

**MANAGING PUBLIC FORESTS  
IN A SHARED-POWER WORLD:  
THE INTEGRATION OF CONFLICT MANAGEMENT  
PRINCIPLES INTO USDA-FOREST SERVICE  
PLANNING AND MANAGEMENT**

by

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## EXECUTIVE SUMMARY

The volatility and national press attention to issues such as clearcutting, deficit sales and threats to endangered species indicate not only the importance of such issues to various publics but the inadequacy of conventional approaches to deal with them. National forest managers rank conflict, and how to deal with it, at the top of all forest management issues. National forests, like ecosystems, are publicly valued resources and as such involve many different stakeholders with many different - and often competing - interests in those resources. Stakeholder interests are thus interdependent and the "management" of forests inevitably entails choice between these competing interests. Increased stakeholder knowledge and empowerment via legislation has shifted national forest management into a "shared-power" world, where the maximum level of satisfaction for all stakeholders can only be attained through the cooperative consideration, mediation or negotiation of these interests.

Previous examination of Forest Service interaction with the public indicate that in order to increase public involvement and decrease the amount and volatility of conflict the Forest Service must: 1) promote increased understanding and interaction between all stakeholders and; 2) establish an institutional framework where - on issues where there is legal leeway - the diverse interests, rights, duties, and claims of all national stakeholders can be considered and negotiated.

The purpose of this study was to investigate the status of movement towards these challenges by the Forest Service. The paper reports the results of a survey that examined the status of conflict and conflict management at the forest level. Data and information was collected via a questionnaire sent to all forest supervisors in the national forest system.

The survey found that:

- The most frequently occurring planning-related conflicts are: 1) over the quantity of forest outputs; 2) over location of Forest Service activities; and 3) between user-groups over Forest Service rules. The most frequently occurring management-related conflicts are: 1) over the quantity of forest outputs; 2) regarding the accuracy and suitability of scientific information; and 3) between user-groups over agency procedures. Supervisors felt that these conflicts can be addressed at the forest level, with the exception of questions regarding scientific information.
- The most common techniques the forests use to interact with the public (e.g. educating citizens, seeking public input, formulating decision alternatives, and debating Forest Service decisions) are through "one-way" communications, such as mailings and written correspondence. Personal invitations are opportunities for more interactive "two-way" dialogue among stakeholders, and are frequently used by forests to formulate decision alternatives. When Forest Service decisions are in contention, the majority of forests seek resolution via the appeals process.
- Many forests are making substantial investments in integrating conflict management. The adoption of conflict management principles is largely via training of personnel, and not organizational arrangements. Fifty-five percent of forests have an average of two full-time equivalents specifically assigned to handle conflicts. Only 62 percent of forests provide personnel responsible for managing conflicts with training.

- The most significant barriers to the adoption of new public interaction and conflict management techniques are the lack of resources (money or personnel), a lack of knowledge among Forest Service personnel as to how effectiveness can be improved, and a reluctance among stakeholders to do things differently. Internal agency reluctance - on the part of superiors and forest-level personnel - ranked lowest of all constraints listed.

- From the categorical analysis of the relationship between the use of techniques, conflict types, and constraints to adopting different techniques, and organizational integration of conflict management principles, no significant conclusive correlations were found. An important conclusion from the analysis is that successful public interaction and conflict management is more a product of process than structure, and what personnel actually do is more important than whether or not they are assigned with the task, whether or not certain techniques are being used, or if they have received training.

The survey indicates that, by and large, the Forest Service has not adopted public interaction techniques commensurate with the reality of today's shared-power world. Individual forests are exceptions, and there are a wide variety of techniques used, but overall, conventional "one-way" communications predominate and the use of forums in which stakeholders participate in the formulation of alternatives, and alternative dispute resolution methods is rare. The study indicates that substantial progress needs to be made by forests in order to decrease the volatility of conflicts associated with the second round of planning and ecosystem management. In short, the Forest Service needs to make an explicit commitment to an institutional framework in which interests can be fairly negotiated.

The results also show that this shift will not be accomplished via training and formal organizational commitments. Methods must be adopted in which power is shared and the outcomes of negotiations are recognized as legitimate. These methods, along with Forest Service support, will result in regimes of stakeholders with interests in the forest (or ecosystem) and these regimes will facilitate the work of the Forest Service, the satisfaction of stakeholders and the sustainability of the resource. The study also indicates that more research is required to investigate: what methods of interaction stakeholders perceive as fair; what public interaction techniques appear effective in dealing with what types of conflict; what types of forest (or ecosystem) regimes appear effective in different situations.

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## INTRODUCTION

The volatility and national press attention to issues such as clearcutting, deficit sales, and threats to endangered species indicate not only the importance of such issues to various publics, but the inadequacy of conventional approaches to deal with them. Indeed, USDA-Forest Service supervisors and district rangers rank conflict between the Forest Service and users, conflict between user groups, and conflict between local and national interests as the top three emerging issues of all issues in national forest management (Jakes et al. 1990). The most well-known example of these conflicts, that concerning the spotted owl in the Pacific Northwest has often been described as a "train wreck", a calamity that could have been avoided with some foresight and cooperative action ten years ago.

This "train wreck" (along with many others) is a product of many factors including: 1) changing values, interests, knowledge and power of national forest stakeholders; 2) conventional approaches to conflict that frequently polarized debate and promoted adversarial relations; and 3) federal legislation of the late 1960's that enhanced and clarified stakeholder rights to participate in Forest Service decisions. These factors have shifted modern public land management into what has been termed a "shared-power world", where no one entity can operate unilaterally if they are to operate successfully (Bryson and Crosby 1992). In our case, the Forest Service is no longer fully "in charge", and must cooperate with other stakeholders in order manage the national forests efficiently and effectively.

The realities of this new world have fostered a marked change, some would say a paradigm shift, in how the Forest Service views its role and interacts with the public. A memorandum released by Forest Service Chief F. Dale Robertson in June 1992 stated that henceforth, national forests and grasslands would managed using an "ecosystem approach" (USDAFS 1992). Although the concept is not new to many natural resource professionals, the explicit announcement from the Washington office signaled a substantial departure from decades of the utilitarian, "sustained-yield" forest management philosophy. Though an ecosystem approach will require that the Forest Service view and manage the forest landscape as an integrated whole, with the trees, soils, water, wildlife, air, and humans functioning in a dynamic, interdependent process, an operational framework for accomplishing this has yet to be defined.

We do know that ecosystems, like the individual national forests, are publicly valued resources. As such, many different stakeholders have many different - and often competing - interests in those public resources. For this reason, stakeholders in forests and ecosystems are interdependent, the benefits they draw from the forest subject to the actions of others. It is for this reason that disagreements and outright conflicts over resource use are inevitable and completely normal facets of public forest management. This dynamic of interdependence, inevitable conflict, and the reality of shared-power is given. And it constitutes a situation in which the maximum level of satisfaction for all stakeholders can only be attained through the fair consideration, mediation or negotiation of their interests.

It is this situation that makes national forest management a political endeavor (Cortner and Shannon 1993) and means that rather than seeking to avoid or deny conflict, the Forest Service must seek ways to "manage" it. The administration of public resources - individual forests or ecosystems - ultimately involves the prioritization and choice between competing options. And

again, these options represent the interests, values, claims, rights and duties of many and various stakeholders. Since ecosystems do not correspond to political, property, or, frequently, cultural boundaries, establishing an ecosystem approach, and managing ecosystem landscapes just renders more complex the dilemmas already facing the Forest Service for the administration of individual forests. The current status of how the Forest Service manages conflicts, considers, mediates or negotiates the interests of forest stakeholders will be briefly reviewed in the next section.

### **Literature Review: The State of Forest Service/Stakeholder Interaction**

Since the mid-1980s, a large amount of effort has been invested by the Forest Service and other researchers in understanding and managing relationships between the public and the Forest Service. Within the Forest Service: some forest supervisors and district rangers have created new tools and strategies to increase public involvement (c.f. Fischer et al. 1993, Johnson 1993, Sirmon et al. 1993); personnel at all levels have received training in conflict management; and in 1988 the agency revised the regulations concerning administrative appeals to facilitate negotiation between appellants and the Forest Service (Manring 1993). As of this writing, the Forest Service is in the process of finalizing new public participation regulations and new frameworks for choosing between alternative modes of participation are being devised (Sample 1993).

Researchers have thoroughly assessed the national forest planning process required under the Resources Planning Act of 1974 and the National Forest Management Act of 1976 (c.f. Baltic et al. 1989, Irland 1991, OTA 1992, USDAFS 1990). Others have investigated the role of public participation in forest planning and management (c.f. Blahna and Yonts-Shepard 1989, Gericke et al. 1992, Facaros 1989, Force and Williams 1989, Knopp and Caldbeck 1990), explored the possibilities of organizationally integrating conflict management techniques (c.f. Manring 1993, Wondolleck 1988), and examined the trends both in society and within the Forest Service that affect the relationship between the two (c.f. Brown and Harris 1992a, Gale 1992, Kennedy 1991, Tipple and Wellman 1989, Shannon 1990, Vining and Ebreo 1991).

There is general agreement in the literature that the use of "rational", computer-aided techniques for planning Forest Service strategies and objectives has been problematic, as they cannot account for all the noneconomic, aesthetic, or spiritual interests society holds for its forest lands. There is also widespread recognition that stakeholder interests have been insufficiently incorporated into the final decisions and that the Forest Service must adopt new (or improved) means of interaction between the public and the Forest Service so that contentious issues can be identified, deliberated and concluded before they become polarized, volatile and out-of-control. Many evaluators have identified the need for methods that would facilitate dialogue and the sharing of information - between all stakeholders - to transform relationships that have often been adversarial into ones that are more positive and cooperative.

In addition to such "preventative" actions, there is also widespread argument that in order to deal with contentious issues, the Forest Service should adopt methods in which stakeholder interests can actually be negotiated or mediated. In such arenas decision-making power would be shared, stakeholder interests and opinions would be acknowledged as legitimate and negotiated, and resulting outcomes and decisions would be recognized as legitimate (Churchill 1989, Knopp and



Caldbeck 1990, Shannon 1990). Such interactive, participatory decision making processes would result in rules, rights and duties governing the allocation and use of national forest resources that would be less susceptible to contestation.

Exactly what techniques should be adopted by forests, how and when they should be used is, of course, the subject of great debate and conjecture. Though specific methods and techniques of interaction show promise, experience and intuition shows that some methods would be appropriate in some situations and not in others. In addition, we know that it is naive to think that all conflicts can be "managed" or resolved, or that all stakeholders will willingly cooperate. Many of today's issues are "wicked", politically charged, and emotion-driven controversies that defy any "rational" methods used by the Forest Service (Allen and Gould 1986), be they computer generated outcomes or sophisticated conflict management techniques. These larger, more powerful issues may only be settled in political or judicial arenas at the national level. Though wicked issues and uncooperative stakeholders are inevitable, it is also widely recognized that many issues have become wicked not because of their inherent nature, but because they were not managed effectively. The establishment of an effective framework for multiple stakeholder deliberation can thus reduce the number of issues that become wicked, and resolve some of those that are inherently wicked.

In sum, this brief literature review indicates that in order to operate in a manner commensurate with today's shared-power world the Forest Service must: 1) satisfy its legal mandates and assure the stewardship of the national forests; 2) promote the establishment of positive relationships between all stakeholders (via repeated interactions and two-way communications) and assure their access to information concerning forest resources and; 3) establish an institutional framework where - on issues where it has legal leeway - the diverse interests, rights, duties and claims of all national forest stakeholders can be considered and negotiated.

Despite the extent to which public participation and conflict management in Forest Service planning and management has been studied, relatively little is known about the current status of the Forest Service's commitment to these challenges. It is well known that individual forests have been changing their approaches in their dealings with stakeholders, but there are few recent indicators permitting generalizations across forests. As the agency gears up for the second round of RPA/NFMA mandated planning and faces the new challenge of ecosystem management it would be valuable to learn of how the Forest Service as a whole is currently adapting to public needs and complying with federal mandates calling for public participation in decision-making.

### **Study Objectives**

This paper presents the results of a recent study that examined the status of conflict and conflict management at the national forest level. We use the term "conflict" to denote an instance when a forest user or stakeholder challenges a Forest Service process or action, either formally or informally. Neither conflicts within the Forest Service, or enforcement conflicts - those involving stakeholder interference with Forest Service implementation of the law - were included in this definition, although they are important.

The study, through an extensive literature review and a national survey of forest supervisors, assessed both the organizational commitment of the Forest Service and the type of methods used

by individual forests to interact with the public to address stakeholder conflicts. The study also examined what techniques appear to be effective and in what instances they appear so. In short, we looked at how the Forest Service is choosing to manage forests by dealing with the diverse and competing interests of stakeholders. The focus is not so much with why conflicts emerge, but how the Forest Service chooses to deal with them.

The survey examined forest supervisor perceptions of: 1) the type and frequency of conflicts emerging on the national forests; 2) the type and frequency of public interaction technique use to manage these conflicts; 3) the degree to which forests have formally integrated conflict management in their organizational structures; 4) the barriers faced by forest managers in initiating new public interaction techniques; and 5) the correlation between the type of techniques used, degree of organizational integration, and barriers identified with the type of conflicts emerging. The survey was inductive, and thus no hypotheses were tested. The survey represents a snapshot of where the Forest Service is in terms of establishing an institutional framework where stakeholder claims, interests, rights and duties can be considered and negotiated.

The paper is organized in the following manner: 1) the context of conflict management on national forests is described in the first section with the assistance of a model of national forest stakeholder interactions; 2) the results of the survey are presented; and 3) the results are interpreted in light of the model, and implications for multiple stakeholder interactions are suggested. This paper is addressed to researchers concerned with modern public forest management, representatives of public interest groups and practitioners within the Forest Service.

## **BACKGROUND: MANAGING NATIONAL FOREST CONFLICTS IN A SHARED-POWER WORLD**

### **Components of Public Forest Management**

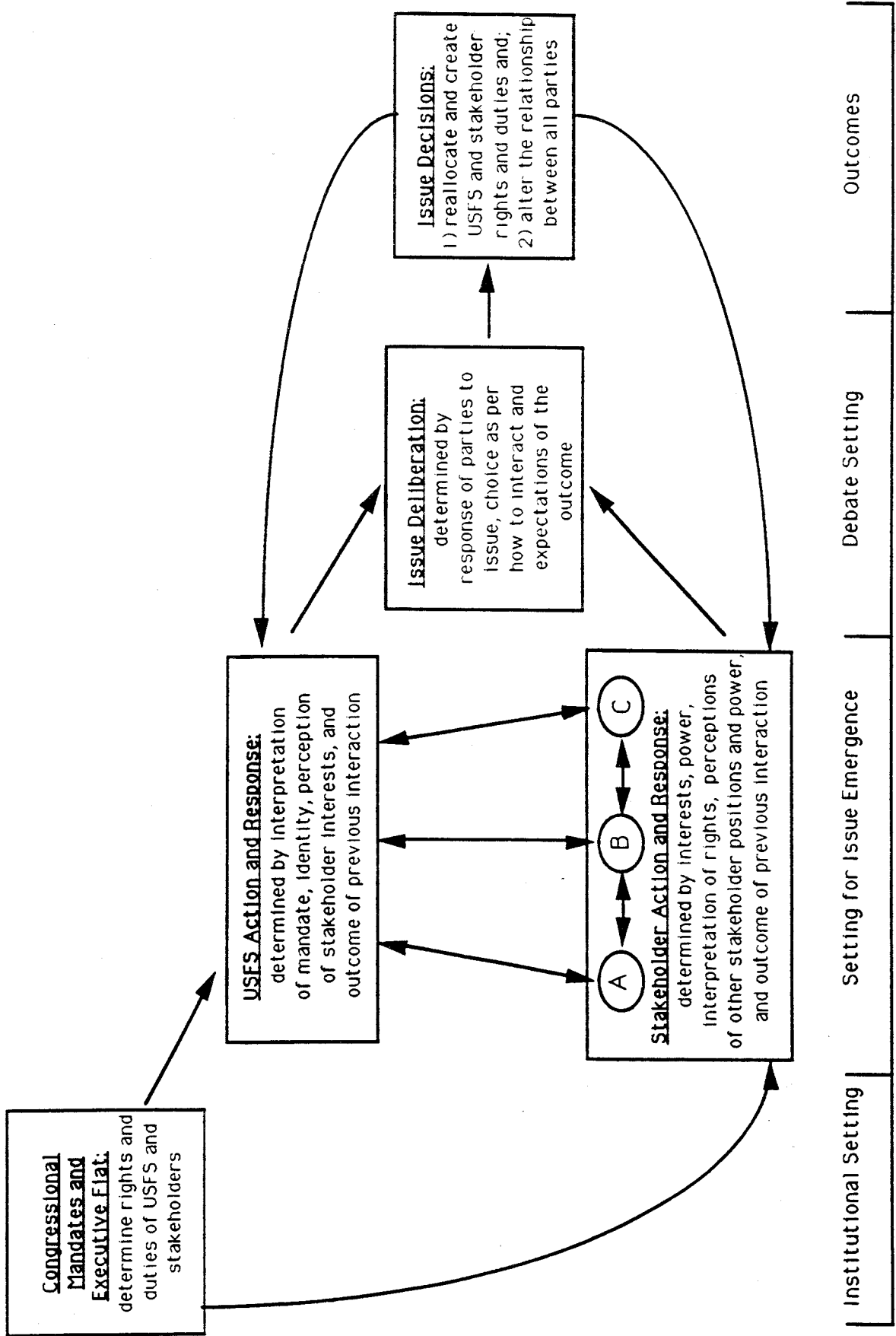
Public forest management involves the dynamic interaction of many stakeholders, including the Forest Service, each seeking to protect or further their interests, duties, and claims on the national forests. Issues emerge, are debated and then resolved (at least temporarily), and stakeholders interact at each stage in this process. It is in this manner that the Forest Service and the public create new rules, allocate resources and decide new rights and duties for all stakeholders. In short, it is via this process that all stakeholders create new institutions for the management of the forest. And since the process is dynamic and iterative, how each stakeholder interacts affects the nature of future interactions. A conceptual framework for assessing this dynamic process of interaction is illustrated in Figure 1. The conceptual framework is composed of four major components, representing the stages of the process: 1) the prevailing institutional setting; 2) the setting for the emergence of issues; 3) the setting for Forest Service/stakeholder debate over issues; and 4) the outcomes of those deliberations.

The institutional setting is established by legislative mandates and administrative regulations that: 1) direct Forest Service policy and; 2) enable public stakeholder participation. The setting for issue emergence entails national forest stakeholders' interpretation of the mandates, and expression of their interests. Forest managers interpret congressional and executive mandates as per the agency's mission, organizational and personal values, and perceptions of stakeholder interests, and subsequently make decisions concerning forest use. Stakeholders interact with each other and with the Forest Service directly, at the local, regional, and national levels and attempt to influence decisions. Conflicts emerge as stakeholders, including the Forest Service, challenge the status quo use of forest lands and allocation of resources. These interpretations and responses are influenced by stakeholder interests, values, power, and the outcome of previous multiple stakeholder interactions.

