectiveness	Low. Most users do not go to visitor centers before entering the wilderness. Consequently, this method is ineffective for them. It is an inexpensive way to communicate with those who do use visitor centers—an inexpensive supplement to a broader communication effort. This may be a particularly effective way to teach plant and animal ecology in hopes of changing behaviors that harm vegetation and wildlife. It may also be a good way to communicate a relatively complex message to a minority of visitors.
Advantages	Consistent, easily updated information can be made available at low cost. If visitors are encouraged by personnel or an attractive display, they may take the time to read the information. Complex information can be communicated. There may be opportunities for questions and answers, or to provide supplemental information in brochures or maps. Messages are presented before the visitor enters the wilderness.
Disadvantages	The primary disadvantage is the small proportion of visitors who come to visitor centers. In some cases, the information comes too late for the visitor to modify behavior (for example, to bring a stove rather than relying on a fire). As with other displays, too much information may be presented. Visitors may overlook all but the specific information they are seeking.
Tips	The key is to entertain as well as educate. Keep displays attractive; for example, use photographs and illustrations to augment text. Mix messages about low-impact recreation with information of interest to the visitor (such as natural history). Take advantage of opportunities to distribute brochures so messages can be reinforced at a later date. Make personnel available to answer questions.

Movies

Description	Reel-to-reel films illustrating practices for low-impact recreation can be shown at visitor centers and agency offices, in schools, or to organizations.
Production	Movies are usually produced by commercial firms or by specialized departments of large agencies. Most agency offices are not able to produce a movie.
Current Usage	Low. Even areas that previously used movies are switching to videos.
Cost	Low, as long as the movie is not produced in-house.
Personnel Time	Low, as long as the movie is not produced in-house.
Maintenance	Minimal; confined to periodic equipment cleaning, film splicing, and storage.

Effectiveness	Moderate. An entertaining movie can capture the visitor's attention, but messages may be quickly forgotten. Movies may be particularly appropriate for dealing with a complex subject, such as the susceptibility of wildlife to disturbance by visitors and behaviors that minimize disturbance. Managers also feel movies are particularly helpful in reducing behaviors that lead to campsite deterioration.
Advantages	Movies are an attractive and familiar medium. Concepts can be expressed clearly with pictures and soundtrack. Movies can be mailed. They are easily shown to large groups. Potential visitors can be reached before their trip when they have time to absorb messages. When agency personnel show movies, they can answer questions.
Disadvantages	Movies may not reach most visitors. They may miss target audiences. People heading into the backcountry are unlikely to want to take the time to view a movie. Movies are hard to modify for different areas and are quickly outdated.
Tips	Carefully consider movie length. Visitors heading into the backcountry will probably prefer shorter movies (perhaps 5 to 10 minutes) than visitors to more developed areas. Movies should be considered as a supplement to other types of information—not a replacement.
Examples	"No Trace Backpacking" and "Techniques and Equipment for Wilderness Horse Travel." USDA Forest Service, Technology Development Center, Fort Missoula, Building No. 1, Missoula, MT 59801.

Videos

Description	With recent advances in technology, videos have become a valuable educational medium. They are easier to use and less expensive than movies. Videos can be shown at agency offices or in visitor centers. Moreover, they can be copied inexpensively and rented or loaned out. They can be produced in-house or by a commercial firm.
Production	Videos can be produced entirely in-house or the basic concepts can be developed in-house, with commercial production. A number of high-quality videos already exist.
Current Usage	Low.
Cost	Low. The cost of developing a professional video can be relatively high. Once developed, however, long-term costs are low.
Personnel Time	Low. Little time is needed unless the video is developed in-house.
Maintenance	Minimal; periodic cleaning of video equipment.
Effectiveness	Moderate. Similar to movies, but may be disseminated more widely. For example, most people have video players at home and can watch videos there. Managers feel videos are particularly effective in reducing problems with trail and campsite deterioration, packstock impact, and human waste disposal.
Advantages	Videos are attractive, entertaining, and familiar. They can be mass produced and distributed widely at relatively low cost. Complex ideas can be communicated. Confusing sections can be replayed. Information can be communicated before trips, when visitors have time to absorb messages and change their behavior.
Disadvantages	Videos may not reach most visitors and may miss target audiences. Visitors heading into the backcountry are unlikely to take the time to view a video. Videos are expensive to modify for different areas and are quickly outdated. They can be modified more easily and more cheaply than movies, however.
Tips	Carefully consider video length. Visitors heading into the backcountry will probably prefer shorter videos (perhaps 5 to 10 minutes) than visitors to more developed areas. Videos could be even longer if they were intended to be viewed at home. The videos should be entertaining and of professional quality. Videos should be considered as a supplement to other informational media—not a replacement. Video rental outlets may carry the videos, for rent or free of charge, making them available to a large audience.
Examples	(1) "Soft Paths: How to Enjoy the Wilderness Without Harming It." National Outdoor Leadership School, P.O. Box AA, Lander, WY 82520; (2) "Leave No Trace: the Hunter's Code."

Idaho Fish and Game Department, 600 S. Walnut Street, Box 25, Boise, ID 83707; (3) "Wilderness Forever: From the Aspen Workshop." Benedict Video Productions, Box 2772, Aspen, CO 81612. Descriptions of 31 videos are contained in USDA Forest Service (1991).

Commercial Television

Description	Commercial television can be used if managers make guest appearances on talk shows or contribute items for news broadcasts or public service announcements. Most material is sent to local stations in rural areas, which generally have small audiences. However, television messages—particularly public service announcements—could target urban communities as well.
Production	Public service announcements can be produced to address specific problems. Often these announcements are produced at agency headquarters and sent to local television stations. Information staff may have the opportunity to discuss wilderness issues on talk shows. This requires background preparation, as well as a good television presence and the ability to speak clearly. Finally, reporters can be notified of significant events or stories to cover. All these approaches require a friendly working relationship with employees of the local television station.
Current Usage	Low. Managers feel this technique should be used more extensively.
Cost	Low. Sending agency public service announcements to television stations or contacting stations about events costs little. However, television spots are expensive to produce.
Personnel Time	Low.
Maintenance	None.
Effectiveness	Low. Managers feel television programs have been most successful in reducing disturbance of fish and wildlife by wilderness visitors and problems with litter.
Advantages	Television is a familiar source of information for most visitors. Most people spend a lot of time watching television. Messages can reach a wide audience at a time when some viewers may be receptive. Messages can be targeted to national, regional, or local audiences. A wide variety of material—from people and equipment to slides and videos—can be used.
Disadvantages	Limited broadcast time is available. Target audiences may be missed. There is little control over the time of day that messages are shown or the frequency with which they are shown.
Tips	Rely on visual appeal and human interest for an entertaining production. Develop a good story line backed by good visual material for a short spot. You will need additional skills for a longer show, including poise before the camera and the ability to get the most out of visual props and individual scenes. Develop a good relationship with local television stations so spots may be shown at times when target audiences are most likely to be reached.

