



**PUBLIC INVOLVEMENT IN NATURAL
RESOURCE DECISION MAKING:
GOALS, METHODOLOGY, AND EVALUATION**

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Introduction

The concept of public involvement in governmental decisions dates back to the founding principles of our nation (Wengert 1976). Nevertheless, natural resource decision makers, such as Forest Service personnel, have operated largely out of the public limelight until the last two to three decades. These decision makers were viewed as individuals who were trained to deal with resource problems through scientific solutions (Behan 1966) and were thus trusted to carry out their legal management mandates largely without public scrutiny.

This is not to say that natural resource decision makers never consulted the public, for in fact there is a long history of public consultation (Fairfax 1975; Robinson 1975). However, because the use of public input was discretionary, it was also generally informal and infrequent.

During the 1960s and 1970s, a perception developed that natural resource decision making was not responsive to changing public values and that decision-making procedures were inadequately designed to deal with these changes. Procedures were seen as providing an inadequate voice to public interests and failing to provide fair mechanisms for including public views. A series of laws passed during this period changed the basic structure of how natural resource decisions would be made on federal lands.

Although it did not mandate public involvement, the Multiple-Use Sustained-Yield Act of 1960 (16 U.S.C.A. §§528-531) (MUSYA) contained new concepts on the role of resource managers that resulted in increased public scrutiny of decisions on forestry (and eventually other natural resources). Specifically, MUSYA required the Forest Service to consider the relative values of national forest resources such that utilization would best meet the needs of the American people. This was a tacit recognition that natural resource decisions involved, among other things, value judgments. Although the realization has been slow for many resource professionals (and is still far from universal today), it has become clear that professional foresters were not trained to evaluate these relative values and that public input was necessary (Magill 1991). The American people needed to be consulted to determine their preferences regarding utilization of natural resources.

The National Environmental Policy Act of 1969 (42 U.S.C.A. §4321 *et seq.*) (NEPA) significantly changed federal decision-making processes. NEPA required analysis and public disclosure of the environmental effects of every major federal decision significantly affecting the environment. According to the Executive Order implementing NEPA, the purpose of public disclosure was to "obtain views of interested parties" (Nixon 1970). The Council on Environmental Quality guidelines and the 1978 regulations promulgated under NEPA mandated public notice, meetings, and other procedures throughout the NEPA process (40 C.F.R. §1500 *et seq.*). As a result of NEPA, its regulations, and court interpretations, by the end of the 1970s, public involvement was a central part of the analysis of the environmental effects of substantially all significant federal natural resource decisions (as significance was measured by almost any interested party).

The National Forest Management Act of 1976 (16 U.S.C.A. §1600 *et seq.*) (NFMA) went beyond public involvement in the analysis of consequences. NFMA required the Forest Service to involve the public in planning and decision making regardless of whether the proposed action would significantly affect the environment. A similar requirement was included in the Federal Land Policy and Management Act of 1976 (43 U.S.C.A. §1701 *et seq.*) with respect to lands administered by the Bureau of Land Management.

As laws requiring public involvement in natural resource decision making were passed, literature on the subject grew. Perhaps surprisingly, an early attempt was made to analyze the Forest Service's public involvement programs and provide pragmatic suggestions based on clearly stated theories (Hendee *et al.* 1973). However, any expectations that the study of public involvement would generally follow this early example were misplaced. Public participation literature developed primarily to analyze legal requirements and the practices that resulted from those requirements. Therefore, much of the literature was necessarily a reaction to these requirements and should not have been expected to develop in a systematic, organized manner.

As the 1970s progressed, little research was occurring, and a public involvement ideology was not yet "systematically organized or neatly structured" (Wengert 1976). This lack of research or ideology, however, did not reflect a lack of literature or opinions. By the mid-1980s, certain principles of public involvement had become widely accepted, but they were generally not based on sound theory or research results (Creighton 1983a). Over the past decade, research and normative theory developed further, but the field remains essentially unstructured with more unsupported opinion than organized theory or research.

The purpose of this paper is to organize a large portion of the research and theory that has been developed. Most of the public involvement literature can be divided into three categories — goals of public involvement, principles for public involvement methodology, or evaluation of public involvement methods. The following chapters discuss major findings and concepts contained in the literature in each of these three areas. This paper concludes with a bibliography and a selected annotated bibliography of public involvement literature.

Public Involvement Goals

All public involvement literature expressly or implicitly involves goals, unless reporting a purely descriptive study. Public involvement methods generally are designed to achieve goals and are evaluated on how well this is accomplished. Failure to clarify goals will result in research or approaches that are ill-defined, unstructured, or inappropriate. Certainly, if the goals are not known, it is impossible to evaluate the methods, because no standards exist against which the methods can be judged.

If asked why the public should be involved in natural resource decision making, some decision makers might respond, "So that we can make better decisions," while others might say, "So that our decisions

are less open to challenge.” (For this discussion we will ignore the cynical decision maker who might respond either, “It is required” or, “They should not be involved.”) However, these responses beg the question “What constitutes a better decision?” Most studies view a better decision as either one that is more likely to achieve resource management goals or one that has more public support. Figure 1 presents the relationships among the public involvement goals discussed in this section.

Achieving Resource Management Goals

One goal of public involvement is to reach decisions that better achieve resource management goals; these are “objectively better” decisions. As shown in Figure 1, there are several mechanisms for reaching this public involvement goal. For example, decision makers who are developing a recovery plan for an endangered species might have incomplete data on the species’ habitat requirements. The public might be able to provide additional information that would help decision makers improve their management methods and thereby achieve species recovery goals. The goal of public involvement in this case is to reach “objectively better” decisions¹ (Cuthbertson 1983) by improving management methods (Figure 1).

In the field of social impact assessment, Burdge and Robertson (1990) cited public involvement as critical for educating the impacted community, providing input on impacts, catalyzing a community self-evaluation of how to cope with change, gathering data for social impact variables, and preparing alternatives. Thus, for these authors, the public is used by decision makers primarily for data gathering. In Figure 1, this would be the goal of (G1) a decision that better achieves resource management goals because (M1b) involvement provides additional data, which results in (R1) “objectively better” decisions.

Decision making also has a political aspect; natural resource planning both affects and is affected by public input (Cortner and Shannon 1993). Thus, public participation provides necessary input for a decision to be made within its scientific and political context. In this case, public involvement would result in “objectively better” decisions, because resource management goals are set within their political context and therefore are better defined. The path through Figure 1 is the same as in the preceding paragraph, except the mechanism (M1a) reflects that resource management goals are better defined.

Public Support

An alternate goal for public involvement is to reach decisions that have increased public support; these are “subjectively better” decisions (Figure 1). The literature reveals that this concept is more problematical. The characteristics of a decision that result in public support are not necessarily well understood or agreed upon. Numerous authors have focused on this in a general manner.

¹However, these “objectively better” decisions are based on resource management goals that ultimately are established subjectively (e.g., do we want to protect the endangered species?).

