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WILDERNESS FIRE POLICY: AN INVESTIGATION OF VISITOR KNOWLEDGE AND BELIEFS

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ABSTRACT

Discusses the attitudes and knowledge of wilderness visitors toward wilderness fire suppression policy. Although most users favored suppression, a substantial minority favored a more natural role for fire. Few found either total suppression or no suppression at all acceptable. A major finding was that as visitor knowledge about the role of fire increased, the likelihood of support for a more natural role for fire also grew. Important policy implications include educating and involving the public, making gradual changes in fire policy, and developing a communications program aimed at different audiences.

EVALUATION OF WILDERNESS FIRE POLICY

Current fire management philosophy recognizes that fire is not a recent aberration that the white man has visited upon the environment, but a natural part of our forest and rangeland ecosystems. Virtually all the northern Rocky Mountains have been burned on repeated occasions, with fires occurring on any given area about every 150 years, with a range from 10 to 300 years (Wellner 1970; Roe and others 1971). Many commercially valuable timber species as well as many other plant and animal species have evolved in the presence of fire and their continued presence is dependent upon the perpetuation of fire in the ecosystem (Mutch 1970). In the face of these realities, fire management seeks to reintroduce the beneficial aspects of fire into forest communities, including such things as maintaining young, vigorous stands capable of withstanding insect and disease outbreaks (Heinselman 1970b), reducing the excessive accumulation of forest fuels (Roe and others 1971), recycling important nutrients (Kilgore in press), and creating important wildlife habitat (Lyon 1966).

The key element in the fire management program is the land management objective; fire is a useful and beneficial ally only to the extent that it helps achieve some specific purpose. Such objectives prescribe the conditions that are desired and the means for attaining them.

In our National Parks and Wildernesses, a key management objective is the perpetuation of natural forest ecosystems (Habeck and Mutch 1973). On units of the National Wilderness Preservation System particularly, we are committed to a course of action that allows the forces of nature to operate "untrammeled by man" to maintain the natural ecosystems of these areas (Heinselman 1970a). To this end, fire management programs have been initiated in several areas. In Sequoia and Kings Canyon National Parks, lightning fires have been allowed to burn in certain zones as a means of restoring and maintaining the natural conditions of the park areas (Kilgore and Briggs 1972). Similarly, the Forest Service has initiated new policies regarding fire suppression in wilderness. In accordance with an approved plan, certain fires are allowed to burn while being kept under surveillance. Beginning in 1970, a program to provide for a more natural incidence of fire was initiated in the 100-square-mile White Cap and Bad Luck drainages of the Selway-Bitterroot Wilderness in Idaho. Since initiation of this policy, seven fires have occurred, one burning 1,200 acres (Mutch 1974).

PUBLIC REACTION TO WILDERNESS FIRE POLICY

The fear of fire is deep and not easily lost. Shifting from a policy where fire was attacked and suppressed quickly, and virtually without regard to cost, to one in which fire is not only tolerated but viewed as necessary has not been without resistance from the public.

To the extent that public opinion is strongly counter to a proposed program, it is unlikely that a program can be successfully implemented. Several students of natural resource policymaking have concluded that failure to incorporate attitudes into resource decisions reduces the probability of successful implementation of programs that were otherwise technically sound (Lowenthal 1966; Mitchell 1971; O'Riordan 1971).

As with any controversial issue, we would speculate there is no single "public attitude" about fires in wilderness, but that a range of attitudes exists. Generally, the consensus of most observers is that substantial public opposition exists to anything less than total fire suppression (Hall 1972). However, little empirical work has been focused directly on the issue. The Outdoor Recreation Resources Review Commission (Wildland Research Center 1962) provided no direct data regarding attitudes about fire suppression policy, but did note that between 70 and 93 percent of persons sampled in seven areas felt trees should be replanted in burned areas within wilderness. Hendee and others (1968) investigated three wilderness fire-related items in their work on three Northwest wildernesses. Ninety-eight percent of the respondents felt man-caused fire in wilderness-like areas should be put out immediately, 95 percent felt lightning fires should not be allowed to run their course, and 90 percent felt wilderness-like areas denuded by fire should be restored as soon as possible.