Slide Shows

Description	Short slide programs (5 to 10 minutes) may be shown at agency offices and visitor centers before visitors enter the wilderness. These may be turned on by the viewers themselves, or shown by information personnel. In a few cases, visitors may be required to view the slide show before getting a permit. Longer shows (15 to 30 minutes) are usually more general. They may be shown at regular times in agency offices or visitor centers, or shown to special groups by information personnel. Videos are slowly replacing slide shows because videos are easy to duplicate and distribute.
Production	Most slide shows are produced in-house by local personnel. Consequently, they can specifically address local conditions and situations. Production begins with development of a basic script and narration. A photographer must take slides or they must be obtained to illustrate items in the script. Recorded narration should be read by skilled speakers. If slides are already available, production may take just 2 to 4 weeks. Special equipment will help local personnel produce a high-quality recorded slide show.

Current Usage	Moderate. This technique has been used most frequently at BLM areas.
Cost	Low. The initial cost of equipment to produce and show slide shows can be substantial. Thereafter, costs are low, unless the show is shown frequently and personnel are needed to show it.
Personnel Time	Low. After initial production, the show takes little time, unless it is shown frequently and personnel are needed to show it.
Maintenance	Minimal. Slide shows are easily updated by changing slides. Equipment must be repaired periodically.
Effectiveness	Moderate. Most managers feel slide shows are the most effective educational medium that does not require personnel. They can effectively illustrate and potentially reduce a wide variety of wilderness problems.
Advantages	Slide shows can have a strong visual impact, and they can reach a wide audience. They are relatively inexpensive and easy to update. They can educate visitors before they enter the wilderness. If agency personnel show the slide show, they may use the occasion to promote other topics, such as volunteer projects.
Disadvantages	Most visitors may be missed. If information personnel are unavailable, questions can be left unanswered.
Tips	Use high-quality slides and recordings. Keep scripts positive, direct, and simple. Make an entertaining show that takes advantage of human interest to keep the audience's attention. Avoid a self-righteous tone and a tedious list of do's and don'ts. Constantly update slide files so new slides are available as needed. Do everything possible to encourage or require visitors to watch the show before entering the wilderness. If possible, make personnel available to discuss the show or answer questions.
Examples	"Without a Trace: The Wilderness Challenge." USDA Forest Service, Pacific Northwest Region, P.O. Box 3623, Portland, OR 97208.

Commercial Radio

Description	Short public service announcements, usually lasting less than a minute, can be produced and sent to radio stations. Alternatively, personnel can appear on radio talk shows or contribute to special programs on specific wilderness topics.
Production	Agency offices frequently can make short public service announcements available to local offices. Most information staffs should have employees with the skills to make high-quality short announcements. They need to write well and speak clearly. Short announcements should take only a few hours to write and record.
Current Usage	Low.
Cost	Low. There may be some initial cost for recording equipment.
Personnel Time	Low.
Maintenance	Minimal.
Effectiveness	Low. Managers generally considered commercial radio the least effective technique.
Advantages	Information can be aired quickly and changed easily. Large numbers of people can be reached at minimal cost.
Disadvantages	Most visitors are likely to be missed. Short messages may be misinterpreted, particularly since they aren't accompanied by pictures. Messages may not attract listener's attention and may be quickly forgotten. The messages may be broadcast at times of the day when few listeners are likely to tune in.
Tips	Be sure short announcements have a clear, concise message. Many managers feel longer programs are more effective, because they offer more opportunity for discussion and for questions and answers. Give the station several spots of varying lengths and on a variety of topics. Agency spokespersons who plan to be on a radio show should be good speakers

and be well prepared. Send talk show hosts background information well in advance. Managers must develop a good working relationship with the radio station employees.

Agency Radio

Description	Agency offices can broadcast scheduled announcements and continuous information. These broadcasts usually deal with topics such as weather conditions, campsite availability, and trail conditions, but may also include messages on low-impact recreation.
Production	Agency offices frequently can make short public service announcements available to local offices. Most information staffs should have employees with the skills to make high-quality short announcements. They need to write well and speak clearly. Short announcements should take only a few hours to write and record. Messages on wilderness may need to be updated frequently.
Current Usage	Low. This was the least used of all the techniques surveyed.
Cost	Moderate. Transmitting and recording equipment is costly, but equipment purchased for another purpose can sometimes be used.
Personnel Time	Low. Some time is required to prepare and update announcements.
Maintenance	Minimal.
Effectiveness	Low.
Advantages	Consistent information can be provided at low cost. Information is easily revised and updated. The agency controls the timing and content of broadcasts. Visitors can get up-to-date information as they drive to the wilderness.
Disadvantages	Most visitors are likely to be missed. Short messages may be misinterpreted, particularly since they aren't accompanied by pictures. Messages may not attract listener's attention and may be quickly forgotten.
Tips	Use roadside signs to inform visitors they can tune in for useful information. Keep the message clear and concise in short announcements. Use high-quality recordings presented by good speakers. Keep messages up to date.

Computers

Description	Computer terminals located at agency offices, visitor centers, and equipment stores can be programmed to provide wilderness information when visitors touch the screen or strike a key. In some cases, computer games may be used to teach a wilderness ethic or techniques for low-impact recreation.
Production	Hardware and software must be purchased and installed. If special programs must be written, the job may have to be contracted.
Current Usage	Low. Some respondents felt this technique should be used more extensively.
Cost	Moderate. The cost of the computer hardware and software can be moderate to high. The cost of programming and keeping information current can also be quite high.
Personnel Time	Low. Relatively little time is required to program the computer and to update and maintain the system.
Maintenance	The hardware needs to be maintained and repaired. Information needs to be updated.
Effectiveness	Low. Most managers felt that computers have not been effective in dealing with recreational impact in wilderness. Many others felt computers could be used effectively. They felt that better systems should be developed and tested for this purpose.
Advantages	Computers are becoming an enjoyable and familiar way of getting information. Visitors can obtain the specific types of information they desire. Consistent, up-to-date information can be supplied at relatively low cost. Information is provided before the visitor enters the wilderness.

Disadvantages	Most visitors may be missed. Only a few visitors can use the computer at one time. Information is presented impersonally. There may be little opportunity for questions and answers if information personnel are unavailable.
Tips	Make the computer system easy to understand and use. Keep the program entertaining and informational. Check the computer daily to make sure it is functioning correctly. Consider computers a supplement to information personnel—not a replacement.

PERSONNEL-BASED EDUCATIONAL TECHNIQUES

This section describes eight personnel-based techniques. These involve face-to-face contact between the visitor and agency personnel.

