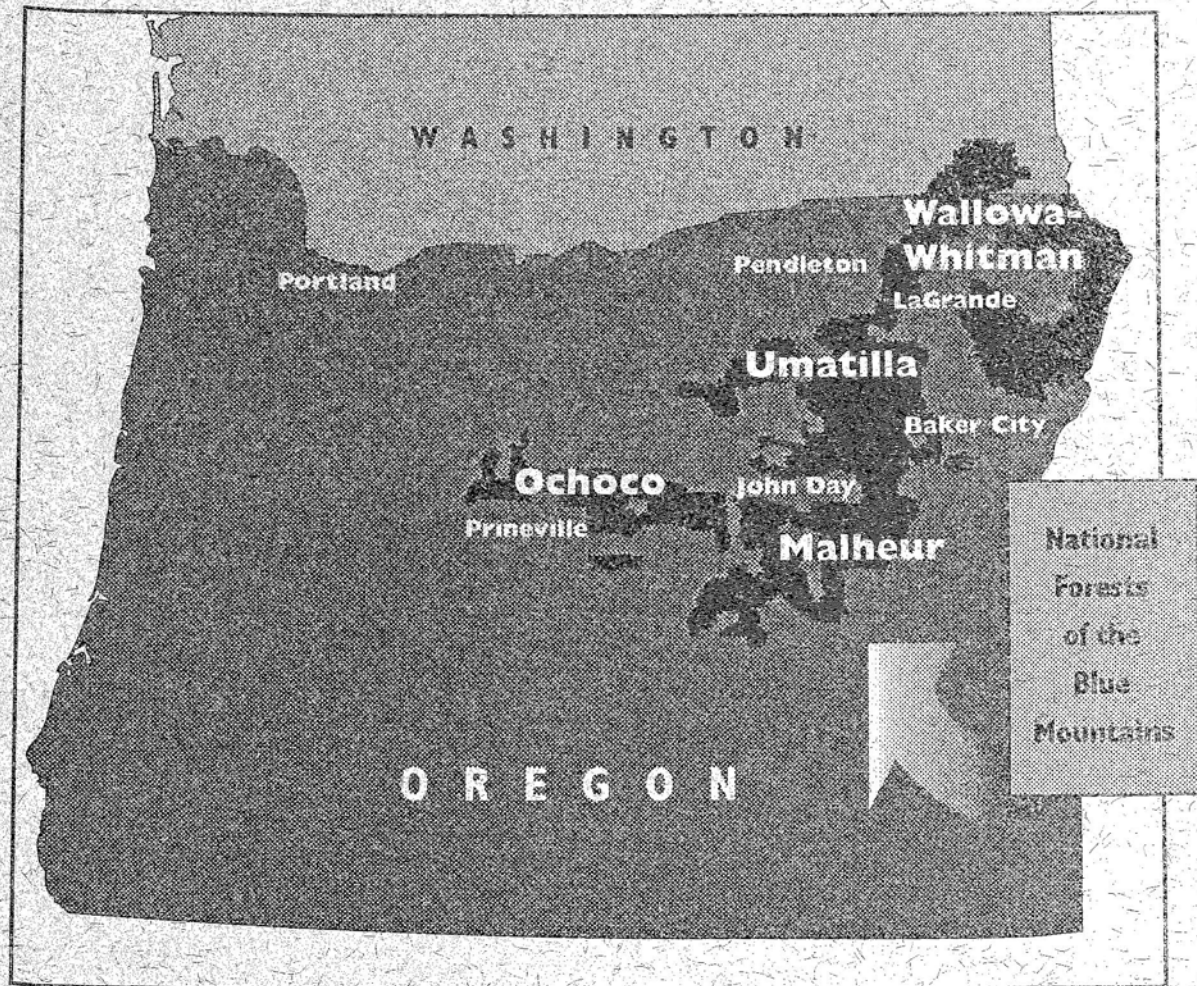


Forest Management in the Blue Mountains: Public Perspectives on Prescribed Fire and Mechanical Thinning



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Oregon State University***

In cooperation with:

***Global Environmental Protection Program
USDA Forest Service PNW Research Station
Corvallis, Oregon***

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*Forest Management in the Blue Mountains:
Public Perspectives on Prescribed Fire
and Mechanical Thinning*

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EXECUTIVE SUMMARY

Introduction and Study Objectives

Insect and disease epidemics have created unhealthy and overstocked conditions in national forests of the Blue Mountains. Two of the most important management tools for reducing fuel loads and restoring forest health are prescribed fire and mechanical thinning practices. Accurate information about public support for these practices is essential for implementing effective long-term management policies. By assessing public attitudes, we improve our understanding of the often contentious environment in which resource management decisions are made.

This report presents a summary of findings from public opinion surveys conducted in Blue Mountains communities in the spring of 1996. Questionnaires were developed based on interviews with Forest Service personnel and focus group meetings with community residents. The data reflect responses from 535 individuals (56% response rate) who completed a mail questionnaire. The study included four objectives:

1. Develop a community profile to describe the "Blue Mountains public" and learn how people view local forest conditions and form opinions about forest management.
2. Examine how citizens engage with the Forest Service and report their opinions of agency planning processes for ecosystem management.
3. Examine public attitudes and perspectives for management ignited prescribed fire and mechanical thinning programs.
4. Explore public preferences for the tradeoffs associated with prescribed burning, wildfire, mechanized logging, clean air, healthy forests, etc.

Profile of Blue Mountains Communities

Sociodemographic information can help establish an important frame of reference for how and why people respond to forestry issues. Research suggests that common attributes are often indicators of people's general attitudes toward forest management priorities. When people share common values, priority setting is easier; however,

conflicting viewpoints often require controversial decisions about management activities.

Findings indicate the "average" Blue Mountains survey respondent is 54 years of age, has some college education, a family income of \$36,000, and has lived in the region for over thirty years. Residents earn their living from a variety of sources, but the majority work in the traditional resource-based economies of forestry, farming, and ranching. Overall, 35% are retired.

Most residents have traveled extensively in the Blue Mountains and pay attention to forest issues on national forest lands; 84% said they were at least moderately informed about forest conditions in the region. A substantial majority rated these conditions as unhealthy, with their own personal observation the primary basis for their opinions. Other important information sources include newspapers, friends and relatives, television, and Forest Service field trips and publications. Although community members support a spectrum of management priorities, overall they placed the highest priority on forest policies that balance environmental conditions and economic factors.

Citizen/Agency Interaction

The involvement of local publics is a central element in ecosystem management and the majority of residents support this approach. In describing the quality of their interaction with the Forest Service, citizens were often divided in their opinions. About an equal number (one-third each) agree, disagree, or are neutral over whether the agency does a good job of providing information about management activities. A similar number are split on whether the Forest Service (and BLM) are open to public input. The majority (53%) believe forest managers usually create plans without listening to the local communities.

Most people (56%) agree our forest management systems need major changes and the Forest Service should provide a stronger leadership role. Overall, the public seems to want a greater level of involvement in determining what should happen on federal forest lands. The majority believe a role that extends beyond the current NEPA process is more appropriate.

Public Perspectives on Prescribed Fire

According to the Blue Mountains communities, prescribed fire is generally a useful, safe, and acceptable practice. A substantial majority of individuals agreed prescribed fire effectively reduces excess forest fuels and they are willing to live with resulting (specific) short-term impacts on soils, wildlife habitat, water quality, recreation, and scenic views. In sum, 84% support a management policy of prescribed fire over not using prescribed fire.

Current levels of smoke management do not seem to be a serious concern for residents. Three-quarters of those surveyed felt that smoke was not a problem in their local area, nor was prescribed fire the problem in matters of air quality. Overall, two-thirds of the respondents believe smoke from prescribed burning is acceptable if it results in a healthier forest.

Several fire issues remain, however. Although few see the practice as a high risk activity, many people still are uncertain about fire being a threat to nearby property. A substantial number also have difficulty understanding the origin of the fires they observe; from a distance it is not clear whether these are prescribed fires, natural forest fires, or field burning activity. Additionally, almost half (45%) of all surveyed believe the trees consumed by prescribed fire would be better used for wood products. Finally, citizen trust in the Forest Service to implement a responsible and effective fire program is divided. While 51% trust the agency, one-fourth do not and another one-fourth are either neutral or undecided.

Bivariate correlations were computed using citizen preferences for the use of prescribed fire and selected sociodemographic characteristics. Few associations were found, in large part because of the wide spread support for fire policies; however, statistically significant correlations for education level and knowledge of fire were reported. That is, people more likely to support the use of prescribed fire are those with a higher level of education, those who know the difference between fire types, and those who believe the Forest Service provides good information about their management activities.

Public Perspectives on Mechanical Thinning

Public attitudes and preferences for mechanized thinning are very similar to those for prescribed fire, only opinions are stronger. Most people agree that mechanized thinning is an effective tool for

minimizing insect and disease damage. In addition, specific harvest impacts on soils, wildlife, water quality, recreation, and scenic views are acceptable to about two-thirds of those surveyed. Overall, 93% support a policy of mechanical thinning for reducing forest disease and infestation over not using this practice. However, as with the use of fire, trust was an issue with people divided over whether the Forest Service could implement an effective thinning program. Finally, in a priority ranking of treatments, 76% preferred selective thinning over using prescribed fire (16%), with 8% opting for no program--preferring instead to let nature take its course.

Findings show that only two respondent characteristics were correlated with preferences for mechanized thinning policies. First, those who favor economic return from forests are more likely to support the use of mechanical thinning; second, those who agree the Forest Service has a good information program are also more supportive of the practice. Again, a lack of association between other variables is most likely attributable to the wide level of support for thinning programs.

Citizens Speak Up

The success of prescribed fire and mechanical thinning programs may be influenced by how community members feel about the Forest Service's ability to make good decisions. The survey provided an opportunity for citizens to respond to two open-ended questions:

1. What are your perceptions about the way the Forest Service makes decisions for managing national forest lands in the Blue Mountains?
2. What criteria do you use for measuring the success of decisions made by a resource agency like the Forest Service?

Over 1300 written comments were received in answer to these questions. Comparative analysis was used to examine the content of each and responses were grouped according to major themes. These themes and descriptive statements are reported in the chapter titled *Citizen Perspectives on Forest Management Decisions*, using the language of participants as much as possible.

Conclusions

Most Blue Mountains residents are receptive, and in many cases strongly supportive, of both prescribed fire and mechanical thinning as fuels reduction techniques in the region. In many cases, the general public seems willing to support a Forest Service program that increases its use of these practices. To address problems, most citizens would like to see the agency take a stronger leadership role on local forests, particularly if this direction includes increased interaction with communities.

However, because natural resource issues are often complex, long-term solutions will need to be more sophisticated than opinion polls about whether people are *for* or *against* a single management practice. For example, public agreement in this region will probably be linked with how a decision effects the local economy, how a practice detracts or contributes to people's understanding of sustainable forests, the visual quality of fire and thinning treatments, and how final management decisions are made. In concluding remarks, five factors that are likely to influence the public's judgment are discussed:

- People need to see things with their own eyes
- People want natural conditions and forest products too
- Credible information is essential
- Pay attention to agency/public barriers
- People will only support what they understand

INTRODUCTION

The demands placed on natural resources in our national forests have generated a great deal of public interest over their management. Accurate information about constituent preferences is essential for integrating the views of citizens into effective long-term management policies. This need to assess public views stems largely from our lack of knowledge about natural resource systems, particularly the public perspective, and the likelihood that management decisions will be made under adverse conditions and will face considerable scrutiny.

Thus, social assessment techniques have become an important element in managing forest ecosystems. When citizens' responses to proposed agency actions are positive, they help insure the overall support and success of management programs. Through the assessment of public perspectives, our ability to understand the environment in which resource management decisions are undertaken is improved.

In eastern Oregon and Washington, the Blue Mountains are suffering from large scale insect and disease epidemics that in many areas have created unhealthy and overstocked forest conditions. A primary reason for these conditions is the exclusion of fire in these ecosystems. Managers in the region's four national forests are planning various strategies for restoring forest health; two of the most important tools are prescribed fire and mechanical thinning treatments. When used effectively, benefits from these practices include fuels reduction, wildlife habitat rejuvenation, seedbed preparation, tree species selection, and greater stocking control (USDA, 1993).

The long-term success of prescribed fire and mechanical thinning programs may be determined by how well resource managers translate public attitudes into policies that fulfill a range of timber and nontimber values. These two management practices, however, may be viewed suspiciously by the public after decades of education on the exclusion of fire from forests and more recent concerns that salvage efforts may simply be an excuse to sell more timber. Fuels reduction projects underway on the Wallowa-Whitman, Umatilla, and Malheur National Forests provided an opportunity to examine citizen perspectives on these practices. This report presents a summary of findings from public opinion research conducted in Blue Mountains communities.

Prescribed Fire

Public attitudes about forest fire have been undergoing substantial change in the last twenty years. Prior to 1977, the Forest Service's policy of immediately suppressing all fires received nearly unanimous public support. This, of course, was due primarily to the agency's aggressive fire-fighting efforts, complete with national public education campaigns and a general interpretation of Smokey the Bear's message to mean that all forest fires have detrimental effects on resources. With more recent emphasis on the use of fire as a management tool, public attitudes have been evolving toward a broader acceptance of fire in forest ecosystems.