These data are old, however, and we might be in a period of considerable transition regarding attitudes about fire suppression. Unpublished data from studies in 1970 in seven wildernesses and dispersed recreation areas in Montana show that 50 percent opposed natural wildfires in wilderness, 16 percent saw them as desirable, 23 percent were neutral, and 10 percent were not sure enough to answer.[1]

Despite limited evidence that a portion of the public might be willing to accept some modification of fire suppression policies, there remains concern that such a policy change will never receive broad public endorsement. Ultimately, evidence as to public support or rejection of such policies will be found in the response of the public to fire management programs such as the National Park Service and Forest Service have instituted. But in the interim, there remains the possibility that a mistaken belief about what the public thinks will hamper programs to reintroduce fire to its natural role in wilderness ecosystems. Moreover, the comparatively unknown position of the public regarding wilderness fire suppression might deter administrators from implementing such policies. Consequently, it seems desirable to determine public attitudes toward wilderness fire policy.

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[1]Lucas, Robert C. Preliminary tabulations--1970 survey of visitors to seven wildernesses and related areas in Montana. Intermt. For. and Range Exp. Stn., Missoula, Mont.

DETERMINING ATTITUDES OF VISITORS

The "Public" is a collective term for what are actually numerous subgroups with diverse and often conflicting views on issues. As an initial group for study, we examined the attitudes of a sample of visitors to the Selway-Bitterroot Wilderness in Idaho and Montana. Names and addresses were selected from a pool collected as part of a study of wilderness use in the northern Rocky Mountains. A total of 217 people were sampled; of these, 183 usable questionnaires were returned for a response rate of 84 percent. Both summer and fall visitors were included.

Study Objectives

We proposed three objectives for our investigation. First, we sought to develop an index of visitors' knowledge about the role of fire in northern Rocky Mountain ecosystems. Second, we investigated the attitudes people held about wilderness fire suppression policies. Finally, we sought to develop guidelines on how to gain public acceptance of modified wilderness fire suppression.

Study Methods

The focus of this study is on attitudes. Attitudes represent one of the central concepts in modern social psychology and it is perhaps because of this centrality that they are also one of the most complex and controversial topics with which behavioral scientists deal. Definitions of "attitude" abound (Kiesler and others 1969, p. 1-8). Generally, attitudes reflect the disposition of an individual toward some other person, object, symbol, idea, etc. Moreover, attitudes are marked by a consistency toward these stimuli; in other words, the dispositions or ideas one holds about some stimulus or set of stimuli are not characterized by random, unexplained fluctuations. This, of course, does not mean that attitudes cannot change, sometimes rapidly.

Attitudes can be differentiated into two main components. First, there is that component dealing with how one feels about an object. We refer to this component as *affect*. Most attitude surveys probe this dimension of attitude, using various types of scales to measure the extent of "like-dislike" or "desirable-undesirable" an individual associates with some stimulus. For example, a statement of affect might be "I dislike big cities."

The second component of an attitude is the belief or *cognitive* dimension. It provides us with a measure of what the individual believes about the stimulus under study. The beliefs might not be accurate but that is not a concern here. Generally, there is a relationship between affect and cognition (Heberlein 1973). If affect is negative, the belief component probably will reflect the negative feeling. For example, "I dislike big cities (affect). They are ridden with crime and corruption" (cognition).

As suggested above, most attitude surveys probe the affective component of attitudes, while neglecting the cognitive. In our investigation, both were considered. The cognitive component of attitudes about fire was studied through the use of an 11-item, true-false test. Each of the statements concerned the role of fire in the northern Rocky Mountains and respondents were asked to check whether each statement was "basically true," "basically false," or "not sure." The 11 statements are shown with the correct answer underlined in table 1. Correct answers were based on consultation with scientists at the Northern Forest Fire Laboratory, Missoula, Montana.

Table 1.--*True-false test to determine level of knowledge about the role of fire in the northern Rocky Mountains*[1]

1. Forest fires usually result in the death of the majority of the animals in the area.	Basically True	Basically False	Not sure
2. Most forest fires in the northern Rocky Mountains are started by lightning.	Basically True	Basically False	Not sure
3. Past forest fires have not changed the way in which the northern Rocky Mountain forests developed.	Basically True	Basically False	Not sure
4. The elimination of forest fire in the northern Rockies would result in a change in the kinds of plants and animals found in the area.	Basically True	Basically False	Not sure
5. Complete control of all forest fires would reduce the habitat of animals such as elk.	Basically True	Basically False	Not sure
6. The majority of forest fires that occurred in the Rocky Mountains before the pioneers covered hundreds of thousands of acres.	Basically True	Basically False	Not sure
7. Fire often proves useful in making minerals and nutrients available to plants and trees.	Basically True	Basically False	Not sure
8. Some kinds of trees found in northern Rocky Mountain forests would gradually disappear over time if all fires were eliminated.	Basically True	Basically False	Not sure
9. Forest fire can be an important force in controlling outbreaks of disease and insects in forests.	Basically True	Basically False	Not sure
10. Intensive fire control has actually increased rather than reduced the chances of a very large fire occurring.	Basically True	Basically False	Not sure
11. Forest fires are partly responsible for some of the open meadows and grassy fields one finds in the northern Rocky Mountains.	Basically True	Basically False	Not sure

[1]Correct answer for each item is underlined.