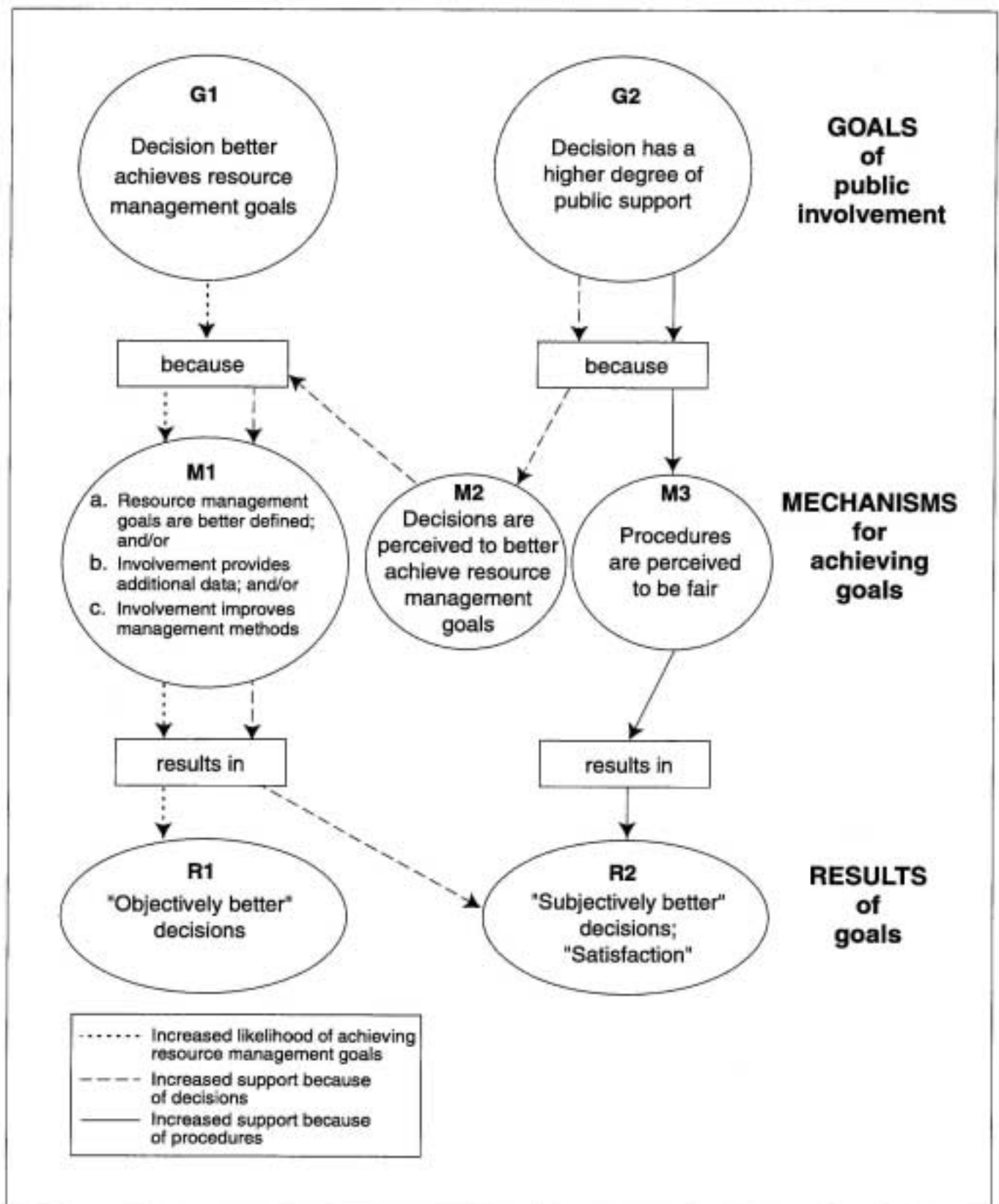


Figure 1. Goals of public involvement.

Some authors have viewed public involvement primarily as a means of building public trust that might otherwise be lacking (Heberlein 1976; Kweit and Kweit 1987b), although the nature of this trust may be difficult to evaluate. It has also been suggested that involving the public bestows legitimacy on the decision and processes. However, Creighton (1983a) noted a lack of supportive research for this "conventional wisdom." Further, Wondolleck (1988) found that, although public concerns are aired during the public participation process, methods used are generally not designed to accommodate concerns in ways that satisfy participants.

Notwithstanding these concerns, the legitimizing effects of public participation are widely accepted and have foundations in democratic theory. Decisions that involve the affected public are more politically valid than are the same decisions that are made authoritatively. Bolle (1971) noted that public participation prevents public isolation that could lead to public resentment. This resentment has a delegitimizing effect on decisions.

Several studies have supported the legitimizing effects of public participation. One such study evaluated public involvement in Forest Service planning based on participants' responses to questionnaires (USDA Forest Service 1990). Respondents generally judged the effectiveness of public involvement by its effects on decisions and commitment to plans. Public participation programs were considered effective if the participants were more committed to the resulting decisions.

A recent national survey of public participants was conducted to determine the level of and reasons for confidence in the Forest Service (Dixon 1993). Results indicated that 43 percent of respondents had a low level of confidence in the local office, and 55 percent had a low level of confidence in the agency at the national level. The most important determinant of confidence was the participants' judgments of procedural fairness, as compared to benefits received, policy preferences, or other factors. This study was the first to relate public participation to procedural justice concepts, although the emphasis was on confidence, rather than the more common object of procedural justice studies, satisfaction.

Effect of Decisions on Public Support

Other authors have explored why public participation might increase public support for decisions. One reason might be that public involvement might lead to decisions that are perceived to better achieve resource management goals, and such decisions might evoke wider public support (Lassey and Ditwiler 1975). (This approach is represented in Figure 1 by the dashed lines.) Thus, support may arise from a subjective belief by the public that the decision better achieves resource management goals, even though the decision might be objectively worse — resource management goals might not be met, and public perception might be wrong. This goal for public involvement resembles attempts to achieve "objectively better" decisions, but it is based only on perceptions. Important interactions between "objectively" and "subjectively better" decisions are discussed below.

Various authors have noted that natural resource managers are not trained to discern society's goals for the natural resources they manage

(Shaffer 1975; Henning 1987; Delli Priscoli 1989). If managers better understood what the public expects, they could apply their technical expertise toward achieving these resource management goals. This statement obviously oversimplifies actual processes and ignores factors such as competing interest groups (which result in no clearly defined "societal" goals) and lack of goal-related decision-making space for the managers (e.g., where legal requirements dictate the managers' goals). However, the concept is that decisions based on a better understanding of the public desires will result in a generally more satisfied public. This analysis can be traced through Figure 1: the goal is (G2) a decision that has a higher degree of public support, because (M2) it is perceived to better achieve resource management goals, because (M1a) resource management goals are better defined, which might result in (R2) "subjectively better" decisions.

In addition to being the unique source of public goals, the public can also be a source of valuable technical information and ideas. Resource managers do not have a monopoly on information or ideas that are useful for achieving natural resource goals. Thus, as noted above, public involvement is beneficial from a technical perspective, but, as some authors have noted, this improvement in technical decision making may in turn lead to increased public satisfaction with the outcome (Hendee *et al.* 1973). The path through Figure 1 is the same as in the preceding paragraph, except in this case public involvement is the mechanism to either (M1b) provide additional data or (M1c) improve management methods.