Still, a number of public concerns over the use of fire remain. The focus has typically been on risk factors (public safety and adjacent property), aesthetic concerns (scenic quality and recreation use), health issues (smoke and air quality), ecological effects (on wildlife, vegetation, water quality), and economic impacts (loss of commercial timber). A handful of studies conducted in the 1980's indicate public support or opposition is largely related to an individual's knowledge of the uses and impacts of fire (Shelby and Speaker, 1990). More recent research (Bright, 1995) supports this view, suggesting that managers will need to improve their communication about the rationale for prescribed fire policies.

Given the ambiguities surrounding fire as a management tool, a distinction should be noted between the forms of prescribed fire. *Prescribed natural fire* is opportunistic. This allows management to make a decision about letting a fire ignited by nature, usually a lightning strike, to burn under their watchful control to accomplish certain management objectives. This use of fire has been practiced in wilderness areas and more recently in other forest settings where social concerns (e.g. smoke, private property) are not necessarily factors. The second form, *management ignited prescribed fire*, is also used as a tool and as its name implies, is ignited by fire managers to accomplish objectives that are often associated with fuels reduction. Both types of burns are planned around a variety of environmental and social considerations.

While the biological effects of prescribed fire have been studied extensively, relatively few studies have addressed the social perspectives involved. Most of these have dealt with visual quality issues or the impact of educational programs on people's attitudes

towards acceptance. This study attempts to go beyond general preferences for or against prescribed fire to more in-depth examination of the factors that influence public judgments about the practice.

Mechanical Thinning

Little social assessment research exists on the public's perspective of mechanized selective thinning as a fuels reduction technique. Most likely, preferences are tied to general attitudes about support for timber harvesting or resource preservation. But a study of forest communities in southeast Alaska on the merits of implementing alternative harvest practices suggests additional factors may be important (Shindler and others, 1995).

First is the public's concern over economic risk. Simply, can mechanized selective thinning be profitable? More complicated harvesting systems increase the cost of doing business, from planning and laying out sales to securing equipment. In the Blue Mountains, additional questions are likely to involve the extent to which sufficient fibre material and small sawlogs can be made available in timber sales and whether the material will still be marketable once it is finally harvested.

The second concern is over environmental impacts. Multiple entries with ground-based and skyline systems will effect soils, riparian systems, plant and wildlife populations, as well as recreation and scenic quality. The public has yet to understand specific long-term impacts on these important resources, and thus may be reluctant to endorse selective thinning programs on a grand scale.

The third issue involves the public's trust of our natural resource agencies to experiment with these silvicultural practices on federal lands. The highly charged sociopolitical environment of recent years has created a credibility gap between large bureaucratic government agencies and constituents. In the case of the Forest Service, many people feel the current levels of timber harvest are already too high and giving the agency additional freedom to cut more trees is not a good idea, particularly when ecological outcomes are uncertain.

Management practices like mechanical thinning pose numerous biological and socioeconomic questions that require long-term research using multiple approaches. The current research design begins to address these issues in an integrated manner by linking with

a larger study framework coordinated by the Blue Mountains Natural Resources Institute. Problems associated with cost effectiveness and specific impacts on soils, wildlife, and riparian areas have been undertaken by separate research teams of harvest engineers, soil scientists, and wildlife biologists. Remaining social issues--the public acceptability of these practices, preferences for particular forest policies, and support for Forest Service programs--are undertaken in this study and reported here. Eventually, each study will be available for review as part of a multi-disciplinary assessment.

OBJECTIVES AND METHODS

Natural resource managers are frequently confronted with the strong voices of interest groups or individual citizens who represent well-defined positions. Listening to this segment of society is an important aspect of obtaining information and understanding constituent concerns about management preferences. Just as important, however, is understanding the views of the broad base of our population--those who are often referred to as the unrepresented, general public. The purpose of this study was to determine how this wider group of citizens--the general public of the Blue Mountains--feels about forest management in their region. Specifically, we were interested in their views on the use of prescribed fire and mechanical thinning practices and factors that influence these attitudes.

In designing this study, we recognized that how people feel about specific forest practices is often connected to a larger set of issues. Examples could include resource sustainability, cost effectiveness, impacts on amenity resources, local control of affected lands, and so on. Thus, we sought to understand attitudes about prescribed fire and mechanical thinning in this wider context. A set of research objectives were incorporated that would be useful for assessing the broad scope of social dynamics surrounding these issues.

Objectives

This study used social assessment techniques to examine citizen knowledge about forest management in the Blue Mountains and measure attitudes and preferences for the use of specific ecosystem management techniques. Four areas were targeted to provide resource managers with an evaluation of public perspectives:

1. Develop a community profile to describe the "Blue Mountains public" and learn how people view forest conditions and form opinions about forest management.
2. Examine how the citizens engage with the Forest Service and report public opinions of agency planning processes for ecosystem management.

3. Examine public attitudes and perspectives for management strategies that incorporate the use of management ignited prescribed fire and mechanical thinning.
4. Explore public preferences for the tradeoffs associated with prescribed burning, wildfire, mechanized logging, clean air, healthy forests, etc.

Methods

A variety of social assessment techniques were used to develop a better understanding of the research questions and finalize a research design. First, individual discussions were held with Forest Service personnel from the Umatilla, Wallowa-Whitman, and Malheur National Forests to gain a perspective on what the agency saw as key issues. Discussions included staff from fire, timber management, public affairs, and forest research. Meetings took place at Forest and District offices as well as on previous and proposed research sites.

Second, focus group meetings with key publics were conducted in LaGrande to gain a sense of important issues from the citizen perspective. Separate meetings included individuals from forest industry groups, forest users, and the environmental community. Participants were encouraged to discuss their views on (1) forest conditions, (2) use of prescribed fire and mechanical thinning practices, (3) important sources of information, (4) their interaction with Forest Service personnel, and (5) other associated concerns or problem areas. Group members spoke freely, offering thoughtful and constructive commentary. Notes and transcripts from meetings were analyzed and subsequently used in formulating a survey questionnaire.

During the time meetings and focus groups were conducted, a search of local newspapers was also done to identify issues that might have been missed. Particular attention was given to editorials and letters to the editor that could provide additional insights to public views on forestry conditions or management problems.

The third research step was design and administration of a comprehensive survey instrument. A public opinion questionnaire was developed with input from researchers at the Forest Service's PNW Research Station Global Environmental Protection Program in Corvallis and the Blue Mountains Natural Resources Institute in LaGrande. Questionnaires were mailed to a stratified random sample of adults in Blue Mountains communities obtained from telephone directories.

Responses from 535 individuals--a 56% response rate--were tabulated and analyzed with the findings presented in this report.

The final segment of investigation is currently in progress and includes site visits with citizens to forest locations where both prescribed fire and mechanical thinning projects have been completed or are currently underway. The intent is to further evaluate factors associated with public acceptance by exposing citizens to these practices. Results from this phase of research will be published in 1997.

Research Design

We anticipated that a triangulation of methods (focus groups, questionnaires, on-site visits) would help insure adequate coverage of public views and result in a higher quality of information (Egan et al. 1995). Multiple techniques also provided the ability to collect quantitative data (appropriate for statistical analysis) as well as qualitative data (observations, written comments) that are not so easily reduced to numbers. This latter form of information frequently yields rich insights to human perspectives.

After the initial round of focus group meetings, a survey questionnaire became the primary research instrument. The accuracy and quality of any opinion questionnaire is dependant on the sampling techniques employed for data collection. One criterion for a sample is how well it represents the population from which it is taken. A stratified sample was selected to ensure a sufficient number of individuals were drawn from homogeneous subsets of the population. That is, we organized communities that were to be sampled by size (over 10,000 and under 10,000) and then drew an appropriate number from each. Babbie (1995) recommends stratified sampling as a method to obtain a greater degree of representativeness from the population of interest, thus decreasing sampling error.

Another basic issue of sampling involves nonresponse. When a large number of participants fail to respond, there is a concern that results may be biased by those who do answer questions because they have a special stake in the issues. In this study, not only was a stratified sample use, but a systematic procedure was used to insure an acceptable percentage of those contacted completed the mail survey. The *Total Design Method* for conducting survey research (Dillman, 1978) was utilized and resulted in 535 of the 950 residents contacted completing questionnaires for a 56% response rate. Texts

on survey research describe expected rates of response at about 10-20% (usually product research) as low, in contrast with 75-80% (often obtained from single interest groups like wilderness hikers or recreational boaters) as being at the top end of the high range (Lehmann, 1989). For a random mail survey with a general topic area like the one in this study, expected response rates are typically at the 35-50% level.

Thus, we are relatively certain the methods used and response obtained here yield reliable information. Based on sample size and return, the sampling error is estimated at 5 percentage points with a 95% level of confidence. Previous studies on research design (e.g. Choi et al. 1992, Wegner & Gregersen, 1964) note that this level of response is adequate to make inferences from a sample to the general population.

FINDINGS:

PROFILE OF BLUE MOUNTAINS COMMUNITIES

A profile of survey participants is presented in this chapter through a variety of tables and figures that help describe residents in Blue Mountains communities. Basic sociodemographic information is provided along with data on environmental values, people's assessments of forest conditions, their ideas about important information sources, and the extent to which the public interacts with forest agencies. Collectively, this information establishes an important frame of reference for how and why people respond to forestry issues.

Association between important variables

One of the reasons for examining the characteristics of people in communities is to look for similarities and differences in the way various segments of the population relate to natural resource issues. The community-oriented approach of ecosystem management requires an understanding of the extent to which citizens share attitudes and preferences. Shared values make priority setting easier; conflicting viewpoints often require controversial decisions about management activities.

Academic research suggests that common attributes like those studied here can be indicators of people's general attitudes toward forest management priorities. For example, some studies show that the farther we get away from urban areas the more likely we are to find citizens with traditional (commodity-based) attitudes about forests (Tichenor et al. 1971; Tremblay & Dunlap, 1978). In the specific case of prescribed fire, we might expect to find more acceptance in rural areas where field burning is commonly done or there has been greater exposure to the use of fire. Similarly, individuals who earn their living from the timber industry are usually more supportive of policies favoring intensive forest management (Brunson et al. 1996). Additional research suggests that other social factors like age, education level, income, and political beliefs are also associated with management preferences (Shindler et al. 1996; Rasker, 1993).

Later in this report, findings will be analyzed to determine if preferences for use of specific management practices are correlated with a variety of sociodemographic characteristics present among the people in the Blue Mountains communities.

Community Characteristics

Table 1-1 provides a descriptive summary of the 535 survey participants. Findings are presented for the total group as well as by national forest. Malheur and Ochoco residents are combined as the samples were smaller and significance tests indicated no difference in responses from these two areas.

The average length of time in the community for a Blue Mountains resident is 35 years suggesting that these individuals have a good sense of the surrounding forest lands. Male respondents make up a larger proportion of the sample which could have an overall effect on value and preference orientations. Gender has been a factor in other environmental studies; the views of women are generally for a more holistic brand of resource management (Mohai, 1992; Steger & Witt, 1989).

The average age of respondents is 54 years, which seems appropriate given the survey was conducted only among adult members of communities. Education levels are comparable to other regions studied in Oregon and Washington; over one-third (34%) have college level or advanced degrees.

Although average family income is about the same among communities (almost \$36,000), differences are apparent in its origins. Substantially more families in the Malheur and Ochoco national forests are dependent on the timber industry than households in the Umatilla or the Wallowa-Whitman. However, a strong majority in all areas earns a living from the traditional natural resource-based economies of forestry, farming, ranching, and fishing. These percentages appear substantially higher than other (metro) regions surveyed in the Pacific Northwest (e.g. Shindler et al. 1996, Brunson et al. 1996), which is probably attributable to the lack of large population centers in the Blue Mountains and the type of jobs normally found in more rural areas.

Overall, 35% of the sample are retired. In some areas of the Pacific Northwest, the retirement population represents a shifting value system regarding natural resource use and protection. Many retirees are no longer as dependent on the region's economic activity,

while others may have recently relocated to the area and essentially brought their retirement income with them. In these cases, retirees may be more interested in the amenity value of natural resources than their extraction value. However, given the long-term residency of most respondents, the general group of retirees in the Blue Mountains appear to be well entrenched in their communities and their valuation of surrounding resources may tend to be relatively constant.

