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National Forest Planning: Searching for a Common Vision

Volume 2

Critique of Land Management Planning

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A Report by The Conservation Foundation
In Cooperation With
Purdue University Department of Forestry and Natural Resources

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Methodology and Acknowledgments

More than 250 individuals contributed information and ideas to this study. They include the project steering committee, participants at regional workshops around the country, and the joint review committee.

As we began the project, we called together a small group of people to serve as a steering committee to help develop the workshop structure and identify people who were to be invited to the workshops. Members of the steering committee are listed in Appendix B. Many of them also served on the joint review committee.

Seven regional workshops—most lasting more than 2 days—provided the base of information for this study. Workshops were held in October and November 1989 in Denver, Atlanta, Milwaukee, Missoula, Sacramento, Portland (Oregon), and Hanover (New Hampshire).

For the regional workshops, The Conservation Foundation/Purdue University project team invited individuals who had worked on national forest plans. All the participants had substantial experience with forest planning, and many had been involved since its inception. More than 150 people representing a broad spectrum of national forest interests participated in the regional workshops. These participants are listed in Appendix C. There was an even balance between representatives of environmental interests and industry. About a third of the participants were State and local officials, academics, and Forest Service staff.

This study was not intended as a broad sampling of society, a polling of the "man on the street." While more than half of those we invited to the workshops attended, participants were, in a sense, self-selected. It is unlikely that someone who had little knowledge of or regard for the planning process would invest a day and a half talking to us about it. Nevertheless, the review process was open to the general public. In addition, the Forest Service itself provided opportunities for interested people to communicate directly with the agency. In sum, this report is based on discussions among people with broad experience in forest policy and planning and who care deeply about the national forests.

As the process drew to a close, we had the assistance of a broad-based technical review committee comprised of some 30 individuals with widely recognized expertise in forest management and policy. The members of the review committee are listed at the front of this report. The committee met three times over the course of several months to review and discuss material prepared by The Conservation Foundation/Purdue University staff. Committee members

thoroughly debated our findings, and our entire effort has benefited greatly from the energy and expertise each contributed. The responsibility for the conclusions and recommendations, however, remains solely with the authors.

Finally, a capstone national conference was held in Washington, D.C., in February 1990 to provide interested individuals with an opportunity to review and comment on a preliminary draft of the report. Their names also are included in Appendix C.

It was not our intent to achieve consensus at the meetings, although broad areas of agreement emerged and are noted in the report. The workshops and meetings of the joint review committee were meant to generate ideas, not to resolve specific disputes over management of the national forests.

Finally, The Conservation Foundation/Purdue University team synthesized and analyzed the material from the workshops and the discussions of the technical committee to develop the recommendations in this report.

We are indebted to all those who participated in the workshops and on committees and otherwise contributed views and ideas to this report. We have tried to faithfully reflect their concerns and the spirit of the discussions.

Special mention is due Gary Larsen, Forest Service coordinator for the *Critique of Land Management Planning* (incorporating the work of six Forest Service technical committees as well as this report), who provided support, encouragement, and total independence.

This report is a product of The Conservation Foundation and Purdue University. The authors are grateful for the valuable contributions made by each of the individuals involved in the different aspects of the study. Any errors or omissions, however, remain the sole responsibility of the authors.

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A Decade of Forest Planning: What Have We Learned?

The journey from enactment of the National Forest Management Act (NFMA) to implementation of forest land and resource management plans has been long and arduous. After 10 years of experimentation, redirection, and controversy, most of the forest plans are largely complete and being implemented. Tens of thousands of people have devoted time, energy, and ideas to national forest planning. Yet, the public and even Forest Service staff voice doubts about the process and question how issues rooted in the plans are to be resolved. Undeniably, there has been progress: Forest Service functional planning is crumbling; there is greater attention to integrated resource management; we know much more about the forests themselves; and the public is playing a stronger role in decisionmaking. In spite of this, dissatisfaction is widespread. From what we heard in workshops around the country, we have concluded that—

- People do not understand forest planning.
- People are displeased with the results of forest planning.
- People question the Forest Service's dedication to stewardship of the public's land.
- Failures in the planning process continue to damage the agency's credibility.

Problems like these are not exclusive to the Forest Service. The public is generally frustrated with the decisionmaking process of public agencies. At the Federal level, challenges are endemic: the Food and Drug Administration (FDA) cannot approve a beneficial drug fast enough and has been too slow in regulating dangerous drugs; the Department of Housing and Urban Development is not dealing successfully with the homeless; the Defense Department is ignoring the dramatic changes in the Soviet Union; and so on.

In this governmental environment, national forest planning is a highly visible and acutely contentious effort to determine the use and long-term conservation of resources that people value highly. Not surprisingly, people are frustrated by delays, indecision, and what they feel to be bad decisions.

In early 1989, the Forest Service initiated a yearlong critique of forest planning under NFMA. As part of that critique, the Forest Service asked The Conservation Foundation and Purdue University's Department of Forestry and Natural Resources to find out what people outside the agency who were involved in

national forest planning thought about it, and to develop recommendations on how the process could be improved.

While individual forest plans have been almost endlessly debated, there has never been a public forum on the process of NFMA planning—its premise, purposes, and methods. Thus, The Conservation Foundation/Purdue University project team set out to explore the collective experience of people who had participated in the planning process. Seven regional workshops and three meetings of a 30-member review committee provided opportunities for focused analysis by more than 250 people with knowledge and experience in national forest policy and planning.

We asked them what they thought worked and what did not. We also sought answers to fundamental questions, such as: "What is forest planning?" and "What, exactly, are forest plans supposed to do?" These questions, as basic as they are, were never addressed by Congress when it enacted NFMA, or by the Committee of Scientists as it developed the planning regulations (personal communication from former committee member Dennis Teeguarden).

This is a report to the Forest Service. It also is a report to the many citizens who participated in national forest planning. Most of the recommendations are directed to the agency, but there are many interests and individuals who influence forest policy, and a number of the findings and recommendations are relevant to their efforts, too.

This study is both retrospective and prospective, looking to past experience to provide guidance for the future—particularly on processes by which plans will be implemented and changed to keep them dynamic and responsive. The study and this report focus on forest planning under NFMA. But the study really addresses how the Forest Service does business. Even if there were no NFMA, the Forest Service would have to comply with the host of other laws that govern national forest management, be responsive to its constituents, make decisions, and be accountable to the public for them.

From what we heard at the workshops, it is apparent that—

- Many people had unrealistic expectations of what would result from forest planning.
- The plans are expected to do many things—to provide a future vision, serve as a social compact, and resolve conflict.

The reality of planning should temper some expectations.

Unfulfilled Expectations

There are those people who believe that forest planning has failed and is beyond correction. Some have called for the repeal of NFMA, equating it with "centralized planning" that is doomed to failure for many reasons (O'Toole 1990). They would prefer a market-based approach to forest management in which the play of market forces eliminates the need for centralized planning.

Others charge that it is "impossible to administer, and exorbitantly expensive" (Behan 1990), believing that within a new multiple resource forest management paradigm, national forest planning should be disentangled from law. How the national forests would fare under these proposals, of course, can only be left to conjecture.

Undeniably, there is much frustration and dissatisfaction with forest planning. Some members of this study's joint review committee agreed that significant, if not radical, changes in forest planning and management are necessary. Expectations for forest planning are high—in some cases, unrealistically so. Some workshop participants expected forest planning would lead to the establishment of "reasonable and sustainable" production goals. Others thought it would free resource allocation from politics while building a powerful case for budgets and appropriations sufficient to accomplish plan goals. And many apparently thought that forest planning would be a way to influence the political process and sway management to their purposes. Probing more deeply, we found that it was not so much the process to which people objected, but the results of that process. In retrospect, it was inevitable that this would occur. When the law was enacted, representatives of both the Sierra Club and the National Forest Products Association returned to their constituents and proclaimed victory. Obviously, both had different expectations of outcomes under the law. Nonetheless, while participants at the workshops had many suggestions for changes, there was little sentiment for dispatching with the law or process or otherwise wiping the forest planning slate clean.

What Are Forest Plans Supposed To Do?

Forest users expect the forest plans to serve many different, and even conflicting, purposes. "Disclose management direction." "Establish production levels for all resources." "Define the role of the national forests." "Foster cooperation with State agencies." "Settle issues on the basis of scientific facts, not politics and emotion."

In practical terms, the purpose of the forest plan is to provide the answers to three questions: What is a forest good for (its ecological potential)? What do people want from a forest? How are today's needs to be met while preserving future options?

From review committee discussions

There was general agreement that the plans are to serve as long-term guides for the management of the national forests, although they are to be ever-changing and dynamic. The idea of the plan as a vision of the future was expressed in different ways and addressed different goals. "Provide sustainable commodity outputs." "Protect streams and all waters." "Preserve future options."

The purpose of the plans is to carry out the reforms mandated by NFMA.

NFMA was enacted to get the timber program back on track.

Two comments from review committee discussions

Informing the public about natural resources and involving people in forest decisionmaking was mentioned frequently as a salient purpose of a forest plan. The plan was seen by many participants as a mechanism for facilitating communications between the Forest Service and its clients—including Congress. The plans also were seen as tools for resolving long-standing conflicts over national forest protection and use.

All these expectations are, to some degree, valid. Forest plans, like any plans, serve multiple purposes. Three purposes in particular—establishing a vision, establishing a social compact, and resolving conflict—were the topics of more than usual debate at the regional workshops and by the review committee.

Establishing a Vision

That the plans should establish a long-term vision for the forest was a common theme at all the regional workshops. There was less agreement on just what that vision should consist of. Should the vision be based on a qualitative description of the forests, emphasizing desired future landscape characteristics and resource quality? Or should it emphasize quantitative targets—wildlife numbers, miles of trail, and commodity production levels?

How do you prepare a document that clearly communicates what a forest will look like in 10 to 20 years?

From steering committee discussions

Establishing a Social Compact

It has been suggested that a forest plan is a social compact—an agreement representing the collective judgment on what is to take place on the forest. Some feel that this should extend to the achievement of quantitative goals expressed in the plan. Others see the plans as general guides for forest management.

The degree to which forest plans represent a production commitment is questionable at best, given the uncertainty of Administration budgets and congressional appropriations. There is a feeling that the vulnerability of plans to manipulation through the courts and Congress makes them unreliable as

statements of future management. Nonetheless, there is broad agreement that forest plans should ensure stability and certainty of production and supplies of the various resources. Said one joint review committee member, "The plan has to be something everyone can rely on." Thus, the concept of the plan as a social compact implies more commitment to plan objectives than does the concept of the plan as a guide.

People view forest plans as a social compact based on current laws and legal processes.

From review committee discussions

Resolving Conflict

The view that plans should resolve conflict is widely held. Many workshop participants, and many Forest Service officials as well, expected the planning process to resolve long-standing conflicts among competing national forest users. This has proven unrealistic, especially in the short term. Typically, plans stimulate controversy because the process surfaces new information and generates proposals that benefit some interests and threaten others.

Once all the conflicts were out on the table, there was no way to get the genie back in the bottle—that is, to resolve conflicts in ways acceptable to opposing interests.

From Atlanta workshop discussions

Workshop participants expressed disappointment—even frustration—that the process had resolved few, if any, big issues and, in some cases, had reignited old controversies. One working group concluded that the process "got the interest groups all fired up and then ran them head-on into one another" in the final stages of planning. But we also heard from several workshops that on some forests a local consensus had emerged only to be disrupted by the intervention of national organizations.

The Reality of Forest Planning

The authors of NFMA wanted to establish a process for making decisions about how the forests were to be managed into the next century. The Forest Service would practice multiple use within some operational standards—particularly for timber harvesting—established by Congress. Data relating to the resources would be collected. The public would be asked what it wanted. The Forest Service then would apply its technical expertise in an interdisciplinary manner to develop a plan for integrated management of all the forest's

resources to meet the public's needs now and for the future within the limits of the land. But this simple description masks the complexity of the assignment. Two problems are foremost. One is rooted in the planning process mandated by Congress; the other is in the role of the Forest Service as an administrative agency.

Planning has nothing to do with planning technology, but the social and economic situation.

From Denver workshop discussions

For NFMA, Congress chose a highly analytical and technical planning methodology, one planners call "rational-comprehensive," meaning that it is logical and inclusive. This technical planning model has proven inadequate in addressing issues that are social and political in nature.

Moreover, it is awkward, at best, to mix technical analysis with political decisionmaking. Put another way, an administrative agency is limited in its ability to address issues that have become politicized. In other planning venues, such as city planning, the planners array information, analyze options, and make recommendations to politicians who are responsible for the decision (and are accountable at the voting booth). The limits of the technicians and the political nature of planning are explicitly recognized.

NFMA established an administrative tier of government involving Forest Service officials and forest interests, one that largely works outside the purview of elected officials at the Federal, State, or local levels.

From review committee discussions

In some cases, it may not be possible to resolve at the forest level issues that have become highly controversial national issues. These issues—balancing protection of the northern spotted owl and old-growth timber harvests in the Pacific Northwest is a contemporary example—probably will have to be decided by Congress. Planning can go a long way toward issue resolution, but there are limits beyond which it cannot and, perhaps, should not go. The task of resolving issues that have become intensely political is the responsibility of elected officials who can be held accountable for their decisions in ways that an official in an executive agency cannot.

What We Found

After seven regional workshops and the national workshop and 5 days of discussion by the review committee, we have concluded that:

- *There is a broad base of support for forest planning.* In spite of frustration and uncertainty, people recognize the need for planning and that, despite its faults, there has been progress. As one workshop participant put it, "Planning has brought all interests to the table and forced them to get organized, and to assert their legitimate rights in an open forum."

- *Expectations vary widely.* The expectations of forest users vary widely and differ significantly from those of the land managers. Users see planning as a tool for achieving their particular objectives. Land managers see planning as a guide for making future land management decisions.

- *The learning curve has been steep, and everyone is learning together.* NFMA mandated a process that is complex. In developing the plans, national forest staffs had to learn through experimentation and, at the same time, explain the process to the public. Similarly, the public had to learn how to participate in an evolving process. Because the process gave the public a stronger voice in decisionmaking, forest managers and the public had to learn new roles. The learning process continues as forests move into plan implementation.

- *The Forest Service, by itself, cannot make planning work.* NFMA brought the public into the decisionmaking process. Planning is aimed at providing more satisfying answers to questions that prior to NFMA had been answered mainly by the forest managers. No matter how technically sufficient the plan may be, if it does not have a base of popular support, it will not be implementable.

- *Good planning must blend popular support with technical soundness.* That a plan has popular support is one criterion for good planning. But the plan also must be anchored to resource capabilities and be legally defensible—criteria that seem to result in a plan that, although armored against legal challenge, is incomprehensible to the public. In fact, both are required—to overemphasize popular favor could result in a plan that does not ensure sound stewardship or a plan that is legally indefensible.

- *People realize that managing a national forest is a complicated job, and they want to trust the Forest Service to carry out its stewardship responsibilities.* Few people have the time, knowledge, or interest to become deeply involved in national forest management or to monitor the Forest Service's actions. At workshops around the country, we were told that people want to trust the Forest Service. The agency's inability to manage the planning process, the array of problems that are readily apparent, and bad decisions have damaged the agency's credibility as managers and stewards.

- *There is considerable agreement among interests on what needs to be done.* The process needs to be simplified. Public involvement should focus on solving problems. Data need to be improved. The Forest Service should focus on gathering information that will help solve problems. FORPLAN should be de-emphasized and simplified. And most importantly, the Forest Service should focus on national forest stewardship—with no significant irreversible environmental degradation nor reduction in productivity over the long term. These and other topics are addressed in detail in the chapters that follow.

- *The problems—communications breakdowns, winning support for decisions among groups with different values and objectives, distrust of the agency—are serious but not intractable.* They cannot, however, be corrected simply by tinkering with the law and regulations. The real problems of forest planning lie not with the laws or regulations, but with Forest Service's attitudes and policies and the agency's relationship with the public and users of individual forests. While a swift response is desirable, more important is dedication and determination to act over the long term to bring about fundamental and lasting change.

Taking Care of the Land

First and foremost, the Forest Service is a steward of the land—191 million acres of land on 156 national forests and 19 national grasslands. To ensure that the productive capability of the forests available to future generations will be at least equal to that we enjoy today is an enduring challenge and the ultimate test of the agency's stewardship.