The affective domain, or how people felt about alternative wilderness fire suppression policies, was measured by use of an attitude scale based on the Social Judgment Approach (Sherif and others 1965). This technique presupposes that attitudes generally encompass a range of feelings rather than a single, unwavering idea--our feelings about most things are flexible or have latitude. However, our feelings toward some stimuli generally fall into one of three categories: (1) we accept them, (2) we reject them, or (3) we have no particular feeling about them one way or another.

In studies on how people develop attitudes about something, and particularly in how those attitudes can be changed, researchers have learned certain important principles. For example, as long as a message about something remains within the broad range of acceptable feelings a person holds (a range called the "latitude of acceptance" or LOA by social psychologists), a change in attitude in the desired direction will probably occur. However, if the message begins carrying an idea that is definitely beyond the range judged acceptable by the individual (an idea that lies in the "latitude of rejection" or LOR), little or no attitude change in the desired direction can be expected. In fact, such messages may "boomerang," producing a change directly opposite to that desired (Zimbardo and Ebbesen 1970).

In applying the principles of the Social Judgment Approach to this study, we sought to define the relative range of wilderness fire suppression policies that users judged as acceptable and unacceptable.

Respondents were presented with a list of nine different statements they might adopt with regard to wildfire in wilderness (table 2). These statements ranged from

Table 2.--*Alternative wilderness fire suppression statements*

A.	It is absolutely necessary that all forest fires be put out as soon as possible in our wilderness areas.
B.	It would probably be best if all forest fires were put out as soon as possible in our wilderness areas.
C.	Generally, it would be preferable if all forest fires in wilderness were put out as soon as possible.
D.	It is hard to decide what the policy toward forest fires in wilderness should be, but probably they should be put out as soon as possible.
E.	It is hard to decide whether we should allow forest fires to burn in our wilderness areas or not.
F.	It is hard to decide what the policy toward forest fires in wilderness should be, but probably we should allow small, "safe" ones to burn.
G.	Generally, it would be preferable if small, "safe" forest fires were allowed to burn in our wilderness areas.
H.	It would probably be best if most forest fires were allowed to burn in our wilderness areas.
I.	It is absolutely necessary that we allow all forest fires to burn in our wilderness areas.

advocating complete suppression to advocating no suppression whatsoever. Respondents were asked to place an "X" on the statement that most nearly matched their own personal feeling. Next, they were asked to place an "O" by all other statements which were also acceptable to them. This allowed us to measure the range of acceptability. The second part of this section presented the same nine statements, but this time asked the respondent to check "√" the one statement that was most objectionable and to place a box "☐" next to all other statements that were also objectionable. This, then, gave us a measure of the range of feelings about unacceptable policies.

ATTITUDES OF WILDERNESS VISITORS

Table 3 presents the percentage of persons in our sample who answered each of the 11 test questions correctly. Two general observations may be drawn from the data. First, the general performance was poor; the average score was only 53 percent. Second, the range of correct answers on the individual items is great. For instance, 67 percent answered question 9 correctly, but only 23 percent correctly answered number 6.

The best performance was on question 3, which concerned the effect of fire on forest succession, and question 9, which was directed at the "cleansing" effect of fire on disease and insects.

During review of a draft of this manuscript for this publication, Mr. James Agee of the National Park Service correctly observed that, technically, the answer to question 3 should be false. The forests of the northern Rocky Mountains have not changed *because* of fire; they are a natural product of the fires that were part and parcel of these ecosystems. Our intent here was to address the question as to whether or not fire had played a significant role in shaping these forests. Numerous studies have documented this (for example, Habeck and Mutch 1973; Norum and others 1974), and this was the basis for our considering the statement true.

The poorest scores occurred on questions 1, 6, and 10. The content of these three questions is worth examining. Question 1 concerns the death of wildlife due to fires. Wildlife has become a central part of much of the fire prevention effort. Posters stress identity with wildlife by giving animals human characteristics: names, tears in their eyes, and so forth. However, there is little evidence that fires typically destroy large numbers of wildlife (Howard and others 1959; Cringar 1958).

It is apparent from the response to question 6 that many people see fire as a rare historical event and one which, when it did occur, was a gigantic holocaust. However, fire history studies suggest that fire was a relatively common occurrence on the landscape and moreover, that many of the fires were relatively small (Wellner 1970).