Table 1-1. Participant Profile by National Forest

	<i>Total</i>	<i>Umatilla</i>	<i>Wallowa-Whitman</i>	<i>Malheur/Ochoco</i>
Sample size	535	255	179	101
Mean years of residence in Blue Mountains	35	35	38	30
Gender				
% female	31	32	31	28
% male	69	68	69	72
Mean age	54	54	55	53
Education				
% high school only	32	28	33	44
% some college	34	34	37	26
% college graduate	22	22	23	17
% graduate degree	12	16	7	13
Mean family income for 1995	\$35,900	\$37,200	\$33,400	\$36,800
Economic sector on which immediate family depends for livelihood (could select more than one).				
% timber	31	24	34	55
% farming	27	30	26	15
% ranching	22	16	28	31
% tourism/recreation	9	7	14	9
% special forest products	9	8	8	12
% hydro-electric power	5	5	5	5
% fishing	4	4	5	3
% other	14	12	16	21
Retired (%)	35	35	36	31
Membership in organization interested in public lands issues				
% recreation group	13	13	13	13
% wise use group	10	9	9	13
% timber group	8	5	10	18
% environmental group	5	5	4	4

Finally, membership in groups organized around public lands issues is fairly low; few people identified with recreation, commodity, or environmental organizations. These figures suggest we would expect to see a lower level of political activism than might be found in the larger population centers of the northwest.

Travel in the Blue Mountains

To understand people's ability to judge forest conditions, participants were asked about the extent of their travel in the Blue Mountains (Table 1-2). Presumably, most individuals have at least traveled on the interstate highway system and on state and county roads, thus having some familiarity with forest conditions in recent years. However, a large number (86%) reported they have also traveled off paved roads onto dirt or gravel forest roads, and over 60% have hiked, skied, or traveled by horseback on mountain trails. Overall, this suggests people have had ample opportunity to view a variety of forest settings and evaluate those conditions.

Table 1-2. Extent of Travel in Blue Mountains

<i>Please tell us about the extent of your travel and visits to local national forests. In the last 3 years, have you done any of the following in the Blue Mountains (check all that apply):</i>	
... drive on state or county paved roads or highways	89%
... drive off paved roads on to dirt or gravel roads	86%
... travel on mountain trails (on foot, horseback, skis, snowmobile, etc.)	61%
... have not visited the Blue Mountains in the last three years	4%

Knowledge of Forest Conditions

An informed citizenry is essential to resource decisions made in the public arena. Findings that reflect the public's general awareness of and involvement in forestry issues are reported in this section. Participants were asked to describe the amount of attention they give to national forest issues and how informed they feel about conditions in the Blue Mountains. Figure 1-1 shows that more than 90% of all citizens described themselves as at least moderately attentive, with one-fourth (25%) believing they give a great deal of attention to forestry issues. Figure 1-2 shows a similar level of knowledge about forest conditions; 84% said they were at least moderately knowledgeable about local forests.

Figure 1-1. How much attention do you give to national forest issues or problems?

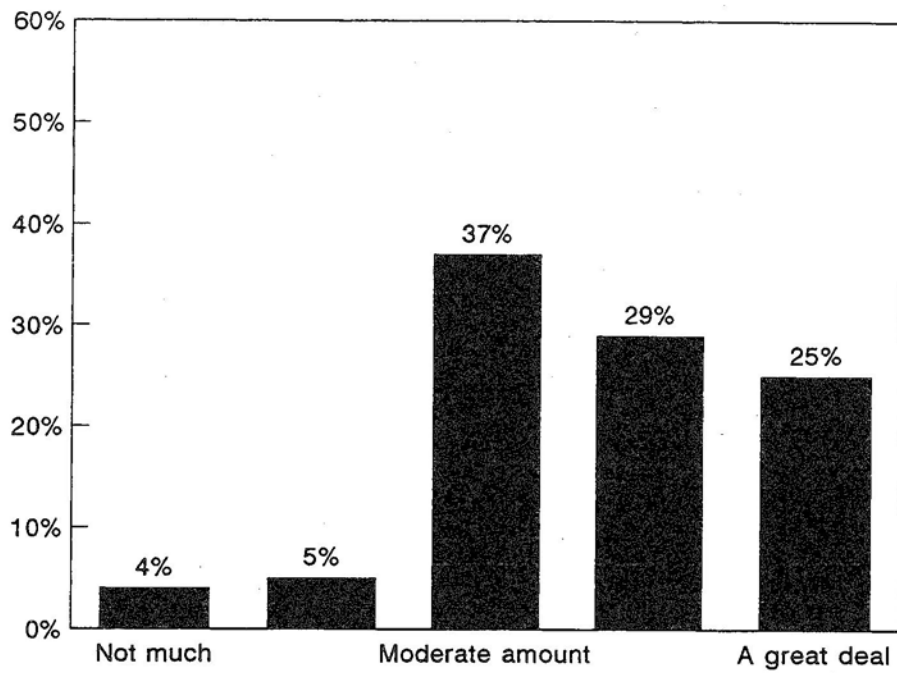


Figure 1-2. How well informed are you about forest conditions in the Blue Mountains?

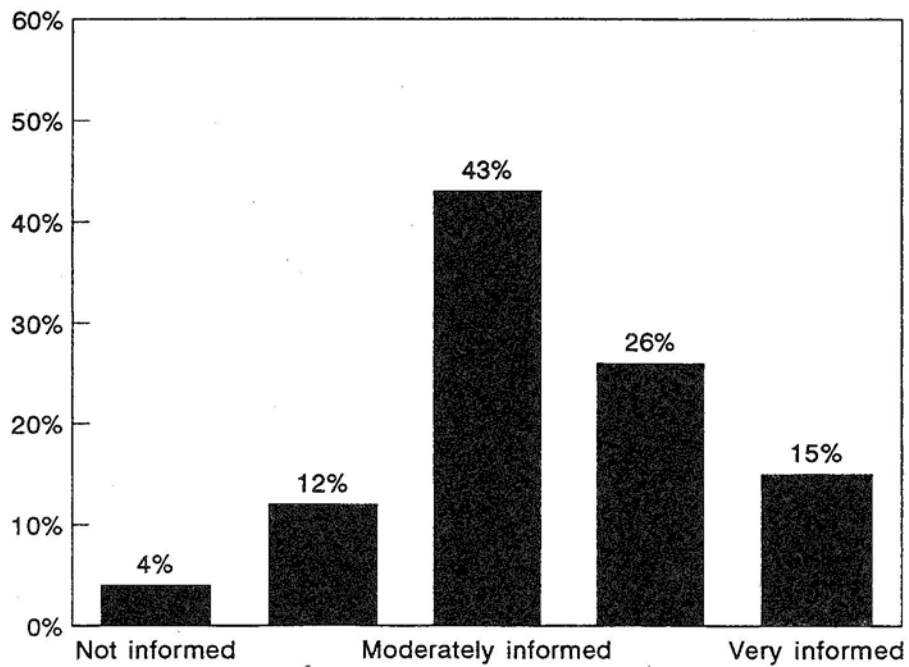
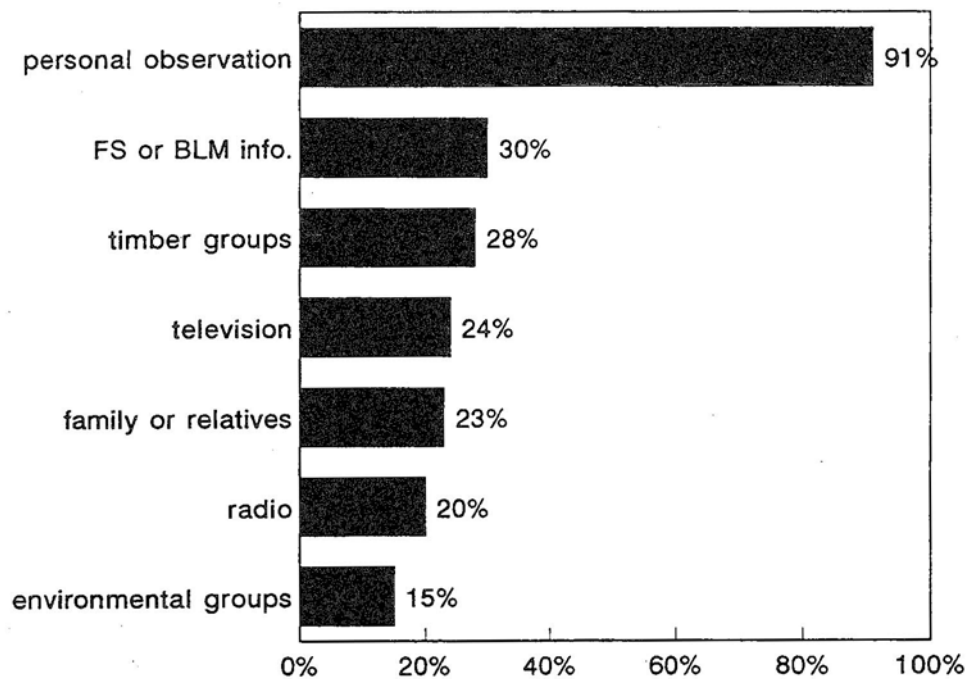


Figure 1-3 depicts the source of people's opinions. When asked to independently rate a number of items, *personal observation*--what people see--was overwhelmingly the most common factor to influence opinions. Other sources such as information from forest agencies, radio or television, and interest groups play a much smaller role.

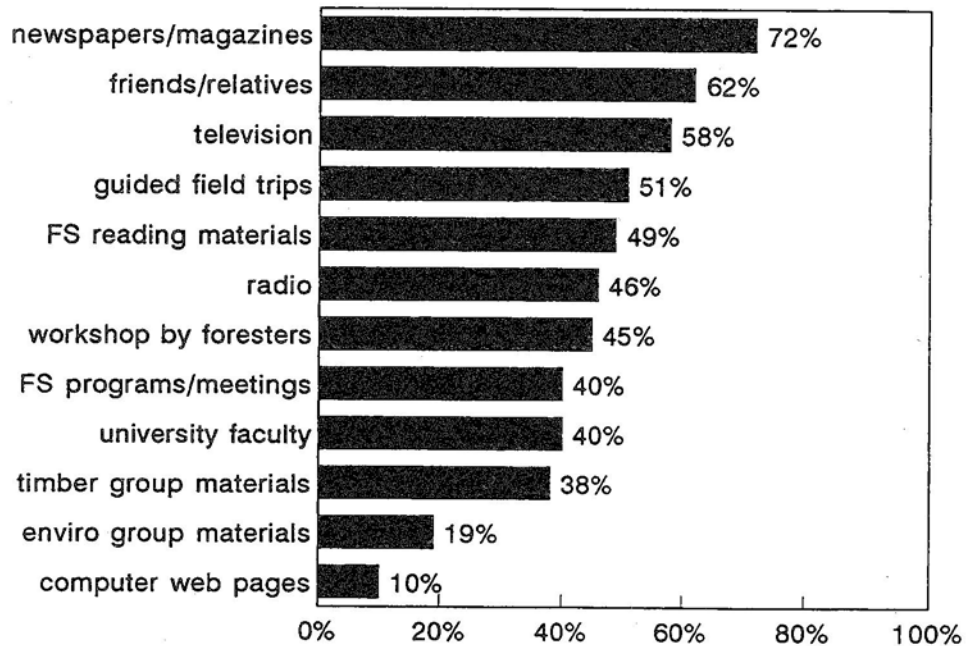
Figure 1-3. What is your opinion of forest conditions based on?



In further questioning, participants were asked to rate various sources for obtaining information about the Blue Mountains. Given a list of twelve items, people judged the importance each (none, slight, moderate, high) for how they currently get information as well as those things they would be willing to do in the future. Figure 1-4 shows the percentage of people who rated the items as moderately or highly important.

The most important sources were fairly predictable: newspapers (72%), friends and relatives (62%), and television (58%) were ranked highest. However, substantial numbers of people--about 50%--also indicated an interest in guided field trips to forest sites and Forest

Figure 1-4. Important information sources for forest management in the Blue Mountains



Number of citizens who rate importance level as moderate or high

Service reading materials and workshops. Lower priorities were given to materials from interest groups like timber and environmental organizations. Of least interest was the use of computer web pages for obtaining information.

Judgments of Forest Health

Respondents used a four-point scale (from very healthy to very unhealthy) to rate forest conditions in the Blue Mountains. Figure 1-5 shows a strong majority (66%) feel unhealthy conditions prevail overall. Residents also rated the areas close to their home (Figure 1-6). Again, more people believed their local national forest was unhealthy; however, the Umatilla communities rated their surrounding forest lands slightly better than other residents.

Figure 1-5. How would you rate the overall forest conditions in the Blue Mountains?