Personnel at Agency Offices

Description	Receptionists and clerical personnel may greet visitors, provide information, and issue permits, if they are required. These employees may also provide educational messages to visitors. There are even rare situations at an agency office where someone's primary task is educating visitors. Visitors can be required to visit the agency office, usually to obtain a permit. They may also be required to attend a presentation on low-impact recreation.
Current Usage	High. This technique is used more commonly in FS and BLM areas than in areas managed by the other agencies.
Cost	Moderate. The proportion of personnel costs truly related to education is usually low. In some situations, costs may be high, normally in areas with heavy use where a substantial proportion of visitors contact the agency.
Personnel Time	Moderate. The proportion of time devoted solely to education is low in most cases. In some cases, staff may need to be added during peak periods.
Training	Agency employees are usually hired for purposes other than educating the public. Therefore, training is critical. On-the-job training is most common. Ideally, personnel should become personally acquainted with conditions in the wilderness. They need to be credible sources of information. They should know regulations and trail and area conditions. They should be able to present a credible message on low-impact recreation.
Effectiveness	Moderate. Managers feel this is the least effective of the personnel-based techniques, perhaps because agency offices are far from the wilderness and office employees may not receive adequate training. Effectiveness will vary directly with the knowledge and credibility of office employees. Managers felt this technique was most effective in reducing problems with visitor conflicts and overcrowding.
Advantages	Office employees are already working, so new employees don't have to be hired. Salary costs are not increased. In some places, office employees present messages personally to many visitors, allowing for questions and answers.
Disadvantages	Rarely do most visitors stop by agency offices. Those who do visit may not be the types of visitors causing most of the problems. Office employees may be too busy with their other responsibilities to spend time educating visitors. Unfamiliarity with the wilderness can reduce credibility. Unless employees are trained, they may provide poor information.
Tips	Make sure employees are credible and well trained. Establish visitor education as an important part of the job so employees will make the time to do a good job. Adjust staffing levels to reflect the varying numbers of visitors on different days and during different seasons. Keep information accurate and up to date. Make sure the information office employees provide is consistent with information provided elsewhere. Provide incentives, such as maps, or consider a mandatory permit system to encourage visitors to come to agency offices.

Personnel at Visitor Centers

Description	Visitor center employees are primarily information specialists. They provide information on natural and cultural history and answer questions about weather, trail conditions, and where
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to go. They also can provide messages about low-impact recreation, particularly if they administer permits. Visitor centers are staffed with both permanent and seasonal employees. Many visitor centers use volunteers extensively.

Current Usage	Moderate. Visitor centers are most common in NPS areas.
Cost	High. Many respondents from areas that maintain visitor centers spend a majority of their information and education budget on the visitor center. Costs can be reduced by relying heavily on volunteers. This can reduce effectiveness if the volunteers are poorly trained or are not credible.
Personnel Time	High. In addition to working directly with the public, center employees may also develop displays, brochures, and other educational materials. Personnel needs are highly seasonal and may vary between weekdays and weekends.
Training	In most areas, the visitor center staff is trained in communication techniques and information about the area at the beginning of the recreation season. Ideally, they will also develop personal experience in the area to increase their credibility. They should also receive training in techniques for low-impact recreation.
Effectiveness	Moderate. Personnel at visitor centers are considered particularly effective in reducing overcrowding. They can provide information to help some visitors steer away from heavily used trails and destinations. Managers also felt visitor centers were particularly good places to help visitors learn ways they could avoid disturbing fish and wildlife. This might relate to the value of natural history displays in visitor centers for education about fish and wildlife.
Advantages	Information staff are usually experienced and skilled. The information provided is consistent and easily updated. Visitors can be contacted before their wilderness trip. Visitors' recreation plans, knowledge, and experience can be checked. There are opportunities for questions and answers.
Disadvantages	Since many wilderness visitors bypass visitor centers, they will be missed. Hours of operation may be too short to catch visitors who arrive late. Visitors may forget messages because messages are not reinforced after they enter the wilderness.
Tips	Make sure information staff are skilled, personable, and well trained. Support verbal messages with written materials visitors can take with them. Design displays to educate visitors who visit centers but do not speak with the staff. Schedule hours of operation to contact the most visitors. Encourage visitors to visit the center.

Personnel at Trailheads

Description	Personnel contact visitors at trailheads. Although their primary function is usually education, they can also act as natural and cultural history interpreters, collect statistics, patrol trails, maintain trailhead displays, maintain campgrounds, and take care of other tasks. If permits are required, the staff may also administer permits. Trailhead personnel may use visual aids and they may hand out written materials. They may show visitors examples of low-impact and high-impact camps built near the trailhead. They may contact visitors during peak-use periods, performing other tasks during slow periods. In some places, all visitors must listen to a talk on low-impact recreation before entering the wilderness.
Current Usage	Moderate. This technique is most commonly used in FS areas.
Cost	Moderate. In many places, most trailhead personnel are volunteers. Costs allocated to educational programs can also be reduced if employees perform tasks other than education.
Personnel Time	Moderate. This varies with the number of trailheads and the frequency with which each trailhead is covered. Several employees will usually be required. The need for personnel fluctuates between seasons and with the day of the week.
Training	Personnel are likely to work without direct supervision; therefore, on-the-job training is insufficient. Training sessions at the beginning of the season should include orientation to the area, low-impact practices and philosophy, and communication techniques. Personnel also should be given an opportunity to become familiar with the backcountry. Alternating wilderness patrols with trailhead patrols provides a good blend of experience.

Effectiveness	Moderate. Trailhead personnel are considered to be particularly effective in reducing problems with overcrowding and visitor conflicts, litter, trail and campsite deterioration, and pack-stock damage. They can help steer visitors away from overcrowded areas and situations with potential for conflicts. In addition, they can demonstrate ways to avoid other problems.
Advantages	Personal education allows the opportunity for discussion and questions. Personnel can become highly skilled because their primary function is contact with wilderness visitors. Messages can be targeted to different users, based on the employee's intuition. Contact occurs outside the wilderness, but in a wildland environment. Visitors are left to enjoy the wilderness once the initial contact has been made.
Disadvantages	Visitors may be contacted too late to change certain behaviors. Many visitors may be missed if a few personnel must cover many trailheads. Visitors who begin trips early or late in the day may be missed. Costs can be very high, and personnel can sit idly during slow periods.
Tips	Use personable, experienced, well-trained personnel at trailheads. Schedule their shifts when they can contact the most visitors. Use trailhead personnel only during the periods of highest use if use is too low to warrant continuous coverage. Use visual aids to reinforce messages and attract visitors; use written materials so visitors can study messages in more detail during their trip. Include information about natural and cultural history and other items of general interest to keep the visitors' attention. You may increase the cost effectiveness of trailhead programs by using volunteers, but they need to be recruited, trained, supervised, and supported by seasonal or full-time employees.

Personnel at Campgrounds

Description	Campground personnel primarily operate and maintain developed campgrounds. Where campgrounds are close to trailheads, however, these personnel also can provide information and educate wilderness visitors. Techniques for low-impact recreation can be included in campground interpretation programs.
Current Usage	Moderate. This technique is most common in FS areas.
Cost	Moderate. Costs associated solely with educating wilderness visitors should be minimal, however.
Personnel Time	Moderate. Time spent on education should generally be minimal.
Training	Because the employees are not hired or asked to volunteer primarily to educate wilderness visitors, training is very important. Preseason training should include an orientation to the wilderness, techniques for low-impact recreation, and communication skills. Personnel should be encouraged to visit the wilderness themselves.
Effectiveness	Moderate. Managers feel that personnel at campgrounds are most effective in reducing problems with overcrowding, litter, and vandalism.
Advantages	Campground visitors are often receptive to contacts by campground hosts. Interpretive programs may be scheduled regularly. Personnel should be available early and late in the day, to contact visitors missed by other information centers.
Disadvantages	Few campground visitors enter the backcountry. Most wilderness visitors do not use developed campgrounds. Education is likely to be only a minor part of someone's job operating a campground.
Tips	Make the visitor aware of information at campgrounds. Provide training and a variety of up-to-date information to campground personnel.