Table 3.--*Percentage responding correctly to fire knowledge test*

Question (Answer)	Percentage answering correctly
1. Forest fires usually result in the death of the majority of the animals in the area. (F)	52
2. Most forest fires in the northern Rocky Mountains are started by lightning. (T)	63
3. Past forest fires have not changed the way in which the northern Rocky Mountains forests developed. (F)	66
4. The elimination of forest fire in the northern Rockies would result in a change in the kinds of plants and animals found in the area. (T)	55
5. Complete control of all forest fire would reduce the habitat of animals such as elk. (T)	50
6. The majority of forest fires that occurred in the Rocky Mountains before the pioneers covered hundreds of thousands of acres. (F)	23
7. Fire often proves useful in making minerals and nutrients available to plants and trees. (T)	55
8. Some kinds of trees found in northern Rocky Mountain forests would gradually disappear over time if all fires were eliminated. (T)	53
9. Forest fire can be an important force in controlling outbreaks of disease and insects in forests. (T)	67
10. Intensive fire control has actually increased rather than reduced the chances of a very large fire occurring. (T)	40
11. Forest fires are partly responsible for some of the open meadows and grassy fields one finds in the northern Rocky Mountains. (T)	54

Finally, only 40 percent of the respondents correctly answered question 10, concerning the potential of a large fire occurring under today's intensive fire control programs. Most were apparently unaware of the fuels that have accumulated in many areas over the past 30 to 50 years. However, the right combination of factors--fuels, weather, and so forth--could lead to a fire that would be virtually beyond human control. Certainly, precautions such as aerial surveillance and quick attack lessen the chances of such a fire getting beyond controllable size, but nevertheless, the potential for such a blaze grows as fuels continue to accumulate. Our test indicates that our sample population was, to a considerable extent, unaware of the mounting fire hazard. In other words, most users believe that forests are now completely protected against holocausts.

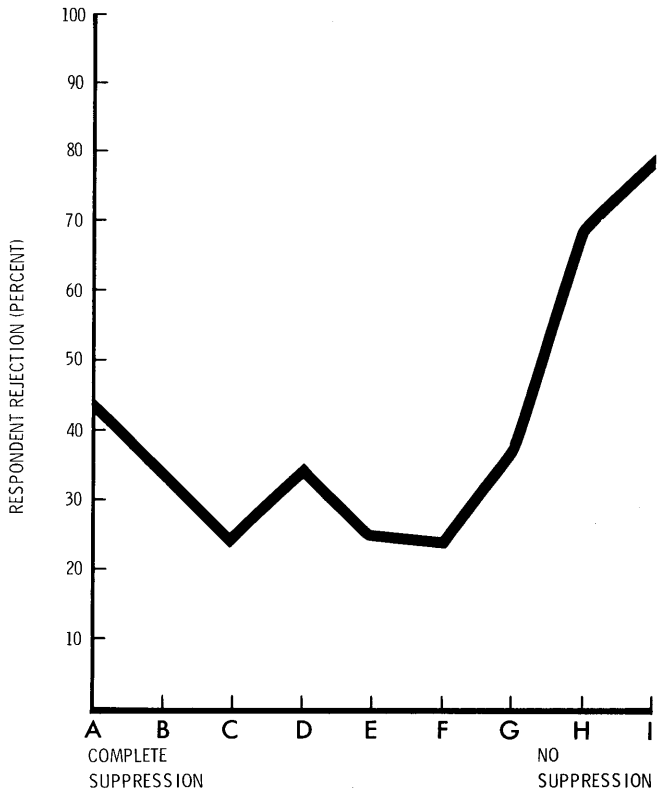

Figure 1.--Unacceptable suppression statement.

As suggested earlier, there is no single attitude about wilderness fire suppression but, rather, a range of attitudes. The nature of this range became more apparent as we reviewed responses to the nine suppression statements outlined in table 2. Figure 1 presents the response to those items defined as unacceptable. For ease of presentation, the "most unacceptable" and "also unacceptable" responses are combined. Because respondents could indicate more than one statement as unacceptable, the sum of the plotted points for each statement equals more than 100.

The respondents almost unanimously rejected the statement that we allow all forest fires to burn in our wildernesses. However, we also found a substantial proportion (43 percent) of respondents indicated that complete suppression was also unacceptable. Most persons did not find the intermediate policy positions unacceptable.

Figure 2 presents the responses as to acceptable wilderness fire suppression actions. Only 5 percent found "no suppression" (statement I) acceptable. However, only about one-third found complete suppression (statement A) acceptable. About one-half indicated that statements F and G were acceptable. These two statements suggested that it might be best if small, "safe" fires were allowed to run their course. The presence of the modifier "safe" might have influenced response (although it did not appear to do so in figure 1). The idea we were trying to convey in these two statements was that certain fires would be allowed to burn if they met certain criteria; in other words, that they were "safe" to let burn. There was moderate support for this concept.