Our response to the challenge, given the current level of knowledge and technology, is an ecosystems approach to multiple-use, sustained-yield management. (Throughout this report, *ecosystems* is used in the scientific sense.)

From what we heard at the workshops and from our research, we found that—

- There is concern that forest plans do not ensure resource sustainability.
- The law requires that the forests' productive capacity be sustained.
- An ecosystem approach is the best way of ensuring the long-term productivity of the forests.
- We need to know much more about ecosystems.

> The goal of the plans is the wise management of forest ecosystems. They're not there yet with this round of plans. Future plans need to be more ecosystem oriented.
>
> *From Milwaukee workshop discussions*

Do Forest Plans Protect Forest Productivity?

Workshop participants repeatedly expressed concern about the degree to which the Forest Service considered the protection of the land and surface resource base in the course of national forest planning. Conservationists, in particular, argued that forest plans did not reconcile the supply of forest resources with ever-increasing demand. They were concerned that production goals for a given national forest often exceeded the biological capability of a forest to yield them and that, accordingly, future generations were being shortchanged.

This concern was reflected in a number of questions asked during the workshops. "Do the plans consider all the resources of the forest?" "Do they

promote a healthy forest environment?" "Do the plans provide for plant and animal species diversity?" "Do they give evidence of an understanding of the complex interrelationships within forest ecosystems?"

Concern over resource capabilities and sustainability also is part of the reason workshop participants repeatedly expressed the need for accurate, current resource data, as well as effective monitoring during plan implementation. And it is why some users want a better picture of the condition and character of the forest that is anticipated after the plan is implemented.

Finally, concern over land and resource capability and sustainability is at least part of the reason for the continued debate over centralized, top-down planning as opposed to decentralized, forest-based, bottom-up planning. Some people are uncertain about how national and regional demands for resources will be reconciled with a forest's biological capability.

Resource Sustainability Is Embedded in Law

No concept is more fundamental to the national forests than the concept of sustained resource management. It goes to the heart of why the national forests were established a century ago. In the late 1800's, many people believed that the country would eventually run out of timber—that a "timber famine" was a real and dangerous prospect for the United States. To remedy the situation, the Creative Act of 1891 (26 Stat. 1095) gave the President authority to set aside public lands as forest reserves, later called national forests.

Six years later, Congress passed the Organic Administration Act (16 U.S.C. 475), which specified the purposes for which forest reserves might be established and provided for their protection. According to the act, the forests were established "to improve and protect the forest within the boundaries, or for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber. . . ." This was the first congressional expression in statute of the concept of sustained yield as it applied to forestry.

More than half a century later, Congress enacted the Multiple Use–Sustained Yield Act of 1960 (16 U.S.C. 531). Relevant to the concept of sustainability, Congress defined sustained yield as "the achievement and maintenance in perpetuity of a high level annual or periodic output of the various renewable resources of the national forests without impairment of the productivity of the land."

The principle of sustained yield was reaffirmed in NFMA, enacted in 1976 (16 U.S.C. 1600). For example, section 6(e)(1) reads: "In developing, maintaining, and revising plans of the National Forest System . . . the secretary [of agriculture] shall assure that such plans . . . provide for multiple use and sustained yield of the products and services obtained therefrom in accordance with the Multiple Use–Sustained Yield Act of 1960, and in particular, include coordination of outdoor recreation, range, timber, watershed, wildlife and fish, and wilderness" (16 U.S.C. 1604(e)).

Hence, there is a strong historical and legal basis for the argument that forest stewardship—ensuring that the land and resource base of the national forests is protected and sustained—is the foremost responsibility of the Forest Service in all its activities, including forest planning. How is this to be done?

Where resources are at risk, take a conservative approach.

From Atlanta workshop discussions

Taking an Ecosystems Approach

Forest resources do not exist in isolation. They occur in certain biological and physical contexts. When the term *forest resources* is used in reference to forest plants and animals, it must be recognized that they are parts of an ecosystem, defined as a community of plants, animals, and micro-organisms living together in the same area, interacting with their physical environment and with each other. (While the wording in scientific definitions of an ecosystem may vary, the concept itself is well accepted and agreed upon in the scientific community. For example, in a 1987 text, *The Science of Ecology*, authors Paul R. Ehrlich and Jonathan Roughgarden define an ecosystem as "[t]he biological community in an area and the physical environment with which it interacts.") No plant or animal species can be managed, and its yields sustained, without understanding how it is embedded in the community of organisms in which it lives. Without this understanding, the alteration of an ecosystem could result in unintended and unanticipated impacts, perhaps irreversible—the extinction of a species of plant or animal being the foremost example.

Future forest plans should reflect emerging ways of looking at land and resources, managing wildlife habitat for biological diversity, rather than for a single species, or taking a landscape ecology approach.

From Sacramento workshop discussions

An ecosystem approach to forest management is simply treating a forest as an integrated community of living organisms in evaluating, making, and implementing decisions for its use and protection. An ecosystem approach reduces the likelihood of unintended and unanticipated impacts because it would compel a comprehensive assessment of the effects of management activities on the community of living organisms and their physical environment where the activities are intended to occur.

The ecosystem approach to multiple-use, sustained-yield management is implied in NFMA itself, which requires that regulations be written to ensure that forest plans—

- Consider both the "economic and environmental aspects" of forest management systems.
- Provide for "diversity of plant and animal communities. . . ."
- Provide for "steps to be taken to preserve the diversity of tree species" similar to that existing in the region.
- Acknowledge that even-aged harvesting systems will be used only after an assessment of their environmental and biological impacts through an interdisciplinary review. (16 U.S.C. 1604(g)(3)(A), (B), and (F))

Moreover, an ecosystem approach to forest management is made explicit in the implementing regulations of NFMA. The regulations specify principles on which national forest planning will be based, and among them is—

> Recognition that the national forests are ecosystems and their management for goods and services requires an awareness and consideration of the interrelationships among forest plants, animals, soil, water, air, and other environmental factors within such ecosystems. (36 CFR 219.1(b))

The Forest Service is mindful of NFMA and its implementing regulations in forest planning activities. The issue is not whether but the extent to which national forest planning considers individual living forest resources separately from the ecosystems in which they live.

The Multiple Use–Sustained Yield Act defines sustained yield as "the achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the national forests without impairment of the land." Nonetheless, timber, forage, and wildlife and fish are components of ecosystems, and their sustainable yields cannot be assured without taking into account their interconnectedness with other life forms in their environment.

The need for the ecosystems approach to national forest planning and management is reinforced by the species diversity provision of NFMA. Section 6(g)(3)(B) requires that national forest planning provide for "the diversity of plant and animal communities" and preserve the diversity of tree species in the forest "where appropriate, to the degree practicable." Hence, not only must resource productivity be sustained, but a diversity of plant and animal communities and tree species must also be preserved.

Forests have translated this into greater attention to ecological connections and processes. For example, the Tongass National Forest's biological diversity goal is "to maintain the viability of native and desirable non-native plant and animal species, the distribution of plant and animal species and communities,

and ecological processes upon which plant and animal species depend" (Orne et al. 1990).

Sustaining biological diversity is an important endeavor in a world where virtually every ecosystem has had human-induced impacts and where the rate of extinction of plant and animal species is rapidly accelerating. (For purposes of this report, *biological diversity* is defined as the diversity of living things and is usually considered at three levels: genetic, species, and ecosystem. Some also refer to regional diversity, which "refers to the variety of communities and ecosystems across and landscape and linkages between them" (Szaro and Salwasser 1990). An attempt to develop a rigorous, operational definition of *biodiversity* acceptable to the scientific community is currently in process.) In a paper presented to the 1989 convention of the Society of American Foresters, Robert Szaro and Hal Salwasser (1990) of the Forest Service argue that "The greatest challenge for conserving biodiversity is not how to preserve what we have. It is to prepare for the environmental pressures that loom in the future."

The statutory direction in NFMA, especially in combination with that of the Endangered Species Act (16 U.S.C. 1531–1536, 1538–1540), provides a firm basis for preserving species and ecological diversity on the national forests. More fundamentally, however, maintenance of biological diversity is an essential component of good stewardship.

A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.

From Aldo Leopold, The Land Ethic

In sum, resource sustainability and maintenance of biological diversity can be accomplished best through an ecological approach—as opposed to a resource approach—to multiple-use, sustained-yield management. The difference between the two approaches is significant. The first is oriented toward the interactions of living things with each other and their environment and toward long-term viability. The latter, by contrast, emphasizes resource allocation, relative value, and scarcity. A resource approach is useful for economic analysis but is conceptually barren for understanding and addressing issues of ecosystem productivity, biological diversity, and sustainability.

What Would an Ecosystems Approach Entail?

Ecologist Eugene P. Odum (1989) distinguishes between "protective" and "productive" ecosystems, with human alteration generally occurring to a greater degree in the latter than in the former. Protective ecosystems provide accumulated organic structure, stored nutrients, and diversity in the landscape. An old-growth forest would be an example. Productive ecosystems yield food,

fiber, and other products on which humankind depends. A young forest regenerated with commercial tree species, such as Douglas-fir or loblolly pine, would be an example of a productive ecosystem. Obviously, both protective and productive ecosystems are needed for human existence.

The philosophy of planning and management should be in the context of a holistic approach of a forest ecosystem rather than outputs, although demand has to be part of the overall picture.

From Milwaukee workshop discussions

Nature creates a mosaic across a landscape because of differences in soils, rainfall, slope, aspect, and elevation, as well as natural disturbances such as fire, insect infestations, disease epidemics, and windthrow. An ecosystem approach to multiple-use management would result in a mosaic on a large scale. The mosaic would consist of an assemblage of ecosystems ranging from protective to productive. Visually, the national forests would appear as a collection of different landscapes created by nature and different management strategies and intensities. Particular ecosystems would yield resources and accommodate mixes of human uses for which they were best suited. This approach is being applied now in the national forests, although its adoption has come about through the cumulative effects of many different policies rather than a single explicit one.

The ecosystems approach might require an examination of some tenets of multiple-use, sustained-yield management that have gained currency over time. Historically, there have been two contesting interpretations of multiple use. The first holds that all uses should be given equal consideration on small areas; the second that multiple use should be applied over larger areas with specific uses given priority on certain parcels. A central issue is the scale over which different uses should be distributed—whether something of everything on every acre, or a variety of uses separated and at different intensities over relatively large areas. For years, the first interpretation was favored in theory and practice (Shands 1988). More recently, as the number of management areas in forest plans attest, the trend has been toward increasing compartmentalization of the landscape—the dividing of the forest into more and smaller areas where particular combinations of uses are emphasized.

Neither approach should be carried to the extreme. Seeking some parity among uses on every acre would be inefficient, if not impossible. Similarly, excessive compartmentalization also is counterproductive. Managing scattered small areas for timber, no matter how productive they might be, results in increased costs of harvesting and increased environmental impacts from roads required for access. Similarly, widely scattered parcels intended to protect

species and ecological communities can result in biological islands that fail to accomplish their intended purposes (Franklin 1989).

In most cases, a diversity of objectives can be achieved efficiently and effectively in a managed landscape (Franklin 1989). An ecosystem approach to multiple-use management would result in a mosaic with relatively large areas of the landscape providing for a variety of mixes and intensities of human use, their boundaries defined by their ecological characteristics.

Nothing has been written to this point about mineral resources, such as coal, oil and gas, and hardrock minerals, and for good reason: An ecosystems approach to forest planning addresses renewable surface resources, not nonrenewable subsurface resources. An ecosystems approach would not inhibit mineral development by itself or obviate the need to coordinate mineral activity with other planned uses of the forest.

We Need To Know Much More About Ecosystems

Considerable gaps in knowledge about ecosystems must be filled. We need to know more about many aspects of specific ecosystems, including the basic processes underlying their structure and function. We also need to increase our knowledge about the limits of specific ecosystems. For example, what is the maximum sustainable yield of given high-valued plant or animal species that can be expected from a specific ecosystem? How much environmental change or disturbance can an ecosystem take and still maintain its ecological integrity?

The Research branch of the Forest Service does not seem to be systematically examining and developing information about the biological and ecological limits of forest ecosystems prominent in the National Forest System.

From review committee discussions

Knowledge also is needed about the kinds and degrees of risk to specific ecosystems that are associated with various types of forest management strategies, techniques, and activities. Forest plans were criticized during the regional workshops for not making explicit the ecological risks that are accepted or assumed in the management direction they prescribe. Understanding the inherent ecological risks is fundamental to evaluating properly the appropriateness of any forest management strategy, technique, or activity.

The need for this knowledge is immediate, serious, and well recognized. For example, understanding ecosystems, including ecological processes and biological diversity, is one of three program components in the Forest Service Research "Strategy for the 90's." (See, for example, USDA Forest Service, "Strategy for the 90's for USDA Forest Service Research—Review Copy,

February 1990"; National Association of Professional Forestry Schools and Colleges, Cooperative State Research Service, and U.S. Department of Agriculture, *Forests for America's Future: A Research Program for the 1990s*, p. 17; Planning and Budget Subcommittee of the Experiment Station Committee on Organization and Policy, 1990, *Research Agenda for the 1990s: A Strategic Plan for the State Agricultural Experiment Stations*, College Station, TX: Texas Agricultural Experiment Station, the Texas A&M University System, p. 36.)

Research efforts to obtain information on ecosystem functioning and ecological processes in the Forest Service and in universities should be evaluated to determine whether they are adequate in terms of their focus, size, and coordination. The challenge of sustaining land and resource productivity, including biological diversity, goes well beyond the national forests. It is a global problem made larger on a daily basis by world population growth and the resulting increases in demand on the world's land and resource base. If the knowledge base for integrated sustainable production systems can be developed and applied successfully in the national forests, then Forest Service managers and researchers will have provided a great service not only to the citizens of the United States, but to the world.

Recommendations

- *Take an ecosystems approach to multiple-use, sustained-yield management.* In contrast to a resources approach, an ecosystem approach should be taken in implementing the planning requirements of NFMA.

- *Intensify research on ecological processes, biological diversity, and sustainability of forest ecosystems in the National Forest System.* The Forest Service should lead in the development and implementation of a comprehensive research program in cooperation with the Nation's forestry schools and other forestry research institutions throughout the world.

- *Analyze ecological risks of management strategies, techniques, and activities.* Forest Service Research should develop a decision-support system for evaluating the risk of damage to specific ecosystems from forest management strategies, techniques, and activities, and this information should be contained in forest plans.

The Public's Role in Decisionmaking

Users of the national forests are gaining power and increasing their influence over agency decisionmaking. It is clear that forest plans—and the decisions of the agency—require a base of public understanding and support if they are to be implemented. There are signs that the Forest Service is coming to grips with the need to listen, learn, and truly bring the public into important decisions.

These developments require changes in how decisions are made—through joint problem solving, negotiation and mediation, and other techniques. While redefining the public's role in decisionmaking, there also is a need to clarify the Forest Service's role and its responsibility for the final decision.

Changing concepts of decisionmaking raise questions about the role of public agencies in our society and how these agencies relate to citizens. These are questions that go beyond forest planning or the Forest Service. In this light, forest planning may be at the frontier of new processes of governance in a pluralistic and heterogeneous society.

We [the Forest Service] were successful in bringing many parties to the table, but then we did not know what to do with them or their comments.

From Atlanta workshop discussions

Our findings are as follows:

- The commonly applied model of public participation is too rigid and formalistic.
- The goal should be open decisionmaking in which different interests work together and with the Forest Service to resolve problems.
- The planning process should open free-flowing channels of communication among interests themselves as well as between interests and the Forest Service.
- All parties have a role in developing the forest plan, but only the Forest Service has the authority—and the responsibility—to make the final decisions.

The Current Model of Public Participation Is Inadequate

Hardly anyone is satisfied by the current model of public participation. At the workshops, participants typically described a process in which the Forest Service called a public hearing to solicit views on issues the plan was to address, forcing interest groups into hard positions at the outset. The planners then retreated to their offices, emerging sometime later with a draft, followed by another public hearing—and increased polarization. In due course, a final plan was released and greeted with a barrage of appeals. It was then that the Forest Service called appellants to say, in effect, "Let's get together and negotiate." Although an oversimplification, this sequence of events is close enough to what actually happens to raise the questions about how the public could be more effectively brought into the decisionmaking process.

