

## CHAPTER FOUR

# Collaborative Planning for Sustainability

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The purpose of this chapter is to outline a collaborative-planning process and adaptive-management approach that recognizes the maintenance of sustainable ecological systems as a foundation for the management of national forests and grasslands and, within that context, attempts to contribute to the economic and social well-being of the nation and nearby communities. This chapter builds upon the existing legal framework for planning and management in the Renewable Resources Planning Act (RPA) of 1974, as amended by the National Forest Management Act (NFMA) of 1976. However, it also builds upon many recent examples of innovative public and private approaches to changing the management and use of natural resources to better ensure the long-term sustainability of the all the lands and resources upon which people depend for survival.

The legislative mandate for the management of the national forests and grasslands requires that these public lands be conservatively used and managed to ensure their sustainability and to guarantee that future generations will continue to benefit from their many values. The Forest Service has broad discretion in charting management direction and regulating human use to meet this mandate. Broad public participation in making these choices is required by statute, regulation, and policy. The purpose of planning is to develop management strategies and policy guides for human use that respond to new scientific understanding of natural and social systems as well as to changing societal conditions and values. Thus, planning is the process in which scientists, citizens, and other public and private stakeholders come together to debate and discuss how to use and manage the National Forest System to the benefit of current and future generations and to ensure the ecological sustainability of these lands and resources. One outcome is clear: the social values and scientific knowledge that guide decision making will change over time, thus changing the management emphases and policies as well as on-the -ground results.

### 4A. The Purpose of Planning

## Fundamentals

The simple objective of any planning process is to promote decisions that are informed, understood, accepted, and able to be implemented. An additional objective is to

promote ongoing learning through the planning process so that future decisions can be better informed. With an acknowledgment of these objectives and an acceptance of the goals outlined in NFMA and other statutes governing the management of National Forest System lands, the proposed planning process has been

structured with several fundamental elements at its core: It is outward-looking; built upon assessments; grounded in current scientific understanding; collaborative in nature; focused on desired future conditions; enhanced by independent review; structured to build stewardship capacity; and has monitoring, evaluation, and adaptation as integral components.

Decisions that are *informed* are those well-grounded in an understanding of current conditions and future trends, all at the scale appropriate to the issues that define the planning process. Informed decisions build upon current scientific understanding of the ecological and human systems of the planning area. Hence, the Committee recommends a planning process that is outward-looking to capture the full scope of the issues involved, that is built upon comprehensive assessments that describe the ecological as well as the social elements of the planning area, and that is grounded in science.

Decisions that are *understood* have meaning not only to decision makers but also to those whose concurrence, involvement, and action is necessary for decision making to have an effect. Hence, NFMA planning should be collaborative in nature, fostering the communication, coordination and problem-solving across the diverse spectrum of individuals, organizations, agencies, and governments whose concurrence, involvement, and action are essential to the success of the NFMA planning process.

Decisions that are *accepted* are those made in pursuit of broadly accepted goals and in a broadly credible manner. Hence, planning needs to illuminate the desired future conditions that represent the achievement of these broader goals as well as to incorporate the independent review that ensures that decisions are sound and hence credible beyond the agency.

Decisions that are *able to be implemented* are those made in a manner that recognizes institutional, political, budgetary, and behavioral realities and incentives and that builds

the capacity for stewardship among agency and nonagency individuals who will implement the decisions.

Planning that *looks to the future and is ongoing* needs to be structured to promote continuous learning. Hence, the process must incorporate monitoring, evaluation, and adaptation mechanisms that promote feedback, learning, and change as knowledge expands, events occur, and public policies evolve.

Finally, the people involved in planning and the places affected by planning vary widely across this nation. To respond to *diversity* as well as to *build upon innovations*, the Forest Service needs to embrace an adaptive-planning approach to facilitate a culture of organizational learning and openness within the agency.

## Key Elements of the Planning Process

### Outward Looking

The planning process is outward-looking. It considers the larger landscape in which the national forests and grasslands are located.

Sustainability of ecological, economic, and social systems is not and cannot be the sole responsibility of any single agency, organization or landowner. Ecological systems transcend public and private land ownerships; they do not recognize or conform to geopolitical boundaries. The resources upon which human communities and economies depend are located both on public and private lands. And, what happens economically or ecologically on one parcel of land will invariably affect what is possible on adjacent lands. Hence, planning for the national forests and grasslands must be outward looking, recognizing the broader

systems that affect, and are affected by, stewardship decisions on National Forest System lands.