Most respondents supported a narrow range of policies. As table 4 shows, fewer than two other acceptable policies were selected in addition to the "most acceptable" choice. The only exception was with statement D (mildly suppression-oriented), where persons chose almost three additional statements. We also see a slight increase in "also acceptable" policies for persons choosing statement F as "most acceptable," which called for nonsuppression in limited situations. Few persons selected statement E (a neutral position), either as "most acceptable" or as "also acceptable."

Figure 2.--Acceptable suppression statement.

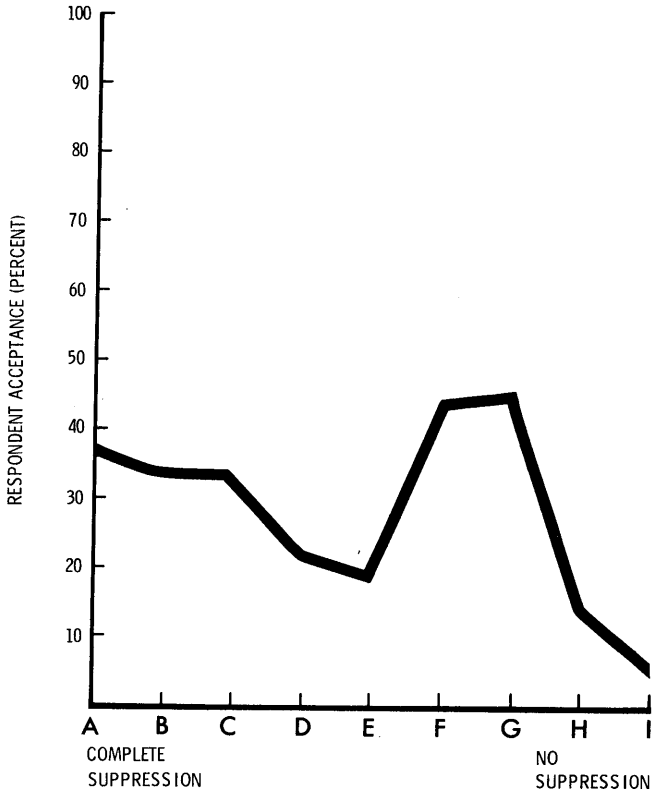

Table 4.--*Frequency of times statements cited as "most acceptable" and "also acceptable" by wilderness users*

Policy	Times cited as "most acceptable"	Total number of other policies selected as "also acceptable"	Average number of other policies cited as "also acceptable"
A (Complete suppression)	55	75	1.4
B	15	21	1.4
C	14	21	1.5
D	16	45	2.8
E	7	10	1.4
F	23	40	1.7
G	32	44	1.4
H	13	19	1.5
I (No suppression)	3	3	1.0

N = 183

Table 4 clearly indicates that suppression actions (statements A-D) were favored by more users than those favoring reduced suppression (statements F-I). Nevertheless, F-I were supported by a substantial minority; 62 percent of the "most acceptable" choices were for statements advocating suppression while 34 percent supported modified suppression.

Although table 4 shows that the average number of acceptable statements is generally narrow, it does not tell us the direction in which "also acceptable" statements tend to run relative to those selected as "most acceptable." That is to say, do those statements selected as "also acceptable" tend to lie symmetrically about the "most acceptable" choice or do they tend to be skewed to one side or the other?

In table 5, we show the frequency distribution of "also acceptable" statements for each of the nine statements. As one would expect, we see a clustering of "also acceptable" choices immediately adjacent to the one chosen as most acceptable. For example, 77 percent of "also acceptable" responses by persons selecting B as "most acceptable" were for A and C. Likewise, 80 percent of the "also acceptable" statements given by persons selecting G as "most acceptable" were for F and H. So, we see that most persons picked statements they perceived as closely similar to their most acceptable choice, certainly a logical pattern.

If we define items D, E, and F as expressing a neutral "core," persons selecting one of these as "most acceptable" generally tended to select modified suppression statements as "also acceptable"; that is, they moved to the right in table 5. This suggests that persons who have yet to firmly crystallize their opinions regarding wilderness fire suppression are likely to support some modified approach.