The third component of the conceptual framework, the debate setting, encompasses stakeholder responses to the conflict, and their choices as per how to interact during its deliberation. Being a stakeholder with a position of authority, the Forest Service largely determines the process for issue debate -- how, when, and if differing perspectives are considered. The Forest Service is caught between competing stakeholders, each advocating conflicting interpretations of the law or uses of the forest. These conflicts often take place at the local level (i.e. district and forest) where Forest Service mandates are implemented, and a majority of the specific land use decisions made.

The last component is composed of the outcomes from multiple stakeholder interactions and issue debates. First, there are substantive outcomes which are the immediate results of issue resolution, such as the opening of a multiple-use trail. Substantive outcomes also redefine what stakeholder claims receive priority. New rights and duties are created among all stakeholders: rights to the use or protection of forest resources, and binding duties to respect those rights. So when the decision is made to open the multiple-use trail, trail users are allocated a certain set of rights and stakeholders with conflicting interests to the trail are bound by a duty to respect this right.

Figure 1. Dynamics of National Forest Management in a Shared-Power World



The second type of outcome affects future multiparty interactions and debate of national forest issues. When the Forest Service and other stakeholders move on to tackle other issues involving the national forests, they carry with them the memories of past interactions, and adjust their strategies and responses accordingly. Thus, the dynamics of national forest management in a shared-power world creates a self-generating feed-back loop, from the emergence of issues and conflicts to the outcomes of interactions and back again.

In order to provide background for the discussion of the survey, the major components of the forest management framework will be discussed in turn.

## **Prevailing Institutional Setting**

### **Mandates Directing Forest Service Policy**

Until the 1970s, the two most important mandates outlining national forest policy and purpose were the 1897 Organic Act and the Multiple-Use Sustained-Yield Act of 1960, and their accompanying regulations. Both laws were broad, vague and ambitious, calling for the management of forests for multiple uses for the benefit of all citizens, but neither provided substantial direction as per how these choices were to be made, or exactly for whom and for what the forests were to be managed (Flamm 1977). In short, the Forest Service emerged and matured with little legislative guidance as per whether to give priority to local or national interests, protection or commodity uses. Similarly, legislation did not specify how the Forest Service was to arrive at decisions and whether or not public stakeholders were to be included in the decision process. Substantive Forest Service policy was not set by Congress, but by the executive branch which interpreted the legislation and instilled its preferences via formal and informal regulations.

Forest Service policy and organizational identity was launched in 1905 with a letter from the Secretary of Agriculture to the new chief of the Forest Service, Gifford Pinchot. In this now famous letter (which was written by Pinchot himself), the Secretary stated that forests were to be used "for the benefit of the home builder first of all"; that "local questions were to be decided on local grounds"; and that when controversies arose "the question will always be decided from the standpoint of the greatest good for the greatest number in the long run" (Flamm 1977). This last statement initiated the unreal expectation that, despite timber and local priorities, the Forest Service could act unilaterally and impartially to mete out socially optimal solutions.

Timber production and management for local preferences, became foundations of the Forest Service mission, despite the fact that they were not part of the Forest Service mandate (Schallau and Alston 1987). National forests came to be managed primarily for maximization of timber production, with a strong commitment to community stability. This was also, in part, due to the fact that timber production brought in substantial receipts to the Forest Service, and to local communities (via the Act of May 23rd, 1908 and the Knutson-Vandenberg Act of 1930) (O'Toole 1988).

The Multiple Use, Sustained Yield Act of 1960 (MUSY) was an attempt to limit the dominance of timber, and force stronger consideration of other resources (Brown and Harris 1992b; Daniels 1987). But, as Daniels (1987) explains: "This freedom to employ the multiple use mandate as a type of managerial *carte blanche* was facilitated by the vague language of the legislation and the

deferential attitude of the courts in dealing with legal challenges to Forest Service management practices." Timber dominance continued. By continuing the notion that the Forest Service could optimally manage all resources for all people for all time, by making simple, technical, judgements, MUSY "perpetuated the wickedness of long-term management planning on national forests" (Allen and Gould 1986).

Federal legislation in the 1970's were enacted with the intent of redirecting Forest Service and national forest policy by requiring the Forest Service to explicitly account for environmental and social concerns (e.g. national forest planning, the environmental impact statement process). Such mandates were, by many accounts, ambiguous, lacking clear direction, and confusing (Baltic et al. 1989; Behan 1990; OTA 1992). Public participation provisions under the federal legislation delegate discretionary authority to Forest Service line officers, but provide little direction in how public input is to be used in forest planning and management decisions (Facaros 1989). For example, while the Endangered Species Act of 1974 was the first piece of legislation to clearly identify a national resource benefit that had Forest Service management priority, it was ambiguous as per how it was to be implemented and what criteria were to be considered in assessing tradeoffs. Nevertheless, the legislation passed in the 1970's marked a clear departure, not from previous legislation, but from the emergent identity and purpose of the Forest Service.

### **Mandates Enabling Public Participation**

Until the 1970s, local Forest Service managers (supervisors and district rangers) exercised almost exclusive authority over the management of national forests, possessed the right to exclude nongovernment stakeholders from the decision making process, and had almost exclusive knowledge of forest resources (Kaufman 1960, Wilkinson and Anderson 1987). The first impetus for redefining national forest stakeholder interactions came in 1964 with the passing of the Wilderness Act. Not only did nontimber stakeholders achieve a political victory in protecting areas from timber harvesting, but the act called for public hearings over new wilderness designation (LeMaster 1984). The implementation of this act resulted in a new level of adversarial relations between timber and environmental groups, as for the first time, environmental groups effectively challenged the paradigm of timber dominance.

Increasing public criticism of agency management resulted in enactment during the late 1960s and 1970s of federal legislation requiring the use of rational planning techniques and full public participation in agency decision making. The National Environmental Policy Act (NEPA) of 1969 mandated that, "Federal agencies, shall to the fullest extent possible encourage and facilitate public involvement in decisions which affect the quality of the human environment" (Facaros 1989). In addition, the Resource Planning Act (RPA) of 1974 and the National Forest Management Act (NFMA) of 1976 required the Forest Service to establish a comprehensive, rational planning process for all administrative units in accordance with NEPA. This new wave of legislation not only supplanted the exclusionary power of the Forest Service by assigning nongovernment stakeholders the right to participate in decision making and binding the Forest Service with the duty to involve these stakeholders, but the laws created a situation of interdependence among stakeholders, giving rise to the shared-power dynamic.

Although the shared-power setting created by NEPA and NFMA officially "levelled the playing field", so to speak, there has been little agreement among the players concerning the specific rules

of the game -- forest planning and management mandates lack specific guidelines as per whose interests and claims were to be considered, how to integrate those interests into the decision-making process and how much weight their input was to be given. As each region and forest interpreted and adapted the mandates to their circumstances, there came to be almost as many versions of the "rules" as there were stakeholders. In essence, the Forest Service was required to ask for public opinion, but not to succumb to it. The mandates maintained the previous situation of Forest Service power over forest use decisions.

The enabling mandates laying the foundations of the institutional setting did not clarify the underlying ambiguities of for whom or for what the Forest Service was to manage. By mandating that decisions over resource allocations and land use be made at the local level with the participation of the public, Congress essentially removed the power of decision from itself (which it had avoided with almost 100 years of vague legislation), and from the executive branch of government. The Forest Service is left with two mandates guiding the use of national forests: 1) manage for multiple uses in perpetuity (Organic Act and MUSY); and 2) protect endangered species. By emphasizing rational planning, and requiring only that the public be "involved", NFMA perpetuated the "naive hope that science can eliminate politics" (Allen and Gould 1986). These empowering yet vague mandates, coupled with the lack in scientific understanding of ecosystems, biological requirements for sensitive plant and wildlife species, and the impact of management activities on them, set the stage where almost any Forest Service action could be challenged as an abuse of mandate.

## Setting for Emerging Issues and Conflicts

### Issue Emergence and the Role of the Forest Service

The institutional setting establishes two roles of the Forest Service: 1) to fulfill prescribed congressional mandates; and 2) to impartially arbitrate between stakeholders on decisions where they have "leeway" to choose between various resource allocation alternatives. These different roles correspond to different types of conflict. Conflicts between the Forest Service and nongovernment stakeholders emerge if the stakeholders interfere with Forest Service implementation of the law (e.g. a logging contractor ignores a Clean Water Act regulations). This is an "enforcement" conflict, is not the type that generally generates widespread public concern, and is not the type generally referred to in this paper. Where the Forest Service has the discretion to choose between alternatives, conflict between different stakeholders emerge and volatile controversy can take place. These are "multi-party" conflicts, the type generally referred to in this paper. In this type of conflict, the forest service is the "lightning rod" for public controversy, as each stakeholder lobbies the forest service to accept its position.

In general, conflicts over the use of national forest arise because: 1) national forest stakeholders have divergent *interests* and *claims* to the use and protection of forest resources; 2) federal laws have entitled stakeholders the *rights* to express those interests and claims and have bound the Forest Service with the *duty* to advance those rights and; 3) stakeholders have amassed sufficient *power* (political and financial) to enforce those rights (c.f. Brett et al. 1990). The Forest Service is vested with the right (and duty) to make decisions concerning national forest use and they have

sufficient power to invoke those rights.<sup>1</sup> Nongovernment stakeholders, on the other hand, have the right to assert claims over the use and protection of the forest and to appeal Forest Service decisions, and have gained sufficient power to do so. What is most important here is that the Forest Service frequently has a choice in how to deal with issues as they emerge.

### **Reasons for Issue Emergence**

New conflicts have emerged as stakeholder interests have changed (e.g. growing environmental movement both in society and within the Forest Service), and old conflicts have intensified with the increased demands on the limited resources of the national forests (e.g. preservation versus production debate). The scope and significance of the issue (and potential conflict) depends on the nature of the issue, which determines which stakeholders are involved and how many stakeholders are involved.

New mandates and shifts in social values have changed the internal dynamics of the Forest Service as well. Shifts in employees' self-perceptions have precipitated efforts to transform the agency's character from that of an "expert" agency towards that of an agency more responsive to public values (e.g. AFSEEE) (c.f. Brown and Harris 1992b and 1992c; Churchill 1989; Gale 1992; Tipple and Wellman 1989). Resultant organizational shifts have expanded the roles of foresters from independent managers of tangible resources, to strategic facilitators of civic deliberation (Shannon 1990). These shifts have affected the emergence of issues, and the way in which the Forest Service has chosen to deal with them.

Similarly, such dynamics occur within and among nongovernment stakeholder groups (c.f. Vining and Ebreo 1991). For example, from figure 1, stakeholder group A reacts to Forest Service decisions and actions relative to how it perceives its own mission, its self-image, and how such decisions and actions affect perceived costs and benefits compared to other stakeholder groups. If a Forest Service decision positively benefits stakeholder groups B and C whose interests are diametrically opposed to A and to the cost of A's self-image, the Forest Service decision or action becomes an issue of contention. Stakeholders' goals, self-image, identity, and perceived costs and benefits continuously evolve as stakeholders interact in the process; such interaction affects the nature of issues and how they emerge. As illustrated in figure 1., issue emergence is a function of interdependence and interaction among stakeholders.

### **Issue Definition and Impact on the Debate Setting**

Each stakeholder - including the Forest Service - tends to understand and define issues in terms consistent with its own values and identity, and how issues are defined affect both the emergence of an issue and how stakeholders choose to interact with other stakeholders in its resolution (Dietz et al. 1989, Dutton and Dukerich 1991). Following Dietz et al. (1989), four characterizations of

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<sup>1</sup> And for this reason the national forests should be considered "state" property and not "common" property as proposed by some (e.g. Brown and Harris 1992a.) Common property represents private property held by a group where the co-owners have the right to exclude non-members, and the co-owners have both rights and duties with respect to resource use. State property exists when direct control over use rests in the hands of the state and citizens have the duty to respect state decisions. In democratic societies citizens have the right to influence state decision via the voting process (c.f. Bromley 1989).



conflict are common: differential knowledge, vested interest, value differences and mistrust of expert knowledge. What matters most, in terms of how an issue is resolved, is how the group in power defines the issue, and thus what arenas they establish for its debate.

The Forest Service has largely characterized public land management issues as problems of differential knowledge. They have historically understood themselves to be experts, and the lack of sufficient knowledge on the part of the public as the cause of conflict. Accordingly, the Forest Service has historically sought to reduce and resolve conflicts by educating the public, and thus "bringing them into our camp". (The factors affecting Forest Service choice in approaching the debate will be discussed in greater detail in the following section).

Environmental groups have often characterized conflicts in terms of value differences and mistrust for expert knowledge. The value difference characterization holds that because resource allocations involve judgmental tradeoffs, value systems are the only appropriate criteria for assessing tradeoffs, and political arenas are the most appropriate setting for their debate. These groups have also grown to mistrust the expert opinion and objectiveness of the Forest Service, and for this reason have developed their own expertise on land management issues. This characterization leads environmental groups to prefer debating issues in an open, negotiation arena where the Forest Service (and their knowledge) is treated as just one of the stakeholders and not the unquestioned power.

Pro-timber groups on the other hand have often characterized issues in similar terms as the Forest Service -- problems of differential knowledge and, in addition, problems of vested interest. Timber industry lobbying groups have sought to educate the public, and also clearly expose the economic impacts of management alternatives. Characterizing conflicts in terms of vested interests legitimizes the position of all stakeholders who stand to gain or lose by a certain action, and devalues the weight of expert knowledge (Dietz et al. 1989). This characterization implies the need for bargaining and may benefit different stakeholders in different conditions.

The key point is that how stakeholders define issues affects how they deem they should be debated. The setting for issue management and resolution must be pro-active and "fair" to all perspectives or stakeholders will resort to adversarial means (e.g. courts) to plead their case. This is not to say that there is no role for scientific, analytical knowledge in influencing decisions. It is to say that unless analytical knowledge is recognized as objective, then it will be discounted. By addressing issues that are value-based (e.g. some environmentalist concerns), from an expert knowledge perspective, the Forest Service has further alienated environmentalists, and fanned the flames of the debate. Recognizing how issues are framed (e.g. differential knowledge, vested interest, etc.) by divergent stakeholders is an important step for the Forest Service to strategically structure its choices and actions.

### **Setting for National Forest Stakeholder Debate**

Because of its authority and power, the Forest Service is in a position to set the tone for national forest stakeholder interactions and determine how the issue is debated (e.g. cooperative versus adversarial; inclusive versus exclusive; bilateral communications versus multilateral dialogue). On the one hand, it can proceed through the internally structured decision-making process, select a

technically suitable alternative, and react to stakeholder concerns after a decision has been made, and action is being taken. This course of action puts the Forest Service in an adversarial position vis-a-vis other stakeholders' interests and values. On the other hand, the Forest Service can recognize the potential of the decision for volatility and conflict, and seek out stakeholder interests and claims to maintain an ongoing dialogue during the course of the internal agency process. In this case, issues and concerns are more easily recognized as differences among stakeholder interests (e.g. wildlife user-groups at odds with off-road vehicle user-groups regarding the location, access, and use of a multiple use trail).

There is no single definitive choice or approach, though there is general agreement within the conflict management community that issues debated on the basis of tangible interests rather than power or rights, generally result in more durable outcomes. The current negotiation of "land for peace" between Israel and the Palestinians is an example of reducing such broad philosophical and political dilemmas to interest-based negotiations (Brett et al. 1990). Once the debate is reduced to the basic level of stakeholder interests arbitration, bargaining, and negotiation techniques can be (and have been) used effectively (Dietz et al. 1989; Wondolleck 1988).

Even value-driven, "wicked" issues can be debated on the basis of interests. These issues commonly originate when a group's vested interest is threatened by a Forest Service action. If unable to change the action, the group often uses propaganda, media interplay, and political posturing to elevate the issues to higher philosophical and political plane in order to gain moral authority. In such instances, trade-offs between vested interests have been replaced with a war among philosophical principles (production versus preservation, economic growth versus environmental protection, "land for peace"). If these wicked issues are not dealt with proactively and explicitly, they quickly move out of the hands of the Forest Service and into the political and judicial arenas (MacDonnell 1988).

### **Modes of Forest Service Interaction With the Public**

Forest Service managers have used a wide variety of ways in which to interact with other national forest stakeholders. Following Force and Williams (1989), these modes of interaction can be organized in the following four categories:

- 1) **General public contacts:** National forests use media programming (television, radio, and newspapers) to advertise their proposed activities to the immediate surrounding population. Mass mailings and postings in public locations, and open houses are also considered options for general public contacts. These contacts can be characterized as highly organized, one-way, one-shot communications where the goal is to present information to the public in generalized terms. The underlying assumption is that if the public is informed, and educated on the issue, then they will generally understand, appreciate and agree with the Forest Service decision on the issue.
- 2) **Large group interactions:** Large group interactions such as open public forums, presentations and lectures, and formal public hearings provide a large number of diverse stakeholders to engage in an interactive, albeit limited, dialogue face-to-face with Forest Service personnel. Frequently participants in open forums and hearings read grievances from prepared statements and Forest Service personnel respond to individual questions and concerns. In these situations, the Forest Service generally presents issues and decisions and receives input on those decisions.

3) **Small group interactions:** Unlike the open large group settings, the small group settings are less of a bilateral affair (e.g. Forest Service vis-a-vis the public) and facilitate the opportunity for multilateral discussions. Small group settings include: meetings for residents of a specific community; informal workshops to share information, concerns, and ideas; citizen advisory committees to forest planning or management teams; liaison groups representing various organizations; forest-sponsored field trips or site visits; and game simulations, in which participants conduct experiments in a risk-free environment to determine economic, social, and environmental impacts of management alternatives. In small groups, specific issues and concerns are discussed in a less formal and structured environment. Interaction is increased as questions and concerns representing a broad array of stakeholder interests may be responded to in length and detail.

4) **Interpersonal interactions:** Some forest managers personally invite individuals or a group of stakeholders into private meetings and discussions. Independent arbitrators or mediators may be brought in to facilitate the engagement. Interpersonal interactions may also take place over private phone calls and personalized letters. Such interactions require a significant amount of personal time, energy, and savvy in personal communications.

### **Timing of Issue Emergence and Effect on the Debate Setting**

Issues arise at different points in the Forest Service decision-making or operational process. When and where issues arise determines, to a large extent, who is involved and the nature of the issue. In general, multi-party issues can emerge during the course of three Forest Service endeavors: 1) internal formulation, analysis, and selection of alternative Forest Service actions; 2) after the draft and final decisions have been made and presented for review and comment; 3) ground-level implementation of the decision. The timing of the emergence of issues raised by stakeholders is critical for it places the Forest Service in differing positions in each of the three endeavors.