This is not to say that people do not recognize the benefits from current public participation practices. The Forest Service did involve members of organizations and individuals who might not otherwise have been heard. Thus, the agency received valuable information about issues and the dimensions and intensity of land-use conflicts or environmental concerns. Workshop participants generally agreed that there had been ample opportunities to make their views known and that their views had been reflected, to some extent at least, in the issues and concerns identified in the plan. Nonetheless, from what we heard at the regional workshops, it is apparent that people feel their involvement had little, if any, effect on what the agency decided to do.

NFMA is emphatic—the public is to participate in the development of the forest plan. NFMA requires that the public be offered opportunities to participate in "the development, review, and revision of land management plans" (16 U.S.C. 1604, 6(d)). The law, however, mentions only the essentials—notification, making the plan available for review, and public hearings. Similarly, the National Environmental Policy Act (NEPA) requires identification and disclosure of the environmental effects of agency proposals and provides for public review and comment.

The public involvement requirements of the two laws imply that the public is to influence agency decisions. However, there seems to be no clear agreement or understanding among agency officials of the public's role in reaching decisions. Similarly, workshop participants had different understandings of the role they were expected to play in the process.

Moreover, there is a widespread perception that Forest Service officials do not welcome proactive participation—such as meetings organized by interest groups themselves—but prefer to accept information only on their own terms and in forums organized by the Forest Service. Cynics suspect that some agency officials look at public involvement processes simply as a way of keeping the agency out of court.

Toward an Open Decisionmaking Process

Recognizing that only the agency has the authority to make the final decision, the public should be involved in all phases of the decisionmaking process (broadly defined). We call this open decisionmaking, in which interested individuals and groups work continuously with the Forest Service to identify issues, explore alternatives, exchange information, and seek consensus.

People did not know the level of specificity they were expected to make in their comments because they did not understand the decisions that were going to be made.

From Milwaukee workshop discussions

I thought public involvement would lead to objective decisionmaking. Instead, it has led to issue-airing and venting, but has not affected decisionmaking.

From Portland workshop discussions

An open decisionmaking process should—

- *Encourage the sharing of information.* The process should be designed to encourage and facilitate an exchange of information among all parties. According to what we heard at the workshops, it seems that in only a handful of forests was there any recognition of the benefits of getting the major stakeholders together early in the process to develop continuing communication channels that seek consensus and build ownership in the plan.

- *Encourage a frank exchange of views among all interests and the Forest Service, especially before positions on issues harden.* Typically, forest interest groups were not brought to the table for serious talks until late in the decisionmaking process—usually after the Forest Service had made most of the major decisions. By that time, of course, interest groups were well entrenched in their positions.

- *Help identify opportunities for collaborative problem solving.* The Forest Service, we were told, was more interested in decisionmaking than problem solving: "Tell us what you want and we will make the decision" rather than "Let's identify the problem and then work together to solve it."

- *Make clear how a decision was reached.* The Forest Service should make clear to the public not only the decision reached, but the rationale for the decision. We were told that the main reason people do not trust the planning process or the outcomes is that the decisions did not seem to reflect information presented in the planning documents. The rationale for the decision should follow clearly and logically from the information and data presented.

In sum, forest users should be involved continuously, contributing information, opinions, and ideas to receptive Forest Service personnel. The dialog should be continuous. When the Forest Service makes the ultimate decision, it should explain clearly and candidly why it decided the way it did.

Listen, Learn, and Understand

The key to open decisionmaking is free-flowing communications. There should be opportunities for all parties to listen, learn, and understand one another.

Forest planning is widely seen as a powerful tool for facilitating communication between the Forest Service and forest users. Typically, however, communications flow only one way—from the public to the Forest Service. At the Missoula workshop, for example, one discussion group composed of a wide range of interests observed that it was the first time that they had ever sat around a table and talked to one another about what they wanted.

Failure to engage diverse interests in constructive dialog results in missed opportunities to build trust relationships and identify topics on which there is potential for agreement. Rather than communications between the Forest Service and users, the process should be opened up so as to establish free-flowing channels in virtually every direction.

Interest groups can help the Forest Service identify issues and public concerns, provide information about user preferences, and provide information on the forest's resources. For its part, the Forest Service should take advantage of opportunities to explain the purposes of the national forests, the regional and local roles of the individual forest, and management opportunities and constraints—especially how budgets affect programs. This also is the place for Forest Service officials to explain how they see their role as professional land managers and decisionmakers. From what we heard at the workshops, it seems that the Forest Service does not exploit these opportunities, especially to explain what it can and cannot do, given the constraints of the laws, the capability of the land, and money.

> When they identify an issue or concern, [forest interest groups] must be required to answer the question, "How can you also cooperate with the other users with whom you share this given area?" Use task forces to develop "win-win" situations.
>
> *From a letter from a workshop participant*

It is essential that there be opportunities for interests with disparate views to discuss fundamental concerns and values before they establish hard and fast positions on issues. Rather than wait until the process is in deadlock, the Forest Service should convene workshops (perhaps facilitated by a neutral third party) at the outset of planning to seek points of agreement. One discussion group put it this way: "We probably are 75 or 80 percent in agreement. This would permit us to identify what we agree on and then focus on ways of resolving those issues where we disagree." Rarely did the Forest Service (or interest groups) convene meetings for a general exchange of views.

When interests were brought together, the results were generally positive—especially when discussions took place early in plan development. Controversy was not eliminated, to be sure. However, people who had participated in such a process believed that some appeals had been avoided and those that had been filed tended to go to the heart of the values in conflict rather than focusing on bargaining positions and political posturing. Forest planning should facilitate constructive and civil dialog among disparate forest interests as well as with the forest staff.

We can communicate in an atmosphere of trust only if everyone follows through on their commitments.

From Atlanta workshop discussions

There is no certainty, of course, that interests can reach a consensus on a forest plan. As one review committee member put it, "We can agree on the problems, but not on resource values and allocations." However, another member argued vigorously that "The idea that consensus isn't possible just isn't true. Don't lose consensus as a goal."

It seems that there are promising opportunities to build effective relationships around forest plans. The spirit of compromise—of finding and accepting solutions that work—seemed to be much stronger at the local level than at the national level. However, opportunities will vary from forest to forest and region to region. One review committee member, referring to the widely heralded success of the Green Mountain National Forest plan, observed that "It was no accident that forest planning worked in New England, with its open, town meeting style of government." Another agreed: "The Green Mountain process won't work everywhere. What we're trying to accomplish has to be flexible."

Citizens' Committees Can Be Helpful

NFMA permits the Secretary of Agriculture to appoint advisory boards as deemed necessary "to secure full information and advice on the execution of his responsibilities" (Forest and Rangeland Renewable Resources Planning Act, Sec. 14(b), P.L. 93–378, 88 Stat. 476; 16 U.S.C. 1600–1614). This provision of law has never been used, although some forest supervisors, in resolving forest plan appeals, have committed themselves to working with committees of appellants in the course of plan implementation. The Huron-Manistee National Forests, for example, stimulated creation of a "Friends of the Forest" group to work with the forests' staff on plan implementation issues and projects.

Perhaps the best (and longest standing) model of an advisory committee in action is the ad hoc advisory committee that works with the White Mountain National Forest in New Hampshire. It began in the early 1970's with a few

leaders of the State's forestry community serving as informal advisors to the forest supervisor. According to one working group member with long service on the advisory committee, "It was something the forest supervisor could use to test ideas or call to for help on an issue." Today it numbers about 15 people broadly representative of forestry interests in New Hampshire and functions "primarily as a communications mechanism." (This account of the citizens advisory committee working with the White Mountain National Forest is drawn from Paul Bofinger, Society for the Protection of New Hampshire Forests.)

When an issue emerges, a small group may form within the committee and add other individuals to address it, often under the aegis of an elected official. When it comes to Forest Service policies, the committee relies on persuasion, as it has with efforts to get the forest's managers to adopt uneven-aged management for the forest's northern hardwoods. Much of the committee's work involves defending the forest against external assaults—poorly planned development or military maneuvers. That is when an alliance with an elected official can pay dividends.

While recognizing that some formalized process might be desirable, it should be kept flexible and responsive. There was concern that a tightly structured advisory committee might be too static and rigid. Instead, the suggestion was made for a model of a national forest citizens' committee with open membership to serve primarily as a communications mechanism. When an issue arises, however, the group could provide a nucleus of individuals interested in the particular issue. This nucleus could serve as the rallying point for others interested in the topic—possibly local people who are directly affected or local and State officials.

Exercising Leadership

The Forest Service is looked to for leadership, and, in the words of one workshop group, "the agency should not be afraid to make the hard decisions." All parties share in the task of building the plan, but only the Forest Service has the authority to make—and is accountable for—the final decision. Workshop participants felt that decisions by Forest Service officials should be made neither by agency fiat nor by some kind of majority rule by users. To a person, workshop participants were opposed to vote-counting—deciding an issue on the basis of the volume of mail received pro and con. Similarly, no one seems to be satisfied with agency officials who see their role only as mediators who hold no strong values or act as if they possess no expertise of their own. Nor should the Forest Service simply seek to occupy the middle ground between conflicting political pressures, a position one group likened, with some mixing of metaphor, to "beleaguered weather vanes." The agency must always argue vigorously for maintaining the integrity of the land and resources for future generations.

The manager's role will vary with the type of issue to be decided, with different issues warranting different responses. In cases where interests disagree, but the quality of the environment or long-term productivity is not at stake, the

Forest Service can remain essentially neutral, helping the interests work out their differences. It can convene meetings to explore opportunities for consensus, or become a party in formal mediation of disputes convened by a third-party mediator. Thus, the Forest Service must apply different techniques, depending on the situation.

In many instances, however, consensus will not be achieved. Interests will not, in good conscience, be able to compromise strongly held values. Or one interest will believe that it can win in the courts or in Congress. Under these circumstances, the Forest Service must make the hard choices. The Forest Service must, in the words of one workshop participant, "win the grudging consent of everyone with a significant interest in the forest." Most said they did not necessarily expect to see the final decision explicitly bent to their will. Whether interest groups support the agency's decisions seemed to turn on the extent to which they felt their contributions were considered.

> We want the agency to listen and understand, even if it doesn't agree.
>
> *From Missoula workshop discussions*

Although the Forest Service cannot escape ultimate responsibility and accountability for final decisions, it is important that the agency engender confidence in those decisions. The Forest Service will have to dispel the impression that forest planning is, in the words of one participant, "used to justify predetermined decisions." Workshop participants said they wanted a clear and credible rationale for the decision that showed that their comments had been heard, understood, and considered and evidence that the Forest Service had acted on the best information available.

The Forest Service also has an important educational responsibility. Few among the general public understand the complexities of natural resources management, much less the impact of specific management decisions. Thus the agency must, in the words of one review committee member, "tell the people what it all means." This is difficult, of course, when forest interest groups represent the public's wishes from the groups' point of view. But the Forest Service can phrase questions that illuminate issues, stimulate public interest, and focus the debate.

Recommendations

- *Be explicit about expectations and responsibilities.* The Forest Service should be explicit about the public's role in decisionmaking and its own authority and responsibilities for leadership.

- *Involve people early and continuously.* The agency should identify stakeholders and involve them in planning before issues are identified or

alternatives developed. It should not wait for parties to become entrenched in their views.

- *Build networks that encourage and facilitate communications in all directions.* Individual forest staffs should establish a communications system that involves, for example, advisory committees, opportunities for information exchanges with and among interest groups, and systematic reporting by the Forest Service.

- *Help interest groups talk to one another.* The Forest Service and interest groups should establish forums for a continuous dialog on problems and issues.

- *Establish committees to work with the Forest Service.* Individual forests should be permitted and encouraged to establish committees broadly representative of its clients to test ideas, provide advice, and facilitate communications among the interest groups and the Forest Service.

- *Explain the rationale for decisions.* The Forest Service should provide evidence that all points of view have been sincerely considered and that the decisions were based on the best information available.

- *Recognize that the Forest Service does have its own values and interests.* The Forest Service should be explicit about its statutory mandates and the professional values of its personnel.

Making the Pieces Fit

National forest planning is conducted within a large framework of laws, Federal regulations, and administrative processes. The various components of this framework must be regarded as parts of a single planning system, facilitating—not frustrating—truly integrated resource management.

In focusing on compliance with NFMA, Forest Service officials have devoted less attention to complying with other laws that govern national forest management. In many cases, the courts have found that the Forest Service fell short of complying with these other laws, particularly NEPA. The result has been substantial delay, uncertainty, and additional expense for management, as well as planning, on the national forests.

Whereas Federal regulations are intended to flesh out the laws they implement, the requirements of the NFMA regulations, especially requirements for analysis, go substantially further than the law. Drafted by a Committee of Scientists, the regulations take a strongly analytical and highly technical approach, emphasizing economic efficiency as a key decision criterion. The complexity of the current regulations, and their orientation away from an ecological or sociopolitical approach to planning, set a tone and direction that has strongly influenced the agency's approach to planning. Local officials may be better able to adapt their planning approach to their particular circumstances, while still making decisions that are consistent with national policy, if the regulations provide less direction. This approach also could apply to the encyclopedic Forest Service Manual, which, in its tremendous volume and complexity, is already seen by most agency field officials as providing "policy beyond capability."

For forest plans to be cost-effective in their preparation and useful in their implementation, budgets must become an integral consideration during planning. The forest plans prepared to date contain little, if any, analysis or discussion of how budgets lower than those assumed in the plan would affect production targets or the mix of resource programs and projects. Forest users in many areas already have been frustrated at being told that the plan is not being implemented as written because of insufficient funding. When congressional appropriations decisions substantially alter resource production or the mix of goods and services from what is described in the forest plan, many who use or rely on the national forests call into question the usefulness of developing the plan at all.

Thus, the following sections address—

- The coordination of forest planning within the larger framework of laws governing national forest management.
- The need to reduce much of the detail and additional requirements of the Federal regulations implementing NFMA.
- The need to explicitly consider the budget process in forest planning.

Forest Planning Must Meet the Needs and Requirements of RPA

National forest planning takes place primarily in the context of NFMA. However, the forest plans also must satisfy the requirements of a host of other laws that govern various aspects of how the national forests are managed. Among these are the Forest and Rangeland Renewable Resources Planning Act (RPA), NEPA, the Endangered Species Act, the Cultural Resources Management Act, and the Administrative Procedures Act. Also, forest planners must be cognizant of the Federal regulations that implement the laws, contain detailed requirements, and have the force of law.

National forest planning must be responsive to the mandates of the overall planning system defined by RPA/NFMA. RPA requires forest planning to provide comprehensive information on the capabilities of the forest and range resources of the national forests. This information then serves as the partial basis for the development of the RPA "Assessment of Forest and Rangeland Situation in the United States," published every 10 years (and usually updated at 5-year intervals). The Assessment also includes information on the availability and condition of resources on other Federal, State, and private forest lands and projections of the Nation's demand for forest resources in the decade ahead. The Assessment itself becomes the basis for the Forest Service's establishment of long-term goals and objectives in the RPA Program, published every 5 years. Thus, the resource capability information developed in the course of national forest planning constitutes a major part of the foundation for RPA planning. The forest-level information is critical to the development of national-level goals and objectives that both address the Nation's resource demands and recognize the natural and practical limitations of the land and forests to meet those demands.

Participants in the workshops questioned whether forest planning had actually met the requirements of RPA/NFMA. First, has forest planning provided current and accurate resource information for the development of the Assessment and the Program? Second, has the resource information developed in forest planning been distorted by an inappropriate use of resource production goals from earlier Programs in the development of plan alternatives? The question of current and accurate resource information is critical to the success and usefulness of both the RPA Program and the forest plans on which it is built. The problems that were encountered with the quality of the resource data are addressed in greater detail in the chapter "Establishing an Information Base for Planning." The second question relates to the appropriate interface between the "top-down" (RPA Program) and the "bottom-up" (forest plans) portions of the RPA/NFMA planning system.

Forest plans should integrate the RPA Program and regional guides and comply with existing statutes, such as NEPA, the Clean Water Act, and the Endangered Species Act.