According to the Social Judgment theory, persons selecting extreme positions see other positions as more different than they actually are. Persons choosing A (the extreme suppression statement), however, did not meet this description. Choices of "also acceptable" statements ranged over the entire continuum. However, persons selecting I (advocating no suppression) had a very narrow LOA. The sample size here is so small (3) that we cannot tell if this response is just an accident or an actual characteristic. We do know, however, that intense commitment to a particular position tends to reduce the range of acceptable statements. A plausible explanation for the respective distributions found for statements A and I might be that while persons selecting A did so out of a "traditional" concern for fire protection, persons choosing I did so because their understanding of the situation led them to reject traditional approaches in the context of wilderness.

But there are many other plausible hypotheses as well. We have seen from the data that many attitudes about fire suppression in wilderness exist. The next question we must address is "why?" What are the critical variables that lead to this differential pattern and to what extent might managers be able to influence this pattern?

Table 5.--*Percentage distribution of statements defined as "also acceptable"*

Most acceptable statement		Other policies also acceptable								
		A	B	C	D	E	F	G	H	I
Complete suppression	A	√	40	36	11	1	4	5	1	1
	B	29	√	48	19	--	5	--	--	--
	C	10	33	√	33	--	10	14	--	--
	D	2	18	24	√	22	24	9	--	--
	E	--	--	--	10	√	50	40	--	--
	F	--	--	2	10	28	√	53	5	2
	G	--	--	2	5	14	64	√	16	--
	H	--	--	--	--	5	32	53	√	11
No suppression	I	--	--	--	--	--	--	33	67	√

N = 183

FACTORS AFFECTING ATTITUDES ABOUT WILDERNESS FIRE SUPPRESSION

Of the many factors that could affect what persons think about wilderness fire suppression, we examined four variables: age, first-time versus repeat visits, education, and score on the fire knowledge test. Using chi-square analysis, we tested for significance at the 0.05 level.

There was no statistically significant difference for the first three variables. We had hypothesized that younger visitors would be more supportive of modified suppression than would older visitors. Similarly, we speculated that persons who were repeat wilderness visitors would be more likely to support modified suppression than would first-time wilderness users. Finally, we hypothesized that persons with more education would be more supportive of modified wilderness fire suppression than those with less education. However, in all three cases, we were forced to reject our hypotheses. The pattern of support for modified suppression was irregular, complex, and unclear. At times, in fact, the data were almost directly contrary to our expectations.

The final variable was the score derived by respondents on the fire knowledge test. We hypothesized that persons scoring high on the test would tend to favor modified statements. There was a strong relationship between the test score and the statements selected as acceptable (table 6). As test scores rose, so did the likelihood that the respondent would accept a modified position. For instance, none of those scoring higher than 92 on the test found *any* of the suppression statements acceptable. Conversely, although nearly 80 percent of those scoring 35 or less found A acceptable, only 15 percent found G acceptable. This dramatic swing in the acceptability of A and G with a change in test score is graphed in figures 3 and 4, respectively.

We further examined this relationship by considering the association between the test score and the number of times a statement was selected as "most acceptable." Using gamma[2] as our statistical measure of association, we found an association of 0.57; that is, knowledge of the individual's test score explained nearly 60 percent of the variance in the selection of the "most acceptable" statement.

The test provided us with a measure of the cognitive aspects of users' attitudes about fire suppression in wilderness. As we can see from the previous discussion, the cognitive and belief domains are related. As the knowledge (as measured by our test score) increases, so does the probability that an individual will select a statement advocating a more natural role for fire in wilderness. At the same time, the relationship is not completely direct. For instance, statement I, advocating no suppression at all, is usually rejected by persons scoring high on the test.

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[2]Gamma indicates the proportional reduction in error that would occur in predicting rank order variation in preference from knowledge of the individual's test score over that which would occur without such knowledge.

Table 6.--*Percentage indicating statement acceptable*

Test score	N	Complete suppression: A	B	C	D	Neutral E	F	G	H	No suppression I
0-35	40	78	58	55	25	18	18	15	0	0
36-44	18	56	33	39	22	17	28	33	6	6
45-54	18	50	50	44	33	17	33	22	6	11
55-63	30	37	40	50	30	20	47	33	7	0
64-72	28	18	21	29	25	29	64	64	18	0
73-81	20	10	20	25	25	25	70	80	20	5
82-91	24	4	8	13	13	25	67	83	46	17
92+	3	0	0	0	0	0	67	100	67	0