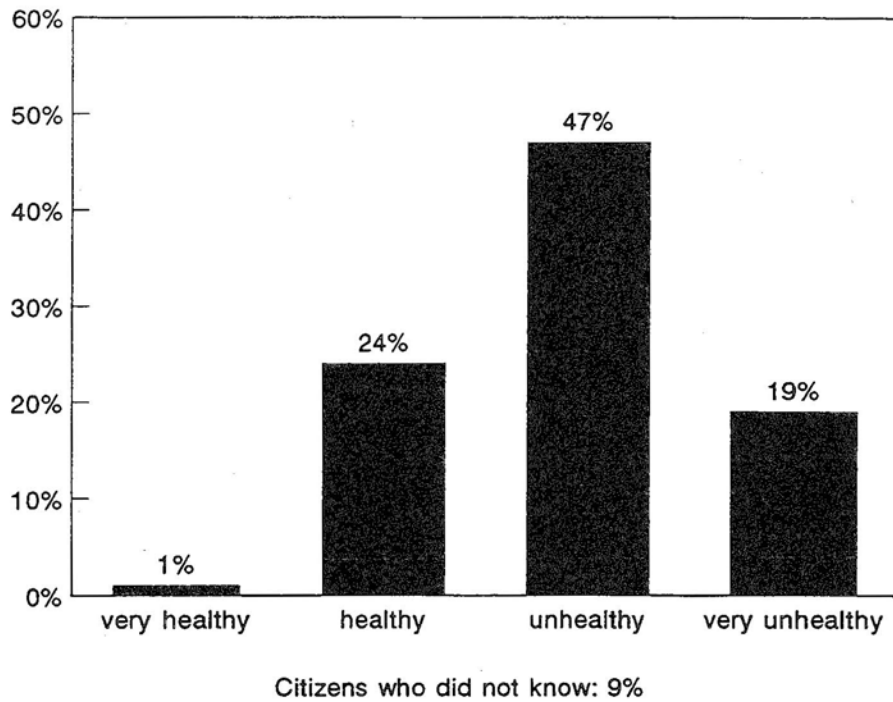
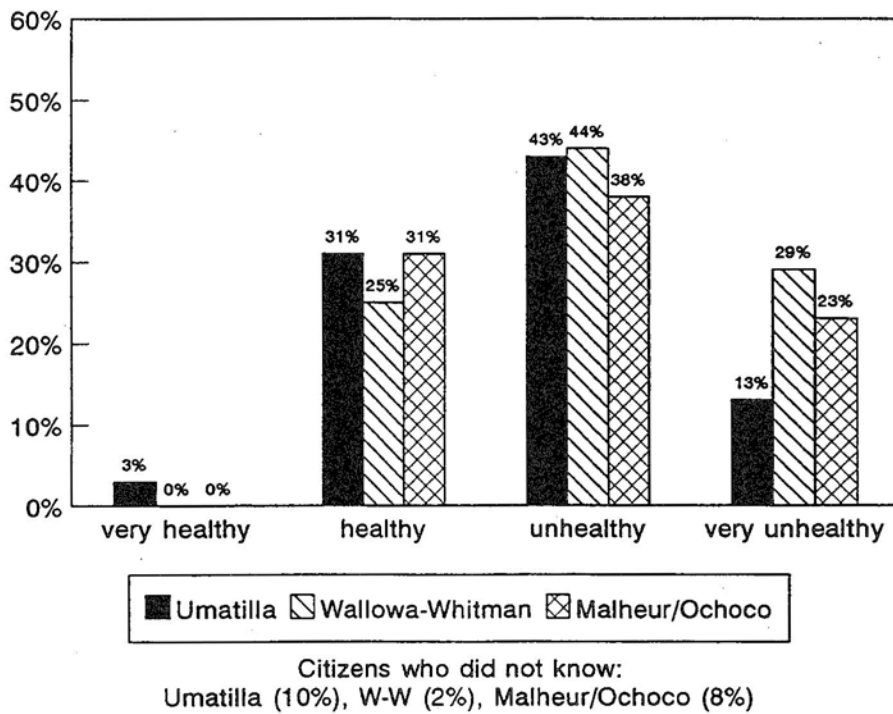


Figure 1-6. How would you rate the overall forest conditions in your area specifically?

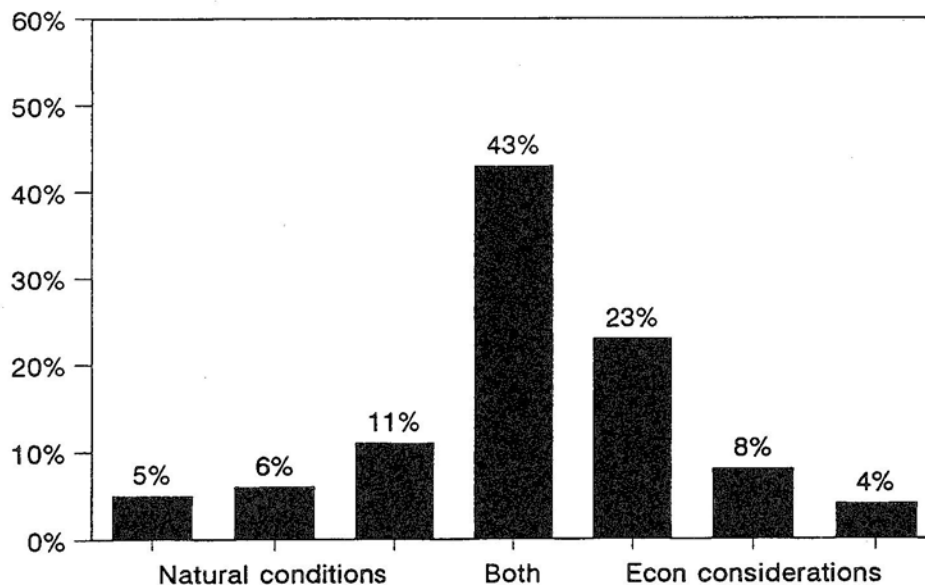


Environment vs. the Economy

To identify policy orientations, respondents were asked to self-select their position on a seven-point scale regarding the importance of managing for environmental and economic considerations (Figure 1-7). Selecting a position left of the midpoint indicated priority should be given to natural conditions (wildlife, old growth forests), even if this had negative economic consequences. A position to the right of the midpoint indicated the priority was on economic interests (employment, tax revenues) even if it was at the expense of the environment. Ratings at the midpoint indicated environmental and economic factors should be given equal priority.

The largest single response was at the midpoint; 43 % favored a balance between environmental and economic components. Dispersed on the natural environment end of the scale were 22 % of the respondents, while 35% expressed a higher regard for economic concerns.

Figure 1-7. Environmental/Economic Scale
Should highest priority be given to maintaining
natural conditions or to economic considerations?



Scale: 1 = highest preference for natural conditions to
7 = highest preference for economic considerations.

A more specific line of questioning probed deeper into the environmental/economic dichotomy and is reported in Table 1-3. Findings show respondents were still about evenly divided in their support for one form of management over the other, with those favoring economic considerations (53%) in the slight majority. Overall, most people placed themselves either at or near the midpoint on this scale, suggesting that most find the two forms of management compatible; wood products are needed, but must be produced within an ecological framework.

Table 1-3. Environmental Conditions vs. Economic Considerations

<i>Which of these statements best describes your feelings about the balance between the economy and the natural environments?</i>	
• The environment should be given priority even if it hurts the economy.	3%
• Both the economy and the environment are important, but if we're forced to make a choice, the environment should usually come first.	44%
• Both the economy and the environment are important, but if we're forced to make a choice, the economy should usually come first.	50%
• The economy should be given priority even if it hurts the environment.	3%
<i>When it is impossible to find a reasonable compromise between economic considerations and environmental protection, which do you believe is more important</i>	
• economic considerations	53%
• environmental protection	43%
• undecided	4%

FINDINGS: *CITIZEN/AGENCY INTERACTION*

The involvement of local publics is a central element in working through decision processes and the eventual adoption of ecosystem management practices. To validate this approach, and determine the public's expectation about being included in the planning process, residents were asked about the value of citizen participation in federal forest management. The question included the phrase "even if it increases the cost of government."

Figure 2-1. Value of citizen participation in federal forest management, taking into account government costs

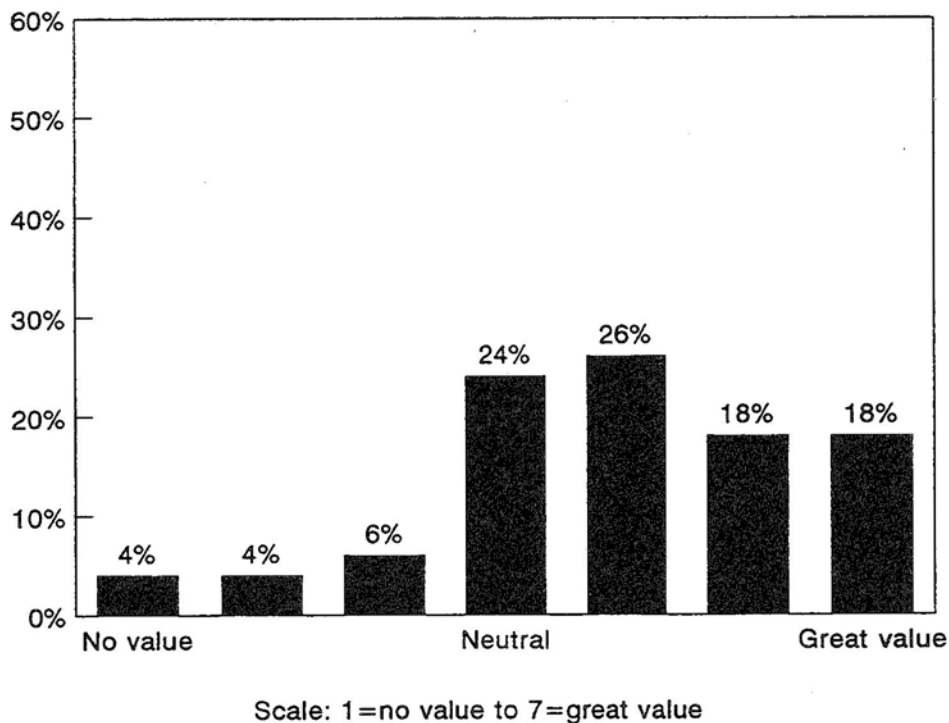


Figure 2-1 shows that a solid majority support the public's participation in federal forest management. Overall 62% saw merit in the practice by placing themselves right of the midpoint, while just 14% felt it was of little or no value. Social researchers generally credit two reasons for the recent high interest in citizens wanting to be a part

of natural resource decisionmaking. First is the belief that decision quality improves if the public is more effectively included; second is that today's informed public increasingly distrusts government bureaucracies (Knopp & Caldbeck, 1990). Some of each may be true in the Blue Mountains; but whatever the reason, there is an expectation among many local citizens that they can have a role in resource decisions and land allocation.

Interaction with Forest Management Agencies

The relationship between forest management agencies and local publics is an important one. To more thoroughly understand the public's perception of forest management decisionmaking and the role people see for themselves, we asked about their level of agreement with a series of statements. Citizen's responses are reported in Table 2-1.

Table 2-1. Perspectives on Public/Agency Interactions

	<i>Agree</i>	<i>Neutral</i>	<i>Disagree</i>
The Forest Service does a good job of providing information about its management activities.	31%	32%	37%
Agencies like the Forest Service and the BLM are open to public input and use it to shape forest management decisions.	37%	31%	32%
Forest managers usually create plans without input from local communities surrounding national forests.	53%	25%	22%
Our federal forest management systems need major changes, not just minor adjustments.	56%	25%	19%
The Forest Service should provide a stronger leadership role.	52%	34%	14%
Reliable knowledge about forest ecosystems is lacking.	45%	27%	28%
I feel like I don't have much to contribute to forest planning efforts.	36%	25%	39%
I would likely support a forest decision made by members of my community, even if it went against my personal preference.	40%	27%	33%

The data show about an equal number agrees (31%), is neutral (32%) and disagrees (37%) with the statement that the Forest Service does a good job of providing information about its activities.

A similar spread of opinions exist about whether agencies are open to input from the public when making decisions. A majority (53%) believe that forest managers usually create plans without listening to their local communities. Most people agree (56%) our federal management systems need major changes and the Forest Service should provide a stronger leadership role.

Other results show that for many people, questions exist whether we know enough about our forest ecosystems. Less than half of those responding (45%) believe we have reliable information. Regardless, the public is about evenly divided on whether or not they personally have something to contribute to planning efforts. It is not clear whether this is based on a lack of knowledge, frustration with the system, or simple apathy. Even so, many people appear reluctant to relinquish too much control to others. Only 40% would support a decision made by members of the community if it went against their personal views.

Table 2-2 provides some insight as to the public's expectation about its role in future management decisions. Few (7%) are willing to sit back and let the resource professionals decide the fate of local forests. Another 30% chose the model that most closely resembles the National Environmental Policy Act (NEPA) process as it was used in the 1970's and 1980's where the public makes suggestions and resource professionals decide what to do. However, this approach entails less participation than the remainder of our respondents feels is appropriate. Most either want to serve on advisory boards (34%) or act as equal partners (21%) in making management decisions.

Table 2-2. Public's Role in Forest Management

<i>In your opinion, a realistic role for the public in federal forest management should be:</i>	
... none, let resource professionals (Forest Service, BLM) make decisions.	7%
... provide suggestions and let the resource professionals decide.	30%
... serve on advisory boards that review and comment on decisions.	34%
... act as a full and equal partner in making management decisions.	21%
... public should make the decisions and resource professionals should carry them out.	8%

Summary

Several inferences can be drawn from these results. In sum, these responses align with opinions from other forest communities in Oregon and seem to reflect public interest in decisionmaking processes overall and an expectation for some level of review or meaningful involvement. The findings suggest there may be an openness to greater levels of experimentation on forests (to improve knowledge of ecosystems) as well as for new attempts to find solutions to management problems. It seems that any new approaches to forest management will have to overcome citizens' doubts about government/constituent relations. The public expects forest agency managers to take a stronger leadership role, but one that includes the experience and advice of local residents.