From Atlanta workshop discussions

Although RPA Programs were prepared in 1975, 1980, and 1985, the 1990 Program will be the first to reflect national forest resource information developed through forest planning. NFMA stipulated that a plan for each national forest be completed by the end of fiscal year 1985. Nonetheless, plans have yet to be completed on some of the largest national forests. Thus, information from the forest plans has not been available for use in RPA planning, and resource production goals in the Programs, particularly for timber, have reflected projected national demand more clearly than they have reflected the ability of the resources to actually meet that demand. The goals were nonetheless considered important by the Forest Service and a number of user groups, and attempts were made by agency officials to apportion the production goals for the 1980 Program among the nine administrative regions of the Forest Service and then to each national forest.

A number of workshop participants asserted that the assignment of these goals to the forests strongly influenced the range of alternatives developed in the forest plans. Because of this, most of the alternatives called for extraordinary increases in resource outputs. These production goals were seen as being driven far more by top-down targets from the RPA Program than by a clear sense that the resources themselves could sustain such production. Many workshop participants felt that this "short-circuited" the RPA/NFMA planning system, with forest plans reflecting the optimistic production goals of the previous RPA Program, not the proven sustainable capabilities of the land itself. These unrealistic expectations, in turn, provide a weak and unreliable basis on which to develop the 1990 RPA Program.

The linkage between RPA and national forest plans should be apparent and close and they should point in the same direction.

From Milwaukee workshop discussions

There was no clear consensus within the review committee or among the regional workshop participants on just how the RPA Program goals should be incorporated in forest planning. Some participants, particularly commodity interests, felt that the goals should be incorporated in forest plans to spur the national forests to help meet the national resource demands identified in RPA

Assessments. Others asserted that this would, in effect, be "putting the cart before the horse," suggesting that the timing of the various documents has been mixed up thus far and needs to be set right. The prevailing interpretation of the requirements of RPA/NFMA was that the RPA Assessment of national demand should precede forest planning, but that both should precede the development of the RPA Program.

In reality, such a logical sequencing of the documents would be difficult and impractical. The schedule for the RPA documents is fixed by statute; timing of the forest plans is much less predictable, and revisions will be going on continuously throughout the National Forest System. The sequence will thus be less linear than circular, with the Programs and forest plans relying on one another for current information and direction.

Forest planners should be cognizant of the resource demands identified in the Assessment and balance these requirements with their own assessments of local demand and of the physical, biological, and economic capabilities of the land. There was a clear and frequently repeated assertion that the forest plans should not be constrained by specific top-down production goals. Any production goals from the RPA Program should reflect a balance between the resource capabilities identified in the forest plans and RPA planners' assessments of the capabilities of forest and rangeland other than that in the national forests to help meet projected national demand.

The overall sense of the discussions was that forest planning was not yet meeting the requirements of RPA, but that all the pieces were there for it to do so in the future. Having the RPA documents and the forest plans out of sequence in the past established some unfortunate precedents, but none that could not be overcome by stepping back and really thinking about how the pieces can best fit together in future planning. Beyond the legal considerations, this concept of the relationship between RPA and forest planning has important implications in the larger issue of centralized versus decentralized decisionmaking in national forest management. This issue will be examined in greater detail in the discussion of the organizational and administrative framework below.

Forest Planning Must Be Coordinated With the Requirements of NEPA and Other Laws

The review committee and workshop participants expressed continuing concern that national forest planning adhere to other important laws as well as RPA/NFMA. There are at least 130 different laws that relate directly to the management of the national forests (USDA Forest Service 1983). Of these, the two that received the most attention in the workshops were the Endangered Species Act and NEPA.

The Endangered Species Act is unequivocal in its requirement that Federal agencies protect the critical habitat of plant and animal species threatened with extinction (16 U.S.C. 1531–1540, 2(c) and 4(b)(3)(A)). But how does this mesh with other legal requirements, including those in NFMA, that the national forests be managed for multiple uses? How should the agency's

multiple-use mandate be reconciled with the requirement that the habitat of endangered species be safeguarded?

The Forest Service must learn about the Endangered Species Act so that it can address threatened and endangered species issues in advance of crisis.

From Denver workshop discussions

The cases of the northern spotted owl in the Pacific Northwest and the red-cockaded woodpecker in the South were the focal points of much of the discussion. When the habitat of an endangered species ranges over an area of several States and many national forests, how should the Forest Service determine what areas on a given forest constitute "critical habitat" and thus halt any further disturbances to the environment? Where the existence of endangered species is known in advance of planning, this can be taken into account, but what of the discovery of an endangered species once a forest plan is completed—must the plan be tossed out and begun again? And perhaps the greatest and most troubling question—how does forest planning proceed when substantial uncertainty remains in the best scientific information available on whether or not a species is endangered, and if so, what changes are needed in habitat management to ensure its survival?

The only point in the discussions on which there seemed to be a general consensus was that there are no easy answers to these questions—and no solutions that will work for every case. This is not to say that the group saw no hope, however. On the contrary, they simply felt that the importance and complexity of coordinating forest planning with the protection of habitat for endangered species warranted a case-by-case approach. Among the major interest groups, no one is quite satisfied with the handling of the spotted owl, but few see any better alternative than to proceed along the established course. One plea heard frequently is that the Forest Service keep in tune with the spirit of the Endangered Species Act, not fall into a strictly defensive mode of shoring up their documents to withstand legal challenges. One case cited to show the success of this approach is on the Shoshone National Forest. It was discovered after completion of the forest plan that grizzly bears were using an area designated in the plan for multiple-use management, including timber harvesting. All activities in the area were halted until the effect of timber harvesting on the grizzly habitat could be analyzed and disclosed to the public. After the adoption of a series of mitigation measures, timber harvesting was again approved in the area. In response to a subsequent legal challenge, a Federal district court found that the Forest Service had complied with the Endangered Species Act, NEPA, and NFMA; planned activities were allowed to proceed.

Forest managers and users alike have been frustrated with the Forest Service's apparent inability to satisfy the requirements of NEPA. Forest managers see

themselves as spending an inordinate amount of time and money "writing environmental analyses instead of actually managing the resources." Users are frustrated that after being repeatedly sued for doing an inadequate job of environmental analysis—and generally losing in court—the Forest Service still cannot seem to do what national forest users and the courts expect of them. There are indications here of problems with both communications and attitude. There is a strong sense among the workshop participants that the vast majority of Forest Service resource managers still regard NEPA-defined environmental analysis as "just another bureaucratic hoop they must jump through before they can get on with the job." This attitude is seen as having led many resource managers to do the absolute minimum environmental analysis required to satisfy NEPA. But as the agency's record on NEPA lawsuits has shown, the courts often have a different view of the minimum requirements and the analyses frequently fall short of satisfying the law.

Once a programmatic environmental impact statement for the forest plan has been completed, environmental analysis for projects can be handled in one of three ways. If the proposed action is part of a class of activities generally deemed to have no significant impacts on the environment, it may qualify for a categorical exclusion, meaning that no environmental analysis at all is needed. For most activities, however, an environmental assessment must be performed to broadly evaluate the expected impacts on the environment. If the impacts are not expected to be great, the agency will then issue a finding of no significant impact, and no further analysis will be done. If the impacts are expected to be more substantial, the agency will proceed with developing an environmental impact statement, identifying not only the impacts of the proposed action, but those of a reasonable range of alternatives to the proposed action.

Many of the Forest Service's legal problems with NEPA and project planning arose when field officials attempted to avoid doing environmental analysis by excluding major activities—such as constructing roads into RARE II roadless areas—under categorical exclusions. When this was found unacceptable by the Federal courts, Forest Service officials turned to writing environmental assessments and routinely found that there would be no significant impact from their proposed actions. In case after case, the courts continued to find that the Forest Service failed to live up to the requirements of NEPA (see *National Wildlife Federation* v. *United States Forest Service*, 592 F. Supp. 931, 14 ELR 20755 (D. Or. 1984)). Officials seemed willing to go to any lengths to avoid preparing an environmental impact statement, which they saw as much longer and more detailed than an environmental assessment. Ironically, the agency is incurring the costs of doing a full environmental impact statement without obtaining the benefits in terms of protection from legal challenge.

Simply avoiding lawsuits, described by agency officials as "bombproofing" the forest plans, should not be what motivates the Forest Service to do more complete environmental analysis. Rather, the agency should be motivated by the worthy and legitimate goal of fully identifying and disclosing the expected environmental effects of resource management activities, and describing a clear and understandable rationale for selecting the course of action that is proposed.

The training of field personnel in NEPA compliance should stress compliance with the spirit—as well as the letter—of the law.

Environmental analysis should be approached affirmatively as an opportunity for the resource managers themselves to discover environmental effects from management activities that they themselves may not have predicted. To fulfill their responsibilities as stewards of the long-term productivity of the forest and range ecosystems entrusted to their care requires no less. It also will be the key to achieving a comfortable fit between the requirements of NEPA and those of RPA/NFMA and other laws governing national forest management.

NFMA Regulations Should Be Substantially Reduced

Ironically, the difficulties local managers have had in applying this legal framework to the situations on individual national forests may stem from too much guidance rather than too little. The Federal regulations implementing NFMA go significantly beyond the law itself, in substance as well as detail. As the NFMA regulations evolved in 1979 and again through revisions in 1982, their emphasis on economic efficiency analysis seemed to overwhelm the other aspects of forest planning. Although the regulations provide more specific instructions to guide local decisionmaking, they also constrain the flexibility of local managers to address their particular management situations within the broader bounds set by the statutes themselves.

The forest's staff should develop key problem statements instead of long lists of issues that all have to be dealt with.

From Milwaukee workshop discussions

The complexity of the current regulations and their emphasis on economic efficiency set a tone and direction that is not well suited to every local situation. As specified in NFMA, the regulations to implement the law were drafted by a Committee of Scientists established to "provide scientific and technical advice and counsel . . . to assure that an effective interdisciplinary approach" would be taken (16 U.S.C. 1601, 6(h)(1)). The approach that was ultimately taken was highly technical and analytical, and was strongly oriented with economic efficiency as a key decision criterion. Forest planners were required to conduct "benchmark analyses" to determine the "present net value" at a level of management that was little more then custodial and at a level that would push the forest to its physical and biological limits (36 CFR 219.12(e)(1)). A third benchmark analysis was required to depict whatever management regime would "maximize present net value" (36 CFR 219.12(e)(1)). To perform this analysis, assumptions had to be made regarding the production and value of resources not commonly thought of in economic terms; wilderness and other undeveloped recreation, wildlife and fish, and water all needed some sort of price assigned to them so that their values could

be weighed against those of timber, livestock grazing, and minerals. The complexity of this analysis virtually required the development of a large and dauntingly complex linear programming model—FORPLAN—that took years to refine and could be run only on a large central computer in Fort Collins, Colorado.

This approach worked against effective planning in several ways. Oriented as it was toward resource "outputs" and present net value, it ignored both the ecosystem approach of NFMA and the express desires of the American public that there be a reasonable balance in the management of the national forests. Although not portrayed as actual alternatives, the benchmarks set the stage for polarization among different segments of society by suggesting that it was possible, for instance, to quadruple timber harvesting or to triple the number of acres managed as wilderness. The difference in present net value between the benchmarks and alternatives that came closer to balancing the needs of society for a variety of forest resources was widely interpreted as the "cost of managing for multiple use" or of considering aspects of the ecosystem other than the one resource maximized in a given benchmark.

Current experience indicates that, at the local level, economic efficiency analysis has not turned out to be a compelling decisionmaking tool. Such analysis is simply of limited usefulness in imputing social values. In practice, many Forest Service decisionmakers eventually distanced themselves from these economic efficiency analyses and based their decisions more on what they heard from individuals and organizations than on an interest in the management of the national forests. In effect, they returned to a more qualitative way of determining how they could best meet society's needs. In most cases, however, the polarization had already taken place, and at that point it was difficult for the Forest Service to get the cooperation and trust of the public.

There were a few forests in which the planners took the second approach without having gone through the required economic analysis beforehand, most notably the Green Mountain National Forest in Vermont. Generally, the result has been far less polarization of the interests, fewer subsequent legal challenges, and plans that nearly all segments of the public find worthy of support. It has been pointed out that, had the Green Mountain and similar plans been challenged on their legal adequacy under the regulations, they would have been found wanting. The fact is, however, they were, for the most part, not challenged. They work. And many other plans that come closer to the letter of the regulations do not. If the Green Mountain and similarly successful plans are out of step with the regulations, then perhaps the regulations—not the plans—should be changed.

Those portions of the NFMA regulations that go beyond the explicit requirements of the statute should be rigorously evaluated, and retained only where there is overwhelming evidence that the additional direction is necessary. Particular attention should be directed to the portion of the regulations that guide the actual process of forest planning (36 CFR 219.12) and its emphasis on depicting the resources of the national forests in economic terms.

Instructions for conducting two key segments of the planning process, the "analysis of the management situation" and "estimated effects of the alternatives," are given in great detail, almost exclusively in terms of economic valuation and the stream of "resource outputs" from the national forests (36 CFR 219.12(e) and (g)). While NFMA clearly requires that economics be considered in managing the national forests, it just as clearly requires a far greater consideration of the ecological aspects of forest management than is now reflected in the regulations.

The balance between economic and ecological considerations is at the heart of many of the controversies over national forest management. Neither Federal regulations nor forest plans are the appropriate places for such major policy issues to be decided. How the balance can be tipped further in one direction or another through precise wording in the regulations or the plans could be debated—fruitlessly—for a very long time. Elected representatives accountable to the voters debated and decided this issue as best they could in 1976. To add to the law was to take away from it. For every detail introduced through regulations, a measure of flexibility in complying with the law is lost. Rather than second-guessing Congress, perhaps there should simply be greater reliance on the law itself rather than on regulations.

The NFMA regulations should be simplified to the minimum level of detail necessary to implement the law (specifically, 36 CFR 219.12(g)). The details should not be shifted to the Forest Service Manual; the existing Manual direction regarding national forest planning should itself be radically simplified. The Forest Service Manual, now covering nearly 20 feet of shelf space in every agency office in the Nation, is another pointed example of "policy beyond capability." Throughout most of the history of the agency, a far simpler Manual was sufficient to keep the decisions of local officials consistent with national policy while facilitating the authoritative decentralized decision-making that is widely recognized as one of the great strengths of the Forest Service (Kaufman 1960). Clearly, the task of national forest managers is immeasurably more complex than it was in 1905—all the more reason for the myriad decisions arising daily on 640 ranger districts to not be micromanaged through regulation and Washington Office directives. Not having detailed regulations and complex economic and technical analysis to claim as a defense may make more than one forest supervisor nervous, but it will almost certainly force officials to address more directly and openly the needs and concerns of the public within the ecological capabilities of the land and resources.

Planning and Budgeting Must Be Integrated

Many of the plans project spending levels far higher than those in recent years, although it is unlikely that there will be significant increases in the Forest Service budget in the short term. Plans contain little, if any, analysis or discussion on how budgets lower than those assumed in the plan would affect production targets or the mix of resource programs and projects. Forest users in many areas have already been frustrated at being told that the plan is not being implemented as written because of insufficient funding. Congressional appropriations decisions that have the effect of changing resource production

or the mix of goods and services from what is described in the forest plan call into question the usefulness of developing the plan at all.

Although there are variations in policy among the administrative regions of the National Forest System, most forest plans do not consider whether funds will be sufficient to implement them. Thus, many forest plans depict a management regime that assumes a far higher budget level than has existed in the recent past or can be reasonably expected in the foreseeable future. As a result, the activities actually funded often do not reflect the activities and management emphasis reflected in the plan. Individuals and interests that participated in the planning process wonder whether the years of striving for consensus on a plan—that ultimately cannot be implemented—is worth the effort.

How can the usefulness of the plans be improved? Fund them at levels of outputs as projected.

From Milwaukee workshop discussions

Planning is not sufficiently sensitive to budget limitations.

From Portland workshop discussions

There is broad agreement across the various national forest interests that budgets should be explicitly integrated into forest planning. Moreover, these considerations should be raised by Forest Service officials at the outset of the planning process so that planners and forest users better understand the limitations that budgets impose, and so there will be no false hopes based on unrealistic budget expectations.