Total N = 181

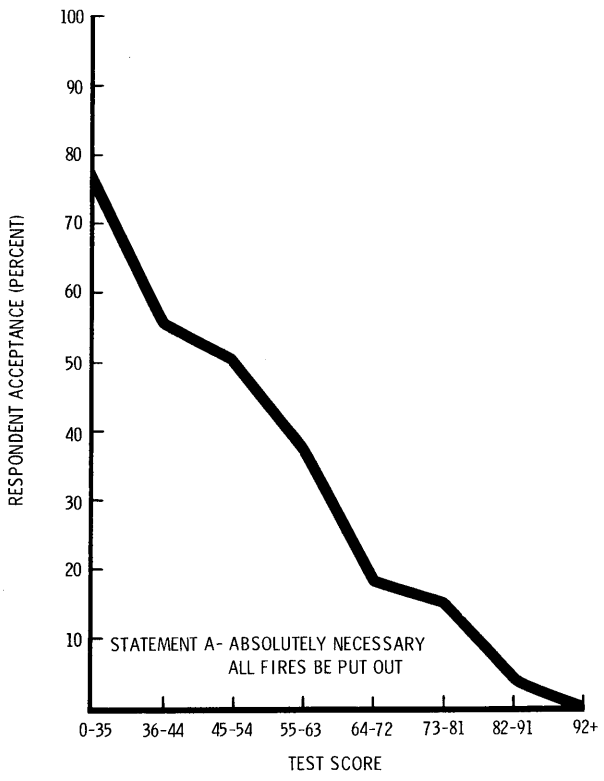

Figure 3.--Relationship between test score and percentage of respondents supporting statement A.

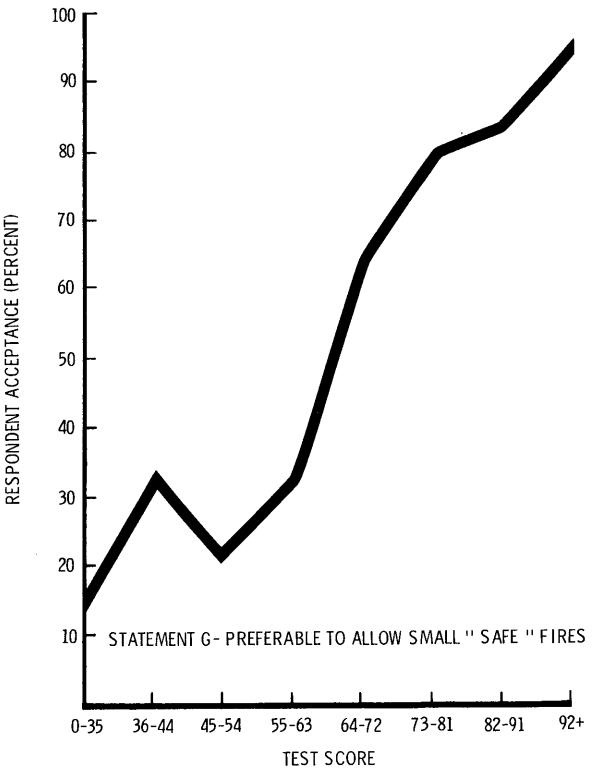

Figure 4.--Relationship between test score and percentage of respondents supporting statement G.

MANAGEMENT IMPLICATIONS

Based on this study's findings, three management actions would enhance public support for modified wilderness fire suppression.

Educate the Public

Garnering public support for modified suppression policies seems closely linked to educating the public to the role of fire in forest ecosystems. It is important that such an effort be made "across the board," not just with regard to wilderness.

As Glascock (1972) has noted, "Education is the most powerful single force deliberately used to shape public opinion toward fire."

As we discussed earlier, affect (how we feel) is not unrelated to cognition (what we believe). This was clearly the case in this study. Persons who understood little about fire were much more likely to endorse stringent suppression statements than were those better informed. Efforts to gain public support, in the absence of concomitant programs to educate, inform, and involve people, seem doomed to failure.

Both administrative guidelines as well as laws such as the National Environmental Policy Act have defined increasingly significant roles for public participation in resource decisionmaking. In particular, such participation serves the function of defining the normative goals toward which our resource management programs should strive. However, if the public is expected to provide realistic and reasonable goals for resource managers to achieve, they must have accurate information. We simply cannot expect useful citizen participation in decisionmaking when the base of information the citizen is using (a base generally supplied by the resource management agency) is faulty or incomplete. We have seen the low level of knowledge that wilderness users possess; it is probably reasonable to assume an even lower level exists among the general public. We should consider the lack of knowledge a major reason for improving the flow and quality of information.

There has been some concern that anything short of an "every fire out immediately" philosophy might lead to increased careless use of fire by people using the forests. However, there seems little basis for the concern. In many ways it is an affront to the public to suggest that it is incapable of distinguishing between the use of fire to accomplish specifically stated objectives and its illegal, indiscriminate use. At any rate, the failure to disclose the facts about fire, or the exaggeration or distortion of the nature of fire will do little to promote desired behavior on the part of the public about fire. "Scare" tactics in fire control literature probably have little effect in reducing fires. The use of similar techniques as methods to control such problems as drug abuse have been unproductive.