So far, this discussion of the effects of decisions on public support has emphasized altering decisions based on public input. However, public participation can also increase support by affecting public perceptions about natural resource decisions. Thus, public involvement may increase public satisfaction with outcomes because of the "selling" process that takes place. Public involvement has been advocated for the Forest Service as a means of educating the public and building support for programs (Fairfax 1975), in addition to providing the agency with information on public preferences. Although the concept of public participation as primarily a tool for selling resource managers' programs is now rarely addressed by authors (who may consider it politically incorrect), this view may still be prevalent among many resource managers. The Forest Service evaluated public involvement efforts for the Olympic National Forest (Sayre 1987) and judged these efforts to be a success because of the agency's ability to meet with the public and clarify its draft plan. Exchanges with the public were used primarily to refine future presentations, not to modify the draft plan.

Effect of Procedures on Public Support

The goal of obtaining increased public support because procedures for decision making are perceived as fair (shown as solid lines leading down the far right side of Figure 1) has received relatively little attention in the literature. A few authors have touched (expressly or implicitly) on the effects of perceived fairness of procedures on increasing public satisfaction. Tipple and Wellman (1989) advocated a new role for the public forester as an implementer of the law, *a provider of a fair procedure for decision making* (italics added), and a model participant.

Bonnicksen (1985) proposed using a "white box" computer-based decision-making tool that, by running simulations as part of the public input process, is intended to lead to increased satisfaction with decisions. Stark and Seltz (1988) have taken maximizing satisfaction to the extreme by developing a computerized decision-making tool designed to determine what decision will maximize the aggregate satisfaction of groups involved in the decision-making process.

Interrelationships Among Goals

Public involvement goals have been presented individually, but critical interrelationships exist among them. Most importantly, the various goals of public participation are not mutually exclusive. It is possible, and often the case, that public involvement proposals and programs will be designed to achieve more than one goal. However, it may also be the case that a public participation practitioner will find (or perceive) multiple goals to be incompatible. Conversely, an attempt to achieve a single goal might fortuitously achieve more than one goal. For example, an attempt to provide perceptively more fair procedures might involve increasing collaboration between the decision-making agency and the local community. This increased collaboration might, by happenstance but not by intent, result in decisions that better achieve resource management goals both objectively and subjectively, thus achieving all public involvement goals.

Another important interrelationship among public involvement goals is that the nature of the goals may vary with the nature or hierarchical level of the decision. For example, if a resource management goal has been established to preserve an endangered species, a dominant goal for public involvement may be to achieve "objectively better" decisions by improving data and methods for species survival. However, at the other end of the decision hierarchy, public involvement might be used to decide whether to preserve endangered species at all, and thus might be considered primarily a use to obtain "subjectively better" decisions by better defining resource management goals.

Principles for Public Involvement Methodology

Although the public involvement literature has developed in a patchwork manner, certain approaches to implementation have achieved widespread acceptance among researchers. These approaches have been based on either well-documented theoretical constructs, substantial research, or both. This section will examine certain of these concepts. The principles discussed are not necessarily exhaustive, but are an attempt to select those that have achieved widest support in the literature.²

²Most studies on public involvement in natural resource decision making involve the Forest Service. However, the conclusions are generally applicable by analogy to other natural resource decision makers.

Public Involvement Should Be Inclusive

There has been a long-standing belief that public participation programs should encourage involvement from a wide variety of interest groups and backgrounds. The belief that the failure of a significant ethnic or social group to participate is a sign of failure of a public involvement program is one of the commonly accepted principles listed by Creighton (1983a). More research can be found in this area than in many other areas.

Curiously, a particular problem arises with noninclusive public involvement programs when an agency is responsive to public input. Although, as noted below, it is important for agencies to use public input in the decision-making process, if the program is not inclusive, the input might not be representative. Decisions based on this input may be responsive to the desires of a small group, while failing to fulfill the needs or wishes of a larger affected public (Freudenburg 1983).

Hendee *et al.* (1973) noted that "Disadvantaged groups, because of economic status, education, language barrier, cultural tradition or other factors, often lack the influence and expertise to participate as effectively as other groups, even on issues that affect them" (p. 78). Nevertheless, the study found that Forest Service officials were aware of and concerned with the problem. Special efforts to increase representation of disadvantaged groups were recommended (Hendee *et al.* 1973; see also Burch 1976).

However, more recent research indicates that little progress has been made. A study of the characteristics of public involvement participants used questionnaires that were mailed to a random sample of persons who had expressed interest to the Forest Service in being informed of public participation activities in four Pacific Northwest forests (Force and Williams 1989). Participants tended to be well educated, have relatively high income (over \$25,000 per year), and be conservative more often than liberal (although the largest group was moderate).

Among the extreme proposals to make public involvement more inclusive is to have public votes on land-use allocations (Knopp and Caldbeck 1990). However, the demographics of other elections suggest that even this method can be expected to underrepresent certain groups.

Not all authors advocate more inclusive public participation methods. Behan (1988) suggested managing national forests for their respective active constituencies. This approach would necessarily and intentionally ignore the silent minorities and majorities. Sirmon *et al.* (1993) put forth a similar proposal for decision making within "communities of interest." However, if these communities of interest could be expanded to include traditionally unrepresented but affected groups, the decision-making process could be made more inclusive.

Public Involvement Programs Are More Successful If More People Participate

Public participation practitioners and researchers have long assumed that increased participation can be equated to increased success (Creighton 1983a). Thus, the various agencies charged with involving the public in decision making have spent substantial time and money trying to in-

crease the number of participants. However, little research or theory has been applied to this precept.

In fact, the one study directly applicable to this hypothesized relationship found the opposite. In 1977, a study of participant reaction to Forest Service public involvement procedures on the Big Levels Unit in Virginia was reported (Twight 1977). The implied goal of public involvement in this study was to achieve decisions with increased support through the use of better procedures, resulting in participant satisfaction. The author found that the Forest Service's "get out the vote" approach to maximizing local and rural public involvement resulted in a disproportionate percentage of alienated participants. These participants were seeking an opportunity to express resentment. It was believed to be unlikely that these participants would support any type of federal management. The study concluded that efforts by the Forest Service to involve this group might have been counterproductive and were misdirected.

However, public participation programs should be evaluated in terms of stated goals. Although Twight (1977) found decreased satisfaction among participants, actual and perceived quality of decisions was not evaluated. Further, the study did not use any experimental controls. Thus, although the increased participation resulted in a higher number of dissatisfied participants, Twight did not test whether those participants were more satisfied with the procedures or results than if they had not participated at all. For example, other research suggests that the alienated participants in the Twight study might have higher confidence in Forest Service staff as a result of their participation if they viewed the procedures as fair (Dixon 1993). Thus, to the extent that research supports theorized advantages of public participation, increased participation generally will be expected to increase these advantages.

Public Involvement Should Begin Early and Continue Throughout the Process

For federal land managers, public involvement is generally required at specific stages throughout the NEPA process. Aside from this legal requirement, some of the earliest research has supported the need for early and continued public involvement for programs to be successful.

The first reported study on public involvement with the Forest Service was an extensive examination conducted in the early 1970s under the agency's auspices (Hendee *et al.* 1973). This study of public participation on 27 national forests was conducted using a 20-page questionnaire answered by the forest supervisors and their staffs. The questionnaires were followed by 2-hour interviews with the study team. The primary goal of public involvement recognized by the study was to make "better decisions, primarily through improved understanding of the relative values the public places on alternative uses of the National Forests" (Hendee *et al.* 1973, p. 13). In Figure 1, this goal would be to reach decisions that (G1) better achieve resource management goals because (M1a) goals are better defined, resulting in (R1) "objectively better" decisions.