Personnel at Public Meetings

Description	Personnel may speak at meetings of recreation groups or they may attend planning and public policy meetings. Detailed talks on low-impact wilderness use can be presented to recreation groups. The speaker may use visual aids, such as slide shows or videos, and may hand out written materials. Opportunities for questions and answers are usually provided. At planning
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meetings, education is usually only a secondary objective. However, personnel can use these opportunities to suggest adoption of a wilderness ethic.

Current Usage	Moderate. This technique is particularly common in BLM and FWS areas.
Cost	Low. These meetings are usually too infrequent for the cost of education to become substantial.
Personnel Time	Low.
Training	Training in public speaking and use of visual aids can be helpful for employees who speak to recreation groups. Speakers should have time to carefully prepare their presentations. Taking advantage of other types of meetings presents a greater challenge. Employees attending these meetings are often upper-level staff with office jobs. They should be exposed to wilderness philosophy and ethics and encouraged to obtain personal experience in wilderness.
Effectiveness	Moderate. Managers feel this technique can be particularly effective in dealing with visitor conflicts, packstock damage, and disturbance to fish and wildlife. Groups that are prone to conflicts, such as large organized groups and packstock groups, can be specifically targeted.
Advantages	Audiences can be targeted, at least at certain types of public meetings. Persons attending meetings are usually particularly interested in the topic. One employee can speak to a number of potential visitors at once. Questions can be answered. Visual aids can be used to emphasize points. Written materials can be handed out so the messages can be reinforced later.
Disadvantages	Only a small portion of visitors can be contacted in this manner. Practices to reduce the impacts of wilderness recreation will only be a peripheral issue at many meetings.
Tips	Make sure speakers are knowledgeable and skilled at public speaking and facilitating meetings if conflict is likely. Instruct employees to seek out opportunities to interject educational messages. Encourage them to use visual aids and handouts.

Personnel at School Programs

Description	Personnel can put on seminars or programs for elementary, high school, or college classes. Programs can be presented in classrooms or at a wilderness area. They can be single classes or a series of classes. They can be formal lectures, skits, or skills courses. Use of these programs has increased dramatically over the past decade. Curricula are now available for a wide variety of programs. Materials can be provided to teachers, or presentations can be given by agency employees or volunteers.
Current Usage	Moderate. This technique increased the most in popularity over the past decade.
Cost	Moderate. Materials can be costly to prepare, but a wide variety of materials are now available. Costs of preparing and giving presentations should not be high. Costs can be reduced by using volunteers.
Personnel Time	Low. Developing programs may take a lot of time. Thereafter, little time should be required.
Training	Personnel who develop these programs are highly skilled and require no formal training to present them. Volunteers and assistants will need to be trained.
Effectiveness	Moderate. Some have asserted that educating grade school children is a highly effective means of education (Bradley 1979). Managers feel such programs are most effective in dealing with simple behaviors, such as littering and vandalism, rather than more complex behaviors, such as those that result in resource damage by packstock.
Advantages	Large numbers of people can be reached. Young people can be educated when they are still forming opinions. Topics can be covered in depth. Questions can be answered. Subsequent school programs can reinforce the message.
Disadvantages	Many students who attend the programs may never enter wilderness. Many other students who later visit wilderness may never be contacted.
Tips	Use skilled, professional educators to present school programs. Include a wide variety of media, such as hands-on activities, to keep the students' interest. Vary program material so it is appropriate to the audience. Divide large classes into smaller groups and rotate them

through program activities. Consider team-teaching. Use programs and materials that have been tested and proven successful. Plan to continue programs over a period of years, so positive results accrue.

Examples

(1) "The Green Scene Curriculum." Developed by the Wilderness Society, the University of Arizona School of Renewable Natural Resources, KUAT-TV, and the USDA Forest Service (available from the University of Arizona); (2) "Lesson Plan for Grade School Students." USDA Forest Service, Stevensville Ranger District, Stevensville, MT 59870; (3) "Wilderness Skills Trail." USDA Forest Service, Salt Lake Ranger District, Salt Lake City, UT 84122; (4) "The Impact Monster." USDA Forest Service, Mesa Ranger District, Mesa, AZ 85211-5800. These programs are described in U.S. Department of Agriculture, Forest Service (1989, 1991).

Personnel in the Backcountry

Description	Personnel that patrol the wilderness can educate visitors. The proportion of time such employees spend educating visitors varies greatly between areas. In some places, backcountry rangers are told to discuss low-impact recreation with as many visitors as possible. Elsewhere, educational contacts are the exception.
Current Usage	High. Use of this educational technique increased over the past decade. It is relatively uncommon in FWS areas.
Cost	High. Respondents tended to allocate all the costs of wilderness patrol to education. For example, one respondent said this education technique cost more than \$100,000 per year. The portion of costs specifically associated with education probably should not be so high.
Personnel Time	High. Most backcountry personnel are seasonal employees who spend about 90 percent of their time in the wilderness or at trailheads. Some spend time in visitor centers, periodically putting on school programs. The number of year-round employees working seasonally in the wilderness is increasing.
Training	Intensive training is critical. Most programs have preseason training sessions that cover many topics, including techniques for low-impact recreation and communication skills. Many backcountry personnel are highly trained and experienced.
Effectiveness	High. This technique is considered to be most effective in dealing with all problems other than reducing disturbance to fish and wildlife. It is difficult to understand why managers felt personnel in the backcountry weren't as effective in reducing disturbance of fish and wildlife as in reducing other impacts. Perhaps opportunities to demonstrate low-impact behavior with respect to wildlife are minimal in the backcountry.
Advantages	Backcountry personnel are highly knowledgeable and credible. They may be perceived as role models. They have frequent opportunities for demonstrations. Specific examples of inappropriate behavior and their effects can be pointed out. Backcountry personnel can answer questions. Visitors often have time to talk with them.
Disadvantages	Because recreationists are highly dispersed, many visitors will not be contacted. Costs per contact are high, if education is the employee's primary job. Some visitors feel contact with agency representatives is intrusive in the backcountry.
Tips	Make sure backcountry personnel are friendly, knowledgeable, and sensitive to visitors' needs and wishes. Advise them to be low-key and avoid self-righteousness. Train them in communication. Monitor employees to make sure they are maintaining the quality of educational contacts. Consider offsetting the cost of educational contacts by making education only part of the backcountry job. Rotate personnel between the backcountry and other locations to offset costs and vary their duties.

Interpreters

Description

Interpreters educate visitors in a variety of ways, from providing general information, to leading walks, developing educational programs, and developing displays. They are usually based at agency offices, visitor centers, or developed campgrounds.

Current Usage	Low. The NPS is most likely to use interpreters.
Cost	Moderate, but only because interpreters aren't more widely used for wilderness education. The interpreter's job is principally to educate the public. Costs are often reduced by using volunteers.
Personnel Time	Moderate. Time requirements would be high if this became a primary technique for educating wilderness visitors.
Training	Interpreters are often highly skilled, having taken college classes. Preseason training should familiarize personnel with the area and coordinate the approaches to educating visitors. Inexperienced employees and volunteers will require more training and supervision.
Effectiveness	High. The relatively small number of managers who use interpreters generally feel they are relatively effective in reducing the entire range of management problems.
Advantages	Interpreters are highly skilled. Communication is very personal and often highly meaningful to the visitor. Interpreters are usually credible. Visitors are usually interested in the contact and receptive to the message. There is opportunity for questions and answers. Topics can be covered in detail.
Disadvantages	Most wilderness visitors will not attend interpretive events, so most visitors are missed. Interpreters are generally more experienced with the general public than with wilderness visitors. They are usually more knowledgeable about natural and cultural history than about techniques for low-impact wilderness recreation.
Tips	Select good communicators with interest in wilderness. Encourage them to include information about the problems of high-impact recreation and behavior that can prevent such problems. Encourage interpreters to gain personal knowledge about the wilderness. Keep them aware of up-to-date conditions.