In the past, planning boundaries were generally based on political/social boundaries: states, national forests or grasslands, or timber-sale boundaries. During the past 20 years, it has become increasingly clear that assessing and planning for ecological sustainability must use ecological boundaries (e.g., the areas used by wide-ranging or key wildlife species), often defined by major watersheds, mountain ranges, or vegetative types. Using ecologically meaningful planning boundaries will enable not only the development of comprehensive plans for the conservation of species and ecosystems but also the ability to measure the cumulative effects of current and future management actions. These boundaries should also have social meaning. Thus, the planning process must be outward looking with the goal of understanding, influencing, and proceeding in a manner that is consistent with the broader landscape in which the national forests and grasslands are located.

An outward-looking planning process is enhanced through improved coordination across other federal and state landowners. Harmonizing and coordinating the different statutory priorities, geographic areas of consideration, and implementation time frames of the various federal agencies is essential to developing integrated strategies for ecological and social sustainability and for adapting these strategies to changed conditions over time. It also enables state and local governments, tribes, nongovernmental and private organizations, and the public who are currently overwhelmed by the multitude and complexity of federal land and resource planning processes to more meaningfully and effectively contribute to these processes.

## Assessments

The planning process is built upon assessments. It initiates a joint public-scientific inquiry that provides the knowledge base for planning and the relationships for stewardship.

Independent information that is considered an objective and realistic portrayal of conditions provides a critical and credible foundation upon which planning can proceed. Assessments, the assembling of a shared and scientifically grounded body of information, provide the foundation of information from which policies, strategies, and decisions can be built, evaluated, and changed. Assessments are conducted as a joint inquiry undertaken by scientists and other knowledgeable people from the federal agencies, other governments, relevant nongovernmental or private organizations, and the public.

The purpose of assessments is to understand the current conditions and trends regarding the land, resources, and people in an area in light of their history and the forces of change. Assessments should address all lands within the geographic area being studied. Considered within the Forest Service's legal framework, these assessments should meet the expectations of the RPA by creating "coordinated public and private research" relationships to "promote a sound technical and ecological base" of information. Two primary scales are needed: bioregional assessments are essential for defining desired future conditions and developing broad conservation strategies, and small-scale assessments provide the site-specific information needed to design effective management activities that fit the history and conditions of the place as well as the social and cultural characteristics of the area.

As part of the assessment process, scientists should help develop strategies for determining and measuring all aspects of sustainability: ecological, economic, and social. In addition, they need to suggest measures of ecological integrity, procedures for obtaining

these measurements, and ways to assess whether ecological systems are being sustained. Social and economic assessments are also critical elements in the assessment processes at both large and small scales. The assessment of social, cultural and economic conditions and trends should provide a useful synthesis of current information regarding demographic changes and migration patterns, economic patterns and relationships, social organization, current institutional arrangements, and historical context relevant to national forests and grasslands. Such an assessment will allow planners to have an independent “picture” of the social environment, which can be refined and become more “place-based” in the planning process.

## Scientific Base

The planning process is grounded in science. It enables policies, strategies, and management decisions to be informed in a scientifically credible manner.

In the first round of forest plans under NFMA, scientists, by and large, sat on the sidelines as managers and interdisciplinary teams developed the plans. A series of lawsuits and a growing realization of the necessity of basing management decisions on credible scientific information led the Forest Service and other federal agencies to call for “scientifically credible conservation strategies” for species and ecosystems. As a result, the Forest Service has embraced the notion of planning based on credible scientific information, including a peer-review process, as one of the tenets of resource management. The Committee of Scientists concurs.

Effective planning develops a foundation of credible scientific information through assessment processes and other consultations with agency and independent scientists. Scientists can participate in planning in a wide variety of ways including: creating knowledge relevant to forest planning, working on the integrative

science of bioregional assessments, helping managers understand the application of this scientific and technical knowledge to management problems, and designing effective monitoring procedures and the experiments needed under adaptive management. One consequence of the involvement of scientists in planning is that managers can learn through this interaction about how to treat management actions as “experiments” with varying levels of uncertainty rather than fixed prescriptions.

## Collaboration

The planning process is collaborative in nature. It provides incentives for people to work together and to contribute to forest planning in meaningful and useful ways.

Effective stewardship of National Forest System lands must engage those who have the information, knowledge, and expertise to contribute; those who have sole control or authority over lands and activities adjacent to national forests and grasslands; those who have the skills, energy, time, and resources to carry out stewardship activities; and those who can independently validate the credibility of stewardship decisions and the reality of achievements. In short, many and diverse collaborative relationships between and among the Forest Service and other agencies, governments, organizations, communities, and individuals are central to stewardship. An important function of the planning process is to build these relationships, and it does so by making collaboration a core characteristic of all phases of the process.