Finally, results reported in Table 2-1 indicate there are few decisive opinions among citizens about their interaction with the Forest Service. In evidence is the general split over agreement and disagreement with statements about provision of information and decisionmaking actions. Another indicator of public indecision is the high percentage of neutral responses across all items. Researchers usually interpret neutral responses to mean that people either do not know or are indifferent (do not care). In the case of perceptions about forest planning, we should probably interpret these answers to mean that many people have had little contact with the Forest Service and therefore, have little on which to base a judgment; On balance, much of the public may be willing to wait and watch before they approve or disapprove. One avenue open to resource agencies then, is to view this indecisiveness as an opportunity to engage local communities more directly in forest management decisions and to help shape public attitudes.

FINDINGS:
ATTITUDES ABOUT PRESCRIBED FIRE
AND MECHANICAL THINNING

This chapter reports empirical findings on public attitudes about the use of prescribed fire and mechanical thinning as suitable management practices. Respondents were asked to evaluate these specific management techniques as approaches to fuels reduction and forest health problems in the Blue Mountains.

Prescribed Fire

To introduce this section of the survey instrument to study participants, care was taken to describe the use of prescribed fire and provide instructions for answering questions. The intent was to provide sufficient information, but not be overly burdensome. The following text was given as an introduction to the section about prescribed fire:

Resource managers on national forests are attempting to use prescribed fire to control disease, insects, and excessive build up of dead trees. Prescribed fire has two forms: 1) prescribed natural fire where a decision is made to allow a fire ignited by nature (primarily lightning) to burn under control to accomplish an objective and 2) management ignited prescribed fire where fire is also used as a tool -- also to accomplish an objective -- but in this case, managers schedule these burns around the weather, fuel loadings, season, and their ability to maintain control of the fire. The following pertains to management ignited prescribed fire.

Below are sets of opposing statements about the use of prescribed fire. Place an "X" on one of the five spaces that most closely reflects your agreement about the two statements. You are not being judged on right or wrong answers, we want your opinions. Base your answer on what you believe to be true. If you truly feel you don't know enough about an item to give an opinion, write the letters DK (for don't know) on the lines for that set of statements.

Statements and findings are reported in Table 3-1. The five response categories have been collapsed into three (agree, neutral, agree). On the actual questionnaire, response sets were stated randomly so that not all affirmative responses were on one side, or vice versa. For reporting and assessment purposes, statements have been arranged in the table so that the more affirmative responses are listed on the left and the opposing responses are on the right. Statements are also partitioned for discussion purposes.

Finally, to determine public attitudes about the use of prescribed fire we wanted to be able to differentiate between those who were neutral on an issue and those who simply did not know enough to answer the question. The table also displays these *don't know* responses. Overall, few people selected this answer indicating that most everyone has an opinion on these issues and was willing to voice it.

Findings

The first section in Table 3-1 reports opinions about the general effectiveness of prescribed fire. A large majority agree the practice is useful in decreasing the chance of wildfire (74%) and reducing excess fuels (70%). Far fewer (43%) are convinced the practice does not present a threat to nearby property.

The next section depicts attitudes about prescribed fire's effect on more specific environmental elements. The data indicate a solid majority agree the practice is a useful tool in ridding the forest of insects and disease and is beneficial for the rejuvenation of native grasses, plants, and soils. Few see harm being done to other desirable forest components; short-term impacts on fish, wildlife, and water quality are acceptable to most people.

In the next section, findings about fire-induced problems that affect humans are reported. Almost two-thirds of the sample (66%) indicated smoke from prescribed fire is acceptable if it results in a healthier forest, while only 17% felt air quality would reach unacceptable levels. In addition, about three-fourths of the respondents were willing to accept the short-term affects of fire on both scenic beauty and recreational uses of the forest.

Table 3-1. Public Attitudes about Prescribed Fire

Prescribed fire:	Agree----Neutral----Agree				Don't know
decreases the chance of high-intensity wildfires.	74%	8%	13%	has little overall effect on wildfire intensity or frequency.	5%
effectively reduces the amount of excess fuels in the forests.	70%	10%	15%	causes more damage than benefits provided from reducing fuels.	5%
is of little or no threat to nearby property and forest land.	43%	23%	30%	is a big threat to nearby property and forest land.	4%
effectively keeps insects and diseases at minimum levels by maintaining healthy trees.	71%	11%	13%	causes more damage than benefits provided from getting rid of insects and disease.	5%
stimulates the growth of native grasses for wildlife and livestock.	83%	7%	4%	severely damages the growth of native grasses.	6%
releases useful minerals and nutrients into soil.	72%	15%	6%	creates ash that is detrimental to soil conditions.	7%
encourages growth of plants best suited to natural ecosystem.	77%	11%	7%	causes long-term damage to natural plant ecosystems.	5%
causes acceptable short-term impacts to water quality and fish habitat.	65%	15%	12%	causes an unacceptable decline in water quality and fish habitat.	8%
creates acceptable changes in native wildlife habitat.	70%	12%	15%	causes unacceptable damage to critical wildlife habitat.	3%
smoke levels are acceptable if it means a healthier forest.	66%	14%	17%	results in smoke that decreases air quality to unacceptable levels.	3%
causes only short-term damage to scenic beauty.	76%	7%	15%	causes long-term damage to scenic beauty of forest land.	2%
has acceptable short-term effects on recreation uses.	74%	11%	11%	has unacceptable long-term effects on recreation uses.	4%
is a legitimate management tool.	70%	13%	12%	is an untested system with too many risks.	5%
is a safe management tool.	68%	14%	14%	is too dangerous to be used.	4%
overall, the benefits of prescribed fire are worth it.	65%	15%	16%	overall, the risk and impacts of prescribed fire are too great.	4%
protecting timber for harvest should not be a consideration.	22%	38%	32%	unnecessarily reduces the amount of harvestable timber.	8%
I trust the Forest Service to implement a responsible and effective prescribed fire program.	51%	21%	25%	I do not trust the Forest Service to implement a responsible and effective prescribed fire program.	3%

The final segment depicts attitudes toward the legitimacy of prescribed fire and the Forest Service's ability to implement an effective program. A large majority believes the use of fire is both a safe and legitimate management tool and that overall, the benefits derived are worth the risks. However, when protecting timber for harvest is factored in, fewer people agree on the appropriateness of prescribed fire. About one-third believe the use of fire unnecessarily reduces the amount of harvestable timber, while 22% think protecting timber for this purpose should not be a consideration. People's level of trust in the Forest Service to implement a responsible and effective program is also divided. A majority (51%) give the agency a vote of confidence, while one-fourth do not trust the Forest Service and about another fourth (24%) are either neutral or undecided.

Mechanical Thinning

Prior to specific questions in the survey about the use of mechanical thinning, another paragraph was provided to help describe the practice and instruct respondents on answering:

Another management approach involves the suitability of mechanical logging methods to selectively thin forests to control disease, insects, and excessive build up of dead trees. A range of mechanized harvesting systems are available. Some are lighter on the land than others; various costs and impacts are associated with each. Currently, managers and researchers are experimenting with ground-based harvesters and skyline (above ground) yarding to test soil compaction, erosion, wildlife disturbance, and the economics of these systems. These projects involve the removal of down logs or standing dead and dying trees less than 15" in diameter from selected forest sites. Forest managers are attempting to find cost effective systems with few impacts that are acceptable to both the public and harvesting operators.

Below are sets of opposing statements about mechanized selective thinning. As before, place an "X" (or DK for don't know) on the space that most closely reflects your agreement about the statements. Remember, you are not being judged on right or wrong answers; we want your opinions.

Statements and findings are reported in Table 3-2. As before, response categories have been collapsed (agree, neutral, agree) and affirmative/opposing statements rearranged for reporting purposes; *don't know* responses are also shown.

Table 3-2. Public Attitudes about Mechanized Thinning

Mechanized selective thinning:	Agree----Neutral----Agree				Don't know
decreases the chance of high-intensity wildfires.	79%	6%	11%	has little overall effect on wildfire intensity or frequency.	4%
effectively reduces the amount of excess fuels in the forests.	77%	8%	10%	causes more damage than benefits provided for reducing fuels.	5%
effectively keeps insects and diseases at minimum levels by maintaining healthy trees.	76%	9%	9%	causes more damage than benefits provided from getting rid of insects and disease.	6%
soil erosion is minimal and impact on water quality and fish habitat are acceptable.	61%	15%	16%	causes soil erosion with unacceptable impacts on water quality and fish habitat.	8%
soil compaction is minimal and impacts on tree and plant regeneration are acceptable.	65%	12%	14%	causes unacceptable levels of soil compaction that harm tree and plant regeneration.	9%
causes little or no damage to natural ecosystems.	62%	18%	12%	causes severe damage to natural ecosystems.	8%
creates acceptable changes in native wildlife habitat.	69%	13%	12%	causes unacceptable damage to critical wildlife habitat.	6%
causes little or no impacts to scenic beauty of forest land.	66%	14%	17%	causes long-term damage to scenic beauty of forest land.	3%
has acceptable short-term effects on recreation uses.	77%	8%	9%	has unacceptable long-term effects on recreation uses.	6%
is a legitimate management tool.	77%	13%	5%	is an untested system with too many risks.	5%
is a legitimate tool for removing harvestable timber.	82%	6%	9%	timber harvesting should not be a consideration.	3%
overall benefits of mechanized selective thinning are worth it.	75%	11%	9%	overall impacts of mechanized selective thinning are too great.	5%
I trust the Forest Service to implement a responsible and effective mechanized thinning program.	58%	16%	23%	I do not trust the Forest Service to implement a responsible and effective mechanized thinning program.	3%

Findings

Overall, responses about mechanized thinning are similar to those given for the use of prescribed fire. In the first section, data reveal that most people agree mechanized thinning is an effective tool; over three-fourths feel the practice decreases the chance of wildfire and reduces the amount of excess fuels.

In the second section, most people view resulting impacts on specific environmental elements as acceptable. Majorities see mechanized thinning as an effective way to minimize insect and disease damage, while not substantially disturbing soils, wildlife, or natural ecosystems.

The third section shows that short-term effects on both scenic beauty and recreational uses are acceptable to over two-thirds of all respondents.

The final segment shows that a strong majority support the use of mechanized thinning as a legitimate management tool with little risk. Three-fourths also agree the benefits derived from the practice are worth any impacts incurred. As with prescribed fire, a majority (58%) has trust in the Forest Service to implement a responsible and effective mechanized thinning program. But again, a substantial minority either do not trust the agency, is neutral, or is undecided.

Summary

In summary, prescribed fire and mechanical thinning appear to be useful and acceptable practices to most of the public. In many cases, large majorities agreed with their use for specific management purposes and were willing to live with resulting impacts. Although few see the practices as involving risk, a question remains about fire being a threat to nearby property. In addition, trust issues surrounding the use of these practices are not completely resolved. When coupled with findings about the agency's ability to provide information or involve the public, the Forest Service and a sizeable minority of respondents agree that in order to implement successful programs effective forms of interaction are needed. Such action could also be useful in connecting with the "neutral" public who may be indifferent to the implementation of these management practices or, to this point, have had little contact with forest agencies.

FINDINGS:

PUBLIC PREFERENCES FOR PRESCRIBED FIRE AND MECHANICAL THINNING

Social science research has taken on the task of measuring general public attitudes about the environment. Opinion polling makes it relatively easy to determine if people are for or against policies like clearcutting or if they support efforts to restore salmon runs. However, little has been done to ask people to decide between more difficult tradeoff questions and consider alternatives. Findings in the previous chapter began to reveal these preferences by reporting public attitudes on opposing management practices. Findings in this chapter record support for specific policies as well results where citizens were asked to choose *between* management strategies ..

Prescribed Fire

For frame of reference regarding forest fires in general, we first asked if people had trouble knowing which type of fire was burning. Responses reported in Table 4-1 show varying levels of knowledge about fire: 42% said they had difficulty telling the difference between a natural forest fire and a management ignited prescribed fire; 35% had no trouble and 23% were neutral--which in this case probably means they were unsure. In a similar question elsewhere on the questionnaire, respondents were asked about being able to tell the difference between a prescribed fire and field burning. In this case responses were similar, 33% said they could not tell the difference, 44% said they could, and 23% were not sure.

Table 4-1. Public Preferences for Prescribed Fire

	<i>Agree</i>	<i>Neutral</i>	<i>Disagree</i>
I usually have difficulty knowing which is burning--a natural forest fire or a management ignited prescribed fire.	42%	23%	35%
All fires, regardless of origin, should be put out as soon as possible.	30%	15%	55%
Prescribed fire is okay as long as it is done in the spring or fall.	54%	31%	15%
Scientific experimentation with prescribed fire is appropriate on insect infested sites.	73%	17%	10%
Prescribed fires waste trees that should be used for wood products.	45%	22%	33%

In further questioning, a majority (55%) disagreed that all fires, regardless of origin, should be put out as soon as possible. This suggests a degree of public knowledge about the utility of fire programs as well as an understanding that fire can be controlled. About the same number (54%) agreed that using prescribed fire is acceptable if done in the spring or fall; only 15% disagreed. The 31% in the neutral category reflects some ambivalence, or perhaps a feeling that fire at other times is also acceptable. In further support of the use of fire, about three-fourths (73%) believe experimentation on insect infected sites is appropriate. However, many individuals (45%) showed a preference for increased timber production by agreeing prescribed fires waste trees that should be cut for other purposes.