In the formulation, analysis, and selection stage of Forest Service actions, the Forest Service generally has broad latitude to bargain and negotiate claims made by concerned stakeholders (Blahna and Yonts-Shepard 1989; Wondolleck 1988). Frequently this stage is conducted at the ranger district or supervisor level, allowing for flexible responses and leeway in approach. When a decision has been released, a considerable amount of effort has been devoted by forest planners and managers, as well as line officers (Blahna and Yonts-Shepard 1989). Issues raised by stakeholders after the release of decisions appear to fly in the face of hours, days, weeks, and sometimes years of work by dedicated staff. Sometimes, elements of the decision are simply not subject to negotiation. After the decision has been made and action is being taken by field staff, stakeholders may raise issues over the implementation of the decision. In such a case, stakeholders not only challenge the technical expertise of the personnel on that particular national forest, but the ability of the Forest Service as a professional agency to carry out its mandated responsibilities. Although such issues have in the past been referred to a judicial setting which, in turn, have traditionally lent deference to the agency's technical and professional expertise, the Forest Service still finds itself having to address issues of implementation and defending its actions.

Clearly, the best opportunity for the Forest Service to manage issues is in the early stages of emergence and decision making. As time passes, and as the decision-making process shifts from the ranger district to the forest supervisors office and to the regional and national offices, the flexibility and leeway to bargain, negotiate, and enter into collective action to arrive at acceptable solutions

diminishes, leading to "train wrecks" and increasing the "wickedness" of issues.

### **Factors Affecting Forest Service Approach to the Debate Setting**

There are many reasons why a forest manager chooses to address an issue in a certain manner however, this study focuses on the organizational and administrative factors which may affect the choices of forest managers in structuring the debate setting. Three factors are presented: 1) administrative feasibility; 2) organizational identity; and 3) recognition of stakeholders' perceptions and expectations.

1) **Administrative feasibility:** Over the years, congressional scrutiny and oversight of Forest Service activities have limited the flexibility of the Forest Service to engage in non-line item activities (Sample 1992). Even imaginative supervisors and district rangers are limited in their use of "free" funds to experiment with innovative public interaction techniques. Moreover, the lack of knowledge among forest personnel in effective public interaction principles is a common constraint in choosing an effective debate process. Well-meaning line officers may simply be ill-equipped to handle difficult social problems. In-depth interaction activities also requires a significant dedication of time, of which forest managers have very little.

2) **Organizational identity:** Employees of a public agency like the Forest Service interact with the public based on their identity with the organization's purpose and objectives (Dutton and Dukerich 1991). Traditionally, forest managers have maintained a respected identity as an autonomous, professional organization focused on managing forests and meeting national demands for forest products. In recent years, the Forest Service has responded to increasing public, political, and legal pressure to increase emphasis on other products by changing its organizational mission and objectives (e.g. new perspectives and ecosystem management directives). The integration of non-timber resource disciplines and the diversification of the socio-demographic makeup of Forest Service employees have also contributed to a shift in organizational identity and culture (e.g. AFSEEE and EEO hiring<sup>2</sup>) (Brown and Harris 1992b; Kennedy 1991). Although the impacts of this shift in organizational identity are difficult to measure, there are indications on many forests that managers at all levels are establishing interactive, durable relationships with national forest stakeholders, stakeholders who have demanded a greater role in national forest management decisions (e.g. Wondolleck 1988, Sirmon et al. 1993, Fischer et al. 1993).

3) **Understanding stakeholder perceptions and expectations:** In structuring the issue debate setting, what is administratively expedient may not necessarily be accepted as meaningful or considered fair and equitable by affected stakeholders. Experience has shown that addressing vested interested issues with educational approaches (traditionally one-way communications) can quickly result in costly, time-consuming administrative appeals (Dietz et al. 1989). Even if a carefully crafted mediated negotiation process is established, there is no guarantee that stakeholders will participate. Experience and research shows that participants generally accept outcomes if the debate process is deemed fair (Thompson and Hastie 1990; Tyler 1987). Understanding stakeholders' perceptions and expectations through careful observation, skillful listening, and maintaining meaningful working relationships with stakeholders will positively affect the forest manager's approach in structuring the

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<sup>2</sup> AFSEEE = Association of Forest Service Employees for Environmental Ethics; EEO = Equal Employment Opportunity hiring criteria.

debate process.

### **Lessons From Experience: Actual and Preferred Forest Service Choices for the Debate Setting**

The various studies that have looked at what the Forest Service is doing about public participation have produced inconsistent results. A study in 1986 found that the surveyed forests mostly used one-way communication methods in seeking public participation during the planning process (e.g. mailings and news releases, and public meetings only after the development of controversy) (Blahna and Yonts-Shepard 1989). The study concluded that the public was largely treated as an informant, but not as an active partner in decision making. Other major studies have supported these general findings (Force and Williams 1989, OTA 1992, USDAFS 1990). Another recent study, conducted by Gericke et al. (1992) found somewhat different results. Surveying forest managers, this study found that small group meetings were the most frequently used technique followed by, phone and mail contacts, on-site visits and large meetings. This study also found that the Forest Service personnel perceived small group activities as the most important technique, followed by informal events, on-site visits, phone/mail contacts, and large meetings (Gericke et al. 1992). In sum, the Forest Service reported to practice what they preached, using two-way communication arenas over one-way. The same study found that rarely was one Forest Service official directly involved in all stages of public participation. This lack of continuity could constrain the development of trust and partnership between groups and the Forest Service.

The Force and Williams study (1989) also examined public preferences for different methods of public participation in forest planning. They found that stakeholders in general preferred two-way communications to one-way. The public preferred open public meetings, meetings with specific communities and informal contacts with Forest Service personnel followed by a mix of one-way type participation (e.g. direct mailings, surveys, presentations). Negotiating arenas appeared to follow in preference (e.g. workshops, negotiations, liaison groups, and advisory committees), followed by educational techniques (e.g. television and radio programs, lectures, adult education). Arbitrators and mediators were the least preferred method of participation (Force and Williams 1989).

This same survey also examined the difference in preference between groups with timber and environmental interests. In short, environmental groups supported a wider range of methods, and generally supported more "open" arenas where two-way communication was established. Timber groups, on the other hand disproportionately preferred meetings with specific community groups and private meetings (Force and Williams 1989). As stated earlier, these preferences relate both to how each group defines the issue (vested interest versus value-based) and thus what arena best suits their interests. Environmental groups by and large feel that the Forest Service has not accounted for a broader range in social values and they feel that open political arenas are more appropriate for the settlement of their issues. Timber interests, on the other hand, define the problem in vested interest terms, and do not support an open negotiation of resource allocations.

### **Conclusions**

In summary, modern national forest management can be characterized by four major points:

1) Issues and conflicts emerge over the use and allocation of national forest resources between stakeholders with divergent vested interests and values. Given the institutional setting, such conflicts are a normal, and fundamental component of public land management. Thus, the process of choosing among alternatives is essentially political.

2) Congressional mandates have established a setting where many issues over the use and management of national forest lands are deliberated at the local level by a community of stakeholders with claims and interests in national forests. Mandates have also created the situation where all stakeholders (including the Forest Service) share entitlements to Forest Service decision-making processes and possess sufficient power to influence and challenge decisions. This "shared-power" situation is analogous to a public goods dilemma in which the interests of all stakeholders are interdependent, and optimal management of the public forest (the public good) requires the cooperation<sup>3</sup> of all stakeholders with power to influence the management of that forest. The lack of cooperation results in a "tragedy" in which separate stakeholders achieve individual goals yet society as a whole - represented by all stakeholders - loses. Experience indicates that such public goods are successfully managed when cooperative institutions - or regimes - emerge that establish conventions of stakeholder interaction that permit the negotiation of stakeholder interests. Once established, regimes can flexibly negotiate new issues, and respond to shifts in social values. In the case of the Forest Service, such regimes might emerge to manage either the specific forest, or an identified ecosystem, and take the form of forest advisory councils, governing boards etc.

3) The Forest Service is one stakeholder in this community of interests, a distinct stakeholder in that it is charged with: 1) stewardship responsibilities for the national forests; and 2) serving as an impartial arbitrator between competing stakeholders. This puts the onus on the Forest Service to take leading responsibility for the establishment of an social deliberation framework - a regime - in which multiple stakeholder interests are represented, expressed and considered when contentious issues emerge. It also means that in cases that do not threaten specific mandates, the Forest Service must cede power and respect the intentions of the joint stakeholders.

4) Though Forest Service managers are in the process of reinventing strategies to integrate stakeholders into the decision making process and have expressed an appreciation and preference for two-way communications and small group settings where stakeholders can interact, most research indicates that these modes of interaction have not been widely adopted. Furthermore, according to the literature, it remains rare for Forest Service managers to explicitly and intentionally cede some decision-making power to stakeholders and create arenas where stakeholders repeatedly interact, learn of and negotiate interests.

Points 1), 2) and 3) indicate that in order for the Forest Service to operate in a manner commensurate with the realities of the modern world it must do two things: 1) promote positive interaction between all stakeholders and assure their access to information concerning each others interests and the forest and; 2) establish forums in which the interests of these stakeholders can be negotiated when conflictive issues emerge. Point 4) indicates that, by and large, the Forest Service is far from adequately addressing these challenges.

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<sup>3</sup> The term "cooperation" is used to mean a relationship in which joint action is undertaken to achieve individual goals.

# **SURVEY AND RESULTS: INTEGRATING CONFLICT MANAGEMENT PRINCIPLES IN NATIONAL FOREST PLANNING AND MANAGEMENT**

## **Objectives and Methods**

The overall purpose of the study was to learn how the Forest Service is currently dealing with conflicts on national forests, and the degree to which it has integrated conflict management principles. The specific objectives were to examine: 1) the type and relative frequency of conflicts emerging on the national forests; 2) the type of public interaction techniques used by the Forest Service to manage these conflicts; 3) the degree to which forests have formally integrated conflict management in their organizational structures; 4) the barriers faced by forest managers in initiating new public interaction techniques; and 5) the correlation between the type of techniques used, degree of organizational integration, and barriers identified with the type and frequency of emerging conflicts. This examination was conducted to determine the relationship between Forest Service administrative actions and the type and frequency of conflicts on the forest.

A detailed questionnaire was prepared and mailed to the forest supervisors of all 123 administrative units (see Annex 2). Survey questions were devised to correspond with the conclusions of our literature review, previous Forest Service public participation surveys, and input from land and resource management professionals and university faculty. The term "conflict" was defined in the survey questionnaire to mean "an instance when a forest user or stakeholder challenges a Forest Service process or action either formally or informally". Conflicts between individuals and/or units within the Forest Service were not included in this definition.

Supervisors were asked to distinguish between two types of conflict; those emerging during planning related activities and those emerging during management related activities. Planning related conflicts were those that occurred during the formal forest planning or EIS process, or concerned either the processes used or the substantive decisions made during those processes. Management related conflicts included those arising over day-to-day management decisions such as: over the location of a clearcut, granting of a mineral license, or use of herbicides.

Respondents were asked to rank the frequency of seven commonly reported conflict types and the use of 15 different public interaction techniques. Public interaction techniques were separated between those used before a conflict arose (i.e. to diminish the emergence of conflicts) and those used to resolve disputes after they emerged. Techniques used before conflict emergence were organized into three separate goal domains: 1) educate the public about impending decisions; 2) seek public input for upcoming decisions and; 3) facilitate additional involvement in formulating alternatives.

Rankings were based on a five-point Likert-type continuum ranging from: very infrequently (1) to very frequently (5). Similarly, respondents were asked to rank the level of seven constraints to initiating different public interaction techniques on a five-point Likert-type continuum ranging from: not at all constraining (1) to absolutely constraining (5). In order to indicate the degree to which forests have integrated conflict management, respondents were also asked to provide information concerning the number of personnel dedicated to conflict management, their positions in the organization and the training provided. Respondents were also requested to provide additional

written comments indicating their opinions concerning each area surveyed. These comments are provided in Annex 3.

A total of 61 supervisors responded, though only 56 responded sufficiently and in time for data tabulation (a 46 percent response rate). Supervisors were guaranteed anonymity, and no information concerning forest location was requested. Analysis of the postmarks did indicate that responses were received from throughout the country and did appear to represent all regions.

### **Data Analysis**

Data was entered first into a database in order to treat the data and assure consistency, and then into the SPSS statistical package for analysis. Frequency distributions were calculated for the categoric data (from the Likert-type scales). Weighted means were then calculated in order to rank the types of conflict, types of public interaction techniques used, and types of constraints identified (see Annex 1 for survey results tables). Descriptive statistics were calculated for the parametric data (e.g. indicators of organizational integration).

Correlations were calculated between the type and frequency of conflicts and 1) the type and frequency of public interaction techniques used, 2) the degree of organizational integration, and the type and 3) level of constraints identified. Correlation strength was measured with Pearson's r-value. Values between .2 and .5 are termed weakly positive, and those greater than .5 are termed strongly positive. The significance of this correlation was indicated with p-values. Only correlations with p-values of .05 or less were deemed significant and are discussed below.

### **Frequency of Conflict Types**

A ranking of planning related conflicts is presented in Table 1 and the frequency counts are presented in Table 3. Conflicts involving the quantity of outputs produced on the forest and location of productive activities as the two most frequently occurring planning conflict types on national forests. About 61 percent of the forests rated the conflicts over quantity of forest outputs as occurring "somewhat frequently" to "very frequently", and 50 percent gave the same frequency rankings for conflicts involving the location of the production of such outputs. Other types of conflict are important locally but not prevalent nationwide. Between 30 and 40 percent of forests ranked conflicts between user groups, between local and national interests, over the scientific basis of decisions, over the distribution of the Forest Service budget, and over Forest Service observance of mandated procedures as occurring from "somewhat frequently" to "very frequently".

The ranking of conflict types occurring over management decisions and actions differ slightly from planning conflicts (see Table 2). Conflicts over the quantity of outputs remained the most prevalent type. The second most frequently occurring type of conflict involved the scientific basis of decisions, while conflict over the location of activities and conflicts between user groups ranked third and fourth. Interestingly, conflicts between national and local interests and the distribution of the Forest Service budget ranked the lowest. The frequency of each conflict type is spread out across all frequency rankings indicating that the nature of management conflicts were diverse (see Table 3).



Similar to the planning conflicts assessments, the highest percentage of respondents (37 percent) assigned conflicts over the quantity of forest outputs the highest two frequency rankings. However, as indicated by the weighted average, a significant proportion scored the conflict type with very low rankings as well. Around 33 percent of supervisors indicated that differences over scientific information, conflicts between user groups, conflicts between local and national priorities, and disagreements over the location of Forest Service management activities are frequently occurring conflict types on their forests. An equally large percentage of forest supervisors ranked such conflict types as occurring very infrequently.

Despite the large differences in conflict type frequency between forests, it appears that disputes over the quantity of outputs from national forest are the major conflict type in both planning and management activities. The frequency of each conflict type varied substantially for both planning and management cases, though this variation was stronger in the case of management decisions than planning decisions.

### **Ability of Forests to Deal With Conflicts**

Respondents were given the opportunity to express whether the conflict types presented could be dealt with at the forest level (see Table 3). A high percentage of forests (range of 64 - 85 percent) indicated that conflicts occurring during both planning and management stages concerning 1) quantity of outputs, 2) location of Forest Service activities, and 3) user-groups interests could be addressed and managed on their forests. A slightly smaller percentage (51 - 64 percent) also considered disputes over agency procedures in forest planning and management decision-making processes as a conflict type that could be effectively handled at the forest level. Fifty-six percent of respondents stated that conflicts involving differences in opinion regarding what is scientifically accurate or best may not be well addressed by forests during the planning process, but may be addressed in cases of conflict over management decisions. Conflicts involving local and national interests and involving distribution of agency budgets and personnel were not regarded as issues that managers at the forest level are equipped to handle. One possible reason for this is that such questions are largely made at a higher level of administration or in the political arena (e.g regional or national office and Congress, respectively).

### **Use of Public Interaction Techniques: Before Conflicts Arise**

Respondents were asked to state the frequency of different public interaction technique use in three different goal domains: how the forest chooses to educate the public on upcoming decisions; how the forest chooses to seek public input on upcoming decisions and; how the forest facilitates additional public involvement in formulating alternatives for upcoming decisions. Response frequency counts are presented in Table 5 and a summary of overall rankings is presented in Table 4.

Of the three options given in the education domain, the use of mailed or posted materials ranked highest with the use of verbal communications and public tours ranking second and third respectively. About 79 percent of forests stated the use mailings and posted materials as occurring "somewhat frequently" to "very frequently". About 60 percent of forests gave the same frequency

ratings to the use of verbal communications, while only 21 percent stated that public tours and field trips were used "somewhat" to "very frequently".

Of the three options given in the seek public input domain, the use of written comments during the review period ranked highest, with verbal comments and conducting open public meetings ranking second and third respectively. Ninety percent of respondents used written comments "somewhat frequently" to "very frequently", about 57 percent of respondents gave the same frequency ratings to the use of verbal comments. About 47 percent of forests stated that open public meetings were used "somewhat" to "very frequently".

Of the four options given in the formulating alternatives domain, extending personal invitations to individuals or groups was ranked highest with conducting workshops with each concerned parties together, conducting workshops with concerned parties separately, and encouraging the formation of semi-independent committees to devise alternatives following respectively. The practice of extending personal invitations to concerned stakeholders was used "somewhat" to "very frequently" by 53 percent of the forests. Few forests use workshops (of either kind) to facilitate dialogue among stakeholders. Only 9 percent of forests use these techniques "very frequently". Encouraging the creation of semi-independent committees to devise decision alternatives was also fairly rare. Only 5 percent used this technique "very frequently" and about 64 percent of forests stated that this technique was used "somewhat" to "very infrequently".

Overall, the techniques most frequently used by forests before conflicts arise are in written form - mailings and postings to publicize proposed Forest Service decisions and actions, and written comments received by individuals or groups regarding proposed agency decisions and actions. Conducting tours, informal workshops and encouraging the creation of semi-independent committees to devise alternatives ranked lowest respectively.

### **Use of Public Interaction Techniques: After Conflicts Arise**

Respondents were asked to rank the frequency of techniques used for facilitating opportunities to resolve disputes once they had already emerged. No single technique appears to be used frequently to deal with conflicts at this stage (see Table 4). Of the five options given respondents, the choice to let conflicts be resolved through the appeals process (because it is more efficient or effective) and the use of workshops in which all disputing parties participate ranked highest, though most forests used these techniques with "infrequent" to "moderate" frequency. Conducting workshops with each disputing party separately ranked third, with use of non-Forest Service facilitators and Forest Service hearings officers ranking fourth and fifth respectively.

About 34 percent of forests allow conflicts to be resolved through the appeals process "somewhat" to "very frequently", and 27 percent of forests conduct workshops with disputing parties together with the same level of frequency. About 16 percent of forests conduct workshops with disputing parties separately "somewhat" to "very frequently", while only 4 percent of forests ranked the use of non-Forest Service facilitators, and 0 percent of forests gave the same ranking to the use of Forest Service hearings officer. The use of either independent, or agency facilitators to resolve disputes is extremely rare and ranked the lowest of all public interaction techniques in the overall rankings.