Collaborative planning engages other agencies, governments, businesses, organizations, communities, and citizens in planning for and contributing to the stewardship of the National Forest System, including consideration of how other public and private lands are managed and used with respect to achieving sustainability. This collaborative effort uses a participatory approach to assemble informa-

tion, build decisions, implement the decisions, and monitor the results. The planning process must provide mechanisms for broad-based, vigorous, and ongoing opportunities for open dialogue. These dialogues should be open to any person; conducted in nontechnical terms readily understandable to the general public; and structured in a manner that recognizes and accommodates differing schedules, capabilities, and interests. The participation of citizens should be encouraged from the beginning and be maintained throughout the planning process, including assessments, issue-identification, implementation, and monitoring.

## Desired Future Conditions

The planning process is focused on desired future conditions: It fosters understanding and concurrence on the conditions of the land and resources that will meet the broad strategic goals.

The link between developing assessments and building decisions is defining the desired future condition. It is the first step of any planning process. (See Table 4-1.) The NFMA planning process should start by collaboratively defining desired future conditions along with long-term management goals for the public lands. Defining desired future conditions requires public dialogue because it is a social choice affecting current and future generations. As a future-oriented choice, a desired future condition seeks to protect a broad range of choices for future generations, avoid irretrievable losses, and guide current management and conservation strategies and actions. Visualization of the future landscape through pictures, maps, and computer simulations will be a crucial element in this work. Furthermore, retrospective analyses that help establish the historical range of variability and changes in resource conditions that have occurred over time are a fundamental component of this process.

From an ecological perspective, desired future conditions are those that will sustain ecological integrity over the long term. From a social perspective, desired future conditions are those that will sustain the capacity for future generations to maintain cultural patterns of life and adapt to evolving societal and ecological conditions. Given the dynamic nature of ecological and social systems, a desired future condition must also be dynamic and thus must be revisited in the decision making process during monitoring, external review, and evaluation of performance.

## Independent Review

The planning process incorporates independent scientific review. It validates the use of technical and scientific information in planning and the consistency of management proposals with current knowledge.

The credibility of the planning process rests in part on the routine application of an outside check on the use of technical and scientific information. Independent reviews can provide verification that plans and their implementation are consistent with current scientific concepts. There should be an evaluation of consistency of strategic goals and objectives with scientific and technical understanding at critical spatial and temporal scales. Independent reviews can also promote adaptive management and learning. For example, reviews can highlight and reward creative approaches to challenging management issues. The review process can, by its very presence, encourage collaboration among managers, specialists, and scientists at all stages of the planning process. In addition to the scientific and technical role of independent review, the review should also evaluate the process itself to identify information bottlenecks and to evaluate whether there is adequate interdisciplinary representation, coordination of planning and management across administrative boundaries, and opportunities for discussions with scientists.

**Table 4-1.** Proposed planning levels and purpose.

Type of decisions/ responsible official	Geographic boundary	Purpose
Bioregional guidance/ Regional Forester	Ecological	Provide strategies to ensure sustainable ecological systems (species viability and ecosystem integrity) and sustainable multiple use options across large areas.
Large landscape Strategies/ Forest Supervisor(s)	Ecological/social	Interpret strategies for ecological sustainability and provide for multiple use; address issues defined by public participants; set desired future conditions for different parts of the landscape and actions permitted within them, choose strategic pathways to move toward desired conditions, set input and outcome measures for judging progress toward desired conditions, set land suitable for resource management, estimate ecological, economic, and social contributions on a programmatic basis. Develop monitoring and evaluation process, including independent review.
Small Landscape/ implementation decisions District Ranger	Ecological/ social	Propose actions that move toward desired future conditions; consider all projects in combination to the degree possible within the planning area; estimate site-specific effects; estimate budgets needed for action, estimate outcomes that will result, estimate cumulative effects, provide a context for action. Specify monitoring criteria and expected outcomes, including experimental efforts and areas of uncertainty.

One model for this type of review is the science-consistency check recently pioneered in the Tongass National Forest Land Management Plan (Everest et al., 1997). This technique evaluates whether the information transferred from scientists to policy makers and planners was understood and used appropriately. Independent field review of projects can also be used to ascertain whether implementation would meet the goals of the plans from a scientific and technical viewpoint. The interagency PACFISH reviews could serve as a model for this effort, assuming that the interagency committee was broadened to consider all the values recognized in the plans.