Among the Hendee *et al.* (1973) findings was that public involvement must be considered at five stages of the decision-making process:

issue identification, collection, analysis, evaluation, and decision implementation. These results suggest that involvement is needed throughout the process.

While legal requirements at the federal level have reduced the need for authors to express this principle, use of public involvement at state and local levels and by private industry is not always required and should not be presumed. Recent literature has emphasized the need for involvement throughout the process (Behan 1988; McMullin and Nielson 1991). As public involvement continues to expand in the nonfederal decision arenas, the lessons learned in Hendee *et al.* (1973) and in subsequent studies will be applicable.

Public Input Should Be Used in the Decision-Making Process

There is widespread agreement in the literature that public involvement programs are not fully effective if public input is not actually used in the decision-making process (Benfield 1985). Thus, while Hendee *et al.* (1973) found that Forest Service officials commonly viewed public involvement objectives as determining public support and educating the public, neither of these objectives necessarily results in using input in the decision-making process. A Forest Service evaluation of public involvement efforts on the Olympic National Forest (Sayre 1987) concluded that the process was a success because the Forest Service was able to present its position and clarify misunderstandings. The substantive effect of public input on decision making was not evaluated.

Other reasons exist for using public input in decision making. A recent study indicated that public participants are disaffected and will decrease future input if they perceive their input is not used (Lyden *et al.* 1990). Questionnaires were sent to 1274 Forest Service and 914 public participants in the Resource Planning Act planning process, with 61 percent and 62 percent response rates, respectively. Most public participants were dissatisfied with the process because of a perceived lack of effect on agency plans, but most were willing to spend more time if they thought the agency listened to them (77 percent). This was consistent with the results of a 1980 Harris poll (71 percent).

Use of public input, of course, does not mean that every item of input will result in a plan modification or that everyone's wishes will be met. It is usually impossible to accommodate everyone, even if this was a resource manager's sole objective. Rather, each item of input should be analyzed as a relevant expression of public opinion or knowledge that must be weighed as part of the decision-making process (Wondolleck 1988).

Controversial Issues Should Be Identified and Addressed

Natural resource decision makers (and others) may tend to avoid controversial issues, especially when dealing with the public. In a review of Forest Service public involvement in the RARE II decisions (Mohai 1987a, 1987b), two conflicting theories about the Forest Service were compared: (1) the agency is molded by professional ideology and is relatively uninfluenced by public participation, or (2) the agency is responsive to interest groups. The study concluded that the Forest Service

responds to public input, but only to avoid conflicts. However, these responses are designed to support agency positions that existed prior to the public input.

A study of public involvement in the preparation of forest plans evaluated success based on standards commonly espoused in the literature and in legal requirements (Blahna and Yonts-Shepard 1990). This study of planning by 13 forests was performed using questionnaires and, in six cases, site visits. The study concluded that in many cases some of the public participation goals of NFMA were not met because of a desire to avoid controversy, among other factors. Attempts to avoid controversy were, in many cases, counterproductive.

Interactive Public Involvement Methods Are Desirable

A large amount of public participation consists of writing letters and attending public meetings (Heberlein 1976). Force and Williams (1989) found that, of 16 methods used by the Forest Service to involve the public, participants most used Forest Service presentations, response forms, personal letters, and telephone calls. Of these four methods, only telephone calls are likely to be interactive, with some level of give and take between the public and the agency, and even this method does not provide interaction among potentially divergent publics.

This tendency toward noninteractive methods persists in spite of a preference for interactive public involvement expressed in the literature and by the public (Blahna and Yonts-Shepard 1989). Force and Williams (1989) found that, of 28 possible participation methods to choose among, the top five preferred by the sampled potential participants were (1) citizen participation on Forest Service policymaking bodies; (2) formal public hearings; (3) surveys of citizens' attitudes and opinions; (4) open public meetings; and (5) meetings held for residents of a specific community. The first, fourth, and fifth of these methods are likely to be interactive.

Professional Resistance Is a Major Source of Public Involvement Failure

Perhaps the most often documented source of failure of public involvement is resistance by agency decision makers to meaningful public input. Interestingly, Hendee *et al.* (1973) found a high degree of organizational commitment to public involvement within the Forest Service, especially at the forest level. However, this level of commitment may have reflected the agency's view of public involvement as a means for educating the public, rather than as a method for cooperative decision making. Also, Hendee *et al.* (1973) conducted their study shortly after NEPA was adopted and before NFMA was passed, when public involvement was not yet mandated at current levels.

Subsequent studies have produced results in marked contrast to this early examination. The U.S. Congress Office of Technology Assessment (1992) found that professional resistance in the Forest Service to public ideas was one of the major sources of failure of public participation. Anecdotes throughout the public participation literature support this finding (Bolle 1971; Wondolleck 1988; Magill 1991). Blahna and Yonts-Shepard

(1990) reported that the Forest Service dropped "public issues" in forest planning due to the "sanitizing effect of administrative review."

Professional resistance occurs when natural resource decision makers, who have been trained in scientific and technical management of resources, are responsible for public involvement but are not adequately trained in the social scientific role of the public (Magill 1988, 1991). The goals of public involvement discussed earlier in this paper and diagrammed in Figure 1 reveal the important role of public involvement as an adjunct to professional expertise. The public is an important source of resource management goals and can often provide additional data and methodological expertise. At least as important is the effect public participation has on legitimizing decisions. Natural resource decision makers must be trained in these roles for public involvement in order to break down entrenched resistance.

Professional resistance is probably an even larger problem at state, local, and private levels, where public involvement requirements are often less stringent or nonexistent. In these instances, professional resistance may do more than reduce the effectiveness of public involvement — it may result in no involvement, thus losing the advantages of public involvement entirely.

Public Involvement Is Necessary in Establishing Resource Management Goals

Numerous authors have stressed the central role of public involvement in setting resource management goals (Hendee *et al.* 1973; Fairfax 1975; Shaffer 1975; Henning 1987), which are ultimately based on relative value judgments. Resource managers generally receive technical training and either are not in a position to make these value judgments for society or do not recognize that their decisions involve value judgments. Rather, the public is the unique source of public values on which management goals must be based. Public participation enables decision makers to elicit information on public values, evaluate these values in an interactive setting, and determine resource management goals.

Public Involvement Methods Should Be Adapted to Different Situations

Given the variety of issues involved in natural resource decision making, it is not surprising that no single method or series of methods is right for every situation. Hendee *et al.* (1973) reached this conclusion and recommended that the techniques used to secure public involvement be based on specific objectives for the issue at hand. The same conclusion was reached by the U.S. Congress Office of Technology Assessment (1992) 19 years later.

Guidelines for determining what method to use in a given situation have been more difficult to develop. Research using the Vroom-Yetton model to determine the desired degree of participation (Thomas 1990; Sample 1993; Daniels *et al.* 1996) has proposed an approach that would vary the degree and nature of public participation depending on a sequential analysis of several key attributes. The attributes were chosen

with the combined goals of raising the quality of decisions (for example, by providing the decision maker with needed data or providing a more time-efficient method) and developing participant acceptance of and commitment to decisions. However, this method only suggests the general nature of public involvement and does not direct the user to specific public involvement methods. Force and Williams (1989) listed 28 different types of public participation methods. Therefore, even if the Vroom-Yetton model is used, choosing the right public participation tool for a specific decision-making task still can be daunting.