A variety of measures have been suggested for bringing budget considerations into forest planning. One is to place an upper limit on the budget increases that can be assumed in the plan, constraining the planning alternatives to program costs that are within a reasonable range of current funding trends. This was the approach taken in one region, producing plans that were considered to be realistic and could be implemented as written without substantial increases in the current level of congressional appropriations. From a planning standpoint, it is useful to project what actions would be needed in order to manage the resources of the national forests in the best possible manner. Not only does this show Forest Service officials, the public, and Congress the full capabilities of the national forests to meet resource demands, but it permits resource managers to identify the highest priorities for substantial increases in funding.

However, constraining all programs to no more than marginal increases over current funding limits the ability of resource managers to indicate where there may be important opportunities to gain substantially greater benefits from fairly modest increases in funding. A recent example is the fish and wildlife habitat management program on the national forests, which has enjoyed major funding increases over the past 3 years but also has produced significant increases in benefits through cooperative efforts with State wildlife agencies and private wildlife groups.

To impose narrow budget constraints on each individual resource program—such as timber, recreation, fish and wildlife, soil and water, and range management—denies planners the ability to establish priorities and to identify extraordinary opportunities or needs for investments. Setting budget constraints at a more general level, say "national forest resource management," that encompasses all the individual resource programs would permit planners to allocate funds according to priorities while keeping overall spending reasonably in line with expected funding.

Another approach discussed at length in the regional workshops and by the review committee is to describe in the forest plan how the alternatives might be implemented at funding levels within a feasible range. Each planning alternative presumably represents a different management emphasis—that is, a different mix of resource management activities to achieve a particular set of desired future resource conditions. Each alternative could be explored, and management opportunities identified, without budget constraints. However, a table would be included in the planning documents themselves indicating how the management emphasis in the preferred alternative (or final plan) would be maintained at less than full funding. For example, the planning staff on the Idaho Panhandle National Forests displayed what they felt would be the ideal distribution of funding among the different resource programs at several overall budget levels. The distribution was quite different at "full funding" (the budget level required to carry out all of the activities described in the forest plan) from what it was when overall funding was assumed to be reduced by 25 percent; the management emphasis in the plan could not be maintained by simply reducing funding for all resource programs by 25 percent across the board. This served two important purposes: first, to show the resource managers' views of the distribution of funding needed to maintain the same management emphasis at different overall funding levels; and second, to disclose these views early in the process so that they would be seen by the public as planned and deliberate rather than as an ad hoc response to funding cutbacks during plan implementation.

A better integration of budgeting and planning is critical to the success—and even viability—of the national forest planning process. The forest plans cannot continue to raise the hopes of national forest users and interests by holding out the prospect of a bigger pie, only to have those hopes dashed when actual funding falls far short of what is required to produce the situation depicted in the plan. People become involved in national forest planning because they believe it presents an opportunity to influence the management of those re-

sources for the better. If it becomes apparent that the plan is irrelevant to what actually takes place on the forest, interests will go back to the courts and to direct pressure from Congress through legislation and appropriations, with forest planning becoming no more than a paper exercise receiving less and less interest inside or outside the Forest Service.

Some portion of the continuing tension between planning and management in the Forest Service is the responsibility of Congress and of other agencies that review the Forest Service budget, notably the Office of Management and Budget. Planning is a very expensive undertaking, yet Congress and the Office of Management and Budget have failed to recognize this in the funding approved each year for the management of the national forests. The task of planning has been performed largely by program staff officers who must use the funding appropriated for the resource programs—timber, recreation, wildlife, water, and range. Although planning has drained away substantial budget resources from these programs, Congress' expectations of the Forest Service in meeting current resource demands have not decreased. Higher appropriations for the Forest Service are not necessarily the answer. However, if Congress wants good planning and good resource management, the appropriations committees must recognize that planning is not free. To hand an agency so daunting a task as national forest planning without the resources to accomplish it and then to excoriate the agency for forest planning's shortcomings seem disingenuous at best.

Recommendations

- *Commit the Forest Service, from the districts up to the agency's top officials, to affirmative compliance not only with the letter of the law but with the spirit as well.* This commitment should underscore that the thrust of the laws governing national forest management—including RPA, NEPA and the Endangered Species Act—is consistent, and should not be seen as pulling resource managers in different directions.

- *Train field personnel in compliance with NEPA.* This training should stress not only the requirements of legislation, regulations, and current case law, but should place a special emphasis on recognizing the legitimacy and value of environmental analysis.

- *Simplify the NFMA regulations to the minimum level of detail necessary to implement the law.* Local resource managers should be given the full flexibility permitted by the statute itself to address the needs and concerns of the public openly and directly within the ecological capabilities of the land and resources. The detail should not be moved to the Forest Service Manual; existing Manual direction regarding national forest planning should itself be radically simplified.

- *Explicitly consider and display budget considerations in the forest planning documents.* One or both of the following approaches should be adopted and applied uniformly across the National Forest System:
  (1) Show in the plan how the particular management emphasis of the selected alternative can be maintained at a variety of budget levels below full funding.
  (2) Place budget constraints on the development of planning alternatives, limiting assumed increases in funding to no more than, say, 10 percent above current funding trends.

Organizing the Agency for Planning

The Forest Service is an agency with a rich history, known for the positive, aggressive "can-do" attitude with which its personnel carry out their responsibilities. Clark and McCool (1985) analyzed the operations of seven Federal resources agencies and found that the Forest Service had a reputation as a "powerful, innovative agency" and was a "bureaucratic superstar." The organizational structure of the agency has changed through the years to meet new challenges and opportunities. However, there was only modest organizational change with passage of the NFMA, and this took place mostly in the Washington Office.

How should forest plans fit into the Forest Service management decisionmaking process?

From steering committee discussions

There is good reason why this was the case. The Forest Service has been involved in land and resource planning since the day the national forests were placed in its stewardship in 1905, and agency officials probably believed that the organizational structure of the 1970's was adequate for effectively implementing the new law. Given the mixed success of the first round of planning, however, there is some question as to whether the agency is now effectively organized for planning.

Based on what we heard at the workshops and other research, we have found that—

- The forest supervisor's close attention to and personal involvement in planning is critical for its success.
- There is a need to train Forest Service planners in planning theory.
- The organization of the Washington Office should be examined to see whether the current organization supports effective planning and integrated resources management.
- There is tension between the organizational philosophies of decentralization and centralization and the related conflict between local and national interests.

The Forest Supervisor Plays a Key Role

NFMA regulations spell out the responsibilities of the forest supervisor in planning. The supervisor "has overall responsibility for the preparation and implementation of the forest plan and preparation of the environmental impact statement for the forest plan" (36 CFR 219.10(a)(2)). The supervisor also appoints the interdisciplinary team.

While the supervisor's responsibilities are clear, just how much direct involvement is technically required is a matter of individual interpretation. We were told that some supervisors chose to distance themselves from forest planning; they turned development of the forest plan over to the forest planning officer and then simply checked from time to time on its progress. Indeed, workshop participants cited instances in which the forest supervisor, at public meetings, seemed unfamiliar with the contents of his or her own forest plan.

The forest supervisor's early and personal involvement in the planning process is a common element in forest plans that are regarded as successful and effective. Direct participation in the development of plan alternatives gave the supervisor a good understanding of the circumstances under which the plans were developed. Supervisors who became involved only at the decision stage often did not know the background to some alternatives.

When a supervisor did not seem to know much about the details of the forest plan, public interest and support soon waned. People tended to conclude that the plan was not a principal factor in the supervisor's decisions, and efforts to fine-tune it would not be an effective use of their time. Likewise, a supervisor's inattention was interpreted as a modest commitment, at best, to forest planning by Forest Service officials up the line. Not surprisingly, advocacy groups soon shifted their focus to political or legal processes in their efforts to influence national forest management.

Effective planning should be made an explicit and important component of forest supervisors' performance evaluations. Since the 1950's, supervisors have been evaluated mainly on how they have met assigned resource production goals. It is clear that forest planning is becoming program planning—an activity for which supervisors always have been responsible—and planning demands a supervisor's personal attention. Over the years, evaluation criteria have been added to address new management challenges. Planning effectiveness deserves to be added to the list.

Needed: A Cadre of Professional Planners

During the first round of planning, the Forest Service literally had to create a cadre of planners. They were new to their work, and much of their training was gained on the job. Under these circumstances, mistakes were inevitable—and were compounded by frequent changes in policy. Some work had to be done over and over, which was frustrating to those doing it. Discrete, meaningful units of work in forest planning were difficult to define. Likewise, the assessment of work performance was difficult, and sometimes caused anger and frustration. Although not necessarily their fault, planners were criticized when plans were not completed on schedule. All this resulted in stress and high turnover within planning staffs.

The line officer should be involved throughout the process with line officer continuity from planning to implementation.

From Atlanta workshop discussions

Really put forest supervisors to the test. They should make the tough decisions. Don't let them off the hook.

From Hanover workshop discussions

The Forest Service has to ensure high-quality planning. It is too important to leave to people who are not good at it. In addition to selecting high-quality people for planning positions, the Forest Service should see to it that its planners have some degree of professional training in the theory and practice of planning.

The Forest Service should seek out professionally trained planners to serve as the core of a permanent employment category of planners. The Forest Service has not, as a regular practice, hired professional planners, preferring to convert individuals with training in traditional forest-related professions into planners. The advantage of this approach is that forest planners also understand natural resources management. But there is a disadvantage in that forest planners tend to lack an understanding of the theory and application of planning as practiced by planning professionals. Put directly, forest planners often do not have a good understanding of the theoretical underpinnings of what they are doing. The agency also should arrange for forest planners to acquire an understanding and appreciation of the body of knowledge that is taught by recognized schools of planning.

Standards for evaluating planners' performance also should be developed. A number of Forest Service employees who worked as planners during the first round of planning remember it as an unsatisfying, even unpleasant experience, mostly because it was not clear just what was expected of them. In addition, some believe they were not dealt with fairly in the agency's reward system because their work as planners was not appreciated or well understood by their superiors. They believe their careers suffered because of their assignment to forest planning. This is a serious charge, and the agency must respond. The role of forest planners must be made clear and their work defined by a systematic set of performance standards. Because planning is now a permanent feature of national forest management, workers in this new employment category should have opportunities for advancement no different from those now available to foresters and other resource management professionals. Planners should be full participants in the reward structure of the agency, including promotion to line officer positions.

Organizing the Washington Office for Forest Planning

Responsibility for forest planning is distributed among several staffs in the Washington Office. The Land Management Planning staff ostensibly has the lead. But the Resources Planning and Assessment staff also is involved through its development of the Renewable Resource Program, the agency's long-term strategic plan. Furthermore, the Program Development and Budget staff is inextricably involved in forest planning because it develops annual budgets, and funding is essential to the implementation of any forest plan. Finally, the Environmental Coordination staff provides guidance in forest planning to ensure compliance with NEPA. This organizational scheme may be currently functioning well, with all staffs coordinating their activities and providing unified and unambiguous direction to the regions. On the other hand, the probability for confusing, if not conflicting, multiple direction is significant.

On its face, the existing functional organization of the Washington Office—and most regional offices and national forests—seems incompatible with integrated resource management. Functional organization—with a specialized staff responsible for each resource—would seem to discourage a holistic view of forests and the interdisciplinary management of ecosystems. The functional organization of the agency should be evaluated to see whether it inhibits the integrated management of all the forests' resources as envisioned in NFMA.

The problems associated with such an organizational arrangement have been recognized in some parts of the agency. On the Allegheny National Forest, for example, functional staffs have been reorganized into three new teams: one for forest planning and design, another responsible for operations, and the third for information management. The forest supervisor believes this will promote integrated resource management in implementing the forest plan (Wright undated). Similarly, the Eastern Region (Region 9) office has taken steps to break down the barriers among functional staffs.

Is Planning Decentralized or Isn't It?

Decentralized management decisionmaking that consistently reflects nationally set policies has been a hallmark of the Forest Service since its inception and is regarded by many as key to the professional competence and esprit de corps that distinguishes the Forest Service from all the Federal agencies (Kaufman 1960). Nonetheless, the agency always is challenged to reconcile inherent tensions between what local citizens want and what is in the national interest.

The day the new Forest Service was given responsibility for the forest reserves, a letter from Secretary of Agriculture James Wilson to Forest Service Chief Gifford Pinchot articulated the philosophy of decentralization. The letter, actually written by Pinchot, declared that "in the management of each reserve local questions will be decided upon local grounds. . . ." However, the letter also made clear that the collective interest of citizens throughout the Nation should be taken into account: "where conflicting interests must be reconciled, the question will always be decided from the standpoint of the greatest good of the greatest number in the long run" (Pinchot 1989).

That the forests were to be managed for all the people was further reinforced by the Multiple Use–Sustained Yield Act, which defines *multiple use* as "management of all the various renewable resources of the national forests so that they are utilized in the combination that will best meet the needs of the American people."

The passage of RPA in 1974 was seen by many, both inside and outside the Forest Service, as promoting a greater centralization of decisionmaking and a skewing of the balance toward the achievement of national goals and objectives. RPA, in the view of many at the local level, muted the views of both local publics and forest staffs (Sample 1990). The advent of NFMA 2 years later was seen as restoring decentralized decisionmaking, both through the forest plans themselves and through the influence of "bottom-up" forest planning data and decisions in subsequent RPA planning.

The influence of the RPA Program goals on the development of forest plan alternatives exacerbated the organizational tensions between centralization and decentralization as well as tensions outside the agency between national interests and local interests. Workshop participants saw the focus of the tension being more internal to the Forest Service than a struggle of people of a region against the Federal Government. They perceived that the range of alternatives available to local Forest Service officials was narrower than the range of alternatives displayed in the plans because of constraints imposed from the regional or national offices of the Forest Service. The constraint most widely cited was the minimum acceptable level for future timber production. The imposition of such a constraint was often not made explicit (see discussion of FORPLAN under "Establishing an Information Base for Planning"), which in itself led to an erosion of the public's confidence in the fairness and openness of forest planning and of the Forest Service itself.

There has to be a balance between national goals and local needs. You can't ignore any level.

From Denver workshop discussions

I agree that plans should look at regional needs, but we may lose sight of the real purposes of the national forests.

From Hanover workshop discussions

Local users seemed to have arrived at two important conclusions. First, participation by local individuals and interests probably was not worth their time because the "real decisions" were top-down and had already been made. Second, although some sort of compromise is obviously necessary in the

planning decision, no compromise proposed by the Forest Service is worthy of public support because it was arrived at through a process that is inherently not fair and open. If these perceptions continue and become more widespread, they clearly will have serious implications for the success of forest planning in the future.

There were a few national forests that explicitly did not allow the RPA Program goals to constrain their own planning. One oft-cited example is the Green Mountain National Forest in Vermont. From the standpoint of consensus and support, not only from the public but from the forest staff, the Green Mountain plan is probably the most successful of all the forest plans. Early and frequent involvement of all individuals and groups with an interest in the forest helped planners to determine just what it was the public wanted from the forest; then this was reconciled with the capabilities of the land and resources to accommodate that particular mix of uses. The Green Mountain plan does not provide a cookbook example for all national forests. Nonetheless, at a time when it seems to planners and decisionmakers on other national forests that nothing works, it is worth taking a hard look at a plan that clearly is working for whatever lessons that can be gleaned.

Recommendations

- *Make planning an explicit component of performance evaluations of forest supervisors.* A clear signal should be sent throughout the agency that forest planning is an integral part of national forest management and that the early, close, and systematic involvement of line officers in the development of forest plans is important enough to the agency to be explicitly recognized and rewarded.

- *Offer forest planners intensive short courses or seminars on theory and practice of planning, perhaps with the cooperation of an accredited school of planning.* The purpose of this effort is to provide an opportunity for forest planners to understand better the theoretical foundation of planning practice.

- *Establish a planning job category within the Forest Service with opportunities for advancement.* Forest planning is now a fixture in the administration of the national forests, and a cadre of professional planners is necessary for effective planning. Planners should participate fully in the agency's reward system, including promotion to line officer positions.

- *Review the internal organization of the Forest Service with an eye to encouraging and facilitating holistic, integrated resource management practices.* There may be unnecessary conflict and overlap among staffs responsible for different aspects of planning. Similarly, the existing functional organization seems at odds with NFMA's requirement for integrated resource management.