## **Integration of Conflict Management Principles**

The integration of conflict management principles on national forests may be manifested in many different forms. For example, some forests may create an organizationally distinct office to deal with conflicts that arise out of forest- or district-level decisions or actions, while others may simply train all staff on the planning team. Because of the organizational diversity between forests, the ambiguity of what actions constitute "conflict management", and the natural overlap of duties within each position, it is very difficult to identify consistent and valid criteria that indicate the degree of organizational integration. We asked supervisors whether or not the forest had organizationally distinct offices, how many full-time equivalents (FTE's) were dedicated to dealing with planning and management conflicts, whether or not the forest has specifically assigned personnel to handle conflicts, how much time these personnel spend on managing conflicts, and at what organizational level these personnel reside. In addition, we asked whether or not these personnel receive training, when they receive training and who conducts those training events.

According to the survey, only 3.6 percent of forests have created organizationally distinct offices for conflict management (see Table 6). In such offices, an average of 0.8 (FTEs) are dedicated to dealing with planning conflicts only and 1.0 FTEs are dedicated to management conflicts only. By contrast, 55 percent of forests have assigned individual personnel specifically assigned to handle conflicts. These forests dedicate an average of 4 persons to deal with management conflicts only and another 4 persons to deal with planning conflicts only. Each of the personnel spend an average of 10 hours a week managing conflicts. An average of 4 personnel are assigned to the supervisors office and 4 are assigned to district offices.

About 62 percent of forests provide personnel responsible for conflict management with training in conflict management. About 72 percent of the personnel responsible for conflict management have already received training with some 27 percent receiving training at initial hire and 41 percent receiving training as continuing education. Each personnel receives about 30 hours of training. About 45 percent of forests use only in-house groups to conduct training. About 59 percent of forests use only external (non-Forest Service) groups to conduct training. About 50 percent of forests using external groups use only for-profit groups to conduct training while about 50 percent of forests using external groups use a mix of for-profit, non-profit and university groups.

These findings clearly show that a majority of forests are making substantial investments in conflict management, and that they are organizationally integrating it in informal ways. Very few forests have organizationally distinct offices, yet a large number of personnel are dedicated to and trained in conflict management principles. Interestingly, only 62 percent of personnel charged with managing conflicts have actually received training in conflict management. These results indicate that the Forest Service is integrating conflict management, mainly in informal rather than formal ways, and that there is room for improvement in terms of personnel training.

## **Constraints to Initiating Different Public Interaction Techniques**

Seven general types of constraints to initiating different public interaction techniques were presented in the survey. Weighted averages display a narrow breadth of rankings, ranging from 2.1 to 3.1 (see Table 7). Responses were distributed over all frequency rankings, reflecting the diverse

situations and conditions on each forest (see Table 8). No one category was regarded as absolutely constraining by a high percentage of respondents.

Lack of resources, such as money and personnel, was regarded as the most constraining factor among respondents with a lack of knowledge among Forest Service personnel, a lack of interest among user groups to do things differently, internal agency rules, legal requirements, reluctance among Forest Service personnel at the national or regional level, and reluctance among forest level personnel following respectively.

About 45 percent of supervisors regarded a lack of resources as "very constraining" to "absolutely constraining." User-group intransigence plays a major role on about a third of all forests. For about 27 percent of the forests, the lack of interest by user-groups poses a "very" to "absolutely" constraining barrier to initiating different public interaction techniques. Responses for legal requirement and administrative procedure constraints were evenly spread across the lower frequency rankings. Although very few forests find legal requirements and procedures to be "absolutely constraining" (4 and 0 percent respectively), about 47 percent of respondents rank each categories as "moderately" to "very constraining". The least constraining factor to initiating different techniques is the perceived reluctance from administrative personnel at all levels of the Forest Service. However, several forests still believe they are not getting support from above for initiating different approaches. About 21 percent of respondents continue to regard reluctance from superiors at the regional or national level as being "very" or "absolutely" constraining. By contrast, only 2 percent of forests attested that reluctance from forest-level personnel pose a "very" or "absolute" constraint.

### **Correlations Between Conflict Types, Use of Interaction Technique, Constraints to Adoption, and Organizational Integration**

The Likert ranking format in the survey provided an opportunity to perform cross-tabulations testing for significant correlations between variables. The purpose of performing correlations is to determine if the variables indicating the integration of conflict management principles and techniques in the Forest Service are related to the level of conflicts and the constraints faced by forest managers to effectively integrate new techniques and principles.

In reviewing these results it is important to remember that correlation does not infer direct causality. In these analyses we are assessing the correlation of two separate events, the use of a technique and the emergence of a conflict. Many factors contribute to the emergence of conflicts, and the use of a single technique would probably not fully explain a certain frequency of conflict. But, this being said, since we know the temporal sequence of events (i.e. whether the interaction technique was used before or after the conflict emerged), we can infer whether or not use of each technique could be considered either as a potentially causal agent or an effect of the conflict.

### **Correlation Between the Use of Interaction Techniques and the Occurrence of Planning Conflict**

We examined the relationship between use of public interaction techniques with the level of each type of planning conflict. The results of these tests are presented in Table 9 and a summary of the

significant correlations are presented in Table 10. The results indicate that, by and large, there are few significant correlations between the use of public interaction techniques (either before or after conflict emergence) and the emergence of different conflict types. This finding indicates that forests use a wide variety of techniques and that conflicts emerge for a wide variety of complex reasons. Though this diversity is true, conclusions can be drawn from the relatively few correlations that were significant. No correlations were significant and negative, indicating that the use of no technique significantly decreased the potential emergence of a conflict.

**Use of Techniques Before Conflict Arise.** Interestingly, only the techniques used to seek public input were significantly correlated with the subsequent emergence of conflict. This means that high rates of use of these techniques correspond to high rates of certain conflict types. None of the techniques used to educate the public about upcoming decisions (use of mailed materials, verbal communications, and public tours) were significantly correlated with conflict. Similarly, none of the techniques used to facilitate additional public involvement in formulating alternatives (extend personal invitations, conduct workshops, encourage the creation of semi-independent committees) were significantly correlated with conflict. This occurred despite the fact that the techniques used to seek public input only represented three of the six most frequently used techniques overall. This means that there were sufficient responses in each category to permit significant correlations. This result indicates that the techniques used during this stage of seeking public input might be important contributors to the subsequent rise of conflicts. A description of the significantly correlated techniques follow.

The use of written comments during the planning review period was correlated with four of the most common conflict types. The only conflict types not correlated with this type of interaction method were those between user groups and between local and national interests. This means that perhaps the use of written comment interactions might be sufficient means to deal with conflicts between user groups and between local and national interests.

Interestingly, the use of verbal comments during the review period was correlated with only one type of conflict, over the location of activities. Evidently, use of verbal comments might have reduced the potential for conflicts to emerge in all other conflict types. Though these correlations mean that the more these types of techniques are used, the greater the frequency of conflict, we must be careful in interpreting these results. We cannot say that use of these techniques were the cause of conflict, or the reasons why conflicts did not emerge. We can only say that they may have contributed to the emergence, or may have discouraged the emergence of conflict. We do know from experience (and from this study) that one-way, non-verbal interaction is the predominant manner of interaction, and that verbal communications are used to a much lesser degree. We also know, from experience, that a high percentage of forest plans devised with these methods were contested.

The use of open meetings during a review period and was also significantly (yet weakly) correlated with most types of conflict. As indicated in the previous section, this type of interaction method was not frequently used by forests. Interestingly, use of this method was not correlated with conflicts over quantity of outputs, the most frequent type of conflict. Nor was the use of this interaction method correlated with conflicts between user groups. This finding indicates that communication methods such as this - in which Forest Service personnel deliver presentations - may not be sufficient in preventing the rise of conflicts.

**Use of Techniques After Conflicts Arise.** Only two of five techniques used to resolve conflicts were correlated with conflict, use of the appeals process and use of non-Forest Service facilitators. Interestingly, use of workshops and use of Forest Service hearings officers were not correlated with conflicts. These results occurred despite the sufficient number of responses for significant correlations.

The strongest significant correlations involved the use of the appeals process to resolve conflicts. For whatever reason, forests generally choose to allow conflicts to be resolved through the appeals process rather than using other conflict management techniques. This practice was most strongly correlated with conflicts over the quantity of outputs produced ( $r = .55$ ), but was also correlated with four other types of conflict. The only conflict types not significantly correlated with use of appeals were those over the scientific basis of decisions and those between user groups. The use of independent facilitators to resolve disputes was correlated with high levels of conflict over the location of activities and between user groups. This indicates that this type of conflict management technique was not used to deal with other types of conflict.

### **Correlation Between the Use of Interaction Techniques and the Level of Management Conflict**

As in the case of planning-related conflicts, the use of techniques to manage management conflicts were significantly correlated to the level of conflict for only several types of conflict. The results of these tests are presented in Table 11 and a summary of the significant correlations are presented in Table 12.

**Use of Techniques Before Conflicts Arise.** Two of the three techniques used to educate the public on upcoming Forest Service decisions were correlated with conflict emergence; use of mailed or posted materials and verbal communications to stakeholders. The use of public tours was not correlated.

The use of mailings or posted materials to publicize Forest Service decisions was significantly correlated with two of seven types of conflict; over what was scientifically optimal, and disagreements over agency procedures. This indicates that use of this technique might not be effective in preventing, or at least diminishing the rise of these types of conflict. On the other hand, this technique might be a sufficient (or at least a positive component of a larger package) to deal with other types of management issues. The use of verbal communications to publicize Forest Service decisions was only correlated with the subsequent emergence of conflicts over the location of productive activities. This implies that other methods might be more effective way to deal with such issues and that verbal communications might be an effective method of dealing with other types of issues.

Use of only one of the three methods for seeking public input on upcoming decisions was correlated with conflict types; use of open public meetings. The use of written and verbal comments during the review period were not correlated with conflict types. The use of open public meetings was only correlated with one type of conflict; those over local versus national interests. This indicates that perhaps conflicts over local and national interests are too thorny to be handled by this type of two-way communication. Open meetings might be an effective means of dealing with other types of management issues.

Use of two of four methods for formulating alternatives for upcoming forest decisions were correlated with conflict types; extending personal invitations to stakeholders to participate and, conducting workshops with all stakeholders together. Use of workshops in which the Forest Service met with private stakeholders separately and the encouragement of semi-independent committees to devise alternatives were not correlated with conflict types.

The use of personal invitations was correlated with the emergence of conflicts over local versus national interests and differences of opinion over the scientific basis of Forest Service decisions. This method is apparently not an effective means of dealing with these conflict types though it might be an effective method to deal with other conflict types. The use of workshops in which stakeholders participated was correlated with two types of conflict; those between local and national interests, and those between user groups over agency rules. The use of workshops was apparently not effective in dealing with these types of issues, though it might be effective in dealing with other types.

Interestingly, no technique - either used to inform the public, seek input, or facilitate involvement in formulating alternatives - was correlated with conflicts over the quantity of outputs produced on the forest, the most frequent type of management conflict. This infers that no means of public interaction listed is a potential contributor to this type of conflict and that this conflict type might emerge regardless of Forest Service efforts at mediation.

**Use of Techniques After Conflicts Arise.** Only two of five methods of resolving disputes were correlated with conflict types; the use of workshops in which all disputants participate, and the use of the appeals process. This indicates that these two methods are the only consistently chosen techniques used to deal with certain types of conflict, and that beyond these techniques, there are no consistent responses to the emergence of conflict.

The use of workshops in which all disputants participate was correlated with only one of the seven types of conflict; those over local versus national interests. Evidently, forests generally deem that this technique is an appropriate means of dealing with this type conflict but not others. Similarly, the use of the appeals process is only correlated with one type of management conflict, those over the scientific basis of Forest Service decisions. Again, evidently, forests generally deem that the appeals process is an efficient and effective means of dealing with this type of conflict.

### **Correlation Between the Use of Interaction Techniques and Constraints to Adopting Different Techniques**

The purpose of this test was to examine the relationship between barriers to adopting different techniques and the actual use of techniques by the Forest Service. This information would indicate if forests that are constrained in a certain way would have a tendency to use certain techniques and not others. The results of these tests are presented in Table 13 and a summary of the significant correlations are presented in Table 14.

In terms of intervention before the emergence of conflict, only one of three techniques used to educate the public was correlated with a constraint, while no techniques used to seek public input were correlated, and only one of four techniques to formulate alternatives was correlated with the emergence of conflict. Three of five techniques used to resolve disputes after the emergence of

conflict were correlated with certain constraints. This infers that supervisors generally feel that constraints affect their ability to deal with conflicts after they have arisen more than their ability to intervene prior to their emergence.

The use of public tours to educate the public was negatively correlated with the lack of knowledge among Forest Service personnel as how effective public interaction might be improved. This indicates that forest managers do not conduct public visits if they feel they do not possess the necessary knowledge to effectively address concerns. The use of workshops in which the Forest Service meets with nongovernment stakeholders separately in order to formulate alternatives was positively correlated with a lack of interest among stakeholders to do things differently. Since we do not know the temporal sequence, whether meeting with stakeholders separately is a cause or a product of the constraint, we cannot speculate on this correlation. Forests might be using this technique in order to overcome intransigence, or the use of this technique might be a source of intransigence.

Similarly, the use of workshops in which disputants are dealt with separately in order to resolve conflicts, was correlated with the constraints of nongovernment stakeholder intransigence to do things differently and internal agency rules. Not surprisingly, Forest Service use of the appeals process is also positively correlated with the occurrence of intransigent stakeholders. Again, since we do not know whether these techniques occur before or after the identification of the constraint, we cannot speculate as per the interpretation of these findings.

The use of an independent Forest Service hearings officer was correlated with both the constraints of superior officer reluctance and internal agency procedures. As a positive, albeit weak, correlation this means that as such barriers become increasingly constraining factors (e.g. limiting the effectiveness of managers' ability to cope with the issue at hand), the probability that an independent Forest Service hearings officer will be brought in to resolve forest planning and management conflicts increases. A nonsequitur at first glance, it seems that if forest managers are facing situations of conflict and if their attempts at resolving such conflicts are bound by reluctant superiors or administrative rules, there is a need for an impartial arbiter who is familiar with agency procedures and rules but unaffected by local or regional political factors to bring the issue to resolution.

### **Relationship Between Conflict Types and the Organizational Integration of Conflict Management Techniques**

The purpose of this test was to determine whether or not there was a significant difference in the level of conflicts between forests that have and have not integrated conflict management techniques. Because so few forests have integrated conflict management into their organizational structures, only two indicators of organizational integration could be tested. These indicators are: 1) whether or not forests have specifically assigned personnel to conflict management; and 2) whether or not those personnel have received training (see Tables 15 and 16).

**Planning Conflicts.** The overall finding these tests is that there is no significant difference in the frequency of planning-related conflicts between forests that have and have not adopted the indicators of organizational integration except for one type of conflict; that between user groups over Forest Service rules (see Table 15). There is a significant difference in frequency of conflict



between user groups between forests that have and have not assigned personnel to conflict management. Examination of the data indicate that forests that have a higher rate of this type of conflict have tended to assign personnel to manage conflicts. High rates of other types of conflict apparently have not justified either the specific assignment of personnel, or the training of those personnel.

**Management Conflicts.** The overall finding from these tests is that there is no significant difference in the frequency of any management-related conflicts between forests that have and have not demonstrated organizational integration of conflict management (see Table 16). This means that there is no relationship between assigning and training personnel and the level of conflict. Again, this does not mean that integration has no affect. Since we do not have time-series data, we cannot infer causality. This finding (and that of the planning-related conflict above) can only be interpreted to mean that forests that are experiencing a great deal of conflict are just as likely to assign and train personnel in conflict management as those who are not experiencing a high level of conflict. This finding is another reminder of the great diversity in management approaches found on national forests.

### **Relationship Between the Use of Interaction Techniques and the Organizational Integration of Conflict Management**

The purpose of this test was to examine the relationship between the level of use of different public interaction techniques and the decision by forests to assign and train personnel for conflict management. The overall conclusion is that there is no significant difference in the use of interaction techniques between forests that have and have not specifically assigned and trained personnel in conflict management (see Table 17). We can conclude that forests that have hired and trained personnel have not significantly altered their public interaction techniques.

### **Relationship Between the Constraints to Adopting Different Techniques and the Organizational Integration of Conflict Management**

The purpose of this test was to examine the relationship between a forest's decision to assign and train personnel for conflict management, and the presence of barriers to adopting new public interaction techniques. While there is no significant difference in the level of constraints identified between forests that have and have not adopted the indicators of organizational integration in most cases, several exceptions stand out (see Table 18). Forests that have personnel specifically assigned to conflict management tend to rank internal agency procedures as less of a constraint to a statistically significant degree. Similarly, these same forests tend to rank a lack of knowledge among agency personnel as less of a constraint. These findings indicate that forests that have assigned and trained personnel for conflict management no longer perceive problems with internal procedures, or with a lack of knowledge.

## **CONCLUSIONS AND IMPLICATIONS**

### **Frequency of Conflict Types and Ability of Forests to Deal With Them**

#### **Planning Conflicts**

According to the supervisors, the most frequently occurring planning-related types of conflict are: 1) over the quantity of outputs produced on the forests; 2) over the location of activities and; 3) between user-groups over Forest Service rules respectively. A high percentage of supervisors indicated that such conflicts could be handled effectively at the forest level. Supervisors also indicated that disputes over the accuracy and suitability of scientific information used to make decisions, conflicts concerning local versus national interests, and those involving the distribution of agency budgets could not be handled at the forest level.

These findings indicate that the primary planning-related conflicts are manifestations of conflict between different private stakeholders at the local level and that given adequate conditions, these could be mediated by the forest. It is interesting to learn that supervisors do not feel that disputes related to scientific information can be handled at the forest level. As the Washington office has increasingly set timber targets and required the use of computer technology to generate planning alternatives, this response may well indicate an inability of supervisors to explain or justify nationally mandated, or artificially created decisions.

#### **Management Conflicts**

The most frequent management-related conflict types are: 1) over the quantity of forest outputs; 2) regarding the accuracy and suitability of scientific information and; 3) between user-group over agency procedures. According to the forest supervisors, these types of conflict can be effectively managed at the forest level. As in the case of planning conflicts, the majority of management related conflicts are actually manifestations of conflicts of interest between private stakeholders.

Interestingly, supervisors did feel that they could handle management level conflicts related to the suitability of scientific information. Apparently, supervisors can explain, or justify, the scientific basis of the locally made decisions. This is probably related to the fact that such decisions are associated, to a lesser degree, on Washington office mandates and computer-aided modeling than conflicts emerging from planning processes.

Although not stated as a dominant conflict type nation-wide, about 20 percent of forests face conflicts over local versus national interests "very frequently". Supervisors by and large felt that these types of conflict could not be handled at the forest level. This is not surprising, as this dilemma - to give priority to local or national interests - is a historical dilemma within the Forest Service and calls to question its mandated role, and interpreted mission. It is somewhat surprising that such conflicts were not more prevalent. Considering present trends of increased demands on public lands, and increased public inquiry we would expect that these types of conflict would increase in the future. It is interesting to learn that the supervisors seen that this dilemma over the mission of the Forest Service is one to be decided at higher administrative levels. It would be

advantageous, we assume, to add some clarity to this mission before more of such conflicts erupt.