Evaluation of Public Involvement Programs

Public participation programs and methods are notoriously difficult to evaluate. Problems arise primarily because it is difficult to conduct controlled experiments on public involvement methods. Most studies, therefore, are field studies, which have some inherent limitations.

The importance of field studies should not be underestimated. They examine methods under actual conditions that cannot be replicated in a laboratory or reasonably approximated by any other means. However, because of the severe limitations on interpreting field studies, when laboratory or other types of studies are possible, field studies serve the primary purpose of corroborating previous laboratory findings.

The most severe limitation of field studies on public participation is that true experimental control cannot be obtained (Goldenberg and Frideres 1986). For example, while an attempt may be made to measure the level of satisfaction of participants in a natural resource decision, it is generally not possible to compare these levels to those that could be achieved by other methods that were not used to make the decision. Comparison to satisfaction levels obtained with other methods for other decisions are not usable, since other confounding factors relating to the two decisions may mask the effects of the public involvement methods. For example, public hearings may be used for a national forest management plan, while group workshops may be used for a state forest management plan. Potential confounding factors include different levels of importance participants place on each of the forests, different levels of trust in the decision makers, differences between state and national constituencies, and regional differences in the participants. Separating the effects of the public participation method from these confounding factors would be impossible.

Goldenberg and Frideres (1986) and Heberlein (1976) suggested an alternative to traditional, nonexperimental field studies to determine the effects of public participation programs: the quasi-experimental approach, in which a similar group is measured as a form of pseudo-control. For example, public involvement with the Forest Ecosystem Management Assessment Team [which was convened by President Clinton to formulate a plan for the Pacific Northwest late successional forests (USDA Forest Service and USDI Bureau of Land Management 1994)] could have been studied with the quasi-experimental approach if two similar affected communities in rural southwest Oregon had been se-

lected. Different types of public involvement mechanisms could have been used for each community (or none for one community). By measuring each community's response before and after the decision-making process, the effects of the process could be measured with many confounding factors controlled. Alternatively, one community could be measured over time to act as its own control. In this latter approach, factors that are trends can be controlled to some extent.

Field studies that are used to evaluate public involvement are plagued by other problems as well. Participants are self-selected; therefore, they generally do not represent the public at large and are not randomly assigned to different public involvement methods (as would be necessary for a scientific experiment). If the goal of the decision-making process is to better satisfy the public's resource allocation and management goals, evaluating the satisfaction of participants may not adequately gauge success. In fact, Twilight (1977) noted that Forest Service efforts to increase participation may have increased the number of alienated participants. The satisfaction level of this group could suggest that the public involvement methods are inadequate even though the public at large may be satisfied, or vice versa.

Notwithstanding these limitations, various attempts have been made to develop methods to evaluate public participation programs. Sewell and Phillips (1979) reviewed four techniques, all of which involve *post hoc* evaluations, either by the participants or by independent evaluators. While these evaluation techniques may provide useful frameworks for analysis, none address the experimental limitations discussed in this paper.

In a study of public participation with the Forest Service (Blahna and Yonts-Shepard 1989), evaluation criteria were extracted from previous literature. These criteria included (1) obtaining input early in the planning process, (2) involving the public throughout the planning process, (3) obtaining input representative of interested parties, (4) using personal and interactive methods, and (5) using input to develop and evaluate alternatives. While the study is an excellent analysis of methods used, none of the criteria test whether the goals of public involvement have been met, other than meeting legal requirements. Only if methods are effective in achieving the goals (as expressed or implied by the methods' proponents) is this a valid evaluation of the effectiveness.

In an effort to evaluate the Vroom-Yetton model, Thomas (1990) determined the effectiveness of decisions in published cases that involved public participation. Effectiveness was based on process elements (including level of antagonism, time necessary, and ability to reach a decision) and outcome elements (including correspondence to quality requirements, success of implementation, managerial satisfaction, and eventual achievement of intended goals). While Thomas' (1990) evaluation approach determined whether the method suggested by the model resulted in more effective decisions than did other methods, the same approach may be applied to evaluate public involvement programs against other standards.

Ultimately, public participation programs must be evaluated against specified goals. Thus, the programs may be measured by whether resource management goals are better achieved. This may be difficult or impossible to determine objectively. For example, one of the resource management goals of the Forest Ecosystem Management Assessment

Team was to increase the prospects for northern spotted owl survival. The adopted plan was at least in part the result of the public participation process (giving it the benefit of the doubt), but it is impossible to determine whether a plan adopted without public involvement (or with different public involvement methods) would have lowered the prospects for owl survival.

It can be argued that decisions made with more data and knowledge are more likely to achieve stated goals. Therefore, public involvement programs that are implemented to improve resource management decisions could be measured by how much additional information they provide to the decision maker. However, resource management decisions are invariably political as well as technical decisions. Public participation may have a significant impact on both of these aspects. Therefore, as a result of public involvement, decisions may be altered to attempt to make them more politically acceptable, while not necessarily more scientifically sound.

Public involvement programs may also be evaluated by whether they achieve a higher degree of public support than other methods. Once again, comparisons are difficult.

In the short term, methods may be considered more successful if they result in fewer appeals or challenges. (For this discussion, we ignore the fact that agency appeals are themselves a form of public participation.) However, this approach is at best superficial and ignores the long-term positive and negative effects that might result from public involvement. In the long term, public involvement can be evaluated by how it affects the public's confidence levels in decision makers, the willingness of citizens to participate constructively in the future, and the effects programs have on building constructive relationships among participants and between participants and agencies.

Summary

Since the 1960s, an extensive body of literature has developed regarding public involvement in natural resource decision making. However, public participation has developed primarily through a series of legal requirements, and the extensive literature on this topic has largely been a response to these requirements. As a result, the literature has developed in a haphazard, atheoretical, almost chaotic, manner. This paper has attempted to bring some order to this chaos.

This paper first examined the central role of the public involvement goals, which, whether expressed or implied, are critical to the development of public participation methods and the evaluation of these methods. Generally, these goals aim to either (1) improve the quality of management decisions by increasing the likelihood that decisions will achieve stated resource management goals, or (2) increase the public support of decisions.

Next, this paper examined a variety of principles that underlie public involvement methods and have achieved widespread acceptance in

the field. These principles include the following: (1) public involvement should be inclusive, (2) public involvement programs are more successful if more people participate, (3) public involvement should begin early and continue throughout the process, (4) public input should be used in the decision-making process, (5) controversial issues should be identified and addressed, (6) interactive public involvement methods are desirable, (7) professional resistance is a major source of public involvement failure, (8) public involvement is necessary in establishing resource management goals, and (9) public involvement methods should be adapted to different situations.

Finally, this paper examined approaches to evaluating public involvement programs. Limitations on traditional evaluative approaches were examined, and some alternative approaches were presented.

This paper contributes to the field of public involvement in several ways. As research and practice of public involvement in natural resource decision making continues to move forward, it is important for authors and practitioners to understand where their work fits generally in the field. Further, the organization of previous literature should assist future authors and practitioners in drawing on the lessons learned in the past. Perhaps most importantly, this paper has examined the role of goals in shaping previous research, with the hope that future research will address these goals directly.