ADDITIONAL USEFUL INFORMATION ABOUT WILDERNESS EDUCATION

The following sections contain various types of information that may be useful to someone developing a wilderness education program. One section describes 10 educational techniques that are uncommon but may offer promise. This is followed by a brief overview of research on persuasive communication and its application in wilderness and eight principles of wilderness education. The final sections discuss the planning of educational programs and sources of further information.

Innovative Techniques

Some educational techniques that have proven successful in wilderness were probably missed in this catalog. Therefore, the techniques we describe should not be considered the final list. To learn about new, little-used techniques, we asked managers if they were using any educational techniques they considered innovative. Managers of 17 percent of the wilderness areas said they were. Those innovative techniques follow.

Traveling Displays and Exhibits—These can be taken to major trade shows, conferences, shopping malls, and local fairs. This technique is most effective when agency personnel are present to interpret the exhibit and talk with visitors. Skills courses (a series of "stations," each offering hands-on treatment of a specific concern) and quizzes about low-impact recreation can supplement displays. Brochures and posters can be handed out. One respondent gave posters to visitors who scored high on a quiz. Perhaps those who received low scores need the poster more. The Northern Region of the Forest Service has a mule team that travels around the country to teach low-impact stock use.

Self-guided or Agency-guided Trips—On self-guided trips, visitors receive a guidebook with information on travel routes, natural and cultural history, and techniques for low-impact recreation. Agency-guided tours can include more detailed discussions of the techniques for low-impact recreation. In some places, rangers join outfitters on a yearly trip to develop good working relationships, exchange information, and discuss techniques for low-impact recreation. Trips for leaders of organizations might be another option. Although expensive, these programs have the advantage of teaching by example—probably the most powerful of all teaching techniques.

Seminars and Workshops—These can be provided for agency personnel, outfitters and guides, and the interested public. Instructors may be university professors, agency professionals, rangers, or skilled

members of the public. Classes can be free or fees can be charged. Clinics can be given on specific subjects such as stock use or techniques for low-impact river recreation. Clinics can be a great way to educate agency office personnel who contact the public but do not generally work in wilderness.

Cooperative Management Agreements With Organizations—Organizations have "adopted" several wilderness areas. They help educate visitors, patrol the backcountry, maintain trails, clean up litter, and rehabilitate damaged areas. Leaders of outing clubs and groups such as the Boy Scouts who attend classes on techniques for low-impact wilderness recreation can pass the knowledge on to their members. Information packets can also be sent to leaders of such groups.

Demonstrations—Many types of demonstrations are feasible. Some wilderness areas have built sample campsites at agency offices, visitor centers, trailheads, or schools. Demonstrations of outdoor gear can be good places to discuss techniques for low-impact recreation. Brochures and posters can be handed out there as well.

Incentives—Incentives can be provided to visitors who are knowledgeable about techniques for low-impact recreation or who use appropriate behavior. In one area, rangers distribute discount coupons for outdoor gear when visitors reduced recreation impacts.

Correspondence—Effective correspondence with the public has tremendous potential for education (Fazio and Gilbert 1981). People requesting information are usually making plans and are receptive to brochures and information. If the reply is a form letter, a personal note will increase effectiveness. Quick replies are important.

Litterbags—Litterbags can be provided to visitors entering the wilderness. Many visitors forget to bring litterbags with them. Not only do the bags increase the likelihood that visitors will pack out their litter, messages emphasizing low-impact recreation can be printed on them.

Bulletin Boards—In heavily used destination areas, information about appropriate behavior in wilderness and regulations can be posted on a bulletin board. This technique will be considered obtrusive by many. Consequently, it should be a last resort. It can be most useful in informing visitors about areas they should use or areas they should avoid.

Trail Information Guides—Information on trails can be provided to visitors. This provides an opportunity to encourage visitors to try less used trails to reduce crowding elsewhere. A number of areas have used interactive computer programs to help visitors select trails. Krumpe and Brown (1982) demonstrated the effectiveness of using maps with information to redistribute use.

Persuasive Communication Theory and Research Results

Little has been written specifically on wilderness visitor education—either on communication theory or on the success of alternative methods. Social psychologists, however, have conducted theoretical and empirical studies of persuasive communication. Much of this work is summarized, in a way that is applicable to recreation, tourism, and natural resource management, in a book edited by Manfredo (1992). Roggenbuck and Manfredo (1990) draw on this work to describe three conceptual approaches managers can use to persuade wilderness visitors.

The first approach, **applied behavior analysis**, seeks to increase the frequency of desired behavior by providing behavioral prompts, manipulating the environment, rewarding appropriate behavior, or punishing inappropriate behavior. An example of this approach would be to provide incentives, such as discount coupons from an outdoor equipment store, when visitors use appropriate behavior. This approach is simple, but doesn't explain why certain behaviors are appropriate or not. The need for continuous contacts with visitors suggests that this approach contributes little to a wilderness ethic. Moreover, both environmental manipulation and rewarding and punishing behavior are usually inappropriate in wilderness.

The second approach is the **central route to persuasion**. With this approach, carefully constructed messages are transmitted to visitors; visitors receive and process the messages, accept the advice as making good sense, and change their behavior accordingly. These behavioral changes should continue into the future because they result from and are reinforced by beliefs and attitudes the visitors have internalized. Most wilderness education efforts take this approach. The challenge of this approach, however, is daunting. For such an approach to be successful, visitors must have high motivation, the ability to process information and accept the arguments in messages, and the skills to respond appropriately. That means wilderness educators must spend as much time as possible with the visitor and "they must know their audience, tailor messages to meet the audience at their interest and knowledge level, develop interesting, understandable, relevant, and well-supported messages, use media which permits self-pacing of message processing (usually the written word), and manage the situation so that distractions are few and the message reaches the recipient on time" (Roggenbuck and Manfredo 1990, p. 106).

The third approach is the **peripheral route to persuasion**. This approach is characterized by little attention to messages and is common in situations of information overload and excessive distraction. Persuasion, if it occurs, is triggered by something other

than the message itself. Often, the cue comes from the source of the message—the basketball star wearing the shoes you feel compelled to run out and buy. This may be the only approach with much chance of being effective at noisy visitor centers or when visitors are at trailheads anxious to begin their trip. Unfortunately, this type of learning is unlikely to produce long-term behavior change. It may also be difficult for management agencies to entice basketball players or other celebrities to deliver their messages.

This body of theory suggests that wilderness education is a difficult task. The simplest approach, applied behavior analysis, is not highly appropriate in wilderness and does not result in long-lasting change. Nor does the approach that applies to most learning opportunities, the peripheral route to learning. The most desirable approach, the central route to persuasion, is complex, with many barriers to success.