Conflict over the quantity of outputs produced were clearly the most frequent source of both planning and management-related conflicts overall. As output levels are not products of legislative mandate (they are set by Congress, the executive office and Forest Service headquarters in appropriation bills) this is a key issue that would benefit from negotiation between forests and private stakeholders.

### Use of Conflict Management Techniques

The most commonly used technique to educate the public was to mail and post materials publicizing upcoming decisions. The most commonly used technique to seek public input for upcoming decisions was to request written comments during the review period, and the most common technique to gain further public input for formulating alternatives was to extend personal invitations to individuals to participate. Overall, the techniques most frequently used by forests before conflicts arise are in written form - mailings and postings to publicize proposed Forest Service decisions and actions, and written comments received by individuals or groups regarding proposed Forest Service decisions and actions. Conducting tours, informal workshops and encouraging the creation of semi-independent committees to devise alternatives ranked lowest respectively.

The results show that no single techniques were used "very frequently" to resolve any type of conflict after they have emerged. The most frequently used technique to resolve disputes was the appeals process, though this was used with "infrequent" to "moderate" frequency. Workshops in which disputing parties were represented, use of non-Forest Service facilitators, and the use of Forest Service hearings officers were seldom used. Though informative, these findings are inconclusive. This leaves our question of what are the most prevalent means of dealing with conflicts after they have arisen unresolved. This could be due to an error in survey question design (i.e. supervisors ranked the use of techniques as infrequent because the occasion to use them was infrequent).

Overall, these results indicate that forests predominantly interact with stakeholders - both before and after conflicts - via "one-way" communication techniques (e.g. mailings). "Two-way" communications, and forums for stakeholder negotiation, such workshops and semi-independent committees, were used only rarely. By and large, these findings reinforce those of most other authors. It is also clear from the survey that forests use two different strategies for dealing with planning and management conflicts. Though "one-way" interaction techniques are the predominant means for dealing with both planning conflicts and management conflicts, "two-way" techniques are used far more often to deal with management conflicts than planning conflicts. These findings indicate a that face-to-face dialogue and interactive meetings among stakeholders are rare. Though impossible to judge from this survey, we speculate that the predominance of one-way communication and the lack of stakeholder interaction has a profound impact on the emergence and outcome of issues.

The use of techniques to manage management-related conflicts differ from those used in planning settings in several ways: 1) forests are much more prone to let planning-related conflicts be settled in the courts; 2) forests consistently use a wider variety of techniques to manage management conflicts; and 3) forests have a greater tendency to use open, "two-way" communication arenas to

address management conflicts (though "one-way" communication still predominates). These differences could be due to the "lower stakes" of most management conflicts in which the Forest Service is willing to cede decision-making power to nongovernment stakeholders. Or, since the majority of forest planning is complete, and management conflicts are presumably now more prevalent, perhaps these findings indicate a shift in management style from the one-way interaction styles of the past to the use of more two-way arenas in the future.

Mailings, postings, announcements, and written and verbal comments during review periods (the most commonly used techniques overall) are certainly important and necessary means of communicating Forest Service decisions and actions. However, past experience and various studies have shown that such techniques are not sufficient to achieve an informed, cooperative community of stakeholders. In order to reduce the potential for issues to "get wicked", the Forest Service must establish forums where stakeholders can learn about Forest Service mandates and each others interests, and in order to manage conflicts the Forest Service must establish forums where different parties can negotiate these interests. Use of such forums; open meetings, public tours, informal workshops and the creation of semi-independent committees to devise alternatives respectively ranked the lowest of all public interaction techniques.

In short, though some forests are adopting new means of public interaction, by and large the conventional "one-way" means of interacting with the public predominates.

### **Nature of Conflict Management Staff and Organization**

Many forests are making substantial investments in integrating conflict management. The adoption of conflict management principles is largely via training personnel, and not organizational arrangements. Only four percent of forests have created distinct offices of conflict management and these offices employ an average of two individuals full-time to manage conflicts. About 55 percent of all forests have an average of two full-time equivalents specifically assigned to manage conflicts. Only 62 percent of forests provide personnel responsible for managing conflicts with training.

At first glance, these figures represent an impressive commitment. But only about one-half of all forests have begun integrating conflict management, and we are sure that these commitments pale in comparison to those of timber, roads and even recreation budgets. This being said, the paucity of distinct offices and limited percentage of trained personnel is interesting, but does not necessarily indicate a weakness. Successful public interaction and conflict management is more a product of process than structure and what personnel actually do is more important than whether or not they've been trained. The establishment of a distinct office might indicate a high level of concerted effort this does in no way guarantee the adoption of appropriate processes of interaction.

Similarly, training personnel is an important step towards modernizing the modes of public interaction as trained personnel will be more sensitive to stakeholder interests and aware of conflict management alternatives, but it will not replace the need for new "fair" forums for stakeholder interaction and negotiation. Such frameworks must be established to provide substantive satisfaction to stakeholders. Many forest supervisors commented in the survey that the agency must revise its hiring practices to bring in people with an emphasis in sociology and social skills. Such a call should not be ignored.

## **Constraints to Implementing Conflict Management Techniques**

In previous studies Forest Service personnel have identified internal reluctance - primarily on the part of superiors as barriers to implementing new public interaction techniques. Our survey, however, indicated a lack of such sentiments. In fact, no one type of constraint was regarded as either as "very constraining" or "absolutely constraining" (the two highest rankings) by a majority of supervisors. This result reflects the diversity of situations across the national forest system. The most significant barriers to the adoption of new techniques were a lack of resources (money or personnel), a lack of knowledge among Forest Service personnel as to how effectiveness could be improved, and a reluctance of stakeholders to do things differently. Internal reluctance - on the part of superiors and forest-level personnel respectively - ranked lowest of all seven constraints. The lack of nongovernment stakeholder willingness to do things differently was cited as "very" to "absolutely constraining" by about 30 percent of all forests. This indicates the level of challenge facing these forests in the next round of planning.

These findings indicate that overall, supervisors feel that in order to proceed with the adoption of different public interaction techniques they need resources, more knowledge and more cooperation from stakeholders. Current agency rules, legal mandates, or superior personnel were not ranked as serious constraints by the majority of supervisors. Although the lack of reluctance from forest-level personnel can hardly be interpreted as a wide-spread grassroots effort to change Forest Service planning and management, it may serve as an indication that forest supervisors are confident that their line officers and staff will support moves to increase the adoption of innovative conflict management techniques.

## **Correlation Between Use of Techniques, Conflict Types, Constraints to Adopting Different Techniques and Organizational Integration**

In considering the results and conclusions it is important to remember that correlation does not infer direct causality. Many factors contribute to the emergence of conflicts, and the use of a single technique would probably not fully explain a certain frequency of conflict. But, this being said, since we know the temporal sequence of events (i.e. whether the interaction technique was used before or after the conflict emerged), we can infer whether or not use of each technique could be considered either as a potentially causal agent or an effect of the conflict.

### **Correlation Between the Use of Techniques and the Occurrence of Conflict**

By and large there were few significant correlations between the use of specific techniques (either before or after conflict emergence) and emergence of different conflict types. This indicates that forests use a wide variety of techniques and that the use of a specific technique can rarely be cited as a potential cause of the subsequent emergence of conflict. The exceptions to this general rule lend valuable insight into what techniques might and might not be effective in dealing with potentially conflictive issues, and what techniques are commonly used to deal with certain conflict types after they have emerged.

**Planning-related Conflicts.** In terms of techniques that are used before conflicts arise, only those

used to seek public input were correlated with subsequent emergence of conflict. No techniques used to educate the public or seek additional input in formulating alternatives were correlated. This indicates that the stage of seeking public input might be a critical source of stakeholder dissatisfaction. Interestingly, no education techniques were correlated despite the fact that they were used frequently by a majority of forests. Evidently these techniques (mostly one-way interactions) are adequate for this stage in the planning process. On the other hand, techniques for gaining additional involvement in formulating alternatives were not used frequently by a majority of forests. They might not be significantly correlated for this reason.

Further analysis indicated that the use of written comments (the most popular technique) was correlated with four of seven conflict types and the use of verbal comments was only correlated with the emergence of one of seven types of conflict. This finding reinforces that found in previous literature, that "one-way" interaction is insufficient in assuring adequate public input and that verbal interaction is superior to written forms. The use of open meetings was also correlated with the emergence of four of seven conflict types. Though this technique was not used by many forests, this finding indicates that open meetings - as conventionally conducted - may not be sufficient in preventing the rise of conflicts.

Only two of five techniques used to resolve conflicts were correlated; use of the appeals process and use of non-Forest Service facilitators. These techniques were correlated with the majority of conflict types, indicating that they are commonly used methods of dealing with planning-related conflicts. The use of the appeals process was the most strongly correlated technique.

**Management-related Conflicts.** As in the case of planning-related conflicts, only several methods of public interaction were correlated with the emergence of conflict types. Two of three techniques used to educate the public were correlated; the use of mailings and the use of verbal communications. These were correlated with the emergence of conflicts over Forest Service procedures, the scientific basis for decisions and the location of activities. Intuitively, the use of one-way interactions would be insufficient to educate stakeholders on such complex issues. Only one of three methods for seeking public input was correlated, the use of open meetings. And this technique was only correlated with one type of conflict, those over local versus national interests. This indicates that this method may not be sufficient to deal with such complex issues, but as it is not correlated with other issues, it may be effective in dealing with them. Two of four methods for formulating alternatives were correlated, extending personal invitations to stakeholders to participate, and conducting workshops with all stakeholders together. Again, these methods were correlated with the subsequent emergence of conflicts over local versus national interests, the scientific basis of decision, and between user groups over rules. Again, these techniques appear insufficient in dealing with such complex issues.

Two of five methods of resolving disputes were correlated. Use of the appeals process was correlated with disputes over the scientific basis of decision. Use of workshops in which all disputants participate was correlated with conflicts over local versus national decisions. This indicates that these are the most consistently used methods to deal with these conflict types.

Overall, the most common types of conflict, those over the quantity and location of forest outputs, are significantly and positively correlated with the use of one-way communications before conflict emergence and the practice of allowing conflicts to be appealed in order to resolve them. Again,

we cannot conclude that the use of these techniques cause the high rate of conflict. But again, experience and the literature indicate that the one-way communication styles are insufficient for both preventing and managing conflicts. Overall, forests use more interactive techniques to resolve issues between user-groups.

A real dilemma lies in identifying means of effectively integrating stakeholder interests into the process of selecting alternatives regarding the quantity and location of forest outputs. One thing that remains clear is that the appeals process causes great inefficiency and animosity between the Forest Service and other national forest stakeholders. Some forests surveyed indicated that "partnerships" have been fostered among nongovernment stakeholders interests and forest managers, which have led to information sharing, meaningful dialogue over interests, negotiation of stakeholder claims, and agreements over conflictive issues. However, such principles are adopted by forests on their own initiative. The Forest Service as a whole must continue to build on these successful concepts and support for these concepts must come from throughout the agency.

### **Correlation Between the Use of Techniques and Constraints to Adopting New Techniques**

Overall, few techniques were correlated with the constraints identified by supervisors. Only one of three techniques used to educate the public was correlated with a constraint. And this technique (the use of tours) was negatively correlated with one of seven constraints, a lack of knowledge of how to do things differently. Evidently forests with knowledge deficits do not conduct tours. No techniques used to seek public input were correlated with constraints. This indicates that nothing impeded the adoption of different techniques in this domain. Only one of four techniques to gain additional involvement in the formulation of alternatives (the use of workshops with each stakeholder separately) was correlated. Again, this technique was correlated only with the lack of knowledge of how to do things differently. This indicates that forests using this technique are apparently dissatisfied with the results and express the need to learn of alternatives.

Three of five techniques used to resolve disputes were correlated with certain constraints, the use of workshops in which disputants were met with separately, and the use of a Forest Service hearings officer. The use of workshops was correlated with two types of constraints, stakeholder intransigence to do things differently, and internal agency rules. Since we do not know whether this technique is a cause of intransigence or a method used by forests to break intransigence, our interpretation is limited. The use of Forest Service hearings officers was correlated with the constraints of superior officer reluctance and internal agency procedures. Forests using this technique evidently feel limited to it via superiors and official procedures. This would be unfortunate, as many other forests are actively adopting more innovative methods to deal with conflicts.

This set of correlations suggests three points: 1) few constraints directly affect Forest Service adoption of different public interaction and conflict management techniques; 2) Forest Service managers are adopting and implementing various techniques independent of the constraints stated in the survey and 3) supervisors generally feel that constraints affect their ability to deal with conflicts after they have arisen more than their ability to intervene prior to their emergence. In essence, these findings indicate that the forests have few constraints binding their choice of technique use, and though additional resources, training etc, would be beneficial, in most cases these resources are not required for the adoption of new techniques.

## **Relationship Between Conflict Types and the Organizational Integration of Conflict Management**

Essentially, the question here was whether forests that have adopted certain indicators of conflict management integration experience the same level of conflict as those forests that have not adopted the indicators. Since so few forests have integrated conflict management principles into their organizational structures the indicators chosen were: 1) whether or not forests have specifically assigned personnel to manage conflicts and; 2) whether or not those personnel have received training. After examining all types of conflict in both management and planning-related scenarios, the overall finding was that except with one conflict type there was no significant difference in the level of conflict between forests that have adopted and forests that have not. Forests that have a high rate of conflict between user groups over Forest Service rules have tended to assign personnel to manage conflicts to a statistically significant degree.

This overall lack of correlation does not necessarily mean that hiring and training personnel has no effect. Because the emergence of conflict is complex and we do not have time sequence data, we cannot infer causality. We can conclude, that either: 1) forests that chose to assign and train personnel did not have a higher level of conflict than other forests prior to adopting those indicators; and/or 2) organizational integration (a recent phenomenon in most cases) has not had a detectable impact to date. These findings are another reminder of the great diversity of management approaches found on national forests and the limited value of institutional indicators to reliably infer actual impact.

## **Relationship Between the Use of Techniques and the Organizational Integration of Conflict Management**

The overall finding from this test was that there was no significant difference in the types and level of public interaction techniques used between forests that have and have not adopted the indicators of conflict management integration. This indicates that forests that have specifically assigned and trained personnel in conflict management use the same techniques as those who have not. As is the case in the previous conclusion; as conflict management integration is a fairly recent phenomenon, perhaps the new personnel have not had time to alter forest methods. Again, this finding is a reminder that these indicators of organizational integration have limited inference power. Assigning specific personnel and training them in no way directly correlates with changes in technique or results.

## **Relationship Between Constraints to Adopting New Techniques and the Organizational Integration of Conflict Management**

In only a few instances is there a significant difference in the constraints identified between forests that have and have not integrated conflict management. Forests that have assigned personnel to manage conflicts tended to rank internal agency procedures as less of a constraint to a significant degree. Similarly, these same forests tended to rank a lack of knowledge among Forest Service personnel as less of a constraint. Both of these findings are somewhat self-evident. It is interesting to note that perhaps forests learn that internal constraints are only not a problem after they have assigned and trained personnel. Similarly, deficits in knowledge can be overcome with training.



## **Study Implications**

The survey indicates that, by and large, the Forest Service has not adopted public interaction techniques that are commensurate with the reality of today's shared-power world. Individual forests are exceptions, and there are a wide variety of techniques used, but overall, conventional "one-way" communications are the predominate means of gaining public input and the appeals process the predominant means of resolving conflicts. The use of one-way communication methods appear sufficient in some instances but their use is positively correlated with the emergence of most types of conflict, as is the use of even the uncommon "two-way" interaction methods. Forums in which stakeholders participate in the formulation of alternatives, and alternative dispute resolution methods are rarely used.

The next phase of forest planning and the new ecosystem management mandate provide the Forest Service with new challenges ripe with both the potential for volatile conflict and opportunities to forge new cooperative relations with stakeholders. This study indicates that progress needs to be made toward: 1) encouraging stakeholder interaction and increased knowledge of each others values and concerns and; 2) adopting public interaction methods that encourage the consideration, deliberation, and negotiation of stakeholder interests. The adoption of such methods would result in the emergence of forest (or ecosystem-based) cooperative regimes composed of interdependent stakeholders with interests in the protection and management of the national forests. Fortunately, efforts in these directions have already begun. Given additional resources and training, supervisors have indicated a willingness to adopt more innovative public interaction techniques.

Leadership will be required at both the national and forest level in order to successfully meet the challenges. The national office must reexamine its mandates and mission and: 1) encourage forests to adopt shared-power methods and encourage the formation of stakeholder regimes; 2) allow these methods to work by allowing forests to devise output levels and; 3) provide forests with adequate resources to invest in personnel training and the adoption of new public interaction techniques. Forests, on the other hand, must accept the challenge of sharing-power by adopting new methods of interaction and redefining their relationships with stakeholders.

We do not pretend that the adoption of the proposed approach will bring to an end the era of conflict on national forests, nor do we pretend that such methods will withstand the force of "wicked" issues that occasionally arise. We do feel that the establishment of cooperative forest regimes will facilitate the work of the Forest Service, the satisfaction of the stakeholders and the sustainability of the forest resource. The issues discussed in this paper are only one facet of the many public interaction questions facing the Forest Service. Additional research to learn of: what methods of interaction and negotiation that stakeholders perceive as fair; what public interaction techniques appear to be effective in dealing with different types of conflict and; what types of forest regimes that appear effective in different situations, would assist the Forest Service in meeting the challenges of tomorrow's national forests.

## REFERENCES

- Allen, G. and E. Gould. 1986. Complexity, wickedness, and public forests. Journal of Forestry 84(4):20-23.
- Baltic, T.J., J.G. Hof, and B.M. Kent. 1989. Review of Critiques of the USDA Forest Service land management planning process. General Technical Report RM-170. Fort Collins, CO: USDA Forest Service Rocky Mountain Forest and Range Experiment Station. 15pp.
- Behan, R.W. 1990. Multiresource forest management: A paradigmatic challenge to professional forestry. Journal of Forestry 88(4):12-18
- Blahna, D.J. and S. Yonts-Shepard. 1989. Public involvement in resource planning: Toward bridging the gap between policy and implementation. Society and Natural Resources 2(3):209-227
- Brett, J.M., S.B. Goldberg, and W.L. Ury. 1990. Designing systems for resolving disputes in organizations. American Psychologist 45(2):162-170
- Bromley, D.W. 1989. Property Relations and Economic Development: The Other Land Reform. World Development 17(6):867-877.
- Brown, G. and C.C. Harris. 1992a. National Forest management and the "Tragedy of the Commons": A multidisciplinary approach. Society and Natural Resources 5(1):67-83
- Brown, G. and C.C. Harris. 1992b. The U.S. Forest Service: Toward the new resource management paradigm? Society and Natural Resources 5(3):231-245
- Brown, G. and C.C. Harris. 1992c. The United States Forest Service: Changing of the guard. Natural Resources Journal 32:449-456
- Bryson, J.M. and B.C. Crosby. 1992. Leadership for the common good: tackling public problems in a shared-power world. San Francisco, CA: Jossey-Bass, Inc. Publishers. 436pp.
- Churchill, G.B. 1989. Why is "sharing power" so bad? Journal of Forestry 87(3):5
- Cortner, H.J. and M.A. Shannon. 1993. Embedding Public Participation in its Political Context. Journal of Forestry 91(7):14-16.
- Daniels, S.E. 1987. Rethinking dominant use management in the forest-planning era. Environmental Law 17:483-506
- Dietz, T., P.C. Stern and R.W. Rycroft. 1989. Definitions of Conflict and the Legitimization of Resources: The Case of Environmental Risk. Sociological Forum 4(1):47-70.