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- Epstein, P. 1987. How citizen participation spruces up performance. *National Civic Review* 76(2):147-151.
- Argues for citizen-based planning and policy development. Examines four case studies.
- Faast, T. 1988. Public involvement: playing the game. *Oregon Wildlife* 1988:8-9.
- Describes a new public involvement policy in Oregon Department of Fish and Wildlife.
- Fairfax, S.K. 1975. Public involvement and the Forest Service. *Journal of Forestry* 73(10):657-659.
- Examines limitations on Forest Service's ability to respond to public involvement. Argues for a less rigid approach.
- Fischer, B.C., S.G. Pennington, and B. Tormoehlen. 1993. Public involvement in Indiana forestry. *Journal of Forestry* 91(7):28-31.
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- Force, J.E., and K.L. Williams. 1989. A profile of National Forest planning participants. *Journal of Forestry* 87(1):33-38.
- Survey of national forest planning participants. Focus is on demographics and participation method preferences.
- Fraser, B. n.d. *Engaging Citizens in Creating Durable Land and Resource Use Agreements: Guidelines for Setting Up a Joint Planning Process Based Upon Consensus-Seeking, Interest-Based Negotiation and Shared Decision-Making*. Salasan Associates, Inc., Sidney, British Columbia. 16 p.
- Publication prepared by consultant for clients. Provides step-by-step guide to setting up and running a public involvement program.
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- Publication prepared by consultant for clients. Presents general principles for public participation in complex decision making, design elements for public participation programs, and issues raised by consultant's experiences.
- Freudenburg, W.R. 1983. The promise and peril of public participation in social impact assessment. P. 227-235 in *Public Involvement and Social Impact Assessment*. G.A. Daneke, M.W. Garcia, and J. Delli Priscoli, eds. Westview Press, Boulder, Colorado.
- Supports public involvement, but points to several risks that need to be guarded against, especially influence of organized groups.
- Gale, R.P. 1983. The consciousness-raising potential of social impact assessment. P. 253-262 in *Public Involvement and Social Impact Assessment*. G.A. Daneke, M.W. Garcia, and J. Delli Priscoli, eds. Westview Press, Boulder, Colorado.
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Review of 4-year research project. Sets forth conceptual framework and summarizes studies.

- Grisham, A. 1988. Public information and citizen involvement. *Water Resources Bulletin* 24(2):449-453.
- Explores role of public information efforts on public involvement. Suggests approaches for effective public information programs.
- Harashina, S. 1995. Environmental dispute resolution process and information exchange. *Environmental Impact Assessment Review* 15:69-80.
- Case study analysis of a road construction project in Japan, and the associated environmental impact assessment and mediated discussion. Particular emphasis on the learning process and information exchange that occurred.
- Hauser, K. 1993. Interaction in the Intermountain. *Journal of Forestry* 91(7):30.
- Describes an interactive approach to public involvement. Emphasis is on creating a community of interests, interaction throughout the process, and building a working coalition for plan development and implementation.
- Heberlein, T.A. 1975. Principles of Public Involvement for National Park Service Planners and Managers. Department of Rural Sociology, University of Wisconsin, Madison, Wisconsin. 10 p.
- General overview of the role of public involvement prepared for the National Park Service, Planning Task Force.
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- Compares methods for obtaining public input. Finds most promise in the workshop and the quasi-experiment.
- Hendee, J.C., R.N. Clark, and G.H. Stankey. 1974. A framework for agency use of public input in resource decision-making. *Journal of Soil and Water Conservation* 29(2):60-66.
- Sets forth conceptual structure for obtaining and using public input in natural resource decision making.
- Hendee, J.C., R.C. Lucas, R.H. Tracey, T. Stead, R.N. Clark, G.H. Stankey, and R.A. Yarnell. 1973. Public Involvement and the Forest Service: Experience, Effectiveness and Suggested Direction. USDA Forest Service, Land and Resource Management Planning, Washington, D.C. 163 p.
- Questionnaires and interviews used to study Forest Service public involvement. Contains extensive findings, 17 major recommendations.
- Henning, D.H. 1987. Wilderness politics: public participation and values. *Environmental Management* 1(3):283-293.
- Argues that wilderness values should drive planning. Observes that discussions of values often are excluded from public involvement processes.

Henning, D.H., and W.R. Mangun. 1989. Managing the Environmental Crisis: Incorporating Competing Values in Natural Resource Administration. Duke University Press, Durham, North Carolina. 377 p.

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Kweit, M.G., and R.W. Kweit. 1987b. The politics of policy analysis: the role of citizen participation in analytic decision making. P. 19-37 in *Citizen Participation in Public Decision-Making*. J. Desario and S. Langton, eds. Contributions in Political Science No. 158. Greenwood Press, New York.

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Case studies of citizen panels as a public involvement method. Success was highly dependent on individual case attributes.

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terests among general and attentive publics. *Social Science Journal* 23(3):309-326.

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Survey of participants in the Resource Planning Act process. Dissatisfaction was a function of perceived lack of influence. Agency's and participants' expectations and values differed.

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Examines the causes and sources of professional reluctance to involve the public. Causes include the personalities of persons drawn to the profession, educational bias, and perpetuation of attitudes.

Magill, A.W. 1991. Barriers to effective public interaction. *Journal of Forestry* 89(10):16-18.

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Manring, N.J. 1993. Dispute systems design and the U.S. Forest Service. *Negotiation Journal* 1993:13-21.

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McCoy, L., E.E. Krumpe, and P.D. Cowles. n.d. *The Principles and Processes of Public Involvement: A State-of-the-Art Synthesis for Agencies Venturing Into Ecosystem Management*. Department of Resource Recreation and Tourism, Moscow, Idaho. 27 p.

General paper outlining key theories, principles, and scales of public involvement. Prepared for The East Side Ecosystem Management Team.

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Case study of public involvement in urban forestry. Study demonstrates that public involvement programs can cut operating costs and increase funding opportunities.

- M'Gonigle, R.M. 1989. The unnecessary conflict: resolving the forestry/wilderness stalemate. *Forestry Chronicle* 65(5):351-358.
- Focuses on forestry in British Columbia. Argues for a new paradigm to allow democratic voices and competitive markets.
- Milbrath, L. 1983. Citizen surveys as citizen participation mechanisms. P. 89-100 in *Public Involvement and Social Impact Assessment*. G.A. Daneke, M.W. Garcia, and J. Delli Priscoli, eds. Westview Press, Boulder, Colorado.
- Argues for surveys to supplement public involvement. Provides a case study.
- Mohai, P. 1985. Public concern and elite involvement in environmental-conservation issues. *Social Science Quarterly* 66(4):820-838.
- Demonstrates that a link exists between upper-middle class and environmental activism, rather than environmental concern.
- Mohai, P. 1987a. Public participation and natural resource decision-making: the case of the RARE II decisions. *Natural Resources Journal* 27(1):123-155.
- Reviews previous studies of Forest Service responsiveness to public input. Forest Service was found to be responsive to public views, but in ways that supported professional ideology.
- Mohai, P. 1987b. Rational decision making in the planning process: some empirical evidence for RARE II. *Environmental Law* 17(3):507-556.
- Found organizational and political factors exert stronger influence on policy outcomes than do rational deliberations. Based on theory, literature on the Forest Service, and empirical evidence from RARE II.
- Nixon, R.M. 1970. Executive Order 11514: protection of environmental quality. *Federal Register* 35(46):4247-4248.
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- O'Riordan, J. 1976. The public involvement program in the Okanagan Basin study. *Natural Resources Journal* 16:177-196.
- Case study of public involvement program in Canada water resource management.
- Patterson, G.J. 1983. Social impact assessments and U.S. Forest Service policy: the case of the Oregon Range Validation Area. P. 235-240 in *Public Involvement and Social Impact Assessment*. G.A. Daneke, M.W. Garcia, and J. Delli Priscoli, eds. Westview Press, Boulder, Colorado.
- Describes ongoing case research study.
- Potapchuk, W.R. 1991. New approaches to citizen participation: building consent. *National Civic Review* 1991:158-168.
- Conceptual article on the advantages of collaborative public involvement methods.
- Potter, H.R., and H.J. Norville. 1983. Citizens' participation and effectiveness in environmental issues. P. 35-44 in *Public Involvement and*

Social Impact Assessment. G.A. Daneke, M.W. Garcia, and J. Delli Priscoli, eds. Westview Press, Boulder, Colorado.