The value of this work—beyond dashing some illusions about simply going out and telling people what they should do—is that it points out ways to increase the likelihood of success. Managers should use as many of these approaches as they can. They also should learn more about variables that increase the likelihood of success. Roggenbuck and Manfredo (1990) have distilled the work of social psychologists to five major factors: timing, message, recipient, source, and communication channel.

Timing is critical when attempting to use behavioral prompts, incentives, or peripheral cues. Prompts (such as a wilderness pin) must be closely associated with desired outcomes (such as leaving a clean camp), for the behavior to be learned. Peripheral cues need to be provided at decision points, such as when visitors are deciding what trail to take, whether to use a stove, or whether to camp on a lakeshore. It is easy to achieve proper timing for some decisions, but virtually impossible for others. Timing is less important for the central route to persuasion, but the message must reach visitors in time for them to process and use the information. It is clearly too late to inform visitors about the importance of using stoves when they reach the trailhead. It may even be too late to inform them of appropriate ways to dispose of human waste.

Message content is important. This variable usually receives the most attention. Message content is relatively unimportant, however, for the peripheral and behavioral change routes. If managers use the central route to persuasion, visitors must be motivated and able to process the message; the message must provide strong arguments and must elicit favorable responses (Petty and others 1992). Arguments in messages must be relevant, strong, novel, and simple enough for the recipient to comprehend (Ajzen 1992). Ending arguments with questions rather than statements can increase the likelihood that recipients will think about the message. Repetition of messages is

likely to increase comprehension and acceptance (Petty and others 1992).

Visitors' characteristics also influence success. Visitors are more receptive to messages if they (1) think of themselves as being a part of the problem, (2) have relatively low levels of prior knowledge and experience, and (3) are part of small groups. Party leaders are likely to be more receptive than party members, unless the leaders are highly experienced; in that case, they may be less receptive (Roggenbuck and Manfredi 1990).

Characteristics of the wilderness educator, or message source, are most important when the peripheral route to persuasion is used. "In these kinds of learning situations—learning situations where the recipient is in a hurry, in a distracting environment, is tired, is part of a large group, or is in a situation where the flow of complex information is forced and fast-paced (as in some video programs)," agencies should seek out attractive or well-respected individuals to deliver messages (Roggenbuck and Manfredi 1990).

The final variable, the communication channel, is the primary subject of this report. Personnel-based techniques and certain audio-visual techniques are more conducive to peripheral learning than techniques relying on written material. With personnel-based and audio-visual techniques, attention to the source may be as important as attention to the message. Written materials need to be delivered in situations that allow visitors time to process information. A variety of channels and messages should be used to help ensure visitors get the message. Since the educational process is so complex, it is important to focus on a few messages rather than try a shotgun approach.

Relatively little research has examined the effectiveness of educational programs in reducing wilderness management problems. The only type of inappropriate behavior that has been studied extensively is littering. Numerous studies have shown that littering can be reduced with persuasive communication techniques. Successful programs have been based on rewards, punishment, and environmental cues such as trash cans (applied behavior analysis), written appeals about the need to keep places free of litter (central route), and demonstrations in which role models pick up litter (peripheral route) (Roggenbuck 1992). Written messages are often least effective. Punishment-oriented themes are often most effective. Changing littering behavior should be much easier than changing many other types of wilderness behavior. The antilitter message is simple and easy to understand; the linkage between behavior and the problem is straightforward; the problem is relevant to most visitors; and wilderness messages are reinforced by similar messages for areas outside wilderness.

Studies also have examined the effectiveness of messages in influencing decisions about places to visit and camp. Persuasive messages have been effective in some cases (Krumpe and Brown 1982) and ineffective in others (Lucas 1981). Success appears to be more likely when information is provided early in the planning process, when it actually reaches the intended audience, and when information more relevant than simply the amount of use is provided. Use has been shifted after ranger contacts accompanied by an informational brochure (Roggenbuck and Berrier 1982) and by using microcomputers with trail information (Huffman and Williams 1987).

Principles of Effective Wilderness Education

The following principles of wilderness education were gleaned from phone interviews with wilderness managers. An alternate, but related, set of principles was suggested by Braithwaite (1990).

Educational Programs Should Be Guided by Specific Objectives—It is important to identify specific problems and the users that are the primary cause of the problems. Messages should be targeted to the specific users and problems. Targeted messages will be more effective than a shotgun approach. Certain behaviors and certain user groups may be more amenable to change than others. Oset's two-pronged approach to education (1990) should be remembered—simultaneously (1) deal with specific problems caused by specific users and (2) invest in the education of future users (for example, through grade school programs).

Messages Should Be Clear, Concise, and Consistent—Visitors may be overloaded with information and, consequently, miss the most important points if managers don't target their messages. Short statements that clearly demonstrate the desired behavior and why it is important are most likely to be effective. When more than one educational technique is used, or when different personnel are involved in education, the message should be consistent. Otherwise, visitors are likely to be confused. Unfortunately, the complexity of certain judgments essential for low-impact recreation (such as where to camp) often defies concise, consistent answers.

The Timing of Educational Messages Is Important—To steer visitors away from heavily used areas, or to influence the equipment they take (such as stoves), messages need to be sent when prospective visitors are planning their trips. Prospective visitors may be willing to spend more time absorbing an informational message then. The timing should be varied for most effectiveness.

A Combination of Techniques Is Likely To Be Most Effective—A combination of techniques allows messages to be repeated. It also makes it more likely that most visitors will be contacted. A variety of strategic approaches can be used. Bradley (1979), Hansen (1990), and Schomaker (1990) describe outstanding examples of educational programs using a combination of techniques. The Eagle Cap program of the late 1970's, for example, used in-town education, trailhead education, and in-the-field education (Bradley 1979).

Messages Should Be Presented in a Professional Manner—Productions do not have to be slick, but they should not be perceived as amateurish. If they are, credibility may suffer. Text and dialogue should be accurate and easy to understand; high-quality equipment and materials should be used for graphics and productions. The options for effective communication increase if celebrities or respected individuals will deliver the messages.

Personnel Must Be Personable and Well Trained—Personnel who contact the public should be cheerful, polite, outgoing, and have a positive attitude. The ability to speak well, give accurate directions, and read a map are helpful, as is the ability to listen attentively to the visitor's experiences. Ideally, personnel should be hired after an interview. Written applications do not reveal the personality traits that are so essential. Personnel need to be trained in communication skills and in the techniques of low-impact recreation. They should have personal knowledge of the area and of wilderness travel.

Personnel Must Be Committed—Agency personnel must believe in the value of preserving wilderness and the importance of education in achieving that goal. This commitment must start with line officers (high-level supervisors) and be transmitted throughout the agency staff. Inservice training, including training of line officers, is critical.

Develop Creative Ways of Educating Visitors—In this day of tight budgets, creativity is often equated with "doing more with less money." Most respondents felt their programs were constrained by insufficient funds. Using volunteers can be an effective way to get more education for less money. But volunteers must be well trained and supervised. Developing an education plan to target high-priority problems is another way to get more from limited dollars.

Wilderness Education Planning

Careful planning is essential to focus an educational program. The following discussion of a basic planning process draws on planning theory and the work of Meyer and Thomas (1991).

Step 1. Identify the Problems—Which recreation impacts are of most concern? What behaviors are causing these problems? What would have to be changed to solve the problems? Will the proposed solution treat the symptoms or will it be a long-term solution? Answers to these questions will focus education on the highest priority behaviors.