Establishing an Information Base for Planning

The variability and weakness of the data on which planning decisions have been based have led interests to question the validity of those decisions. All sides have accused agency officials of bias in their decisionmaking and of manipulating what data there are to justify a predetermined course of action. Lacking sufficient information, agency officials have been unable to show convincingly that their conclusions are any more defensible than those reached by various interest groups performing their own analysis. While recognizing that compromise will ultimately be necessary, interest groups are unwilling to accept an agency decision that they feel was reached on weak or specious grounds. This has led to endless skirmishing between interest groups and the Forest Service, and to frustration for agency officials at the seeming unreasonableness of interest group leaders.

The quality of the resource data and the manner in which they were analyzed and incorporated into the decisionmaking process have had a profound impact on the success and usefulness of the forest plans. Both the review committee and participants in the regional workshops observed that even if the agency's planning decisions had been accepted, much of the data on which the decisions were based were so inaccurate or out of date that the plans probably could not be implemented. These data comprised the basic information analyzed using FORPLAN, the computer-based optimization model developed especially for use in national forest planning. Despite the weaknesses in the data and the inherent limitations of a linear programming model in capturing important but often unquantifiable considerations, planning decisions in many areas were seen to have been "blindly driven" by FORPLAN. This practice not only diminished the viability of the forest plans, but it had important implications for the public's trust and understanding of the planning process—and, ultimately, for the Forest Service itself.

From what we heard at the workshops and our own reading of forest plans, we have found that—

- The information base on which many forest plans were built was inadequate.
- There is a need for research on methods of data collection and analysis.
- In many cases, forest staffs did not use FORPLAN appropriately.
- For most forests, a simpler model would suffice.

Current Data in Useful Terms Are Critical to Viable Decisions

Reliable, complete and up-to-date information on basic resource capabilities—the level of use that can be sustained without diminishing long-term productivity—is the foundation on which any forest plan must be built. In the two-way flow of information envisioned in the RPA/NFMA planning system, current resource capability information was to be a key product of national forest planning, tempering the RPA assessments of the Nation's resource demands with an understanding of the forests' limits to meet them (16 U.S.C. 1600, 6(a). Intending that the first set of forest plans under NFMA would be produced quickly and later revised on the basis of more detailed analysis, Forest Service leaders directed that new data not be gathered for this initial effort. It has taken far longer to complete the plans, however, and much of the information on which they are based is obsolete and inaccurate.

Many workshop participants observed that the poor quality of the resource data had led the Forest Service to "oversell the national forests," developing plans that called for more than the forests could possibly deliver. When this is discovered during plan implementation, resource managers are confronted with a choice of (1) staying with the plan at the risk of exceeding environmental standards and resource protection guidelines, (2) deviating from the plan and managing on some other basis, or (3) immediately revising the plan. The standards and guidelines for the management and protection of all the forest resources are legally binding and may not be violated just to attain resource production goals established in the forest plan. The production goals are regarded as important statements of policy by the Forest Service, however, and are often the basis for business planning and capital investment by industries relying on the commodity resources of the national forests (*Intermountain Forest Industries Association* v. *Lyng*, Nos. C88-009, 0010 (D. Wyo., April 18, 1988)). While they are not legally binding, the Forest Service makes every effort to see that the production goals in the plans are met (according to a letter from Douglas W. MacCleery, Deputy Assistant Secretary of Agriculture, to the Intermountain Forest Industries Assocation, July 18, 1988).

In many forest plans, the projections of future production, particularly of timber, were based on inaccurate or out-of-date inventories and growth-and-yield estimates. When a higher inventory or stocking level is assumed than actually exists on the forest, production levels are overestimated. If this is not to lead to overcutting and violations of the standards and guidelines (and possibly NFMA and other laws), then the allowable sale quantity must be scaled back. This can result in timber purchasers and local communities having to halt or substantially modify planned investments predicated on a particular level of timber availability. Conversely, when growth-and-yield estimates reflect the older age-class structures that prevailed when much of a forest was still in old growth, the allowable sale quality may significantly underestimate the sustainable yield of timber. The result may be unnecessarily high local stumpage prices and timber harvesting spread over a larger area than required to provide a given volume of timber.

Because timber harvesting has such extensive effects on other resources of a national forest, the allowable sale quality established in the forest plan

becomes the focal point for both industry and conservation interests. Unreliability and wide margins of error in Forest Service estimates lead interests to do their own calculations of the "true" sustainable harvest level. When the Forest Service's figures differ from their own, they commonly suspect the agency of sinister motives. This has accentuated conflict between the various interests and eroded their trust and confidence in agency officials.

In collecting data, focus on areas where decisions are critical.

From Denver workshop discussions

The quality of the data for nontimber forest resources has been even poorer than that for timber, particularly in terms that would permit a meaningful assessment of the sustainability of these resources in response to management activities. Many forest plans indicate only a vague awareness of the recreational or wildlife use of large areas. In others, basic information on soil and water resources and plant and nongame wildlife species is lacking or not available in sufficient detail to provide an adequate basis for resource management decisionmaking. Where such inventories do exist, they are often compiled resource by resource, providing little sense of the relationships between the resources or how management activities relating to one resource will affect all the others. Such shortcomings hobble local managers in adopting the integrated resource management approach called for by NFMA.

Collecting data is an expensive and time-consuming task, and finding the money is a problem. Congress provides no special funding for data collection, so it must be accomplished within the regular funding for individual resource programs. For many resource programs, congressional appropriations have been declining in real terms for nearly a decade, but congressional expectations for resource production and program accomplishments have not. Given their increasing difficulty with meeting basic demands, few managers can afford to make data collection a high priority.

There is a general perception outside the Forest Service that the agency recognizes this problem, but that the Office of Management and Budget, Congress, and even budget-conscious agency leaders in the Washington Office have not provided the money needed for collecting information. There is growing concern that the current multimillion dollar emphasis on developing a Forest Service geographic information system (GIS) will divert what little funding there is from basic data collection. While GIS promises to be a useful tool for analyzing resource data, it is no substitute—and indeed depends on—accurate, up-to-date resource information.

Additional Research Support Is Needed on Methodologies for Data Collection and Analysis

The problems with adequate resource data go much further than a failure to go out and recount the trees and animals. It is now clear that for many forest resources, there is no clear understanding of how to assess capability, nor are the complex relationships and interactions among the different resources fully understood. In many instances, the current state of scientific knowledge is of little help to forest managers when they try to assess the capability of the resources, even when they have the opportunity and funds to do so.

For such resources as wildlife habitat, recreation opportunities, or watershed quality, there is no widely accepted methodology on what to measure or how to measure it, even if the funding were available to do so. Current measurements are of limited usefulness in understanding the resource, setting meaningful goals, and measuring accomplishments. National Forest System resource managers have turned to Forest Service Research for guidance, but it is widely perceived by both forest managers and the public that the experiment stations have not been able to provide much help.

There are few organizational or professional incentives for Forest Service research scientists to apply themselves to meeting the needs of National Forest System managers in terms of technique and methodology for data collection and analysis. As with those in many research organizations, tenured scientists in the Forest Service have incentives to become progressively more narrow in their individual disciplines, rather than supporting the interdisciplinary approach needed in the management of the national forests. Forest plans and regional guides do have research components. The question is how these can be factored into the agency's research agenda.

Data collection and research priorities need to be established. NFMA and its implementing regulations provide explicit guidance on both the collection and maintenance of current data bases, and on the conduct of additional research to support decisionmaking and management of the national forests. Regarding inventory data and information collection, the regulations require that:

> Each forest supervisor shall obtain and keep current inventory data appropriate for planning and managing the resources under his or her administrative jurisdiction. The supervisor will assure that the interdisciplinary team has access to the best available data. This may require that special inventories or studies be prepared. The interdisciplinary team shall collect, assemble, and use data, maps, graphic material, and explanatory aids, of a kind, character, and quality, and to the detail appropriate for the management decisions to be made.
> 36 CFR 219.12(d)

It was understood that shortcomings in current inventory and assessment methodologies may point up the need for additional research. Indeed, one of the secondary purposes of national forest planning was to identify research needs for followup by Forest Service Research:

> Research needs for management of the National Forest System shall be identified during planning and periodically reviewed during evaluation of implemented plans. Particular attention should be given to research needs identified during the monitoring and evaluation. . . . Research needed to support or

> improve management of the National Forest System shall be established and budgeted at the research station and national levels. Priorities for this portion of the Forest Service Research Program shall be based upon the information gathered at all planning levels of the National Forest System. An annual report shall be prepared at the national level with assistance from regions and stations which shall include . . . a description of the status of major research programs which address National Forest System needs for research, significant findings, and how this information is to be or has recently been applied. 36 CFR 219.28

This current direction regarding data collection and supporting research seems clear and explicit. It just has not been followed.

It has been suggested that the phrase *best available data* be stricken from 219.12. Critics say that it provides too much discretion to agency officials to avoid updating existing data; in its place would be specific age limits set to trigger new inventories when, for instance, the current timber inventory is more than 10 years old. However, a recent decision by the Federal district court in Colorado suggests that there are already enforceable limits on that discretion. Ruling against the Forest Service, the court found that data used to develop the allowable sale quantity in the plan were "inaccurate and outdated"; affected portions of the plan must now be redone (*Citizens for Environmental Quality* v. *U.S.*, No. 87-F-1714 (D. Colo., August 24, 1989)). In the interest of avoiding the necessity of more prescriptive law or regulations, the Forest Service should give priority to updating resource data important to planning decisionmaking before the first major revision of any forest plan.

Through its appropriations authority, Congress bears the primary responsibility for correcting the situation. No one is more painfully aware of the shortcomings in the resource data supporting forest planning than the resource managers themselves. The appropriations committees should consider a special funding initiative, such as that taken in 1976 to eliminate the reforestation backlog, to ensure that the basic resource capability information available to forest managers is made—and kept—as accurate and up-to-date as possible.

Not all data need be gathered by the Forest Service itself. For their own purposes, many organizations outside the Forest Service have gathered information on the resources of the national forests. In some cases, the information is superior to that compiled by the Forest Service, especially for the nontimber resources. For example, the Forest Service's capability to independently develop information on minerals and oil and gas deposits is quite limited. Universities, State agencies, and industry associations often have superior expertise and data collection capabilities in this area. Expertise and existing data from outside the agency also could provide better information on soils mapping, water flow and quality, plant and wildlife populations, and cultural resources. Forest Service officials should seek out data that already exist, encourage a continuing sharing of information with outside organizations (particularly the universities), and, where improved information would be useful to several parties, negotiate cooperative agreements to share the cost of additional data collection.

Where further advances are needed in the science and technology of data collection and analysis, the Forest Service must decide whether it will continue to rely primarily on its own internal Research organization or will turn to the universities and other research institutions. Such organizations often have a greater sensitivity for the "market" for their research—and thus may show a greater responsiveness to the needs of National Forest System managers. If the Research branch of the Forest Service is to serve the role depicted in the regulations, a fundamental reordering of its incentive and reward system is required (36 CFR 219.28). Interdisciplinary task groups of scientists from the experiment stations might be assigned to work with a group of National Forest System managers and resource specialists to develop methods and techniques that truly address the needs of resource management and planning personnel. This research should be augmented by applied research at the Nation's universities, funded through an expanded competitive grants program directed at a broader array of research activities than is covered by the McIntire-Stennis research grants. Unlike McIntire-Stennis funds, eligibility should be extended to all accredited universities, not just the land grant universities.

The needs of the Forest Service in this area are great, and it is clear that priorities will have to be set. More accurate and complete data facilitate more informed dialog and sounder decisions. However, no amount of data will change people's values. Questioning the validity of current information and calling for more data form a common—and often effective—way of delaying decisions that may be inconsistent with the values of particular interest groups.

Research should respond to the most critical shortcomings already identified during forest planning. A first priority should be developing methodologies for both assessing and monitoring trends, not just "snapshots," in both the quantity and quality of noncommodity resources. Resource inventories and monitoring results should be on the same basis.

A second major priority should be developing integrated approaches to resource inventory and monitoring. There are three fundamental needs in this area. First, managers need guidance on developing and using a "general ecological inventory," rather than a series of single resource inventories, considering the complex interrelationships among resources on the national forests. Second, techniques must be determined for assessing the effects of management activities on other associated resources ("resource interactions"). Third, sustainability thresholds, established through empirical research, would allow managers to determine the cumulative effects of management actions on forest ecosystems and to know when the limits of resource capability are being approached.

Research priorities should be issue driven. Part of the problem with existing data bases is that, in an attempt to make the data comprehensive, the Forest Service has made it inflexible. During forest planning, questions were continually changing, often requiring a new or different approach to analyzing the information. As these changes took place, Forest Service managers found that they had a great deal of information but that little of it was truly useful.

Priorities should be based on whether the information is required to identify and address the most pressing issues and whether the availability of additional or different information is critical to the decision at hand.

For monitoring and evaluation, research priorities should be driven by a comparison of results with what was anticipated in the plan, especially in terms of the impacts of management activities on other resources. As forest plans are revised, new issues, concerns, and opportunities are sure to arise. The Forest Service should anticipate this and be prepared to respond with appropriate and current information for the public as well as for the decisionmakers. During the later stages of planning, sensitivity analysis should guide decisions on whether additional information at this stage would result in a fundamental difference in the outcome of the plan, and thus whether or not the decision on the plan should wait until the information is provided.

Decisionmakers Need Guidance in the Appropriate Use of FORPLAN and Other Analytical Tools

FORPLAN, the computer-based optimization model developed for use in national forest planning, relied on data that have been found in some instances to have been inaccurate or outdated, and the model's formulation continues to be a subject of debate among experts in computer modeling. However, the technical merits of the model may ultimately prove less critical than the manner in which FORPLAN was employed in decisionmaking in national forest planning. On many national forests, the planning decisions were perceived to have been, in words used by more than one workshop participant, "blindly driven" by FORPLAN analysis. The interdisciplinary team was constrained by FORPLAN rather than operating independent of the model to identify factors that, by their very nature, could not be adequately reflected in linear, mathematical terms. In many instances where the alternatives were constrained by FORPLAN, the model itself was constrained by assumptions that were not made apparent in the plans, leading to a public perception that the plans reflected top-down decisions rather than decisions reached on the basis of local issues, concerns, and opportunities.

Models should supplement planning. Instead, models drove planning.

From Portland workshop discussions

Forest users who questioned the formulation of the planning alternatives were often told that they had been determined by FORPLAN. FORPLAN, in turn, was virtually impenetrable to most forest users, leading to frustration and distrust for the process and agency officials alike. The inaccessibility of the model, and its portrayal as a decisionmaker rather than one of several analytical tools in decisionmaking, contributed to the perception that the public was still being excluded from the most important decisions. Many felt that the important decisions were being made on the basis of information and criteria

buried somewhere in the depths of FORPLAN and not disclosed to the public in the planning documents.

This is not an indictment of FORPLAN, per se, or of linear programming as a planning tool. FORPLAN itself was handicapped by the constraints placed on the model beforehand. As one workshop participant noted, "Optimization often had little to do with the results of FORPLAN analyses." The difficulties encountered when planning alternatives were developed on the basis of FORPLAN results had more to do with the top-down constraints on the model rather than anything intrinsic to linear programming or any other type of optimization modeling. With the length of time it took to produce most forest plans, and the turnover in the planning staff, many Forest Service officials dealing with the final stages had little understanding of just how constrained their own particular version of the model had become. Implicitly, many planning options had been precluded along the way.

There must be a clear understanding, both inside and outside the Forest Service, of the appropriate role of FORPLAN analysis. Given the growing complexity of balancing the many uses of the national forests and the requirements of NFMA to consider economics in planning future management activities, the continued use of FORPLAN or similar computer models is almost certain. However, Forest Service planners and line officers can be trained to use FORPLAN more appropriately, eliminating many of the drawbacks associated with the model during the initial planning effort.

The interdisciplinary team must use FORPLAN—FORPLAN should not drive the interdisciplinary team. FORPLAN should not be the starting point in the development of alternatives. Resource capabilities and management issues, including sociopolitical and economic considerations not well suited to quantitative analysis, should frame the discussion. The interdisciplinary team should develop a full range of alternatives based on its own assessment of local and national issues, concerns, and opportunities, and on an integrated consideration of resource capabilities. FORPLAN should then be used primarily as a device for analyzing tradeoffs among these alternatives. FORPLAN should not dominate or limit the broader considerations of the interdisciplinary team; the interdisciplinary team should do the planning, with FORPLAN playing a minor supporting role.