Davis' (1959) remarks about the importance of frankness in dealing with the public are appropriate:

> Very real problems of education and understanding are involved in distinguishing between undesirable wildfires and desirable uses of fire in certain situations. But the truth will come out sooner or later: Fire does have uses. It is better to meet such questions honestly and squarely, but with discretion, than to risk the consequences of lack of public confidence resulting from unwillingness to face up to the matter.

Avoid Sudden Changes in Policy

Most users indicated support for suppression-oriented statements. Moreover, the latitude of acceptable policies was generally quite narrow. Thus, programs that call for a sudden shift in policy direction would appear to have considerable potential for creating a "boomerang" effect, in which increased agency efforts to push modified suppression might be greeted by stiffened public resistance.

The theory of Social Judgment predicts the greatest attitude change when a message advocates a position at the extreme boundary of an individual's latitude of acceptance. The data presented here aggregate individual responses, but we can see how programs endorsing a substantial and rapid change in wilderness fire suppression would be at odds with most users' attitudes. Thus, we find support for a gradual, or incremental, approach to altering wilderness fire suppression policy.

Under a gradual approach, the new fire policy might be initially limited to a few areas, the number of acres within any one area would be limited, and certain restrictions would be established for when and where fire would be permitted. For instance, weather conditions or the burning index might be major determinants on whether or not a fire would be allowed to burn. As experience with fire increases and as public awareness of such programs grows, the number of areas and acres covered by modified policies might gradually be increased.

Such an approach does pose problems for the resource manager. Attempting to initiate and conduct a fire management program on too small an area can generate disproportionately high costs as well as other problems. For example, one of the fires that started in the fire management prescription zone in the White Cap drainage of the Selway-Bitterroot Wilderness spotted across into an area not under prescription and burned approximately 1,600 acres. Although our knowledge of fire behavior is improving constantly, such outbreaks and unexpected fires are going to happen. During the preliminary stages of introducing a new policy direction, however, managers will need to walk the tight line between excessive enthusiasm that might confuse and worry the public, on the one hand and, on the other hand, experimenting on such a limited scale that they impose unrealistic constraints upon themselves, hindering the opportunity for a fair and reasonable test.

Educate all Segments of the Public

The diversity of opinion in the homogeneous population of wilderness users suggests that a survey of the general public would reveal even greater diversity. As we attempt to garner support for modified fire suppression across a broader spectrum of the public, we will need a variety of tools to contact diverse publics. Even wilderness users are different enough to require ingenuity and imagination to reach them all. Working through conservation and outdoor recreation groups is important; however, this should not be relied upon as the sole source of contact with users. We found only 27 percent of the respondents indicated membership in such groups. Visits by users to ranger stations, field contacts by wilderness rangers, and the use of handout materials (maps, information brochures, etc.), should all be viewed as opportunities to communicate information to visitors.

Educating the "general public" presents more formidable problems than educating wilderness users. The data in this study do not bear directly on this issue, but they do suggest that the content of communications should be factual and straightforward. Given the diverse nature of the "general public," a similarly diverse package of communication programs seems called for, varying in the level of presentation and in the medium. Programs in the schools, presentations to service clubs, and newspaper and television features are only a few of the ways in which this "general public" might be reached.

We should also consider all other fire prevention materials. Although our investigation did not attempt to trace where people got their information, it seems reasonable that fire prevention posters and literature are an important influence on public attitudes, and therefore we should consider the messages they communicate.

In our efforts to educate the public to be careful in the use of fire, we do not want to foster public resistance to other programs we are attempting to implement. Also, if the public comes to believe that fire prevention materials are inaccurate or nonfactual, they may decide that there is no need to be careful with fire.

SUMMARY

This study has investigated the attitudes and beliefs of wilderness users toward modified fire suppression in wilderness. The results suggest that while a majority of users favor suppression, a substantial minority support a more natural role for fire. Few users found either total suppression or no suppression at all acceptable.

Most users revealed a fairly low level of understanding about the role of fire in the forests. On investigating the relationship between attitudes about fire suppression in wilderness and knowledge, there was a strong association between higher knowledge scores and support for liberalized suppression. Age, membership in conservation groups, and previous wilderness experience were found to have no significant effect on this relationship.

As land management agencies strive to gain public support for modifying wilderness fire suppression policies, three important implications seem to emerge from the data. They include: (1) educating and involving the public; (2) gradual changes in policy; and (3) a communications program aimed at many different audiences.

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