- Dutton, J.E. and J.M. Dukerich. 1991. Keeping an eye on the mirror: Image and identity in organizational adaptation. Academy of Management Journal 34(3):517-554
- Facaros, N. 1989. Public involvement in National Forest planning: What the Council of Environmental Quality requires and the Forest Service neglects. Journal of Environmental Law and Litigation 4:1-34
- Fischer, B.C., S.G. Pennington and B. Tormoehlen. 1993. Public Involvement in Indiana Forestry. Journal of Forestry 91(7):28-31.
- Flamm, B.R. 1977. Evolution of National Forest Management: The Statutory Stimulus. in Crises in Federal Forest Land Management. Proceedings of Symposium sponsored by: Forest Resources Committee, Natural Resources Section of the American Bar Association; and the Natural Resources Law Working Group, Society of American Foresters. Denver, CO, November 4-5, 1976. Washington, D.C.: Society of American Foresters.
- Force, J.E. and K.L. Williams. 1989. A profile of National Forest planning participants. Journal of Forestry 87(1):33-38
- Gale, R.P. 1992. Living with "Agency Ulcers." Journal of Forestry 90(9):37-42
- Gericke, K.L., J. Sullivan, and J.D. Wellman. 1992. Public participation in national forest planning: Perspectives, procedures, and costs. Journal of Forestry 90(2):35-38.
- Ireland, L.C. 1991. The RPA: From the Perspective of the Essentials of Strategic Thought. Renewable Resources Journal 9(2):11-16.
- Jakes, P., H. Gregersen, A. Lundgren and D. Bengston. 1990. Emerging Issues in Forest Management and Use: What do Forest Supervisors and District Rangers Think? Journal of Forestry 88(4):25-31.
- Johnson, K. 1993. Beyond polarization: Emerging strategies for reconciling community and the environment. Seattle, WA: Northwest Policy Center, University of Washington. 67pp.
- Kaufman, H. 1960. The Forest Ranger: A Study in Administrative Behavior. Baltimore: Johns Hopkins Press.
- Kennedy, J.J. 1991. Integrating gender and interdisciplinary professionals into traditional U.S. Department of Agriculture-Forest Service culture. Society and Natural Resources 4(2):165-176.
- Knopp, T.B. and E.S. Caldbeck. 1990. The Role of Participatory Democracy in Forest Management. Journal of Forestry 88(5):13-18.
- Larsen, G., R. Lynn, D. Kapaldo, and J. Fedkiw. 1990. Analysis of an emerging timber supply disruption. Volume 9, Critique of Land Management Planning. FS-460. Washington, D.C.: USDA Forest Service. 44pp.

- LeMaster, D.C. 1984. Decade of change: The remaking of Forest Service statutory authority during the 1970s. Westport, CT and: Greenwood Press.
- MacDonnell, L.J. 1988. Natural resources dispute resolution: An overview. Natural Resources Journal 28(1):5-19
- Manring, N.J. 1993. Dispute Systems Design and the U.S. Forest Service. Negotiation Journal January.
- OTA. 1992. Forest Service planning: Summary. Washington, D.C.: U.S. Congress, Office of Technology Assessment (OTA).
- O'Toole, R. 1988. Reforming the Forest Service. Washington, D.C.: Island Press.
- Schallau, C.H. and R.M. Alston. 1987. The commitment to community stability: A policy or Shibboleth. Environmental Law 17:429-482
- Sample, V.A. 1992. Resource planning and budgeting for national forest management. Public Administration Review 52(4):339-347
- Sample, V.A. 1993. A Framework for Public Participation in Natural Resource Decisionmaking. Journal of Forestry 91(7):22-27.
- Shannon, M.A. 1990. Foresters as Strategic Thinkers, Facilitators and Citizens. Journal of Forestry 90(10):24-27.
- Sirmon, J., W.E. Shands, and C. Liggett. 1993. Communities of Interest and Open Decisionmaking. Journal of Forestry 91(7):17-21.
- Thompson L. and R. Hastie 1990. Social Perception in Negotiation. Organization Behavior and Human Decision Processes.
- Tipple, T.J. and J.D. Wellman. 1989. Life in a fishbowl: Public participation rewrites public foresters' job description. Journal of Forestry 87(3):24-27, 30
- Tyler, T.R. 1987. What is Procedural Justice?: Criteria Used by Citizens to Assess the Fairness of Legal Procedures. Working Paper No. 3. Dispute Resolution Center, J.L. Kellogg Graduate School of Management, Northwestern University.
- USDAFS. 1990. Critique of Land Management Planning. Volumes 1-11. Washington, D.C.: USDA-Forest Service (USDAFS).
- USDAFS. 1992. Memorandum from USDA-Forest Service Chief F. Dale Robertson, to Regional Foresters and Station Directors. Reply to: 1330-1. June 4, 1992.
- 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 and Natural Resources 4(2):177-196

## **ANNEX 1: SURVEY RESULTS**

**Table 1. Frequency of Planning Conflict Types: Weighted Means**

<b>Planning Conflict Type</b>	<b>Weighted Mean (s.d.)</b>
Involves quantity of outputs produced on the forest	3.6 (0.6)
Involves location of productive activities	3.3 (0.5)
Between user groups over designated rules, or allocation of resources	3.2 (0.4)
Between local and national interests	3.0 (0.3)
Involves distribution of USFS budget and personnel	2.9 (0.3)
Differences in opinion regarding what is scientifically accurate or best	2.8 (0.2)
Involves procedures followed (or not followed) by USFS in reaching decisions	2.4 (0.1)

Notes: Weighted means are based on a five-point scale from very infrequent to very frequent and are derived from results presented in Table 3.

**Table 2. Frequency of Management Conflict Types: Weighted Means**

<b>Management Conflict Type</b>	<b>Weighted Mean (s.d.)</b>
Involves quantity of outputs produced on the forest	3.1 (0.4)
Differences of opinion regarding what is scientifically accurate or best	3.1 (0.3)
Between user groups over designated rules, or allocation of resources	2.9 (0.2)
Involves location of productive activities	2.9 (0.2)
Involves procedures followed (or not followed) by USFS in reaching decisions	2.7 (0.2)
Between local and national interests	2.6 (0.2)
Involves distribution of USFS budget and personnel	2.4 (0.2)

Notes: Weighted means are based on a five-point scale from very infrequent to very frequent and are derived from results presented in Table 3.

**Table 3. Frequency of Conflicts and Whether or Not They Can be Dealt With at the Forest Level**

Conflict Types	Frequency of Conflict Occurrence on Forest (n = 56 responses, figures indicate the % of responses in each category) <sup>1</sup>					Can the Conflict be Dealt With Effectively at the Forest Level? <sup>2</sup>	
	(1) Very Infrequently	(2) Somewhat Infrequently	(3) Moderately frequently	(4) Somewhat frequently	(5) Very frequently	No	Yes
<b>Planning:</b>							
(1) involves quantity of outputs produced on forest	12.5	7.1	17.9	28.6	32.1	28.2	71.8
(2) involves location of productive activities	12.5	26.8	7.1	19.6	30.4	15.4	84.6
(3) between user groups over designated rules, or allocation of resources	10.7	28.6	23.2	19.6	14.3	20.5	79.5
(4) between local and national interests	14.3	33.9	8.9	23.2	16.1	56.4	43.6
(5) involves distribution of USFS budget and personnel	28.6	28.6	17.9	12.5	8.9	53.9	46.1
(6) involves differences of opinion regarding what is scientifically accurate or best	8.9	12.5	35.7	25.0	14.3	56.4	43.6
(7) involves procedures followed (or not followed) by the USFS in reaching a decision	17.9	28.6	19.6	14.3	16.1	48.7	51.3
<b>Management:</b>							
(1) involves quantity of outputs produced on forest	14.3	23.2	19.6	10.7	26.8	35.9	64.1
(2) involves location of productive activities	19.6	19.6	26.8	16.1	14.3	23.1	76.9
(3) between user groups over designated rules, or allocation of resources	14.3	28.6	17.9	16.1	17.9	15.4	84.6
(4) between local and national interests	26.8	26.8	7.1	19.6	12.5	61.5	38.5
(5) involves distribution of USFS budget and personnel	26.8	28.6	23.2	8.9	8.9	59.0	41.0
(6) involves differences of opinion regarding what is scientifically accurate or best	12.5	17.9	28.6	19.6	16.1	43.6	56.4
(7) involves procedures followed (or not followed) by the USFS in reaching a decision	17.9	25.0	26.8	10.7	12.5	35.9	64.1

**Notes:**

1. Percentages reported do not sum to 100 as several of the respondents did not answer this question for each conflict type. These nulls account for 2 - 7% of the answers for each conflict type.

2. 31 of the 56 respondents answered this question. Data presented indicate the percentage of those who responded who answered yes or no.

**Table 4. Frequency of Public Interaction Techniques Used on Forests: Weighted Means**

<b>Public Interaction Techniques</b>	<b>Weighted Mean (s.d.)</b>
<u>Before conflicts arise:</u>	
Public written comments during review period	4.7 (1.5)
Mailed or posted materials to publicize USFS decision/action	4.2 (1.1)
Public verbal comments during review period	3.6 (0.6)
Verbal communications to publicize USFS decision/action	3.5 (0.5)
Extend personal invitations to concerned individuals or groups	3.5 (0.5)
Conduct open meetings during review period	3.3 (0.4)
Conduct public tours or field trips to publicize USFS decision/action	2.7 (0.6)
Conduct informal workshops with concerned parties together	2.7 (0.3)
Conduct informal workshops with concerned parties seperately	2.6 (0.2)
Encouraging creation of semi-independent committes to devise alternatives	2.3 (0.2)
<u>After conflicts arise:</u>	
Choose to allow some conflicts be resolved through the appeals process because it is more efficient or effective	2.7 (.3)
Conduct informal workshops with each disputing party together	2.7 (.3)
Conduct informal workshops with each disputing party separately	2.3 (.3)
Use an independent, non-agency facilitator to resolve disputes	1.4 (.2)
Use an independent USFS hearings officer to resolve disputes	1.1 (.2)

Notes: Weighted means are based on a five-point scale from very infrequent to very frequent and are derived from results presented in Table 5.



Table 5. Use of Public Interaction Techniques by the USFS: Frequency

Public Interaction Techniques	Frequency of Public Interaction Techniques Used (n = 56, figures indicate % of responses in each category)				
	(1) Very infrequently	(2) Somewhat infrequently	(3) Moderately frequently	(4) Somewhat frequently	(5) Very frequently
<b>Before Conflicts Arise:</b>					
Your forest educates the public on upcoming decisions by:					
(1) mailed or posted materials	1.8	5.4	14.3	25.0	53.6
(2) verbal communications	0	8.9	32.1	32.1	26.8
(3) public tours or field trips	8.9	39.3	30.4	16.1	5.4
Your forest seeks public input on upcoming decisions by:					
(1) written comments during a review period	0	0	10.7	12.5	76.8
(2) verbal comments during a review period	1.8	19.6	23.2	23.2	32.1
(3) conduct open meetings that anyone can attend	8.9	21.4	23.2	26.8	19.6
Your forest facilitates public involvement in formulating alternatives by:					
(1) extending personal invitations to individuals or groups	5.4	16.1	25.0	30.4	23.2
(2) conducting informal workshops with each concerned party separately	17.9	39.3	19.6	14.3	8.9
(3) conducting informal workshops with all concerned party together	10.7	37.5	26.8	16.1	8.9
(4) encouraging the creation of semi-independent committees to devise alternatives	30.4	33.9	19.6	10.7	5.4
<b>After Conflicts Arise:<sup>1</sup></b>					
Your forest facilitates opportunities for resolving disputes by:					
(1) conducting informal workshops with each disputing party separately	21.4	41.1	19.6	12.5	3.6
(2) conducting informal workshops with all disputing parties together	19.6	26.8	26.8	19.6	7.1
(3) using an independent USFS hearings officer to resolve disputes over USFS decisions	78.6	12.5	3.6	0	0
(4) using an independent, nonagency facilitator or mediator to resolve conflicts over USFS decisions	64.3	14.3	12.5	3.6	0
Your forest chooses to allow some conflicts to be resolved through the mandated appeals process because it is more efficient or effective.	30.4	16.1	19.6	23.2	10.7

Notes:

1. Some percentages reported in this category do not sum to 100 as several respondents did not answer for each conflict type.

**Table 6. Institutionalization of Conflict Management on National Forests**

Indicator of Institutionalization	Percent of Forests Responding Positively (n = 56)	Average per Forest (standard deviation)	Range of Values
Does the Forest have an organizationally distinct conflict management office?	3.6		
If yes: How many FTEs are dedicated to dealing with planning conflicts only? How many FTEs are dedicated to dealing with management conflicts only?		0.8 FTEs (24) n = 2 1.0 FTEs (n/a) n = 2	0.5 - 1.0 n/a
Does Forest have person(s) specifically assigned to handle conflicts?	55.4		
If yes: How many personnel are assigned to work with planning conflicts only? How many personnel are assigned to work with management conflicts only? How many personnel are assigned to work with both types of conflict?		3.7 persons (3.2) n = 31 4.3 persons (3.5) n = 31 4.6 persons (3.6) n = 31	0.1 - 12.0 0.2 - 11.0 0.5 - 14.0
How much time (hrs/wk) does each of the dedicated personnel spend managing: planning conflicts only? management conflicts only? both types of conflict only?		8.9 hrs/wk (7.7) n = 13 9.6 hrs/wk (7.9) n = 19 9.6 hrs/wk (9.4) n = 18	1.0 - 30.0 1.0 - 30.0 1.0 - 40.0
Of the personnel assigned, how many reside at the: Supervisors Office? District Office?		3.6 persons (1.8) n = 22 4.7 persons (1.9) n = 15	0.25 - 8.0 1.0 - 8.0
Do personnel responsible for conflict management receive training?	62.5		
If yes: What percent have already received training in conflict management? Do personnel receive training at initial hire? Do personnel receive training at continuing training activities?	n/a 26.8 41.1	71.8 % 39.2 hrs/person (24.) n = 15 27.6 hrs/person (18.4) n = 23	n/a 4.0 - 80.0 4.0 - 80.0
What percentage of Forests use only in-house groups to conduct training? What percentage of Forests use only outside groups to conduct training? What percentage of National Forests use university groups alone to conduct trainings? What percentage of National Forests use for-profit groups alone to conduct trainings? What percentage of National Forests use non-profit groups alone to conduct trainings? What percentage of National Forests use a mixture of groups to conduct trainings?		44.6% 58.9% 6% 47% 0% 47%	n/a n/a n/a n/a n/a n/a

**Table 7. Constraints to Initiating Different Public Interaction Techniques: Weighted Means.**

Constraints to Initiating Different Public Interaction Techniques	Weighted Mean (s.d.)
Lack of resources (money or personnel)	3.1 (0.4)
Lack of knowledge among USFS personnel as to how effectiveness might be improved	2.8 (0.5)
Lack of interest by user groups to do things differently	2.8 (0.3)
Internal agency procedures and administrative rules	2.5 (0.4)
Legal requirements	2.5 (0.3)
Administrative or personnel reluctance from superiors at the national or regional level	2.4 (0.2)
Administrative or personnel reluctance from forest personnel	2.1 (0.4)

Notes: Weighted means are based on a five-point scale from not at all constraining to absolutely constraining and are derived from results presented in Table 8.

**Table 8. Constraints to Initiating Different Public Interaction Techniques**

Barriers to Initiating Different Public Interaction Techniques	Frequency of Responses in Each Category (%) n = 56				
	(1) Not at all constraining	(2) Somewhat constraining	(3) Moderately constraining	(4) Very constraining	(5) Absolutely constraining
Legal requirements:	21.4	26.8	32.1	14.3	3.6
Internal agency procedures and administrative rules:	26.8	23.2	23.2	25.0	0
Administrative or personnel reluctance from: forest personnel: superiors at the national or regional level	21.4	35.7	28.6	1.8	0
Lack of resources (money or personnel):	28.6	25.0	16.1	17.9	3.6
Lack of interest by user groups to do things differently:	12.5	16.1	25.0	33.9	10.7
Lack of knowledge among USFS personnel as to how effectiveness might be improved:	17.9	19.6	32.1	16.1	10.7
	7.1	28.6	44.6	14.3	3.6

**Notes:**

1. Percentages reported do not sum to 100 in several barrier types as several respondents did not answer for each barrier type.