FORPLAN Should Be Substantially Simplified for Use by Most National Forests

A substantial reduction of the complexity and detail in FORPLAN would serve many valuable purposes. Simplification would keep it continually clear to planners and decisionmakers that FORPLAN is an analytical tool, not a device for providing answers. For nearly every biological, physical, or economic relationship modeled in FORPLAN, certain assumptions and approximations must be made to state the relationship as a linear equation. The total of these approximations in a model with 50,000 or more equations makes the model much less precise than is realized by decisionmakers, planners, and often the modelers themselves.

Some of the individuals who themselves played a role in the design of the model point out that FORPLAN is useful on forests that have major timber programs but that it may not be worth the effort and cost to use it on forests that do not. FORPLAN evolved from timber-harvest-scheduling models developed in the early 1970's, and this is still the core of the model. Although the model has been refined so that other multiple-use values are now treated as more than just constraints on timber management, FORPLAN still faces a considerable credibility problem with most forest users and the general public.

FORPLAN is clearly useful where there is a significant timber resource. Below that, is it worth the effort?

From Denver workshop discussions

A much more basic and simplified model, limited to the few relationships that can be accurately captured by such an approach, would continually remind decisionmakers that the bulk of the analysis must still be done by human resource managers working together on an interdisciplinary team. The rationale for decisions would not only be clearer to the public, particularly those who never have—and perhaps never will—understand the technical details of FORPLAN, but it would be clearer to the planners themselves. This will likely result in plans that are better thought through and that are easier to revise when the conditions on which the planning assumptions are based begin to change.

Before forest plan revisions are widely under way, the Forest Service should organize training sessions and materials for planners and line managers, discussing the prior experience with FORPLAN and reinforcing the use of FORPLAN in a supporting role. It should remain clear that planning is to be done by the interdisciplinary team, with the direct involvement of the line officer, all of whom should thoroughly understand the workings of their own particular version of FORPLAN and how it produces the conclusions it does. There should be a healthy regard for the potential of FORPLAN as an analytical tool, and also for its limitations.

Recommendations

- *Data collection priorities should be issue driven.* Rather than taking the comprehensive approach to data gathering, resource information should be collected and analyzed in a way that is flexible enough to permit planners and managers to respond to changing information needs. Precedence should be given to assembling information to address current issues and information that could make a critical difference in the outcome of decisionmaking.

- *Ensure research support where current scientific knowledge regarding data collection methodologies is insufficient.* The Forest Service should improve current techniques for projecting timber growth and yield and mineral potential. It should place special emphasis on developing techniques for assessing non–market resource capabilities and resource interactions. The agency should develop incentives that will encourage Forest Service research scientists to work closely with National Forest System resource managers to identify needs for additional research to support national forest management decisionmaking.

- *Simplify FORPLAN.* The Forest Service should develop scaled-down models that are flexible enough to be used and understood by line officers and the public and can be adapted for cost-efficient use on national forests with a variety of resource bases. The agency should train local officials in the appropriate use of planning models, making clear that planning is done by the line officer and the interdisciplinary team, with FORPLAN serving a subordinate analytical role.

Putting the Plans to Work

Plan implementation is the ultimate test of the success and usefulness of national forest planning. How well a given forest plan anticipates the changes that actually take place and how effectively it guides on-the-ground management decisions are the proof of the plan itself and the process by which it was produced.

In implementing forest plans, continuing conflicts are brought sharply into focus in the development of individual resource management projects. Issues raised and ostensibly resolved in the forest plan and its subsequent administrative appeals have been raised again at the project planning stage, precipitating another round of administrative appeals and the renewed threat of lawsuits. This has resulted in substantial delays in many planned management activities and increasing uncertainty over whether the management activities will be allowed to proceed at all. The uncertainty over whether management activities will proceed as described in the plan was perceived by many workshop participants as a major shortcoming of forest planning. Many individuals and communities rely on the resources of the national forests as an economic base, as sources of recreation and enjoyment, and for the preservation of important natural values.

Our folks are interested in implementation. They want decisions made on the ground.

From steering committee discussions

From what we heard at the workshops, we have concluded that—

- People are uncertain as to how plan decisions will be carried out, particularly in terms of annual budgeting.
- Because changes in policy are inevitable, plans must be kept flexible.
- Monitoring, evaluation, and plan revision are of critical importance and deserve greater attention.

Forest Plans as a Basis for Project-Level Decisionmaking

The difficulties being encountered in project planning have raised questions about how decisions made in the plans will be carried out. For a variety of reasons discussed in earlier chapters, compromises were not reached easily, and there were many individuals and interests who did not accept the decisions reached in the forest plans. At first, the growing number of administrative appeals on forest plans was regarded as evidence of a failure of forest planning. However, appeals now are generally recognized as a logical extension of the planning process—a means of resolving any remaining questions over either the process or the substance of a particular forest plan decision.

Thus, issues that were thought to have been resolved in either the planning process or in administrative appeals on the plans are surfacing again as challenges to individual resource management projects, especially timber sales and road construction. These appeals, filed by both industry and conservation interests, have significantly slowed the process of plan implementation. Some projects may never be permitted to proceed. Interest groups have accused one another, and the Forest Service, of bad faith. They have proposed both regulatory and legislative changes that would limit the use of administrative appeals on projects that can be shown to be consistent with the forest plan decision as well as decisions on any subsequent plan appeals.

There is a legitimate basis for some of this continuing conflict. Much of it can be attributed to fundamental differences within our society in values relating to public resource use and management. These differences will not go away. The allocation of public resources is inherently a political question. In many cases, Congress will have to be the one to make the tough choices. There are, however, two important factors contributing to the continuing conflict that are clearly questions of administrative procedure and should be addressed in the context of improving forest planning.

The first is the deferral of decisions on a number of broad, forest-wide management issues from forest planning to the project planning stage. In a number of instances, senior Forest Service officials have made the decision to move ahead with implementing most of the forest plan, but to defer other important resource management decisions. Unless an issue is subsequently addressed in an addendum to the forest plan (and in a supplemental environmental impact statement), this shifts the burden for resolving conflicts to each and every project plan that involves that particular activity. For example, the issue of where oil and gas leasing would be permitted on the national forests was bypassed in most forest plans, to be dealt with on a case-by-case basis afterwards. Lands in the northern Rockies with potential for oil and gas development were designated as grizzly bear habitat or allocated to other land uses generally incompatible with intensive commodity development. This virtually guaranteed strife when oil and gas development projects were later proposed in these areas. Commodity interests accuse wildlife groups of bad faith in attempting to halt every proposed project through administrative appeals and the threat of lawsuits. Wildlife groups counter that because no decision was made on the issue in the forest plan, the project plans are the earliest point in the process at which an appealable decision is being made.

Plans were good at addressing the big issues but didn't resolve many of them. They provide direction on what to consider on project decisions.

From Denver workshop discussions

The second major factor contributing to continued conflict at the project plan level and uncertainty in plan implementation is the adequacy of the environmental analysis for proposed projects. NEPA requires that a programmatic environmental impact statement accompany the forest plan and that cumulative and site-specific impacts of a given project be identified and disclosed in a separate project-level environmental analysis (*City of Tenakee* v. *Block*, 778 F. 2nd 1402 (9th Cir. 1985); 40 CFR 1501.7, ELR Reg. 46018). Preparing project-level analyses that are simultaneously broad enough to include the cumulative impacts of other current and foreseeable projects, and yet narrow enough to provide detail, site-specific information on the project at hand, has been a difficult challenge for resource managers. And shortcomings in these analyses invite legal challenges, with all the delays and uncertainties that accompany them.

Officials in different administrative regions of the Forest Service have tried different approaches to assessing the effects of numerous management activities taking place in a geographic area smaller than the entire national forest. Known by various names, including Opportunity Area Analysis, these approaches are an attempt to project the timing and location of all management activities, including timber sales and road construction projects, within that area for a period of 5 years or more. Area analysis helps forest managers develop the specific activities to carry out the forest plan. Area analysis is not meant to satisfy the legal requirements of NEPA for cumulative effects analysis.

When done well, plans assist with project-level decisions and help minimize conflict.

The problem is that you can't relate projects to what is included in the plan.

From Milwaukee workshop discussions

However, in the development of site-specific environmental assessments or environmental impact statements for individual projects, it is tempting to incorporate the results of the area analysis to satisfy the requirements for an assessment of cumulative impacts. Because the area analysis essentially has no validity for NEPA purposes, relying on them in a project environmental

assessment or environmental impact statement does not comply with NEPA. An appeal of the project decision brought on NEPA grounds will usually halt the project until the proper analysis can be done.

There continue to be different points of view among top Forest Service officials and legal experts over just what procedures should be used in project-level environmental analysis, leading to frustration and confusion on the part of field officials and national forest users. In some cases, field officials receive guidance from several different sources—and the inconsistencies only compound the confusion and frustration. It may not be possible for agency leaders to provide clear guidance until there have been enough appeals and lawsuits to determine just what the courts' interpretations are of the requirements of NEPA. In the meantime, an affirmative approach to environmental analysis, and training of field personnel in what is clearly required to comply with NEPA during project planning, will help reduce the uncertainty that planned management activities will be delayed or halted by adverse court decisions.

The Plans Should Be Kept Flexible Enough To Accommodate Policy Changes

A number of important national forest policy changes have been made since forest planning began, many of them outside the context of the planning process itself. Timber contract relief legislation turned nearly 10 billion board feet of timber that had already been sold back to the Forest Service and made it available for future sales. Decisions to protect habitat for endangered species, such as the northern spotted owl or the red-cockaded woodpecker, may substantially change the area of land available for managing timber. The regional forester in California has ordered a one-third reduction in the use of clearcutting on the national forests in that region. A new policy on the export of unprocessed logs could have a significant effect on timber supply, employment, and local economies, particularly in the Pacific Northwest. Workshop participants asked: "Will these decisions make the recently completed forest plans obsolete?" "Will we have to start all over again after implementing the first plans for no more than a few months?"

Policy changes such as these will continue to be made by Congress and by the Forest Service; the forest plans should be flexible enough to accommodate moderate changes without having to be completely revised. The NFMA regulations specifically provide for the amendment or revision of a forest plan in response to changes in the resources or in the supply and demand for those resources (36 CFR 219.10(e–g)). National forest interests, and in some cases Congress itself, have sought increasing detail and commitment in the forest plans. These pressures have made it more difficult for Forest Service resource managers to respond to policy changes without lengthy administrative and planning procedures and without difficult adjustments on the part of resource-using private interests.

Forest plans are guides for the resource manager, not step-by-step statements of exactly what the agency will do over the next decade. Because detailed information will be provided in subsequent site-specific project plans (and thus

will be based on the most current information), forest plans should remain sufficiently general and flexible to respond to a variety of policy decisions without major plan revisions being automatically triggered.

However, the Forest Service should make clear what level of commitment is implied in the forest plans, especially regarding the display of resource production goals that appear in the forest plans. People recognize that the forest plans prepared under NFMA, unlike earlier plans prepared by the Forest Service, are legally binding, but it is not clear to the public just what this means. Users speak of a "social contract," especially in terms of resource production goals, on which communities and individual companies can rely for their own planning and investment decisionmaking. Others see the management standards and guidelines for the protection of long-term resource productivity as a legal commitment. Recently, a Federal district court ruled that the production targets are important goals, but that the standards and guidelines must take precedence if a conflict arises (*Intermountain Forest Industries Association* v. *Lyng* (D. Wyo., April 18, 1988)). The Chief (in a memorandum to regional foresters regarding plan implementation) has reinforced this decision through internal direction to the regional foresters (FSM 1920, February 23, 1990).

The nature of commitments made in the forest plan should be made clear to the public from the outset. Deviation from the resource production goals displayed in the plan is not, in itself, sufficient reason for revising the plan. Given the many unforeseeable fluctuations in economic and environmental factors affecting the use of forest resources, certainty cannot be provided—and thus should not be promised—by the Forest Service.

Congress Should Restructure the Forest Service Budget

Just as a truly integrated planning system will require that the planning process be modified to consider budgets (see "Making the Pieces Fit"), the Forest Service budget must be modified to reflect the integrated resource management approach of good forest planning. People representing a variety of interests—the regional workshops as well as the review committee—agreed that budget decisionmaking is among the greatest sources of continuing uncertainty in plan implementation. In part, this is because other organizations outside the Forest Service—the Secretary of Agriculture, the Office of Management and Budget, Congress—exert control over the agency's funding. But the disjointed way in which the many interrelated parts of the budget itself are considered also is a major factor.

The Forest Service annual budget request now is based largely on the forest plans. Because the plans represent an integrated approach to managing all the resources of the national forests, the budget information also is integrated; individual projects may have a number of components, including timber, wildlife, recreation, and watershed improvement. Congress, however, requires that this information be translated into dozens of budget line items representing the individual components. During budget review by the Secretary, the Office of Management and Budget, and Congress, money is added to or subtracted from these line items with little or no recognition that they are interrelated.

Consequently, the congressional appropriation can comprise a very different mix of funding than is called for by the forest plans. Integrated management becomes further distorted by Congress' assignment of a specific volume of timber that must be sold in the coming fiscal year. This target, which Congress has begun to assign on a region-by-region basis, becomes the marching order for line officers—who will be evaluated on whether or not they have met their portion of the target.

This budget structure significantly impedes the Forest Service's efforts to accurately implement the forest plans and meet the requirements of NFMA. The forest plans represent significant progress toward integrated management. Under the current budget structure, however, Congress does not give the agency the tools it needs to conduct integrated management.

There is no point in the public investing time in negotiating plans if Congress acts to set bounds on planning—through mandated timber sale targets, for example.

From Missoula workshop discussions

Congress must put its money where its statute is. This is not to say that the Forest Service should simply be given more money. A Forest Service test of a simpler budget structure that considers all national forest resource management programs (except construction) under a single appropriation suggests that better integrated management could be achieved with lower overall funding. The simplified budget structure should be expanded to include all regions of the National Forest System where forest planning is essentially complete.

This should be done without any further complication of the system through the introduction of new "resource output goals" that are problematic to define and are of dubious value in program evaluation. Meaningful production goals for recreation, water, wildlife, and fisheries have yet to be established, even in theory, and reported accomplishments would be nearly impossible to evaluate objectively or even verify independently. Even the board-foot targets for timber production say nothing about the quality of timber management on the national forests and whether conditions in the forest have improved or declined.

Congress should cease assigning fixed timber sale volume targets in the appropriations bills, requiring instead that the forest plans be implemented as faithfully as possible within available funds. Congress should concentrate its efforts to improve Forest Service appropriations control on accounting procedures—where it has traditionally had the greatest validity and can be professionally and objectively evaluated by Congress' General Accounting Office.

Greater Attention Must Be Directed Toward Monitoring, Evaluation, and Plan Revision

Monitoring and evaluation are key elements in forest plan implementation. Together, they provide assurance that the objectives of the forest plan are being met through the management activities taking place on the ground. Further, the results of monitoring and evaluation can trigger changes in management if an action is not producing the desired result, or they can trigger changes in the plan itself.

It is important that the implementation of the forest plans be monitored and evaluated at each national forest, and that all the various interests that participated in the development of the plan continue to be just as committed and involved. Monitoring and evaluation form a step in the planning process that is no less important than the analysis of the management situation or the weighing of alternatives. Planning on the national forests is a continuous process of exploration, learning, and adjustment. The decision on a forest plan is not the termination of a linear process, but one point on a circle in which the depth of knowledge and understanding increases with each revolution.

As with data collection and planning more generally, monitoring and evaluation are significant additional responsibilities for local resource managers that must be met within the budget for regular program activities. There is no special funding for monitoring. Forest Service officials in many areas have stated that if the funds to properly monitor the results of a particular project are not available, the project will not be allowed to proceed until they are. However, the connection between monitoring and individual projects is a loose one; most monitoring needs, such as whether water quality standards or wildlife habitat needs are being met, apply to much larger areas of a forest than can be addressed in a single project.