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Quasi-experimental longitudinal study to determine predictors of participation behavior. Factors include present environmental quality, expected state of environment in the future, knowledge and assessment of participation, and general interest in politics.

Regens, J.L. 1983. Siting hazardous waste management facilities. P. 121-128 in *Public Involvement and Social Impact Assessment*. G.A. Daneke, M.W. Garcia, and J. Delli Priscoli, eds. Westview Press, Boulder, Colorado.

Examines public involvement as a means of overcoming opposition to site location.

Reich, R.B. 1985. Public administration and public deliberation: an interpretive essay. *The Yale Law Journal* 94:1617-1641.

Reviews role of public administration in a democratic society. Argues for methods that enhance discovery of public values.

Robinson, G.O. 1975. *The Forest Service: A Study in Public Land Management*. The Johns Hopkins University Press for Resources for the Future, Inc., Baltimore, Maryland. 337 p.

General overview of the Forest Service. Contains a brief description of the role of public involvement.

Rock, M.J. 1983. Colorado's joint review process: the AMAX experience. P. 207-213 in *Public Involvement and Social Impact Assessment*. G.A. Daneke, M.W. Garcia, and J. Delli Priscoli, eds. Westview Press, Boulder, Colorado.

Description of case study including public input.

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Rosener, J.B. 1981. User-oriented evaluation: a new way to view citizen participation. *Journal of Personality and Social Psychology* 1:583-597.

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Sample, V.A. 1990. A framework for public participation in natural resource management decisions: the case of National Forest planning. P. 293-297 in *Are Forests the Answer? Proceedings, 1990 Society of*

- American Foresters National Convention. Society of American Foresters, Washington, D.C. SAF Publication 90-02.
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- Sample, V.A. 1993. A framework for public participation in natural resource decisionmaking. *Journal of Forestry* 91(7):22-27.
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- Sayre, T.W. 1987. Public involvement — the Olympic National Forest assesses its efforts. *Journal of Forestry* 85(11):5-7.
Subjective analysis of public participation programs for the Olympic National Forest. Views efforts as successful because the Forest Service was able to explain its policies to the public.
- Schomaker, J.H., and D.W. Lime. 1988. Identifying critical issues in recreation planning and management: improving the management-research partnership. *Water Resources Bulletin* 24(3):593-598.
Describes the nominal group process for structuring interchange between managers and researchers. Some implications for public involvement are discussed.
- Sewell, W.R., P. Dearden, and J. Dumbrell. 1989. Wilderness decision-making and the role of environmental interest groups: a comparison of the Franklin Dam, Tasmania and South Moresby, British Columbia cases. *Natural Resources Journal* 29:147-169.
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- Sewell, W.R.D., and T. O'Riordan. 1976. The culture of participation in environmental decisionmaking. *Natural Resources Journal* 16:1-21.
Cross-cultural comparison of the nature of participants and participation in the United States, Canada, and Great Britain.
- Sewell, W.R.D., and S.D. Phillips. 1979. Models for the evaluation of public participation programmes. *Natural Resources Journal* 19(2):337-359.
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- Shaffer, R.E. 1975. Citizen involvement in land use planning: a tool and an example. *Journal of Soil and Water Conservation* 30(4):211-214.
Reviews a case example that used the nominal group process. The method did not solve all public involvement concerns, but did reduce adverse reactions.
- Shannon, M.A. 1987. Forest planning: learning with people. P. 233-252 in *Social Science in Natural Resource Management Systems*. M.L. Miller, R.P. Gale, and P.J. Brown, eds. Westview Press, Boulder, Colorado.
Describes the development of forest planning and public involvement. Demonstrates the compatibility of public involvement and rational decision making.

Shannon, M.A. 1990. Building trust: the formation of a social contract. P. 229-240 in *Community and Forestry*. R.G. Lee, D.R. Field, and W.R. Burch, Jr., eds. Westview Press, Boulder, Colorado.

Discusses the social structure of public involvement. Reviews various concepts of public involvement that relate to and affect levels of trust in the Forest Service.

Shannon, M.A. 1990. Revisioning citizenship: a comment. P. 298-300 in *Are Forests the Answer? Proceedings, 1990 Society of American Foresters National Convention*. Society of American Foresters, Washington, D.C.

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Shannon, M.A. 1991. Resource managers as policy entrepreneurs. *Journal of Forestry* 89(6):27-30.

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Shannon, M.A. 1992. Foresters as strategic thinkers, facilitators, and citizens. *Journal of Forestry* 90(10):24-27.

Editorially oriented article supporting social practices and strategic approaches in forestry.

Sirmon, J., W.E. Shands, and C. Liggett. 1993. Communities of interests and open decisionmaking. *Journal of Forestry* 91(7):17-21.

Advocates a more flexible public involvement process. Reviews Shands *et al.* (1990) and briefly describes several examples.

Stankey, G.H., and R.N. Clark. 1992. *Social Aspects of New Perspectives in Forestry: A Problem Analysis*. Grey Towers Press, Milford, Pennsylvania. 33 p.

Reviews social aspects related to "new forestry." Among the problems explored is the lack of effective mechanisms to translate public involvement into public participation in decision making.

Stark, C.R., Jr., and W.D. Seitz. 1988. EZ-IMPACT: a judgment-based program for public input in resource management and modeling. *Society & Natural Resources* 1(4):387-395.

Describes a computer-based public involvement tool. Program uses mathematical satisficing to develop preferred models.

Stifel, B. 1983. Dialogue: does it increase participant knowledgeability and attitude congruence? P. 61-78 in *Public Involvement and Social Impact Assessment*. G.A. Daneke, M.W. Garcia, and J. Delli Priscoli, eds. Westview Press, Boulder, Colorado.

Statistical analysis of the effects of interaction in small groups (dialogue) versus large groups. Dialogue was generally not found to increase knowledge or attitude congruence.

Syme, G.J., and E. Eaton. 1989. Public involvement as a negotiation process. *Journal of Social Issues* 45(1):87-107.

Examines traditional public involvement recommendations and finds them inadequate for analysis. Advocates the use of negotiation analysis and social psychology research.

Tanz, J.S., and A.F. Howard. 1991. Meaningful public participation in the planning and management of publicly owned forests. *Forestry Chronicle* 67(2):125-130.

Advocates public involvement in Canadian forestry. Argues for constituency analysis and use of computerized decision aids.

Thomas, C.L. 1991. One hundred twenty years of citizen involvement with the Wisconsin Natural Resources Board. *Environmental History Review* 15(1):61.