Table 4-2 reports public preferences regarding smoke and air quality. Clear majorities indicate that smoke is not a problem for most families (76%), nor are people in favor of banning prescribed fire practices because of the effects of smoke on health. A slim majority (52%) agree that prescribed fire is not the problem when it comes to air quality. However, people were divided over a statement that exempted the Forest Service from Clean Air Act regulations; 39% were in favor while 38% were against.

Table 4-2. Smoke Management

	<i>Agree</i>	<i>Neutral</i>	<i>Disagree</i>
In my area, smoke levels from fire are not a problem for me or my family.	76%	9%	15%
Prescribed fire should not be used because of potential health problems from smoke.	11%	18%	71%
Prescribed fire is not the problem when it comes to air quality.	52%	21%	27%
Forest Service use of prescribed fire should be exempt from Clean Air Act regulations.	39%	23%	38%

To further resolve public preferences for use of prescribed fire, respondents were asked to select from four policy statements about the practice (Table 4-3). Most favor some form of prescribed fire, either giving the Forest Service full discretion to use it for forest improvement (44%) or to use it sparingly in selected areas (44%). Only 12% overall felt the practice should not be considered.

Table 4-3. Prescribed Fire Policies

<i>In my opinion, prescribed fire in the Blue Mountains:</i>	
... is a legitimate management tool that the Forest Service should have the discretion to use for improving forest conditions.	44%
... should be used sparingly by the Forest Service and only in carefully selected areas.	44%
... creates too many impacts and should not be considered as a management alternative.	7%
... is unnecessary and should not be utilized.	5%

Mechanical Thinning

Tables 4-4 and 4-5 reflect strong public support for selective thinning practices. Most people (82%) believe experimentation on insect infested sites is appropriate, while even more think thinning dead and dying trees is better than leaving them in the forest.

Table 4-4. Preferences for Selective Thinning

	<i>Agree</i>	<i>Neutral</i>	<i>Disagree</i>
Scientific experimentation with selective thinning is appropriate on insect infested sites.	82%	12%	6%
Selectively thinning dead and dying trees is better than leaving them in the forest.	85%	8%	7%

Table 4-5. Mechanized Thinning Policies

<i>In my opinion, mechanized selective thinning in the Blue Mountains:</i>	
... is a legitimate management tool that the Forest Service should have the discretion to use for improving forest conditions.	63%
... should be used sparingly by the Forest Service and only in carefully selected areas.	33%
... creates too many impacts and should not be considered as a management alternative.	2%
... is unnecessary and should not be used.	2%

In selecting a mechanized thinning policy, almost everyone (96%) favors some form of the practice. A majority (63%) were willing to

give the Forest Service full discretion to use thinning as a way to improve forest conditions.

Selecting among treatments

Table 4-6 depicts how people selected between management options when asked to make a choice. In each case, respondents were given a set of options, each including a consequence, and asked to choose between the two. From responses to the first four sets of options (a-d), it is clear that citizens overwhelming support the use of both prescribed fire and mechanized thinning over not employing these strategies. In most cases, support outweighs opposition nine to one. Even the threat of increased smoke (b) was not a problem for residents, as long as some discretion was used. Finally, in a choice between the two practices, citizens preferred the use of mechanized thinning over prescribed fire almost four to one (79% to 20%).

Table 4-6. Public Preferences between Management Strategies

<i>Forest management today requires considering difficult tradeoffs. Five sets of management decisions are listed below. Read carefully and choose between each pair of options by checking your preference.</i>		
For management of national forests in the Blue Mountains, I would choose:		
a. using prescribed fire to help reduce the threat of large-scale wildfire.	84%	
-or-		
no prescribed fires and no reduction in the threat of large-scale wildfire.	16%	
b. using prescribed fire on selected days to help reduce forest diseases and infestation, with some increase in smoke levels.	90%	
-or-		
no prescribed fires nor increase in smoke levels, but also no reduction in forest disease and infestation.	10%	
c. using mechanized selective thinning to help reduce the threat of large-scale wildfire.	92%	
-or-		
no mechanized selective thinning and no reduction in threat of large-scale wildfire.	8%	
d. using mechanized selective thinning to help reduce forest diseases and infestation.	93%	
-or-		
no mechanized selective thinning and no reduction in diseases and infestation.	7%	
e. use of mechanized selective thinning to improve overall forest health.	79%	
-or-		
use of prescribed fire to improve overall forest health.	20%	

These same preferences are also reflected in people's ranking of three management options for treating the existing build up dead trees. Table 4-7 shows that over three-fourths ranked selective thinning as their first choice over prescribed fire. A few (8%) wanted no management, instead preferring nature take its course.

Table 4-7. Preference among Treatments

<i>Rank your preference for treating the existing buildup of dead trees in the Blue Mountains:</i>	
Most preferred:	
<i>selective thinning</i>	76%
<i>prescribed fire</i>	16%
<i>nothing, let nature take its course</i>	8%

Summary

Communities in the Blue Mountains strongly align with the use of both prescribed fire and mechanical thinning over less intensive approaches. It is also clear that people prefer one treatment, mechanical thinning, over the other. But it is probably safe to say that using the practices in tandem is also a preference. That is, people are likely to support removal of timber through thinning as a first step with fire as a follow up measure.

Yet, substantial numbers either agree or are uncertain - that all fires should be extinguished, suggesting that fire education is still needed in these communities. But this also could be another indication of a stronger preference for thinning programs over the use of fire. Additional interaction with key publics will be useful. Views on smoke management indicate a general acceptance of smoke from prescribed fire. However, the data also suggest a need to help people understand when prescribed fires are burning and recognize the sources of smoke in their local areas.

FINDINGS:

SOCIODEMOGRAPHIC CHARACTERISTICS AS INFLUENCES ON MANAGEMENT PREFERENCE

In the first chapter on findings, substantial information was provided detailing the sociodemographic characteristics of the study participants. One reason for providing these details was in anticipation that they may be useful points of analysis in determining shared or conflicting points of view. Among publics, common attributes (age, education, place of residence, etc.) may be indicators of people's attitudes toward forest management priorities.

Using the findings on sociodemographic characteristics and ratings of prescribed fire policies (Table 4-3) and mechanized thinning policies (Table 4-5), we looked for associations between key variables. Zero-order correlations were computed using policy ratings for these two practices and 13 selected citizen characteristics. This type of correlation analysis is used when we want to initially assess the strength of a relationship between variables. For example, we can test if support for or against the use of prescribed fire is related to the size of town in which one resides, age, level of education, and so on.

In correlation analysis, the only possible computational values fall between - 1 and 1, with the strongest possible direct relationship being 1 and the strongest inverse relationship being -1. A value of zero indicates the absence of any relationship between variables. For this sample, correlations differed significantly from zero at $<-.15$ or $>.15$. Results are shown in Tables 5-1 and 5-2.

Prescribed Fire

Findings show that three respondent characteristics are moderately associated with preferences for the use of prescribed fire. First, the inverse relationship with education indicates that support for prescribed fire is correlated with those individuals who are more highly educated. That is, people who are more educated are also more likely to favor prescribed fire policies. Second, people who know the difference between a natural forest fire and prescribed fire are also more likely to support the practice. Third, those individuals

**Table 5-1. Bivariate Correlations
Support for Use of Prescribed Fire by Respondent Characteristics**

<i>Characteristics</i>	<i>Correlation Co-efficient</i>
Place of residence (by national forest)	-.08
Size of community (over or under 10,000)	.01
Age	.04
Gender	.01
Education level	-.15*
Income	-.06
Economic dependence on timber industry	-.05
Retired	.02
Length of residence in Blue Mountains	.12
Economic/environmental orientation	.12
Knowledge of forest conditions	-.05
Knows difference between natural forest fire and prescribed fire	-.22*
Agrees Forest Service provides good information	.24*

*Statistically significant at $p < .05$

who think the Forest Service does a good job of providing information about their management activities are more likely to support the use of prescribed fire. No other clear associations between variables exist.

Mechanical thinning

In Table 5-2, findings show that two respondent characteristics are moderately associated with preferences for mechanized thinning. First, an inverse association with a person's economic/environmental orientation indicates that those who favor economic return from forests are more likely to support the use of mechanized thinning. Second, those who agree that the Forest Service provides good information about mechanized thinning are more supportive of the practice. No other association between variables is present.

**Table 5-2. Bivariate Correlations
Support for Mechanical Thinning by Respondent Characteristics**

<i>Characteristics</i>	<i>Correlation Co-efficient</i>
Place of residence (by national forest)	-.08
Size of community (over or under 10,000)	-.07
Age	.01
Gender	.08
Education level	.04
Income	-.01
Economic dependence on timber industry	-.10
Retired	.02
Length of residence in Blue Mountains	.02
Economic/environmental orientation	-.22*
Knowledge of forest conditions	-.13
Agrees Forest Service provides good information	.24*

*Statistically significant at $p < .05$

Summary

At least two observations emerge from these findings. First, prior to the study we could have hypothesized that correlations would exist between a substantial number of variables. This has been the case in other areas of the northwest where residents were asked about ecosystem management practices (Brunson et al. 1996, Shindler et al. 1996). The relatively few associations observable in the Blue Mountains data is most likely attributable to the wide level of support for these management practices across all settings. There simply is not a great deal of variability in public preferences; large majorities support both prescribed fire and mechanized thinning.

The second observation involves the influence that education has on preferences, particularly in the case of prescribed fire. Not only is a person's educational level relevant, but also if the individual knows the difference between natural and prescribed fire. This latter distinction indicates both knowledge about the existence of a prescribed fire program and that individuals have learned something

about the two forms of fire. Finally, agreement that the Forest Service provides good information suggests some awareness and evaluation of materials about these management practices. In sum, education programs seem to make a difference in the acceptance of these programs.

FINDINGS:
CITIZEN PERSPECTIVES (WRITTEN COMMENTS)
ABOUT FOREST SERVICE
MANAGEMENT DECISIONS

The success of plans for prescribed fire or mechanical thinning programs may be influenced by how well local communities think Forest Service decisionmaking has been conducted in recent years. The survey instrument provided an opportunity to collect additional (qualitative) data by asking respondents two open-ended questions about their ideas on Forest Service management in the Blue Mountains. In all, over 1300 comments were recorded. Specifically, we asked:

1. What are your perceptions about the way the Forest Service makes decisions for managing of national forest lands in the Blue Mountains?
2. What criteria do you use for measuring the success of decisions made by a resource agency like the Forest Service?

Open-ended questions like these have the advantage of allowing respondents to express their thoughts and feelings in their own words. The use of this research method has recently grown in popularity, particularly in natural resource fields where developing a better understanding of human responses is essential. Although findings from such research questions are not usually quantifiable, and we need to be careful about how they are interpreted, they can be analyzed to provide insights to people's perceptions and how they might respond to future interactions.

In this study, we used comparative analysis to examine the content of the hundreds of statements from respondents. This research technique allowed us to find patterns in the responses and group answers according to major themes. These major themes are reported here, using the language of participants as much as possible. Number of responses are given in parentheses.

What are your perceptions about the way the Forest Service makes decisions for managing national forest lands in the Blue Mountains?

Responses about decisionmaking were grouped into six major themes:

- *Public Involvement*

The Forest Service needs to keep local people informed on the issues and give them a chance to provide input.... then listen to what they have to say. Often our opinions are ignored; local people want to help. (115)

The Forest Service could do a better job of explaining what their decisions are based on.... we hear very little about why choices were made. (24)

The Forest Service provides ample opportunity for public input. (5)

- *Frustration over politics*

The Forest Service is threatened by too many politicians, lawsuits, and groups pulling in different directions; the courts are making the decisions. Decisions should be based on science and what is best for the forest, not by how people will react. (82)

The agency takes too long to make decisions. The Forest Service needs to cut through the red tape and act; they are the resource professionals. (32)

- *Local control*

Decisions for the Blue Mountains should be made by local Forest Service staff and local people, not by officials in Washington, D.C. We should cut down the size of the bureaucracy. (68)

- *Interest group influence*

The Forest Service is under intense pressure from all sides and caters too much to special interest groups. (35)

The Forest Service would do a better job if they quit listening to the environmentalists. (61)

The Forest Service caters too much to the timber industry and large landowners. (40)

- *Management emphasis*

There is too much focus on improper logging (i.e. clearcuts) and forest economics. (55)

The Forest Service needs to consider both environmental and economic concerns -- find the compromise of middle ground. (31)

There should be more emphasis on timber management and economic concerns. (15)

- *Assessment*

The Forest Service does a (pretty) good job, especially considering the complexity of the problems and the decision making process they must go through. They seem to make logical decisions and are concerned about forest health. (72)

It seems like the Forest Service makes haphazard decisions without planning for the future there's no real accountability or common sense. They have employees who have no real experience, only book experience. (35)

The Forest Service does a poor job at forest management.... too big a decline in health and habitat, too many slash piles, and too many clearcuts. (28)

What criteria do you use for measuring the success of decisions made by a resource agency like the Forest Service?