**Table 9. Correlation Between Level of Planning Conflict and Level of Public Interaction Technique Used**

Conflict Type <sup>1</sup> (planning)		Public Interaction Technique Type <sup>2</sup>														
		EDU1	EDU2	EDU3	INI1	INI2	INI3	AL11	AL12	AL13	AL14	DIS1	DIS2	DIS3	DIS4	DIS5
TYPE1	P-VALUE	0.24	0.24	0.48	0.21	0.86	0.27	0.28	0.1	0.9	0.35	<.01	0.73	0.62	0.86	<.01
	R-VALUE	0.15	-0.16	-0.2	0.26	0.14	0.24	-0.07	-0.07	-0.14	-0.01	-0.07	-0.11	0.17	-0.03	0.55
	SIGNIF.	0.27	0.25	0.88	0.05	0.3	0.07	0.6	0.6	0.31	0.92	0.59	0.44	0.2	0.85	<.01
TYPE2	P-VALUE	0.85	0.39	0.21	0.35	0.33	0.15	0.43	0.25	0.98	0.65	0.42	0.93	0.16	0.05	0.22
	R-VALUE	0.09	0.1	0	0.28	0.28	0.4	0.01	0.14	0.05	-0.03	0.05	-0.07	0.2	0.28	0.37
	SIGNIF.	0.52	0.46	1	0.03	0.04	<.01	0.94	0.32	0.74	0.85	0.71	0.59	0.14	0.03	0<.01
TYPE3	P-VALUE	0.59	0.27	0.2	0.38	0.49	0.71	0.34	0.03	0.72	0.26	0.15	0.72	0.15	0.23	0.67
	R-VALUE	0.03	0.1	0.05	0.21	0.11	0.19	0.15	0.19	0.23	0.11	-0.03	0.12	0.05	0.37	0.11
	SIGNIF.	0.8	0.44	0.71	0.11	0.43	0.16	0.25	0.16	0.09	0.4	0.8	0.37	0.72	<.01	0.41
TYPE4	P-VALUE	0.8	0.07	0.73	0.64	0.63	0.09	0.75	0.75	0.31	0.55	0.1	0.59	0.52	0.8	0.62
	R-VALUE	-0.02	0	0.06	0.2	0.1	0.39	0.13	0.09	0.16	0	0.06	0.12	0.03	0.06	0.26
	SIGNIF.	0.89	0.95	0.66	0.14	0.46	<.01	0.34	0.51	0.18	0.98	0.68	0.37	0.79	0.65	0.05
TYPE5	P-VALUE	0.61	0.52	0.8	0.31	0.32	0.07	0.93	0.24	0.09	0.61	0.01	0.92	0.76	0.41	0.39
	R-VALUE	0.07	-0.05	0.05	0.31	0.22	0.45	0.04	0.17	0.03	-0.07	0.07	-0.02	0.05	-0.17	0.34
	SIGNIF.	0.58	0.71	0.71	0.02	0.09	<.01	0.77	0.21	0.81	0.61	0.58	0.88	0.68	0.21	0.01
TYPE6	P-VALUE	0.09	0.48	0.01	0.82	0.48	0.04	0.75	0.38	0.03	0.62	0.03	0.37	0.87	0.92	0.51
	R-VALUE	0.22	0.04	0.07	0.09	0	-0.02	0.17	0.18	0.03	0.15	0.21	-0.09	0.03	0	0.21
	SIGNIF.	0.11	0.77	0.6	0.49	0.96	0.88	0.2	0.19	0.8	0.28	0.11	0.5	0.85	0.99	0.11
TYPE7	P-VALUE	0.36	0.14	0.1	0.54	0.32	0.21	0.22	0.25	0.71	0.15	0.05	0.23	0.12	0.82	0.2
	R-VALUE	0.22	-0.05	0.15	0.28	0.21	0.32	-0.02	0.22	0.1	-0.08	0.15	0.15	0.03	-0.02	0.44
	SIGNIF.	0.1	0.72	0.27	0.04	0.13	0.01	0.87	0.1	0.46	0.54	0.28	0.69	0.83	0.85	<.01

**Notes:**

1. Conflict type code: Type 1 = quantity of outputs; Type 2 = location of activities; Type 3 = between user groups; Type 4 = between local and national interests; Type 5 = distribution of USFS budget and personnel; Type 6 = difference of opinion over what is scientifically best; Type 7 = procedures followed (or not) by USFS in reaching a decision.
2. Public interaction technique code: EDU1 = mailings; EDU2 = verbal; EDU3 = tours; INI1 = written comments; INI2 = verbal comments; INI3 = open public meetings; AL11 = extending invitations; AL12 = workshops with concerned separately; AL13 = workshops with dispucees separately; DIS1 = ad hoc committees; DIS2 = workshops with dispucees together; DIS3 = hearings officer; DIS4 = non-USFS mediator; DIS5 = appeals process.
3. The p-value indicates the probability that the H0 that the true proportions of the level of technique use and the level of conflict are the same. P values below .05 indicate that the proportions are not the same at the .05 level of statistical significance.
4. The r-value indicates the degree of linear correlation between the level of conflict and the level of use of the different conflict management techniques. R-values between 0 and .5 indicate a weak positive correlation. The H0 that the r-value = 0 is tested with the signif. figures.

**Table 10. Correlating Use of Public Interaction Techniques and Occurrence of Planning Conflict Types: Summary of Significant Correlations**

Public Interaction Technique	Conflict Types (r-value)
Public written comments during review period	Quantity of outputs produced on the forest (.26) Location of productive activities (.28) Distribution of USFS budget and personnel (.31) Procedures required of USFS in reaching decisions (.28)
Public verbal comments during review period	Location of productive activities (.28)
Conduct open meetings during review period	Location of productive activities (.40) Local vs. national interests (.39) Distribution of USFS budget and personnel (.45) Procedures required of USFS in reaching decisions (.32)
Use an independent, nonagency facilitator to resolve disputes	Location of productive activities (.28) User-groups conflicts over designated rules or resource allocation (.37)
Chose to allow some conflicts to be resolved through the appeals process	Quantity of outputs produced on the forest (.55) Location of productive activities (.37) Local and national interests (.26) Distribution of USFS budget and personnel (.34) Procedures required of USFS in reaching decisions (.44)

Notes: Pearson's r-value indicates the degree of linear correlation between two parameters. The correlation is judged to be strong if the r-value is greater than .50; the correlation is judged to be weak if the r-value falls between .25 and .50.

**Table 11. Correlation Between Level of Management Conflict and Level of Public Interaction Technique Use**

Conflict Type <sup>1</sup> (management)		Public Interaction Technique Type <sup>2</sup>														
		EDU1	EDU2	EDU3	INI1	INI2	INI3	ALT1	ALT2	ALT3	ALT4	DIS1	DIS2	DIS3	DIS4	DIS5
TYPE1	P-VALUE	.48	.46	.24	.61	.54	.13	.77	.51	.85	.88	.75	.31	.92	.28	.46
	R-VALUE	.21	.03	.14	.13	.06	.06	.15	.11	.16	.15	.03	.17	.11	.2	.05
	SIGNIF.	.12	.82	.31	.35	.71	.66	.28	.43	.28	.26	.84	.19	.42	.14	.7
TYPE2	P-VALUE	.27	.2	.31	.64	.53	.01	.37	.21	.4	.29	<.01	.14	.61	.28	.26
	R-VALUE	.06	.26	.13	.12	.17	.22	.1	.2	.1	.02	.06	<.01	<.01	.11	.02
	SIGNIF.	.56	.05	.32	.38	.2	.1	.47	.13	.48	.89	.66	.97	.1	.39	.87
TYPE3	P-VALUE	.06	.18	.17	.21	.66	.21	.4	.7	.24	.41	.29	.61	.18	.16	.66
	R-VALUE	.16	.1	-.14	.21	-.02	.06	.18	.11	.25	.02	-.13	.13	-.09	.18	-.15
	SIGNIF.	.25	.44	.31	.11	.86	.56	.19	.41	.06	.86	.31	.33	.49	.19	.28
TYPE4	P-VALUE	.75	.49	.24	.85	.1	.16	.37	.82	.07	.49	.41	.07	.31	.69	.53
	R-VALUE	.03	.1	.06	.19	.05	.28	.34	.05	.48	.17	-.05	.33	-.16	.04	-.13
	SIGNIF.	.84	.44	.54	.15	.74	.03	.01	.7	<.01	.22	.68	.01	.25	.76	.35
TYPE5	P-VALUE	.58	.1	.23	.57	.27	.06	.92	.83	.9	.6	.51	.54	.66	.87	.59
	R-VALUE	.12	0	.13	.07	-.01	.14	-.02	.04	.03	.12	-.03	-.14	.03	-.14	.07
	SIGNIF.	.39	.97	.33	.6	.92	.29	.9	.79	.8	.39	.8	.31	.81	.29	.61
TYPE6	P-VALUE	.28	.55	.07	.61	.81	.4	.82	.32	.65	.97	.09	.24	.28	.56	.24
	R-VALUE	.34	.17	.05	.11	.06	-.04	.29	.12	.17	.13	.22	0	-.07	.18	0
	SIGNIF.	.01	.2	.73	.43	.66	.77	.03	.36	.21	.33	.1	.98	.56	.19	.96
TYPE7	P-VALUE	.64	.4	.61	.61	.84	.77	.39	.71	.64	.72	.28	.06	.48	.96	.4
	R-VALUE	.27	.04	.16	.19	.05	.17	.05	.19	.14	.01	.18	-.01	.09	.06	.32
	SIGNIF.	.05	.77	.23	.15	.71	.21	.69	.16	.3	.94	.18	.91	.53	.64	.01

Notes:

1. Conflict type code: Type 1 = quantity of outputs; Type 2 = location of activities; Type 3 = between user groups; Type 4 = between local and national interests; Type 5 = distribution of USFS budget and personnel; Type 6 = difference of opinion over what is scientifically best; Type 7 = procedures followed (or not) by USFS in reaching a decision.
2. Public interaction technique code: EDU1 = mailings; EDU2 = verbal; EDU3 = tours; INI1 = written comments; INI2 = verbal comments; INI3 = open public meetings; ALT1 = extending invitations; ALT2 = workshops with concerned separately; ALT3 = workshops with concerned together; ALT4 = ad hoc committees; DIS1 = ad hoc committees; DIS2 = workshops with disputeres together; DIS3 = hearings officer; DIS4 = non-USFS mediator; DIS5 = appeals process.
3. The p-value indicates the probability that the H0 that the true proportions of the level of technique use and the level of conflict are the same. P values below .05 indicate that the proportions are not the same at the .05 level of statistical significance.
4. The r-value indicates the degree of linear correlation between the level of conflict and the level of use of the different conflict management techniques. R-values between 0 and .5 indicate a weak positive correlation. The H0 that the r-value = 0 is tested with the signif. figures.

**Table 12. Correlating Use of Public Interaction Techniques and Occurrence of Management Conflict Types: Significant Correlations**

Public Interaction Technique	Management Conflict Types (r-value)
Mailed or posted materials to publicize USFS decision/action	Difference of opinion over what is scientifically accurate or best (.34) Procedures required of USFS in reaching decisions (.27)
Verbal communications to publicize USFS decision/action	Location of productive activities (.26)
Open Public Meetings	Local vs. national interests (.28)
Extend personal invitations to concerned individuals or groups	Local vs. national interests (.34) Difference in opinion over what is scientifically accurate or best (.29)
Conduct informal workshops with concerned parties together	User-groups conflicts over designated rules or resource allocation (.25) Local vs. national interests (.48)
Conduct informal workshops with disputing parties together	Local vs. national interests (.33)
Chose to allow some conflicts to be resolved through the appeals process	Difference in opinion over what is scientifically accurate or best (.32)

Notes: Pearson's r-value indicates the degree of linear correlation between two parameters. The correlation is judged to be strong if the r-value is greater than .50; the correlation is judged to be weak if the r-value falls between .25 and .50.



**Table 13. Correlation Between Level of Constraint to Initiating New Techniques and Level of Use of Different Public Interaction Techniques**

Constraint Type <sup>1</sup>	Public Interaction Technique Type <sup>2</sup>														
	EDU1	EDU2	EDU3	INI1	INI2	INI3	ALTI	ALT2	ALT3	ALT4	DIS1	DIS2	DIS3	DIS4	DIS5
TYPE1	P-VALUE	.65	.72	.42	.88	.34	.01	.46	.54	.95	.65	.52	.01	.91	.06
	R-VALUE	.05	-.02	-.12	-.01	.14	.03	.08	-.04	-.08	.06	-.14	.24	-.03	.21
	SIGNIF.	.43	.91	.81	.36	.94	.84	.55	.80	.55	.67	.3	.08	.84	.12
TYPE2	P-VALUE	.59	.83	.23	.24	.7	.01	.31	.41	.39	.23	.53	.37	.09	.34
	R-VALUE	.13	-.09	-.12	.09	.1	.07	.09	-.03	-.08	.12	-.10	.32	.06	.18
	SIGNIF.	.35	.52	.4	.52	.47	.63	.5	.84	.54	.38	.44	.02	.69	.18
TYPE3	P-VALUE	.2	.54	.13	.43	.41	.36	.47	.61	.77	.14	.69	.4	.61	.81
	R-VALUE	-.16	-.22	.06	0	-.07	-.18	.06	-.14	.06	.01	-.01	.16	-.09	-.07
	SIGNIF.	.24	.11	.58	.96	.6	.19	.55	.3	.65	.96	.95	.23	.53	.61
TYPE4	P-VALUE	.53	.39	.97	.33	.32	.10	.51	1.00	.23	.20	.81	.12	.93	.93
	R-VALUE	.01	-.24	.11	.12	.16	.09	.09	.03	.06	.17	.02	.38	.10	.05
	SIGNIF.	.93	.08	.43	.37	.24	.53	.52	.85	.64	.20	.88	<.01	.45	.73
TYPE5	P-VALUE	.90	.34	.46	.16	.81	.24	.61	.25	.01	.02	.54	.85	.84	.36
	R-VALUE	-.03	-.12	-.06	-.16	.02	.04	-.12	-.22	-.15	.16	-.11	.03	.01	.03
	SIGNIF.	.82	.39	.65	.25	.87	.75	.39	.10	.27	.24	.41	.81	.93	.85
TYPE6	P-VALUE	.63	.34	.52	.82	.88	.30	.02	.27	.41	.46	.09	.46	.63	.60
	R-VALUE	.19	-.02	-.06	.01	0	-.02	.29	-.05	-.13	.27	-.07	.20	-.01	.31
	SIGNIF.	.17	.86	.64	.93	.98	.86	.03	.72	.36	.05	.61	.13	.93	.02
TYPE7	P-VALUE	.90	.27	.36	.63	.55	.02	.71	.48	.61	.22	.09	.96	.66	.70
	R-VALUE	-.10	-.16	-.26	0	-.01	-.02	.01	-.11	0	.06	0	.07	-.11	.09
	SIGNIF.	.46	.22	.05	.99	.97	.86	.95	.42	1.00	.58	.98	.60	.43	.49

Notes:

1. Constraint type code: Type 1 = legal requirements; Type 2 = USFS procedures and rules; Type 3 = reluctance from Forest personnel; Type 4 = reluctance from superiors at regional or national level; Type 5 = lack of resources; Type 6 = lack of interest by user groups to do things differently; Type 7 = lack of knowledge among USFS personnel
2. Conflict management technique code: EDU1 = mailings; EDU2 = verbal; EDU3 = tours; INI1 = written comments; INI2 = verbal comments; INI3 = open public meetings; ALT1 = extending invitations; ALT2 = workshops with concerned separately; ALT3 = workshops with concerned together; ALT4 = ad hoc committees; DIS1 = workshops with displacees separately; DIS2 = workshops with displacees together; DIS3 = hearings officer; DIS4 = non-USFS mediator; DIS5 = appeals process.
3. The p-value indicates the probability that the H0 that the true proportions of the level of technique use and the level of conflict are the same. P values below .05 indicate that the proportions are not the same at the .05 level of statistical significance.
4. The r-value indicates the degree of linear correlation between the level of conflict and the level of use of the different conflict management techniques. R-values between 0 and .5 indicate a weak positive correlation.

**Table 14. Correlating Use of Public Interaction Techniques and Occurrence of Constraint Types: Summary of Significant Correlations**

Public Interaction Technique	Constraint Type (r-value)
Conduct public tours or field trips to publicize USFS decision/action	Lack of knowledge among USFS personnel as how effectiveness might be improved (-.26)
Conduct informal workshops with concerned parties separately	Lack of interest by user-groups to do things differently (.29)
Conduct informal workshops with disputing parties separately	Lack of interest by user-groups to do things differently (.27) Internal agency procedures and administrative rules (.32)
Use an independent USFS hearings officer to resolve disputes	Administrative or personnel reluctance from superiors at the national or regional level (.38) Internal agency procedures and administrative rules (.32)
Chose to allow some conflicts to be resolved through appeals process	Lack of interest by user-groups to do things differently (.31)

Notes: Pearson's r-value indicates the degree of linear correlation between two parameters. The correlation is judged to be strong if the r-value is greater than .50; the correlation is judged to be weak if the r-value falls between .25 and .50.

**Table 15. Relationship Between Level of Planning Conflict and the Institutionalization of Conflict Management<sup>1</sup>**

Conflict Type (planning)	Indicators of the Institutionalization of Conflict Management Techniques <sup>2</sup> (p-values)	
	Forest Has Persons Specifically Responsible for Conflict Management (n = 35)	Personnel Responsible for Conflict Management Receive Training in Conflict Management (n = 31)
Conflict involves the quantity of outputs produced on the forest	.67	.77
Conflict involves the location of productive activities	.18	.93
Conflict is between user groups over designated rules or the allocation of resources	.02	.62
Conflict is between local and national interests	.63	.92
Conflict involves distribution of USFS budget or personnel	.98	.72
Conflict involves differences of opinion regarding what is scientifically accurate or best	.82	.63
Conflict involves procedures followed (or not followed) by USFS in reaching a decision	.75	.69

**Notes:**

1. The Chi square statistic was used to compare proportions between categories of National Forests that have and have not institutionalized conflict management indicators and the distribution of conflict frequency (i.e. a 2x5 contingency table). The null hypothesis tested was as follows:  $H_0$  = true proportions of conflict frequency are the same in National Forests that have and have not institutionalized the conflict management indicator. For example: the  $H_0$  that true proportions of conflict frequency between user groups are the same for Forests that have persons responsible for conflict management and those that do not is not accepted ( $p = .02$ ).

2. Counts of the other indicators of the institutionalization of conflict management (e.g. existence of a distinct office for conflict management) were too small to analyze statistically. The indicators presented had sufficient responses to permit analysis as the minimum expected cell frequency was greater than or equal to 1.

**Table 16. Relationship Between Level of Management Conflict and the Institutionalization of Conflict Management<sup>1</sup>**

Conflict Type (management)	Indicators of the Institutionalization of Conflict Management Techniques <sup>2</sup> (p-values)	
	Forest Has Persons Specifically Responsible for Conflict Management (n = 35)	Personnel Responsible for Conflict Management Receive Training in Conflict Management (n = 31)
Conflict involves the quantity of outputs produced on the forest	.18	.14
Conflict involves the location of productive activities	.42	.4
Conflict is between user groups over designated rules or the allocation of resources	.54	.19
Conflict is between local and national interests	.54	.63
Conflict involves distribution of USFS budget or personnel	.63	.59
Conflict involves differences of opinion regarding what is scientifically accurate or best	.56	.99
Conflict involves procedures followed (or not followed) by USFS in reaching a decision	.98	.59

Notes:

1. The Chi square statistic was used to compare proportions between categories of National Forests that have and have not institutionalized conflict management indicators and the distribution of conflict frequency (i.e. a 2x5 contingency table). The null hypothesis tested was as follows:  $H_0$  = true proportions of conflict frequency are the same in National Forests that have and have not institutionalized the conflict management indicator. For example: the  $H_0$  that true proportions of the frequency of conflicts involving the quantity of outputs are the same for both Forests that have and have not trained conflict management staff in conflict management techniques is not rejected ( $p = .14$ ).

2. Counts of the other indicators of the institutionalization of conflict management were too small to analyze statistically (e.g.  $n = 2$  for the question of whether or not a distinct office for conflict management existed). The indicators presented had sufficient responses to permit analysis as the minimum expected cell frequency was greater than or equal to 1.