Historical/descriptive article of citizen involvement in Wisconsin.

Thomas, J.C. 1990. Public involvement in public management: adapting and testing a borrowed theory. *Public Administration Review* 50(4):435-455.

Tests a version of the Vroom-Yetton model for determining involvement levels against 42 public decisions. Findings support the use of the model.

Thomas, J.C. 1993. Public involvement and governmental effectiveness: a decision-making model for public managers. *Administration & Society* 24(4):444-469.

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Tipple, T.J., and J.D. Wellman. 1989. Life in the fishbowl: public participation rewrites public foresters' job descriptions. *Journal of Forestry* 87(3):24-30.

Suggests new roles for foresters based on the impacts of public involvement. Roles are an implementer of laws, a provider of a fair procedure, and a model participant.

Twight, B.W. 1977. Confidence or more controversy: whither public involvement? *Journal of Forestry* 75(2):93-95.

Survey of public participants on the Forest Service Big Levels Unit. Found that attempts to obtain representative input attracted an increased number of alienated persons.

Twight, B.W., and M.S. Carroll. 1983. Workshops in public involvement: do they help find common ground? *Journal of Forestry* 81:732-735.

Survey of participants in Indian Peaks wilderness controversy. Found that workshop attendees perceived differences with the Forest Service that were equal to those perceived by letter writers and public meeting attendees. Actual differences were significantly less.

Twight, B.W., and F.J. Lyden. 1989. Measuring Forest Service bias. *Journal of Forestry* 87(5):35-41.

Survey of public participants in the Resource Planning Act process compared to Forest Service respondents. Revealed that agency responses corresponded more to industrialist constituency than to environmentalist constituency.

Twight, B.W., F.J. Lyden, and E.T. Tuchmann. 1990. Constituency bias in a federal career system? A study of district rangers of the U.S. Forest Service. *Administration & Society* 22(3):358-389.

Survey of public participants in the Resource Planning Act process compared to Forest Service respondents. Revealed that agency responses corresponded more to industrialist constituency than to environmentalist constituency.

Twight, B.W., and J.J. Paterson. 1979. Conflict and public involvement: measuring consensus. *Journal of Forestry* 77:771-774.

Survey of public participants on Forest Service Big Levels Unit. Found that conservation group membership contributed to perception of disagreement with Forest Service position.

U.S. Congress, Office of Technology Assessment. 1992. *Forest Service Planning: Accommodating Uses, Producing Outputs, and Sustaining Ecosystems*. U.S. Government Printing Office, Washington, D.C. 206 p.

Chapter 5 reviews legal requirements for public participation. History, trends, and reasons for difficulties are examined through a review of existing literature.

USDA Forest Service. n.d. *Ridding Public Participation of the "Black Hole."* USDA Forest Service, Northern Region, Missoula, Montana. 27 p.

Guidebook for Forest Service personnel on coding and responding to public correspondence.

USDA Forest Service. 1990. *Public participation. Critique of Land Management Planning 5*. USDA, Washington, D.C. 23 p.

This publication includes the results of a questionnaire for participants in national forest planning to determine compliance with NFMA and evaluate public participation. Compliance with regulations was found to be high, but several problems were identified. Recommendations included (1) more frequent and open discussions, (2) modification of planning goals, (3) reducing complexity of planning process, (4) more interaction between district and field personnel, (5) improved training in social and political skills, and (6) changes related to Congressional direction.

USDA Forest Service. 1993. *Strengthening Public Involvement: A National Model for Building Long-Term Relationships with the Public*. USDA, Washington, D.C. 22 p.

Proposed model to guide public participation practitioners. Prepared by the National Public Involvement Task Group for Forest Planning.

USDA Forest Service and USDI Bureau of Land Management. 1994. *Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl*. U.S. Government Printing Office, Washington, D.C. 432 p.

Environmental impact statement related to President Clinton's Northwest Forest Plan. Includes a discussion of public participation in the process leading to the issuance of the Plan and responses to public input.

Val, E. 1987. Socioeconomic impact assessment, regional integration, public participation, and new national park planning in Canada. P.

129-148 in *Social Science in Natural Resource Management Systems*. M.L. Miller, R.P. Gale, and P.J. Brown, eds. Westview Press, Boulder, Colorado.

Descriptive article about new Canadian system. An example is provided.

Vasoo, S. 1991. Grass-root mobilization and citizen participation: issues and challenges. *Community Development Journal* 26(1):1-7.

Discusses factors necessary to encourage participation and risks of leaders of grass-roots movements becoming "burnt out."

Vining, J., and A. Ebreo. 1991. Are you thinking what I think you are? A study of actual and estimated goal priorities and decision preferences of resource managers, environmentalists, and the public. *Society & Natural Resources* 4:177-196.

Scenario study of public groups, an environmental organization, and Forest Service personnel. Found that decision preferences among these three groups differed and that groups were unable to predict each other's responses.

Vining, J., and H.W. Schroeder. 1987. Emotions in environmental decision making: rational planning versus the passionate public. P. 181-192 in *Social Science in Natural Resource Management Systems*. M.L. Miller, R.P. Gale, and P.J. Brown, eds. Westview Press, Boulder, Colorado.

Argues for including emotions as input to decision-making process. Discusses problems raised by emotions, psychological theories of emotions, and empirical evidence regarding the interaction between emotions and knowledge.

Vining, J., and H.W. Schroeder. 1989. The effects of perceived conflict, resource scarcity, and information bias on emotions and environmental decisions. *Environmental Management* 13(2):199-206.

Scenario study using university students. Examines what aspects of environmental conflicts enhance negative emotional reactions.

Wengert, N. 1976. Citizen participation: practice in search of a theory. *Natural Resources Journal* 16(1):23-40.

Examines the political science basis for public participation.

Wengert, N., and M.S. Hamilton. 1983. Citizen participation in state and local government control of power plant siting. P. 129-142 in *Public Involvement and Social Impact Assessment*. G.A. Daneke, M.W. Garcia, and J. Delli Priscoli, eds. Westview Press, Boulder, Colorado.

Reviews history of public involvement in power plant siting and notes haphazard application. Reviews several cases and makes recommendations.

Williams, K.L., and J.E. Force. 1985. Results of a Survey on Public Participation in National Forest Planning Process. Idaho Forest, Wildlife, and Range Experiment Station, Moscow, Idaho. 7 p.

Survey of national forest planning participants. Focus is on demographics and participation method preferences.

Wondolleck, J.M. 1988. *Public Lands Conflict and Resolution: Managing National Forest Disputes*. Plenum Press, New York. 263 p.

Examines problems with Forest Service decision making, emphasizing negotiation and conflict resolution issues. Deals briefly with public involvement.

Wondolleck, J.M., and S.L. Yaffee. 1994. *Building Bridges Across Agency Boundaries: In Search of Excellence in the United States Forest Service*. School of Natural Resources and Environment, Ann Arbor, Michigan. 93 p.

Examines Forest Service relations outside of the agency and provides examples. Public involvement is one of the "bridges" discussed.

Yankelovich, D. 1991. *Coming to Public Judgment: Making Democracy Work in a Complex World*. Syracuse University Press, Syracuse, New York. 290 p.

Discusses the nature of public opinion and the effects of technological complexity. Sets forth recommendations for effectively incorporating public opinion.