Six major themes emerged as measures of successful decisions:

- *Good forest health*

Forest health determined by:

*the forest's overall appearance (151)
aesthetics like green trees and fewer dead trees (46)
managed as a sustainable, renewable resource (39)
general ecosystem health, healthy watersheds (24)
reduction in forest diseases (19)
reforestation efforts that are working (18)
health of wildlife and good wildlife habitat (17)
few large scale fires that threaten communities (10)
wise use of prescribed fire (8)
condition of recreation areas (7)
presence of old growth (7)*

- *Achieving middle ground*

Practices that reflect a balance between the economy and the environment by providing for wildlife, recreation, timber, and grazing over the long-term. (57)

- *Objective decisionmaking*

Decisions that are based on good science, historical experience, and reliable information not interest group demands. (42)

- *Credibility*

Decisions are made by capable staff with common sense, hands-on experience, and clear long-term goals.... no decision is good until everyone understands it. (41)

- *Proper harvesting practices*

Agency follows a sound program of selective cutting, no overharvesting or clearcuts, and adequate reforestation. (39)

~ *Local people are considered*

Decisions help support the local economy. (26)

Residents have access to forest and forest roads. (24)

Provide for local woodcutters. (16)

Local residents are included in discussions. (12)

CONCLUSIONS

In terms of public support for prescribed fire and mechanical thinning, findings from this study are not particularly difficult to interpret. Most people are receptive, and in many cases strongly supportive, of the use of both management practices as fuels reduction techniques in the Blue Mountains. The overall acceptance of these practices is most likely much higher than resource managers anticipated given the turmoil that seems to surround most forestry decisions.

Often loud voices or interest group agendas are the driving forces in agency/public discourse and require most of the attention. It is easy to construe these opinions as representing the public at large. This study reveals the views of the general public with empirical data and a synthesis of written observations. From this information, it could be concluded that the general population is in support of the Forest Service increasing its efforts to use prescribed fire and mechanical thinning in the Blue Mountains. It is also likely that citizens would prefer the agency to provide stronger leadership locally, particularly if this direction includes increased interaction with communities.

While these findings reflect the views of the general public, recent history indicates that numerous factors play a role in shaping forest policy. Even though people are receptive to these ideas, many will be waiting to see how well they work before making final judgments. It is unlikely that many citizens will unequivocally approve of a fuels reduction program without first seeing what forest practices and conditions will result. This study, and previous socioeconomic research in Oregon, indicate that public support for ecosystem management practices--like prescribed fire and selective thinning--hinge more on a group of factors than any single element (Shindler et al. 1996).

From the various data reported here, we can predict that a number of variables will ultimately contribute to public acceptance of these management practices in the Blue Mountains. Because natural resource issues are often complex, long-term solutions will be more sophisticated than just people being *for* or *against* a single management practice. For instance, public agreement in this region is

likely to be influenced by how a decision effects the local economy, how a practice detracts or contributes to people's understanding of sustainable forestry, the visual quality aspects of these treatments, and how the final management decisions are made. In the end, judging mere acceptance of policies may not be enough. Instead, more sophisticated solutions will be required to insure long-term public support. Five factors that are likely to influence the public's judgment are outlined here for more thoughtful consideration.

People need to see things with their own eyes

Citizens in the Blue Mountains consider their own personal evaluation of conditions to be most important in making up their minds. In a self-assessment, most said they pay attention to the issues and feel pretty well informed about federal forestry from their travel in the Blue Mountains and personal observations. The single most influential criterion for measuring agency decisions about forest health is the overall appearance of the resource.

It is what people see--aesthetic considerations like green trees and fewer dead ones or high levels of disease and infestation--that makes the greatest impression. This "observability" of resources is a significant factor in opinion formation (van ES et al. 1996). Finding ways to raise awareness of natural conditions and to depict what specific treatments will actually look like once they are implemented is management's challenge.

In one successful example, the Deschutes National Forest has introduced fire management practices to local residents with demonstration plots close to residential areas on the Sisters Ranger District. Similarly, a network of large demonstration areas on the Wallowa-Whitman, Malheur and Umatilla national forests have been planned (Mutch et al. 1993). These sites can be useful to showcase, monitor, and evaluate the results of prescribed fire practices, but they also will provide opportunities to examine public reaction to these treatments.

People want natural conditions and forest products too

Currently, most people believe it is possible to supply forest products and maintain natural ecosystems. There is even an expectation that our management systems can find a balance between the economy and the natural environment. Since people have been hearing so much about the sustainability of ecosystems,

many believe it must be true. Of course, the dilemma in finding the compromise of middle ground is that it depends largely on whose definition of sustainability is used.

Proactive leaders might view this situation as an opportunity to further educate and help shape people's expectations. With good leadership and effective communication, a case could be made to work more from the midpoint to help emphasize the agency's ecosystem management approach rather than on the margins where interest group agendas are so strong. Many people agree that forest systems need major change. Today, change encompasses weighing alternatives and making difficult choices. This seems like a chance to experiment with ecosystem management techniques (like prescribed fire and mechanical thinning), not only to improve forest conditions and provide forest products, but to work with communities to jointly learn about the tradeoffs involved.

Similar to a more balanced form of management that does not make us choose between the environment and forest products, the use of prescribed fire and selective thinning does not boil down to one over the other. Used effectively, it instead becomes a multiple approach. Numerous respondents pointed out that many diseased stands in the Blue Mountains are so densely covered they could not be burned without being thinned first. Most agree that selective thinning is needed to adequately reduce the risk of catastrophic fires, and almost as many agree with using prescribed fire. Those who support timber harvesting are more likely to be receptive of this tandem approach, particularly when decisions come while wood is still merchantable.

Findings further suggest the public may be willing to support some testing and evaluation of these practices, with their ultimate support dependent on how relevant the outcomes are to their concerns. This appears to be a good time to engage local communities more directly in management programs and, as a result, influence public attitudes.

Credible information is essential

Currently, the Forest Service could do a better job of providing information on forest management activities--at least in the eyes of their publics. No doubt, some people simply have no contact with the agency and are largely indifferent to outcomes. Still others may be waiting to judge the effectiveness of agency programs and

communications. However, a certain segment of the forest constituency had no difficulty expressing their frustration (see comments section). In the existing politicized climate, information sources must be credible and inclusive.

Credible information, in part, is based on good science. Fortunately, a good amount of state-of-the-art research is being conducted by the Forest Service in the Pacific Northwest Region, particularly on dryer eastside forest systems. But credible information is also dependent on sincere and genuine delivery systems. In the case of prescribed fire, for example, researchers warn against overselling a manager's ability to control for all contingencies (Carpenter et al. 1986) or that all prescribed burns will end the threat of wildfire and adequately protect homesites from future wildfire events.

Having sound scientific data that informs the decision process is not a new idea. Inclusive activities, where managers and citizens are able to discuss and analyze information together, may be a more groundbreaking--and publicly preferable-- notion. In other Oregon communities, Forest Service personnel and citizens agreed that such joint fact-finding increased the accuracy and trustworthiness of information (Shindler & Neburka, 1996) and allowed for more adequate treatment of public concerns about local issues. Specific programs throughout the northwest are also noteworthy. Forest Service personnel have been uniformly praised for their public school programs on forest fire as well as interpretive activities that hit a wider audience. Some agency staff have also found that using the established forums of other organizations like watershed councils or preservation groups is an effective way to distribute and discuss materials on ecosystem management.

Pay attention to agency/public barriers

Barriers to achieving more durable resource decisions seem to center on issues of trust, communication, and reducing frustration with the bureaucracy. Many Blue Mountain residents believe the Forest Service does not listen to the public nor include the community's ideas in forest planning. About half overall trust the agency to implement a responsible and effective prescribed fire or mechanical thinning program. Failure to engage these concerns are only likely to add to credibility gaps. However, any public feelings of becoming disconnected did not develop overnight and the situation is not likely to be resolved with one or two good deeds.

Attending to communication barriers includes speaking the public's language. For example, numerous definitions of "thinning" exist and people will need to see and believe in the version called *mechanized thinning for fuels reduction*. Similarly, since not all uses of fire are the same, helping people differentiate between them is likely to generate greater understanding and support. Good communication also includes a willingness to listen. But there is another step; people also want to see their ideas reflected in management plans. It is apparent that many Blue Mountains residents are knowledgeable and willing to express themselves. It is also likely that a good deal of rich information exists within the public sector. As people are invited in to the forest discussion, a mutual understanding of conditions and problems accrues and better solutions can be crafted.

There is little doubt about the public's frustration with forest management being overrun by bureaucratic politics. These feelings are reflected from northern California to Alaska, especially in forest communities where regional issues have become high profile and are under debate nationally. These conditions can challenge, even exhaust agency efforts to engage with people at the local level. Success with interested citizens tends to be measured by whether their ideas and concerns were given serious consideration and the agenda was not simply driven by federal agency or national-level politics (Shindler & Neburka, 1996). Somehow, managers will need to renew commitments to their local constituents and filter out the "noise" from the larger national debate.

People will only support what they understand

From the survey data, it is apparent that many people believe knowledge is lacking about our forest ecosystems and what we do know may not be effectively communicated. Others simply may not be connected to forestry issues and, for the time being, remain relatively distant from them. Overall, public understanding can be increased, and ultimately support enhanced, by helping people sort through the ambiguities of ecosystem management practices.

For example, many people in Blue Mountain communities cannot tell the difference between prescribed fire, field burning, or even wildfire. In addition, a certain amount of public knowledge about fire comes from fires that cause problems, like increased smoke or perceived threats to nearby property. In such cases, forest managers have found that providing specific information about the reasons,

location, time, and effects of prescribed fire can resolve many of these concerns (Shelby & Speaker, 1990). The result is often a high level of public acceptance, even for highly visible fires.

Currently, smoke and air quality are not major issues for most people in the region; however, we know that it does not take many dissenters to elevate the status of this concern. Smoke levels seem like a prime target for additional research and education. For instance, the Oregon Department of Environmental Quality suggests that a combined strategy of prescribed fire and mechanical thinning in the Blue Mountains may ultimately reduce fuel loads to the point there is "no net increase" in smoke emissions (Finneran, 1995). Even with a three to four-fold increase in the current use of prescribed fire, the ODEQ expects a net improvement in air quality from the tradeoffs of reduced wildfire. Potential solutions will come from more research and experimentation; public acceptance will come with a greater understanding of these programs.

A second example of the need for better understanding involves the implementation of mechanical thinning. Although strong support exists for thinning programs, additional questions may surface with a change in management tactics because some citizens are simply opposed to more harvesting or are wary of Forest Service intentions. In other regions, citizens had a range of concerns when the Forest Service introduced the use of alternative harvest practices (Shindler et al. 1995). People wanted to know about the effects on forest aesthetics, cost effectiveness, impacts to wildlife and watersheds, and expressed the need for a public/agency working relationship where clear, well defined objectives could be established prior to implementation. Although Blue Mountains residents seem firmly behind a thinning program, these same questions are likely to surface as plans get underway on a larger scale.

In the Blue Mountains, as elsewhere, residents have an awareness of the natural landscape as well as the biological and human forces that affect it. They also have the ability to understand sophisticated messages that involve more than whether fire is good or bad. In order to gain more than a tentative acceptance of experimentation with prescribed fire and mechanized thinning, forest managers and researchers will need to continue with strategies that effectively incorporate citizens into the dialogue about their use. Informative programs that help people understand ecosystem management practices, and inclusive ones where people can

contribute to plans involving difficult but necessary tradeoffs, often mean the difference between success and frustration.

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APPENDIX:
Summary of Survey Results

Survey of Forestry Issues in the Blue Mountains

This questionnaire has been developed by researchers at Oregon State University in cooperation with the U.S. Forest Service and the Blue Mountains Natural Resources Institute. It is designed to help managers and researchers understand how citizens feel about federal forest practices and learn what people think is important for improving forest health on the national forests in the Blue Mountains.

Many of the questions relate to management decisions about the use of prescribed fire and selective thinning. Some questions appear similar, but are asked in different ways. This is necessary because forest management today involves difficult decisions about resource tradeoffs and we would like to get your opinions about these tough issues. Please answer every item carefully. Answer what you feel to be true for you; the best answer is the one which most closely reflects your own beliefs.

1. How much attention do you pay to national forest issues or problems?

Not much	Moderate amount	A great deal
9%	37%	54%

2. How well informed would you say you are about forest conditions in the Blue Mountains?

Not informed	Moderately informed	Very informed
16%	43%	41%

3. Forest health problems have been described as large amounts of trees dying from disease, infestation or drought. How would you rate the overall condition of the forests in....