Other problems with monitoring and evaluation are similar to those with data collection (see "Establishing an Information Base for Planning"). For many resources, managers are unable to assemble monitoring data that are thorough, accurate, and current. For other resources, particularly the noncommodity resources, there is often no generally accepted methodology for the managers to follow; there is insufficient scientific understanding of specifically what to monitor and how to evaluate the results. This situation simply reinforces the need for the actions recommended in "Establishing an Information Base for Planning": (1) congressional rededication to providing adequate and specific funding for data collection and analysis and (2) stronger research support for national forest management through both the Research branch of the Forest Service and competitive grants to universities.

As a preliminary stage in determining whether the plan needs to be revised or amended, there should be a general evaluation of how the management of a national forest changed while the existing plan was in force. The review committee observed that current plans provide no sense of history. How management had changed on the forest in the decade or so prior to the development of the plan could be only vaguely inferred from the trajectory of the "current direction" alternative. The original analysis of the management situation and the records of what has taken place on a national forest over the life of the

plan provide solid documentation of management trends. They also will indicate how events diverged from what was depicted in the plan, and may even offer a few clues as to why. To view the fact that there was a divergence as a failure of planning would be a mistake. Understanding the reasons for the differences—and separating out the effects of external factors that can be neither controlled nor predicted—is a critical step toward making the next forest plan better than the last.

The central focus of the "National Forest System" portion of the annual *Report of the Forest Service* should be how well the forest plans are being implemented. Both Congress and the Forest Service should focus greater attention on whether the resource management occurring in the field is in accord with the forest plans. Congress should see that the agency has adequate funds to reliably monitor and report on plan implementation.

There should be a critical reevaluation of whether revisions of the current forest plans should be done incrementally or should be "zero-based." The NFMA regulations now require that revisions be "considered and approved in accordance with the requirements for the development and approval of a forest plan" (36 CFR 219.10(g)). Zero-based planning shares many of the same theoretical values—and practical pitfalls—as the zero-based budgeting attempted some years ago by the Federal Government. Wiping the slate clean and beginning anew allows the entire universe of alternatives to be examined, unprejudiced by directions and choices that have gone before. In fact, however, change is incremental when the alternatives available are heavily influenced—and circumscribed—by the choices made in the past.

Examining the entire universe of alternatives in great detail may be both interesting and informative, but it imposes a tremendous demand for analysis that may go largely unused in the real decision process. Guidance must be taken from NEPA procedures that underpin the formulation and analysis of alternatives in forest planning. The NEPA regulations require that the agency "rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated" (49 CFR 1502.14(a)). There is a substantial body of NEPA case law regarding the range of alternatives, and this may determine what subset of the full array of possible actions need be subjected to rigorous and detailed analysis.

Recommendations

- *Defer important forest-wide decisions only after careful consideration and in limited circumstances.* Decisions might be delayed to avoid inordinate delay in implementing an otherwise completed forest plan. Decisions should not be delayed simply to shift the burden for conflict resolution from the forest plan to project planning. Where the Forest Service expects to defer certain decisions, the agency should make clear at the outset what will—and will not—be decided in the plan.

- *Make clear what level of commitment is implied in the forest plans.* This is especially important in the display of resource production goals that appear in the forest plans as they relate to other criteria, such as the management standards and guidelines.

- *Reduce the number and detail of line items in the Forest Service budget.* Congress should specify a Forest Service budget structure based on fewer, more inclusive budget line items, enabling the agency to acrually take the integrated resource management approach required in NFMA. Resource production goals that are difficult to define and even more difficult to evaluate should not become the basis for congressional direction and control over the agency. The timber sale targets now assigned in the appropriations process should be dropped completely, and evaluation should be based on the agency's success in implementing the forest plans.

- *Federal regulations should be revised to permit an explicitly incremental approach to the revision of forest plans.* This should be coordinated with the separate requirements of NEPA (especially regarding the consideration of "all reasonable alternatives") and other laws governing national forest management activities.

- *Ensure that forest plans are flexible enough to respond to a variety of policy decisions without automatically triggering major plan revisions.* The Forest Service should make clear its intent that the plans serve as guides for the resource manager, not step-by-step statements of exactly what the agency will do over the next decade. Detailed information, based on more current information, should be provided in subsequent project plans.

- *Focus the "National Forest System" portion of the annual* Report of the Forest Service *on how the forest plans are being implemented.* Both Congress and the Forest Service should focus greater attention on whether the resource management occurring in the field is in accord with the forest plans. Congress should see that the agency has adequate funds to reliably monitor and report on plan implementation.

What Is Good Forest Planning?

What, then, is quality forest planning? The question is not simply an academic one. The Forest Service technical team that studied the administration of the forest planning process observed that "people in the Forest Service were generally not sure what a good plan comprised. Not knowing a good thing when they saw it, how could they fully appreciate it?" (USDA Forest Service 1990).

There is a difference between good forest planning and a good forest plan. The first emphasizes quality of process, the second quality of product. When workshop participants cited an example of a quality plan, they usually pointed to the strengths of the process used by the forest's staff. We place a premium on process, believing that a good process is essential to the production of a good plan. A good process does not guarantee a plan that has broad public support and is technically sound, of course. But it also is unlikely that a poorly managed process would result in a gem of a plan.

Given the tremendous variety among forests and their social and political environments, successful planning will be defined differently on each one. Planning is affected by many factors—the value of the various resources of a national forest, the composition of the local population (the mix of long-time residents and immigrants from metropolitan areas, for example), the political environment and local power bases, and relationships among interests (whether they view each other as neighbors or antagonists and whether there are established communications channels). Typically, where a forest plan was deemed to be a success, there was a forest supervisor who understood the social and political environment, was able to read the forest's constituency well, and personally navigated the plan through the reefs of public controversy.

Asked for their criteria for good forest planning, workshop comments fell into four general categories—

- One emphasizes process—"It focuses on changes required on the land to improve resources quality, not just production targets." "It provides for systematic communications among all interests." "There is a sharing of *all* information on how the decision was made."

- Another focuses on results—"The plan is achievable." "It implements the reform mandate of NFMA." "It guarantees a dependable supply of timber for local mills." "We are better off than we were before."

- A third category consists of standards for the plan itself—"It presents a vision of how the forest should be managed and what it should become."

"It is connected with RPA and complies with other laws." "It is written plainly and directly."

- A final category considers effects beyond the process—"It reduces polarization." "It helps people understand forests and their resources."

Participants at the regional workshop in New England, where plans for the two national forests generally met with broad local acceptance, offered this advice: "Start by establishing the basic purposes of the forest—the goals—then fill in the details."

Six Criteria To Judge Planning

Synthesizing what we heard at the workshops, we believe that planning can be judged using six criteria—

- The process is simple and clear.
- The process is transparent, with the public involved throughout.
- The plan is based on sound, current information.
- The process addresses major issues in ways people can understand.
- The process is not an ordeal for citizens or forest personnel.
- The plan results in a vision of future management that can be clearly understood.

One could add many other criteria to the list, of course. But this would only complicate an assessment of the process. If these six are applied, we believe the other components of the process will fall into place.

The Process Is Simple and Clear

The planning process should be straightforward, with the function of each planning step clear and understandable. The public should be told what decisions will be made, when they will be made, how they will be made, and by whom. The logic behind decisions should be explained clearly and forthrightly.

The Process Is Transparent, With the Public Involved Throughout

Forest users are involved continuously, contributing information, opinions, and ideas to receptive Forest Service personnel. The dialog is continuous and free flowing among forest interests and the Forest Service. Line officers are personally committed and involved. When the Forest Service selects a preferred alternative and renders a final decision, it explains clearly and candidly why it decided the way it did. Overall, the process facilitates constructive and civil dialog among disparate forest interests as well as with the forest staff.

The Plan Is Based on Sound, Current Information

Sound, current information is a critical ingredient of good planning and the quality of the plan itself. This includes information about the quality and quantity of the forest's resources and the productive capacity of the land, as well as information about how people feel about the forest and what people want. However, priorities on what information to collect are established, and efforts focus on data required to make a decision, solve a problem, or address an issue.

The Process Addresses Major Issues In Ways People Can Understand

The planning process identifies the major issues and addresses them, focusing debate, resolving issues that can be resolved, and clarifying those that must await further study and debate. Moreover, the process frames the issues in ways that people can relate to—proposed changes in the character of popular hiking or camping areas, changes in opportunities to hunt or see wildlife, changes in the view from a town or from a well-traveled road, or the effects of a plan on the local and regional economy.

The Process Is Not an Ordeal for Citizens or Forest Personnel

A good planning process, in the words of one participant at the Denver workshop, "doesn't chew people up and spit them out." This applies both to members of the public participating in planning and to Forest Service staff. Planning has taken a high toll in burnout of Forest Service planning personnel and has exhausted the energy and patience of many among the public. The ideal, as expressed by one workshop participant: "The process should be stimulating for everyone."

The Plan Results in a Vision of Future Management That Can Be Clearly Understood

Good planning generates a vision of the future of a forest—a vision that is understood, if not entirely shared, by the forest's local and national constituents. The vision incorporates a qualitative description of the forest and its resources as well as production tables. It provides a geographic sense of how the forest is to be managed. The vision establishes the forest's distinctive role in its regional and national context. It contains an explicit statement of what, in the managers' view, constitutes sound resource management. The plan describes the past and present, and shows in what ways the future will be different. Altogether, the vision is a picture—qualitative and quantitative—of what the forest is expected to be like in character, quality, and productivity at the end of the planning period. The vision evolves over time, in response to changing needs and situations.

Conclusion

Society has lofty aspirations, some of which can be satisfied by the national forests. Some aspirations are economic, or have to do with individual health and well-being, or the quality of the environment locally or globally. The challenge of forest planning is to reconcile increasing and changing social, economic, and environmental aspirations with the finite capability of the land. We must remember that forest planning is simply a means to an end: sound management of the national forests over the long term, protection of resource

productivity and natural values, and enrichment of our lives and those of future generations.

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Appendix A
Summary of Recommendations

Taking Care of the Land

- *Take an ecosystems approach to multiple-use, sustained-yield management.* In contrast to a resources approach, an ecosystem approach should be taken in implementing the planning requirements of NFMA.

- *Intensify research on ecological processes, biological diversity, and sustainability of forest ecosystems in the National Forest System.* The Forest Service should lead in the development and implementation of a comprehensive research program in cooperation with the Nation's forestry schools and other forestry research institutions throughout the world.

- *Analyze ecological risks of management strategies, techniques, and activities.* Forest Service Research should develop a decision-support system for evaluating the risk of damage to specific ecosystems from forest management strategies, techniques, and activities, and this information should be contained in forest plans.

The Public's Role in Decisionmaking

- *Be explicit about expectations and responsibilities.* The Forest Service should be explicit about the public's role in decisionmaking and its own authority and responsibilities for leadership.

- *Involve people early and continuously.* The agency should identify stakeholders and involve them in planning before issues are identified or alternatives developed. It should not wait for parties to become entrenched in their views.

- *Build networks that encourage and facilitate communications in all directions.* Individual forest staffs should establish a communications system that involves, for example, advisory committees, opportunities for information exchanges with and among interest groups, and systematic reporting by the Forest Service.

- *Help interest groups talk to one another.* The Forest Service and interest groups should establish forums for a continuous dialog on problems and issues.

- *Establish committees to work with the Forest Service.* Individual forests should be permitted and encouraged to establish committees broadly representative of its clients to test ideas, provide advice, and facilitate communications among the interest groups and the Forest Service.

- *Explain the rationale for decisions.* The Forest Service should provide evidence that all points of view have been sincerely considered and that the decisions were based on the best information available.

- *Recognize that the Forest Service does have its own values and interests.* The Forest Service should be explicit about its statutory mandates and the professional values of its personnel.

Making the Pieces Fit

- *Commit the Forest Service, from the districts up to the agency's top officials, to affirmative compliance not only with the letter of the law but with the spirit as well.* This commitment should underscore that the thrust of the laws governing national forest management—including RPA, NEPA and the Endangered Species Act—is consistent, and should not be seen as pulling resource managers in different directions.

- *Train field personnel in compliance with NEPA.* This training should stress not only the requirements of legislation, regulations, and current case law, but should place a special emphasis on recognizing the legitimacy and value of environmental analysis.

- *Simplify the NFMA regulations to the minimum level of detail necessary to implement the law.* Local resource managers should be given the full flexibility permitted by the statute itself to address the needs and concerns of the public openly and directly within the ecological capabilities of the land and resources. The detail should not be moved to the Forest Service Manual; existing Manual direction regarding national forest planning should itself be radically simplified.

- *Explicitly consider and display budget considerations in the forest planning documents.* One or both of the following approaches should be adopted and applied uniformly across the National Forest System:
  (1) Show in the plan how the particular management emphasis of the selected alternative can be maintained at a variety of budget levels below full funding.
  (2) Place budget constraints on the development of planning alternatives, limiting assumed increases in funding to no more than, say, 10 percent above current funding trends.

Organizing the Agency for Planning

- *Make planning an explicit component of performance evaluations of forest supervisors.* A clear signal should be sent throughout the agency that forest planning is an integral part of national forest management and that the early, close, and systematic involvement of line officers in the development of forest plans is important enough to the agency to be explicitly recognized and rewarded.

- *Offer forest planners intensive short courses or seminars on theory and practice of planning, perhaps with the cooperation of an accredited school of planning.* The purpose of this effort is to provide an opportunity for

forest planners to understand better the theoretical foundation of planning practice.

- *Establish a planning job category within the Forest Service with opportunities for advancement.* Forest planning is now a fixture in the administration of the national forests, and a cadre of professional planners is necessary for effective planning. Planners should participate fully in the agency's reward system, including promotion to line officer positions.

- *Review the internal organization of the Forest Service with an eye to encouraging and facilitating holistic, integrated resource management practices.* There may be unnecessary conflict and overlap among staffs responsible for different aspects of planning. Similarly, the existing functional organization seems at odds with NFMA's requirement for integrated resource management.

Establishing an Information Base for Planning

- *Data collection priorities should be issue driven.* Rather than taking the comprehensive approach to data gathering, resource information should be collected and analyzed in a way that is flexible enough to permit planners and managers to respond to changing information needs. Precedence should be given to assembling information to address current issues and information that could make a critical difference in the outcome of decisionmaking.

- *Ensure research support where current scientific knowledge regarding data collection methodologies is insufficient.* The Forest Service should improve current techniques for projecting timber growth and yield and mineral potential. It should place special emphasis on developing techniques for assessing non-market resource capabilities and resource interactions. The agency should develop incentives that will encourage Forest Service research scientists to work closely with National Forest System resource managers to identify needs for additional research to support national forest management decisionmaking.

- *Simplify FORPLAN.* The Forest Service should develop scaled-down models that are flexible enough to be used and understood by line officers and the public and can be adapted for cost-efficient use on national forests with a variety of resource bases. The agency should train local officials in the appropriate use of planning models, making clear that planning is done by the line officer and the interdisciplinary team, with FORPLAN serving a subordinate analytical role.

Putting the Plans to Work

- *Defer important forest-wide decisions only after careful consideration and in limited circumstances.* Decisions might be delayed to avoid inordinate delay in implementing an otherwise completed forest plan. Decisions should not be delayed simply to shift the burden for conflict resolution from the forest plan to project planning. Where the Forest Service expects

to defer certain decisions, the agency should make clear at the outset what will—and will not—be decided in the plan.

- *Make clear what level of commitment is implied in the forest plans.* This is especially important in the display of resource production goals that appear in the forest plans as they relate to other criteria, such as the management standards and guidelines.

- *Reduce the number and detail of line items in the Forest Service budget.* Congress should specify a Forest Service budget structure based on fewer, more inclusive budget line items, enabling the agency to actually take the integrated resource management approach required in NFMA. Resource production goals that are difficult to define and even more difficult to evaluate should not become the basis for congressional direction and control over the agency. The timber sale targets now assigned in the appropriations process should be dropped completely, and evaluation should be based on the agency's success in implementing the forest plans.

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- *Focus the "National Forest System" portion of the annual* Report of the Forest Service *on how the forest plans are being implemented.* Both Congress and the Forest Service should focus greater attention on whether the resource management occurring in the field is in accord with the forest plans. Congress should see that the agency has adequate funds to reliably monitor and report on plan implementation.

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