Step 2. Identify the Target Audiences—It is important to identify groups that are the primary causes of problems and to understand as much as possible about them: their values, desires, expectations, and knowledge, as well as where they live, what they read and listen to, and how they communicate with one another. This knowledge will help educators decide how best to communicate with them.

Step 3. Develop a Program of Educational Techniques—Meyer and Thomas (1991) divide this step into (1) defining goals and objectives, (2) designing messages to reach target audiences, (3) selecting appropriate channels for disseminating messages, (4) deciding on an evaluation strategy to assess success, and (5) recording all these steps in an action plan. Objectives help focus educational efforts and evaluate success. Messages should be carefully crafted so they will be received and processed by the target audience. Channels of communication must also be considered. Several will usually be needed to reach the target audiences. The final plan should include both the educational techniques and the evaluation system, describing what will be done, who will do it, how it will be accomplished, and when it will be completed. Refer to the appendix for an example of a plan developed by the Forest Service's Mt. Shasta Ranger District in California.

Step 4. Implement and Evaluate the Program—Evaluation is important so programs can be adjusted to become more effective. The information visitors are receiving, their attitudes, levels of knowledge, and behaviors can be periodically assessed. The incidence of on-the-ground problems should be monitored as well.

Sources of Information

Anyone developing a wilderness education program will need information about (1) desirable low-impact practices; (2) concepts of effective communication; and (3) examples of messages, communication channels, and established education plans and programs. The most thorough treatments of low-impact practices for wilderness recreation are Cole (1989), Hampton and Cole (1988), and Hart (1984). The most thorough treatments of communication concepts are Fazio and Gilbert (1981), Manfredo (1992), Braithwaite (1990), and Roggenbuck and Manfredo (1990). Three sources full of practical information for wilderness educators

are the Ideas booklets for wilderness information and education (USDA FS 1989, 1991) and the book of ideas for designing an education action plan (Meyer and Thomas 1991). Good descriptions of educational programs are provided by Bradley (1979), Hansen (1990), Oset (1990), and Schomaker (1990). Other sources of useful information include textbooks on interpretation and journals such as the *Journal of Environmental Education*.

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APPENDIX

The following plan is an excellent example of a program of educational techniques. The plan was developed by Kristen Meyer and Rick Stock, the wilderness rangers on the U.S. Department of Agriculture, Forest Service, Mount Shasta Ranger District in California. It sets goals and objectives and identifies target audiences and the channels needed to reach each audience. The evaluation plan is not included.

MT. SHASTA RANGER DISTRICT WILDERNESS EDUCATION PLAN

The Mt. Shasta Ranger District is responsible for managing the Castle Crags and Mt. Shasta Wildernesses. Both areas were designated as wilderness by the 1984 California Wilderness Act. Proximity to the interstate highway and high visibility make both areas attractive destinations. In addition, Mt. Shasta and the Castle Crags play an integral role in the life of surrounding communities.

The Mt. Shasta Ranger District is spearheading an effort to increase awareness about the importance of wilderness, wilderness values, and appropriate behaviors in congressionally designated wilderness. The overall goal of the program is to reach a wide variety of target audiences with messages appropriate to each group. It is hoped that the program will generate respect and appreciation for wilderness in addition to encouraging behaviors appropriate to wilderness.

GOALS OF THE PLAN:

This plan focuses on two broad goals of wilderness education. **The first goal is to increase awareness and understanding of wilderness. The second goal is to solve wilderness management issues through education.** Both goals are essential to preserving wilderness quality. Building awareness can foster a supportive wilderness constituency and prevent future impacts by potential wilderness visitors. Education to resolve current management issues involves working with appropriate user groups to establish appropriate attitudes and behaviors.

Goal 1: To increase awareness and understanding of: wilderness history, values of wilderness, wilderness philosophy, principles of wilderness management, and specific issues affecting the Mt. Shasta and Castle Crags Wildernesses.

Goal 2: To demonstrate, explain, and encourage attitudes and behaviors appropriate to wilderness on topics such as: human waste disposal, campsite selection, group size, pets, woodfires, structures, safety, rock climbing, mountaineering, solitude, privacy, water quality, and noise.

After creating a list of relevant wilderness issues and current management problems, we identified all appropriate target audiences. Keeping the goals of the program in mind, each audience was analyzed to determine which issues to highlight and concentrate on. After relevant topics were identified for each group, we generated a list of possible channels to determine the best ways to reach each target audience. Following is a list of the target audiences identified, basic issues to be covered, and the channels selected for delivery.

Specific objectives will be identified for each activity or presentation. Evaluation and documentation of all programs will be based on the goals and objectives outlined.

1. Target Audience: Media

Message(s): overview of the program, what we hope to accomplish, coverage of specific activities, who to contact for more information, how to schedule a program

Channel(s): television interviews, news releases, feature articles, photographs, live television coverage

Action Plan: news release to Record Searchlight, Siskiyou Daily News and Mt. Shasta Herald (4/3/92), news release to Royal Mannion for other Northern California papers (4/3/92), television interview (to be scheduled), open house at Mt. Shasta District office (to be scheduled)

2. Target Audience: Climbing Groups

Message(s): human waste/water quality, access/permits, wilderness philosophy, bolting, solitude/privacy, structures (windbreaks), group size, history (climbing, etc.)

Channel(s): phone calls, slide shows, brochures/mail packets, trailhead signing, field contacts, newsletter articles, district office interpretive materials (weather, conditions reports, etc.)

Action Plan: revise brochures and create mail packets (by 4/15/92), discuss issues and distribute printed materials to local outdoor stores (by 6/1/92), develop safe climbing video with COS partners (by 5/15/92), conduct slide presentations with climbing groups (2-3 by 6/1/92)

3. Target Audience: College Groups (classes and outing programs)

Message(s): wilderness philosophy/history/management principles, minimum impact principles (highlight current innovations, group size, noise), career/employment options, values of wilderness (freedom, spontaneity, challenge, adventure, mystery), provide positive role models

Channel(s): field contacts, interactive presentations (management case studies), contact group leaders, printed materials, staff meetings, ideas for papers/projects, curriculum supplements to instructors (videos, etc.)

Action Plan: California State University, Chico: RECR 85 (3/22), RECR 115 (5/13), RECR 140 (4/9), RECR 246 (by 5/1/92). College of the Siskiyous: Life Sciences (4/6). California State University, Humboldt: RECR 120 (4/3).

4. Target Audience: School Groups (grades six through twelve)

Message(s): What is Wilderness?, Why do we have Wilderness?, minimum impact principles, land classification distinctions, values of Wilderness (non-human values and adventure, challenge, personal growth, freedom, escape, etc.), user conflicts, wilderness management principles, put them in our shoes, career/employment options, provide positive role models

Channel(s): classroom presentations, interactive programs, curriculum supplements to teachers, coordinate with scheduled field trips

Action Plan: Weed Elementary (4/2/92), Weed High School (4/20/92, 4/23/92), Dunsmuir High School (4/23/92), Dunsmuir Elementary (will schedule), Butteville Elementary (5/7/92, 5/12/92), Castle Rock Elementary (4/7/92), Sisson Elementary (5/11/92), Mt. Shasta High School (will schedule), McCloud Elementary (will schedule), McCloud High School (will schedule), Sequoia Elementary (Redding will schedule)

5. Target Audience: Commercial Businesses (The Fifth Season, Stony Brook Inn, House of Ski, Sporting Goods and Hunting Stores, Bed & Breakfasts, etc.)