..... the Blue Mountains in general?

very healthy	1%
somewhat healthy	24%
somewhat unhealthy	47%
very unhealthy	19%
don't know	9%

.... your area specifically?

very healthy	1%
somewhat healthy	29%
somewhat unhealthy	43%
very unhealthy	20%
don't know	7%

What would you say your opinion of forest conditions is based on? (check all that apply)

personal observation	91%
information from Forest Service or BLM	30%
timber group information	28%
television programs	24%
family or relatives	23%
radio news reports	20%
environmental group information	15%

.... drive on state or county paved roads or highways	89%
.... drive off paved roads on to dirt or gravel roads	86%
.... travel on mountain trails (on foot, horseback, skis, snowmobile, etc.)	61%
.... have not visited the Blue Mountains in the last three years	4%

	-----Level of importance-----	
	None/Slight	Moderate/High
newspapers or magazines	29%	71%
friends or relatives	38%	62%
a guided field trip to a forest site	40%	60%
television programs	42%	58%
Forest Service reading materials	51%	49%
radio station	54%	46%
a workshop conducted by professional foresters	55%	45%
timber group reading materials	62%	38%
Forest Service programs or meetings	61%	39%
university researchers and educator	61%	39%
environmental group reading materials	81%	19%
computer bulletin boards or web pages	90%	10%

- Citizen participation is of no/little value and adds needlessly to the cost of government. 14%
- Neutral 24%
- Citizen participation is of moderate/great value even if it adds to the cost of government. 62%

.... none, let resource professionals (Forest Service, BLM) make decisions.	7%
.... provide suggestions and let the resource professionals decide.	30%
.... serve on advisory boards that review and comment on decisions.	34%
.... act as a full and equal partner in making management decisions.	21%
.... public should make the decisions and resource professionals should carry them out.	8%

- Highest priority should be given to maintaining natural environmental conditions even if there are negative economic consequences. 22%
- Neutral 43%
- Highest priority should be given to economic considerations even if there are negative environmental consequences. 35%

The environment should be given priority even if it hurts the economy. 3%

Both the economy and the environment are important, but if we're forced to make a choice, the environment should usually come first. 44%

Both the economy and the environment are important, but if we're forced to make a choice the economy should usually come first. 50%

The economy should be given priority even if it hurts the environment. 3%

economic considerations	53%
environmental protection	43%
undecided	4%

11. We would like you to evaluate two management approaches to fuels reduction and forest health problems in the Blue Mountains. The first is prescribed fire.

Resource managers on national forests are attempting to use prescribed fire to control disease, insects, and excessive build up of dead trees. Prescribed fire has two forms: 1) prescribed natural fire where a decision is made to allow a fire ignited by nature (primarily lightning) to burn under control to accomplish an objective and 2) management ignited prescribed fire where fire is used as a tool -- also to accomplish an objective -- but in this case, managers schedule these burns around the weather, fuel loadings, season, and their ability to maintain control of the fire. The following pertains to management ignited prescribed fire.

Below are sets of opposing statements about the use of prescribed fire. Place an "X" on the space that most closely reflects your agreement about the two statements. You are not being judged on right or wrong answers, we want your opinions. Base your answer on what you believe to be true. If you truly feel you don't know enough about an item to give an opinion, write the letters DK (for don't know) on the lines for that set of statements.

Agree----Neutral----Agree

Prescribed fire:

decreases the chance of high-intensity wildfires.	74%	8% (dk=5%)	13%	has little overall effect on wildfire intensity or frequency.
effectively reduces the amount of excess fuels in the forest.	70%	10% (dk=5%)	15%	causes more damage than benefits provided from reducing fuels.
is a big threat to nearby property and forest land.	29%	23% (dk=5%)	43%	is of little or no threat to nearby property and forest land.
effectively keeps insects and diseases at minimum levels by maintaining healthy trees.	71%	11% (dk=5%)	13%	causes more damage than benefits provided from getting rid of insects and disease.
stimulates the growth of native grasses for wildlife and livestock.	83%	7% (dk=6%)	4%	severely damages the growth of native grasses.
causes an unacceptable decline in water quality and fish habitat.	12%	15% (dk=8%)	65%	causes acceptable short-term impacts to water quality and fish habitat.
results in smoke that decreases air quality to unacceptable levels.	17%	14% (dk=3%)	66%	smoke levels are acceptable if it means a healthier forest.
causes long-term damage to scenic beauty of forest land.	16%	7% (dk=2%)	75%	causes only short-term damage to scenic beauty.
releases useful minerals and nutrients into soil.	72%	15% (dk=7%)	6%	creates ash that is detrimental to soil conditions.
has unacceptable long-term effects on recreation uses.	11%	11% (dk=4%)	74%	has acceptable short-term effects on recreation uses.

	Agree----Neutral----Agree			
encourages growth of plants best suited to natural ecosystem.	77%	11% (dk=5%)	7%	causes long-term damage to natural plant ecosystems.
is too dangerous to be used.	14%	14% (dk=4%)	68%	is a safe management tool.
unnecessarily reduces the amount of harvestable timber.	32%	38% (dk=8%)	22%	protecting timber for harvest should not be a consideration.
causes unacceptable damage to critical wildlife habitat.	15%	12% (dk=4%)	69%	creates acceptable changes in native wildlife habitat.
I trust the Forest Service to implement a responsible and effective prescribed fire program.	52%	21% (dk=2%)	25%	I do not trust the Forest Service to implement a responsible and effective prescribed fire program.
is an untested system with too many risks.	12%	13% (dk=5%)	70%	is a legitimate management tool.
overall, the risks and impacts of prescribed fire are too great.	16%	15% (dk=4%)	65%	overall, the benefits of prescribed fire are worth it.

12. In my opinion, prescribed fire in the Blue Mountains:

.... is a legitimate management tool that the Forest Service should have the discretion to use for improving forest conditions.	44%
.... should be used sparingly by the Forest Service and only in carefully selected areas.	44%
.... creates too many impacts and should not be considered as a management alternative.	7%
.... is unnecessary and should not be utilized.	5%

13. The second management approach involves the suitability of mechanical logging methods to selectively thin forests to control disease, insects, and excessive build up of dead trees. A range of mechanized harvesting systems are available. Some are lighter on the land than others; various costs and impacts are associated with each. Currently, managers and researchers are experimenting with ground-based harvesters and skyline (above ground) yarding to test soil compaction, erosion, wildlife disturbance, and the economics of these systems. These projects involve the removal of down logs or standing dead and dying trees less than 15" in diameter from selected forest sites. Forest managers are attempting to find cost effective systems with few impacts that are acceptable to both the public and harvesting operators.

Below are sets of opposing statements about mechanized selective thinning. As before, place an "X" (or DK for don't know) on the space that most closely reflects your agreement about the statements. Remember, you are not being judged on right or wrong answers; we want your opinions.

Agree----Neutral----Agree				
Mechanized selective thinning:				
decreases the chance of high-intensity wildfires.	79%	6% (dk=4%)	11%	has little overall effect on wildfire intensity or frequency.
effectively reduces the amount of excess fuels in the forest.	77%	8% (dk=5%)	10%	causes more damage than benefits provided from reducing fuels.
causes soil erosion with unacceptable impacts on water quality and fish habitat.	16%	16% (dk=8%)	60%	soil erosion is minimal and impact on water quality and fish habitat are acceptable.
effectively keeps insects and diseases at minimum levels by maintaining healthy trees.	75%	10% (dk=6%)	9%	causes more damage than benefits provided from getting rid of insects and disease.
causes unacceptable levels of soil compaction that harm tree and plant regeneration.	14%	13% (dk=9%)	64%	soil compaction is minimal and impacts on tree and plant regeneration are acceptable.
causes little or no damage to natural ecosystems.	61%	18% (dk=9%)	12%	causes severe damage to natural ecosystems.
has unacceptable long-term effects on recreation uses.	9%	8% (dk=6%)	77%	has acceptable short-term effects on recreation uses.
causes unacceptable damage to critical wildlife habitat.	12%	13% (dk=6%)	69%	creates acceptable changes in native wildlife habitat
causes long-term damage to scenic beauty of forest land.	17%	14% (dk=3%)	66%	causes little or no impacts to scenic beauty of forest land.
is a legitimate tool for removing harvestable timber.	81%	6% (dk=4%)	9%	timber harvesting should not be a consideration.

Agree----Neutral----Agree

is an untested system with too many risks.	5%	13% (dk=5%)	77%	is a legitimate management tool.
I trust the Forest Service to implement a responsible and effective mechanized thinning program.	58%	16% (dk=3%)	23%	I do not trust the Forest Service to implement a responsible and effective mechanized thinning program.
overall impacts of mechanized selective thinning are too great.	9%	11% (dk=6%)	74%	overall benefits of mechanized selective thinning are worth it.

.... is a legitimate management tool that the Forest Service should have the discretion to use for improving forest conditions.	63%
.... should be used sparingly by the Forest Service and only in carefully selected areas.	33%
.... creates too many impacts and should not be considered as a management alternative.	2%
.... is unnecessary and should not be used.	2%

(1=most preferred, 2=next preferred, 3=least preferred).

Most preferred

selective thinning projects	76%
prescribed fire	16%
nothing, let nature take its course	8%

	Agree-----	Neutral-----	Disagree
Following nature's way is preferable to human intervention in ecosystems.	31%	14%	55%
All fires, regardless of origin, should be put out as soon as possible.	30%	15%	55%
I usually have difficulty knowing which is burning -- a natural forest fire or a management ignited prescribed fire.	42%	24%	34%
In my area, smoke levels from fire are not a problem for me or my family.	76%	9%	15%
Prescribed fire should not be used because of potential health problems from smoke.	11%	19%	70%
Prescribed fire is not the problem when it comes to air quality.	52%	21%	27%
Prescribed fire is okay as long as it is done in the spring or fall.	54%	30%	16%
Forest Service use of prescribed fire should be exempt from Clean Air Act regulations.	39%	23%	38%
Prescribed fires waste trees that should be used for wood products.	45%	22%	33%
Scientific experimentation with prescribed fire is appropriate on insect infested sites.	73%	17%	10%
Scientific experimentation with selective thinning is appropriate on insect infested sites.	82%	13%	5%
Selectively thinning dead and dying trees is better than leaving them in the forest.	86%	8%	6%
Reliable knowledge about forest ecosystems is lacking.	45%	26%	29%
Agencies like the Forest Service and the BLM are open to public input and use it to shape forest management decisions.	37%	31%	32%
I would likely support a forest decision made by members of my community, even if it went against my personal preference.	40%	27%	33%

	Agree-----	Neutral-----	Disagree
I feel like I don't have much to contribute to forest planning efforts.	36%	25%	39%
Forest managers usually create plans without input from local communities surrounding national forests.	52%	25%	23%
Our federal forest management systems need major changes, not just minor adjustments.	56%	25%	19%
Forest Service does a good job of providing information about their management activities.	31%	32%	37%
The Forest Service should provide a stronger leadership role.	51%	34%	15%

no	33%
yes	44%
not sure	23%

- | | | |
|----|--|-----|
| a. | using prescribed fire to help reduce the threat of large-scale wildfire. | 84% |
| | -or- | |
| | no prescribed fires and no reduction in the threat of large-scale wildfire. | 16% |
| b. | using prescribed fire on selected days to help reduce forest diseases and infestation, with some increase in smoke levels. | 90% |
| | -or- | |
| | no prescribed fires nor increase in smoke levels, but also no reduction in forest disease and infestation. | 10% |
| c. | using mechanized selective thinning to help reduce the threat of large-scale wildfire. | 92% |
| | -or- | |
| | no mechanized selective thinning and no reduction in threat of large-scale wildfire. | 8% |

- | | | |
|----|---|-----|
| d. | using mechanized selective thinning to help reduce forest diseases and infestation. | 93% |
| | -or- | |
| | no mechanized selective thinning and no reduction in diseases and infestation. | 7% |
| e. | use of mechanized selective thinning to improve overall forest health. | 79% |
| | -or- | |
| | use of prescribed fire to improve overall forest health. | 20% |

In conclusion we would like to know a little about your background to help us compare your answers with those of other people.

- | | | |
|----------|--------|-----|
| 19. Sex: | male | 69% |
| | female | 31% |

20. Age: 51 years (average)

21. Highest level of education:

some high school	7%
high school graduate	25%
some college	34%
college graduate	22%
completed graduate degree	12%

22. Approximate family income from all sources in 1995:

less than \$10,000	4%
\$10,000 to \$19,999	13%
\$20,000 to \$29,999	18%
\$30,000 to \$39,999	19%
\$40,000 to \$49,999	16%
\$50,000 to \$59,999	9%
\$60,000 to 69,999	5%
over \$70,000	16%

23. Are you retired?

no	65%
yes	35%

24. Do you or any of your immediate family depend on the following industries for your economic livelihood? (if retired, did you depend on any of them?)

timber	31%
farming	27%
ranching	22%
tourism/recreation	9%
special forest products	9%
hydro-electric	5%
fishing	4%
other	14%

25. Membership in an organization interested in public lands issues such as timber management, recreation use, or environmental protection? (check all that apply)

recreation group	13%
wise use group	10%
timber or commodity group	8%
environmental group	5%

26. Years of residency in the Blue Mountains region?

35 years (average)