**Table 17. Relationship Between Level of Use of Different Public Interaction Techniques and the Institutionalization of Conflict Management<sup>1</sup>**

Public Interaction Technique	Indicator of Institutionalization (p-values)	
	Forest Has Persons Specifically Responsible for Conflict Management (n = 35)	Personnel Responsible for Conflict Management Receive Training in Conflict Management (n = 31)
<b>Before Conflicts Arise:</b>		
Forest <u>educates</u> the public on upcoming decisions by:		
(1) mailed or posted materials	.73	.69
(2) verbal communications	.70	.89
(3) public tours or field trips	.76	.37
Forest <u>seeks public input</u> on upcoming decisions by:		
(1) written comments during review period	.35	.28
(2) verbal comments during review period	.49	.39
(3) conduct public meetings that anyone can attend	.84	.31
Forest facilitates public involvement in <u>formulating alternatives</u> for upcoming decisions by:		
(1) extending invitations to individuals or groups	.70	.77
(2) conducting workshops with concerned parties separately	.74	.11
(3) conducting workshops with concerned parties together	.30	.32
(4) encouraging the creation of a semi-independent committee of users to devise alternatives	.79	.29
<b>After Conflicts Arise</b>		
Forest facilitates opportunities for <u>resolving disputes</u> by:		
(1) conducting workshops with disputing parties separately	.75	.32
(2) conducting workshops with disputing parties together	.32	.17
(3) using USFS hearings officer to resolve disputes over USFS decisions	.34	.47
(4) using a non-agency facilitator or mediator to resolve conflicts over USFS decisions	.41	.50
Forest allows some conflicts to be resolved through the appeals process because it is more efficient or effective	.11	.35

**Notes:**

1. The Chi square statistic was used to compare proportions between categories of National Forests that have and have not institutionalized conflict management indicators and the distribution of conflict frequency (i.e. a 2x5 contingency table). The null hypothesis tested was as follows:  $H_0$  = true proportions of technique use frequency are the same in National Forests that have institutionalized the conflict management indicator and those that have not. For example: the  $H_0$  that true proportions of verbal communication technique use are the same for Forests that have assigned personnel to conflict management duties and those that have not is not rejected (p = .70).

2. Counts of the other indicators of the institutionalization of conflict management (e.g. existence of a distinct office for conflict management) were too small to analyze statistically. The indicators presented had sufficient responses to permit analysis as the minimum expected cell frequency was greater than or equal to 1.

**Table 18. Relationship Between Level of Constraints to Initiating Different Public Interaction Techniques and the Institutionalization of Conflict Management<sup>1</sup>**

Barriers Constraining Initiation of Different Public Interaction Techniques	Indicators of the Institutionalization of Conflict Management Techniques <sup>2</sup> (p-values)	
	Forest Has Persons Specifically Responsible for Conflict Management (n = 35)	Personnel Responsible for Conflict Management Receive Training in Conflict Management (n = 31)
Legal requirements	.32	.28
Internal agency procedures and administrative rules	.05	.52
Administrative reluctance from: forest personnel: superiors at the national or regional level:	.32	.18
	.26	.2
Lack of resources (money or personnel)	.13	.44
Lack of interest by user groups to do things differently	.49	.07
Lack of knowledge among USFS personnel as to how effectiveness might be improved	.05	.80

Notes:

1. The Chi square statistic was used to compare proportions between categories of National Forests that have and have not institutionalized conflict management indicators and the distribution of conflict frequency (i.e. a 2x5 contingency table). The null hypothesis tested was as follows:  $H_0$  = true proportions of constraint ranking are the same in National Forests that have and have not institutionalized the conflict management indicator. For example: the  $H_0$  that true proportions of legal requirement constraint ranking are the same for Forests that have assigned personnel to conflict management duties and those that have not is not rejected (p = .32).

2. Counts of the other indicators of the institutionalization of conflict management (e.g. existence of a distinct office for conflict management) were too small to analyze statistically. The indicators presented had sufficient responses to permit analysis as the minimum expected cell frequency was greater than or equal to 1.

## **ANNEX 2: SURVEY QUESTIONNAIRE**

2. If all the above constraints could be overcome, please briefly describe how you would change existing procedures.

### **FOREST SERVICE CONFLICT MANAGEMENT SURVEY**

This questionnaire concerns how conflicts are managed on your National Forest. For the purposes of this questionnaire, "conflict" is defined as any instance when a forest user or stakeholder challenges a Forest Service process or action either formally or informally. Conflicts between individuals and/or units within the Forest Service are not included in this definition. The first part of the questionnaire concerns what types of conflicts are encountered most often on your forest. The second part of the questionnaire concerns the types of activities undertaken in an attempt to resolve these conflicts. The third part of the questionnaire concerns how conflict management and resolution is institutionalized. The fourth part of the questionnaire concerns constraints on conflict management and what ideally you might want to try.

Conflict which occurs within two types of organizational activities are included — planning and management activities. Planning-related conflicts occur within the planning process itself or within the EIS process and concern either the processes used or the substance of a forest plan or EIS. Management-related conflicts arise over day to day management activities or proposed changes in management activities such as the location or size of a clearcut, the granting of a mineral lease or use of herbicides to control a forest pest. Only in the first and third part of the questionnaire are you asked to make a distinction between them.

Thank you very much for taking the time to complete this questionnaire. Enclosed is a stamped, self addressed envelope in which it can be returned.

Please return this questionnaire by April 30, 1993.



**CONFLICT TYPES: What is the nature of conflict on your Forest?**

1. Please indicate how frequently each characteristic below applies to the type of conflicts which occur on your forest. Please place a number from the following scale in the blanks provided.

- 1 very infrequently, characteristic of very few conflict or potential conflict situations.
- 2 somewhat infrequently.
- 3 moderately frequently, characteristic of about half of all conflict situations.
- 4 somewhat frequently.
- 5 very frequently, characteristic of almost all conflict or potential conflict situations.

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\_\_\_\_\_    \_\_\_\_\_  
 Conflict involves what quantity of various outputs should be produced on the forest. (i.e. how much timber will be produced, how much wilderness will be produced, etc. forestwide.)

\_\_\_\_\_    \_\_\_\_\_  
 Conflict involves where the various outputs should be produced on the forest. (i.e. whether a mine should be allowed at X or Y or whether a campground should be located at X or Y.)

\_\_\_\_\_    \_\_\_\_\_  
 Conflict is between user groups within designated land or resource allocations. (i.e. btw. snowmobilers & cross country skiers on a multiple use trail or btw. small size groups of canoeists and large size groups of canoeists.)

\_\_\_\_\_    \_\_\_\_\_  
 Conflict is between local and national interests and priorities. (i.e. btw. local interest group support for a dam and national interest group opposition.)

\_\_\_\_\_    \_\_\_\_\_  
 Conflict involves the distribution Forest Service budget & personnel between different types of outputs. (i.e. how much should be expended on timber sales vs. wilderness or game mgt. vs. endangered species mgt.)

\_\_\_\_\_    \_\_\_\_\_  
 Conflict involves differences of opinion regarding what is scientifically accurate or best. (i.e. whether clearcutting or selection cutting is most appropriate or whether resource damage is being caused by horseback riders or hikers on a trail.)

\_\_\_\_\_    \_\_\_\_\_  
 Conflict involves the procedures followed by the Forest Service (i.e. proper or prudent procedures in reaching a decision were not followed.)

**CONSTRAINTS IN CONFLICT MANAGEMENT AND DESIRED CHANGE: What barriers prevent change in conflict management techniques?**

1. Given current mechanisms used on your forest to manage conflicts, what prevents you from initiating different mechanisms that you think might be more effective? Please place a number from the following scale in the blank provided.

- 1 not at all constraining.
- 2 somewhat constraining.
- 3 moderately constraining.
- 4 very constraining.
- 5 absolutely constraining.

\_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_  
 Legal requirements.  
 Internal agency procedures and administrative rules.  
 Administrative or personnel reluctance from:  
     \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_  
     forest personnel;  
     \_\_\_\_\_    \_\_\_\_\_    \_\_\_\_\_  
     superiors at the national or regional level.  
 Lack of resources (money or personnel).  
 Lack of interest by user groups to do things differently.  
 Lack of knowledge among F.S. personnel as to how effectiveness might be improved.

a. If there are other constraints not included in the above list that are very or absolutely constraining, please list them in the space below.

3. Please estimate how much funding (either formally designated or included in other budget line items) does conflict management receive on your forest?

Planning-related conflict management \_\_\_\_\_ per year and management-related conflict management \_\_\_\_\_ per year.

4. Do personnel responsible for conflict management receive formal training in this area of expertise? Yes No

a. If yes, what percentage of personnel responsible for conflict management have received formal training? \_\_\_\_\_ percent.

b. If yes, please indicate the average number of hours per year received by each employee at initial hire \_\_\_\_\_ and in continuing education \_\_\_\_\_.

5. What is the nature of this training?

a. Is it conducted primarily by in-house personnel or outside (the Forest Service) trainers?

\_\_\_\_\_ percent is in-house and \_\_\_\_\_ percent is by outside trainers.

b. Of the percentage that is done by outside trainers, do these trainers come from universities, non-profit organizations or for profit organizations \_\_\_\_\_?

6. In your opinion, what changes/additions in personnel are needed to help reduce conflict on your forest?

a. On the right margin, please check the types of conflict that you feel can be most effectively dealt with at the Forest level, using a ✓ for planning conflicts and an X for management conflicts.

b. If other types of conflicts somewhat, moderately or very frequently arise that are of a type not included in the above list, please write them in the space that follows.

**CONFLICT MANAGEMENT TECHNIQUES: What methods and activities does your Forest use to manage conflicts?**

1. For each activity listed below, please rate how frequently the indicated activities are used on your forest to manage or resolve conflicts. Please place a number from the following scale in the blank provided.

- 1 very infrequently, done in very few conflict or potential conflict situations.
- 2 somewhat infrequently.
- 3 moderately frequently, done in about half of all conflict situations.
- 4 somewhat frequently.
- 5 very frequently, done in almost all conflict or potential conflict situations.

**BEFORE conflicts arise**

Your Forest educates the public on upcoming decisions on your Forest through:

\_\_\_\_\_ Mailed or posted materials (e.g. personal letters, newsletters, newspaper announcements)

\_\_\_\_\_ Verbal communications (e.g. personal phone calls)

\_\_\_\_\_ Public tours or field trips

Your Forest seeks public input on upcoming decisions on your Forest through:

- \_\_\_\_\_ Written comments during a review period
- \_\_\_\_\_ Verbal comments during a review period
- \_\_\_\_\_ Conduct open public meetings that anyone can attend

Your Forest facilitates additional public involvement in formulating alternatives for upcoming Forest decisions by:

- \_\_\_\_\_ Extending personal invitations to individuals or groups to participate
- \_\_\_\_\_ Conducting informal workshops between Forest personnel and each concerned party separately
- \_\_\_\_\_ Conducting informal workshops between Forest personnel and all concerned parties together
- \_\_\_\_\_ Encouraging the creation of a semi-independent committee composed of users and concerned citizens to devise alternatives to manage conflict

**AFTER conflicts arise**

Your Forest facilitates opportunities for resolving disputes by:

- \_\_\_\_\_ Conducting informal workshops with each disputing party separately
- \_\_\_\_\_ Conducting informal workshops with all disputing parties together
- \_\_\_\_\_ Using an independent Forest Service hearings officer to resolve disputes over Forest decisions
- \_\_\_\_\_ Using an independent, nonagency facilitator or mediator to resolve conflicts over Forest decisions in an organized setting
- \_\_\_\_\_ Your Forest chooses to allow some conflicts to be resolved through the mandated appeals process because it is more efficient or effective

a. If you frequently, somewhat frequently or moderately frequently use other methods not included in the above list, please write them in the space that follows. If there things you hope to try in the future, identify these separately in the space that follows.

**CONFLICT MANAGEMENT STAFF AND ORGANIZATION: How are personnel on your Forest are organized to manage conflict?**

1. Does the Forest have a formally or organizationally distinct office of conflict management? (Please circle the correct response.) Yes No  
a. If yes, is this office responsible for planning-related conflicts? Yes No  
b. If yes, is this office responsible for management-related conflicts? Yes No  
c. Please estimate the number of FTE's (or partial FTE's) assigned to office operation for planning-related conflicts \_\_\_\_\_ and for management-related conflicts \_\_\_\_\_.
2. Does the Forest have a person or people specifically assigned to handle conflict management that are not organized into a separate office of conflict management (a person whose job description specifies their responsibility to respond to disagreement over Forest planning activities or management decisions)? Yes No  
a. If yes, how many people have these types of responsibilities for planning-related conflicts only \_\_\_\_\_, for management-related conflicts only \_\_\_\_\_ and responsibilities for both types \_\_\_\_\_.
- b. If yes, how much time, on average, does *each* of these individuals spend on conflict management and resolution? \_\_\_\_\_  
People responsible for planning-related conflicts only \_\_\_\_\_ hours/week, people responsible for management-related conflicts only \_\_\_\_\_ hours/week and people with responsibilities for both types \_\_\_\_\_ hours/week.
- c. Please indicate at what administrative level the individuals identified in 2.a. reside. (The total of the following eight spaces should equal the total number reported in 2.a.)

Plng. Mgt.

- \_\_\_\_\_ Forest supervisors office
- \_\_\_\_\_ District supervisors office
- \_\_\_\_\_ District level operational or program personnel
- \_\_\_\_\_ Area level operational or program personnel
- d. Of the total number of people identified in 2.a., how many are administratively located in the planning program? \_\_\_\_\_ people.

**ANNEX 3: SUMMARY OF WRITTEN COMMENTS**

## SURVEY WRITTEN COMMENTS

The survey provided five opportunities for respondents to write comments to open-ended questions. Each section of the survey ended with an open-ended question (two were given for the Constraints section). We can not provide each and every comment. The following summarizes the comments expressing opinions most widely held among the respondents for each question.

### 1) Section 1: What other conflicts arise that not included in the survey list?

Seven forests made comments about other conflicts surrounding National Forest planning and management. The common thread running through the responses was the basic philosophical differences among user-groups and stakeholders over for what and for whom the National Forests ought to be managed. One supervisor wrote: "Conflict is basically about the allocation of any resource based on widely different value systems." This is consistent with the common knowledge that conflicts arise out of the divergent value systems held by the various segments of society who use and have an interest in the National Forests.

One forest indicated that almost all of the conflicts are precipitated by one small, local environmental interest group which wants all commercial logging, mining, and grazing stopped, so they appeal each and every decision. On two forests, local concerns drive the emergence of conflicts with issues such as local regulatory control and fiscal dependence on National Forest productive activities.

### 2) Section 2: What other conflict management techniques are used by your forest, or that you would like to use not included in the survey list?

The vast majority of the 13 forests responding use some form of a community consensus process to arrive at forest planning and management goals. The premise of consensus-based decisionmaking is that all stakeholders involved must agree to a certain course of action; if any one stakeholder is opposed, the process must continue until a universal decision is reached. The time and energy required to negotiate and facilitate is tremendous, but, as many studies prove, appeals and litigation are greatly reduced. One response read: "Community-based consensus is a concept we are beginning to discuss as well as facilitated discussion between conflict users. The Forest Service would not be a facilitator."

Related to consensus groups, many forests use focus groups, task forces, and personal communications as means to manage conflict. On a few forests, the forest supervisor, line officers, and other forest staff have responsibility to avoid, reduce, and resolve conflicts in their particular area of expertise. One forest uses what it terms as 'early sensing', which is to "contact known critics and gain understanding or informed consent ahead of a [formal] announcement." This demonstrates a growing commitment by individual forests to develop interpersonal relationships to proactively address issues, concerns, and conflicts.

**3) Section 3: In your opinion, what changes/additions in personnel are needed to help reduce conflict on your forest?**

Eighteen of the 56 respondents provided written comments to this question. The common theme related by forest supervisors is the need to integrate public affairs and social skills into their staff, either through added specialists or training. As put by one supervisor, "We can not afford a full-time sociologist but those types of skills might be helpful in dealing with the deep philosophical difference which cause most of the major conflicts." Another supervisor was more straightforward: "...No changes in personnel; we need people with sensitivity to working with the public."

An important statement made by several forests is that conflicts are a natural and important facet of planning and managing the National Forests. According to one supervisor, "Conflict isn't going to be reduced and shouldn't be. Staffing, however, is stressed by the time spent dealing with conflict. That time must be built into expectation for results." However, forests must recognize that at some point, the Forest Service should live with its decisions. One wrote, "[We need to] make decisions and move forward, recognizing we can't please everyone. Don't procrastinate too long."

**4) Section 4: What are other constraints to developing effective public interaction or conflict management techniques faced by your forest not included in the survey list?**

Three forests added written responses. All had different comments. One wrote: "Natural resource education places too much emphasis on technical education [and] too little emphasis on people skills." The second suggested that "some individuals and/or groups do not want the conflict resolved. In fact [they] are using the conflict for their own purposes. To resolve it would not meet their objectives." The last cited the "lack of support by superiors at the regional and national level to permit resolution by the forest, e.g. timber targets too high."

Although the comments varied by topic, they represent a familiar issue: the inadequacy of the Forest Service to address conflicts in the past stems from the long-held traditions of 1) how resource managers have been trained, 2) the organizational culture of the agency, and 3) the adversarial positions taken by many stakeholder groups.

**5) Section 4: If all the above constraints could be overcome, please briefly describe how you would change existing procedures.**

59 percent of the respondents (thirty-three of 56) provided opinions and viewpoints on how things could be changed. The topic of responses vary widely: many suggest better training and internal incentives for cooperative behavior; others recommend more use of mediators, consensus groups, task forces, and committees; a few would like to change procedures and processes; and others still claim that the Forest Service can make do if conflicting stakeholders are willing to cooperate.

The majority of the responses (20 comments) centered around a greater need to train and educate forest personnel in public affairs, interpersonal relations, and communications, as well as the need to create an incentive system which provides personnel with rewards for public involvement and the flexibility to try innovative methods. One supervisor concisely stated, "I'm not convinced changing procedures is required. Continuing education and selection of employees with

strong people skills is necessary. I would also change the promotion process within the agency to reward employees based on people skills rather than high performance in technical areas." Another suggested that training is needed to get personnel to "understand that conflict is 'part of the job'; get rid of the antiquated old way of thinking that we can manage a limited resource without conflict."

Aside from the popular belief that more training is necessary, the subject of incentives is shared by more than one supervisor. One wrote, "If more autonomy was given to forest supervisors independent of hard targets, you would see more opportunity for conflict resolution." Yet another partially blames conflicting Congressional mandates: "Most conflict is difficult to resolve because Congress gives me incompatible goals and objectives in the same area. [For example], I knew three years ago I could not keep a sawmill supplied and abide by current interpretations of the Endangered Species Act at the same time, yet I was expected to do so."

Many forests would try to integrate stakeholders into the decisionmaking process given more time. Said one supervisor, "I would spend more time and energy with integrated public councils/advisory committees, etc. exchanging views and perceptions with each other and forest leadership teams." But, as another commented, "... time frames are so compressed, personnel balk at additional public involvement."

The most compelling comment we received came from a supervisor in the West. The super stated: "We absolutely need to start embracing conflict as healthy and implementing process items that allow it to occur in a healthy manner. Quit trying to avoid or eliminate conflict. Even this questionnaire infers that conflict is bad rather than simply a difference of opinions."