Message(s): minimum impact principles, wilderness management principles, coordinate consistent information sharing, build a solid relationship, explain Wilderness plans (whys, what is to come, etc.), what to share with customers (information and printed materials)

Channel(s): phone calls, visits, printed materials, staff presentations

Action Plan: develop and distribute information packets (4/15/92), call or visit (by 6/1/92)

6. Target Audience: Outfitter/Guides

Message(s): What is to come?, How can we help?, wilderness management plans and principles, sharing of knowledge/skills/conditions, route selection and timing of trips, demographics of participants, minimum impact principles (highlight innovations)

Channel(s): phone calls, field contacts, staff training sessions, printed materials, mail packets, letter to participants, conditions report forms and board, sign-up on trips, safe climbing video and Soft Paths video

Action Plan: Shasta Mountain Guides: participate in guide training session (spring 1992), select dates to meet groups on Mt. Shasta (by 4/15/92), provide curriculum materials for training guides (by 4/15/92). Sierra Wilderness Seminars: set dates to meet groups on Mt. Shasta (by 5/1/92), meet group on Whitney Glacier (6/1/92). Others: set dates to meet groups on Mt. Shasta (by 5/1/92), phone and send mail packet (by 5/1/92).

7. Target Audience: Scouts

Message(s): minimum impact principles (current innovations), relate wilderness philosophy to scouting philosophy, wilderness values/history/management, decision making/thinking skills, citizenship/role models, career/employment options, wilderness projects

Channel(s): work with scout leaders, provide printed materials, attend meetings, interactive presentations (Soft Paths video and demonstration), field contacts, work projects

Action Plan: Boy Scouts will discuss initiating a Wilderness merit badge (3/17/92). Girl Scout Troop Leader meeting (4/8/92).

8. Target Audience: Chambers of Commerce

Message(s): answer their questions, find out what they need, statistics, minimum impact principles, where to direct different types of people, appropriate places for different types of groups, wilderness regulations/suggested behavior

Channel(s): phone calls and visits, printed materials, presentation at monthly meetings, Soft Paths video, posters, fact sheets, invite to our training session

Action Plan: attend monthly meeting (by 5/15/92), prepare information packets (by 5/15/92), call or visit (by 5/1/92)

9. Target Audience: Commercial Spiritual Groups

Message(s): defuse the stand-off and evasion, permit process, find common ground, i.e., "We all need to work together to care for the mountain," tie wilderness philosophy and management to their behavior, highlight values of wilderness such as personal growth and spiritual development, share poems/quotes/stories, wilderness management/philosophy and historical framework, appropriate behavior, minimum impact philosophy

Channel(s): personal contacts in town and in the field, letters and phone calls, letter to participants, participate in scheduled events

Action Plan: obtain copies of all brochures/posters/handouts advertising commercial spiritual trips (ongoing), phone and send follow-up letter to all known commercial spiritual guides (by 6/15/92), set dates for meeting groups in the field (ongoing)

10. Target Audience: Spiritual Groups

Message(s): identify common ground, share our preservation philosophy, acknowledge their feelings/validity, express interest in their concerns, make friends, wilderness philosophy/values/history, minimum impact philosophy, poems/quotes/stories, we are implementing others' visions (i.e., historical figures), symbols of wilderness, identify appropriate sites for "worship" activities

Channel(s): informal seminars, individuals (i.e., Marie Mitchell), spiritual kiosks, trailhead signs, develop materials together, invite to our training session, develop reading list, LISTEN, be creative!, brown bag sharing sessions

Action Plan: schedule meadow nature walk (by 6/15/92), meet Bioregional hikers at Horse Camp (6/21/92), schedule brown bag seminar (by 6/15/92), call individuals for input on printed materials (by 4/15/92)

11. Target Audience: Conservation Groups

Message(s): wilderness management/history/values, current wilderness plans (permits, pets, woodfires, etc.), interpreting the Wilderness Act, wilderness as a single resource (wildlife, water, air, plants, etc.), minimum impact philosophy

Channel(s): field trips, presentations, newsletter articles, attend meetings, individuals and personal contacts, scheduled hikes and nature walks

Action Plan: Bioregional Ecology Center hike (6/21/92). Horse Camp Committee meeting (by 5/15/92). Mt. Shasta Trail Association: annual meeting (4/4/92), Castle Crags hike (6/20/92), Mt. Shasta hike (7/18/92). Send letters to other groups describing our goals and availability (by 5/15/92)

12. Target Audience: Internal (front desk receptionists, resource specialists, "ologists," line officers, staff officers, field wilderness rangers, volunteers, recreation technician, YCC's, engineers, etc.)

Message(s): wilderness philosophy/management/history, wilderness as a resource consists of many disciplines (i.e., air, water, wildlife, soils, cultural, recreation, etc.), wilderness does not necessarily take care of itself, specifics of local wilderness plans in a national/regional context, why are we managing this way?, What are the alternatives?, What are the current regulations?, appropriate behavior, minimum impact philosophy

Channel(s): personal contacts, newsletter, updated conditions reports, management updates, field trips for front desk receptionists and business administration, radio check-in process, activities at annual district meetings, trail reports to engineering, department potluck, wilderness ranger training

Action Plan: set up conditions report board and mountain weather at district office (by 5/1/92), schedule and prepare presentation for district meeting (by 6/1/92), set dates for field trips (by 6/15/92), start wilderness newsletter (by 5/1/92), meet with engineering to discuss trail plans (by 5/1/92), wilderness ranger training (6/8/92 - 6/10/92), schedule and prepare presentation to Forest Management Team (by 10/1/92)

TIMELINE FOR MSRD WILDERNESS EDUCATION ACTION PLAN

ACTION	START	FINISH
1. Define program objectives	3/9/92	3/20/92
2. Develop action plan	3/13/92	3/27/92
3. Initiate contacts with schools	3/9/92	6/15/92
4. Initiate contacts with other groups	3/9/92	ongoing
5. Phone or visit target audiences	3/10/92	5/1/92
6. Produce printed materials	3/9/92	5/15/92
7. Produce safe climbing video	3/10/92	5/15/92
8. Schedule hikes for the MSTA	3/15/92	4/4/92
9. Schedule "Wild by Law"	3/15/92	6/15/92
10. Meet college outing groups on Mt. Shasta	3/15/92	9/30/92
11. Meet with girl/boy scouts	3/17/92	9/30/92
12. Schedule presentation for Earth Day	4/1/92	4/22/92
13. Meet permitted guides on Mt. Shasta	4/1/92	9/30/92
14. News release describing program	4/2/92	4/3/92
15. Begin school programs	4/2/92	6/15/92
16. Meet with Chambers of Commerce	4/15/92	5/15/92
17. Schedule meeting with VIS & BA	4/20/92	4/30/92
18. Schedule media open-house	4/20/92	5/1/92
19. Distribute printed materials	4/15/92	6/1/92
20. Prepare presentation for MSRD meeting	5/15/92	6/15/92
21. Wilderness Ranger Training Session	6/8/92	6/10/92