## Stewardship

The planning process builds the capacity for stewardship. It develops the relationships and capabilities through which stewardship can occur.

Achieving ecological, economic, and social sustainability is a formidable task that the Forest Service cannot accomplish alone. The capacity for stewardship of the national forests and grasslands must be fostered both within the Forest Service and within the other agencies, governments, communities, groups, and individuals who must be a part of this endeavor. The planning process is the vehicle for building this capacity. Capacity is the ability to get work done. Stewardship capacity is the ability to bring about effective stewardship, including on-the-ground activities as well as the potential to conceive and analyze new ideas and to effectively solve problems. Stewardship capacity is found in the amalgam of relationships, organizations, processes, skills, resources, understandings, knowledge and expertise, legal mandates, and institutional structures that accommodate, encourage, and implement stewardship activities.

The planning process must shift the emphasis of the Forest Service and other participants in the planning process from

“creating documents” to “building the capacity for stewardship.” Just as the Forest Service can help the American people learn about the limits and capabilities of the national forests and grasslands through the planning process, so too can the agency learn from the knowledge, perspectives, and values of the American people. Citizens and other agencies can contribute a wide array of stewardship services, ranging from volunteer work on trail crews to participating in collaborative efforts aimed at resolving disputes over specific projects. The Forest Service can build the capacity for stewardship by drawing on this knowledge, wisdom, and energy for building relationships, dialogues, and partnerships.

## Monitoring, Evaluation, and Adaptation

The planning process incorporates mechanisms for monitoring, evaluation, and adaptation. It ensures that ongoing learning will occur that will inform future decisions and enhance implementation of current decisions

Monitoring is crucial if performance evaluations are to provide accurate and useful information. It also serves as an early warning system against unforeseen risks involved in management activities. Monitoring procedures need to be incorporated into planning procedures and should be designed to be part of the information used to inform decisions. Adaptive management and learning are not possible without effective monitoring of actual consequences from management activities.

Collaborative planning should estimate a schedule of management actions needed to reach desired future conditions along with the intermediate conditions, outcomes, and learning expected along the way. The correspondence between management actions and expected results should become the performance measures for achievement of strategic goals. Measurement of performance would be

## 4-1. Elkhorn Mountains: An Example of Interagency Cooperation

The Elkhorn Mountain Range of Montana is small and isolated by western standards, containing 250,000 acres surrounded by low-elevation flatlands. Though it contains several different types of ecosystems, including mountain grasslands, various forest types, and riparian zones, the entire range is considered one contiguous landscape. Despite its distinct nature, the mountain range is managed by a variety of landowners: the Forest Service oversees 160,000 acres in two national forests and three ranger districts; the Bureau of Land Management (BLM) manages 70,000 acres; and private landowners hold the remaining 20,000 acres. The Montana Department of Fish, Wildlife, and Parks (FWP) has jurisdiction over wildlife in the entire region.

According to Jodie Canfield, Elkhorn Coordinator for the Beaverhead, Deerlodge, and Helena national forests, this mix of land ownerships has led to conflicting management practices, even within the Forest Service: “The three ranger districts all operated on their own, with little cooperation or even communication between them.” Communication between the other agencies was even less common, she added, and the agencies often worked at cross-purposes. With each agency operating under different mandates and working toward different goals for the land, holistic and consistent management of the mountain range had been impossible.

A bold attempt to change this situation began in August 1992, when the Forest Service, BLM, and FWP signed a memorandum of understanding (MOU) entitled “An Agreement on Working Together.” The MOU designated the entire Elkhorn Mountain Range as a “Cooperative Management Area” and set forth a process for substantive management goals and interagency cooperation.

The goals of the MOU are based entirely on ecosystem-management principles, stated as follows: “Sustaining ecological systems is the umbrella concept in management of the Elkhorn.” The document further states that native-species management will be emphasized and that “wildlife values are a strong consideration in evaluating all land use proposals.” The MOU contains a vision statement, which captures, as those involved put it, “a picture of the desired future.” The vision statement reads:

The Elkhorn Cooperative Management Area is a unique, cooperatively administered geographic area, where management of all lands within public ownership emphasizes sustainable ecosystems. ... On public lands, a sense of “naturalness” is the pervasive quality of the landscape. Mining, timber, grazing and other land use occur, but are mitigated such that they do not appear dominant. ... There is a diversity and abundance of wild animals.

Along with the MOU, the process involved the creation of several interagency teams and committees and two new positions in the Forest Service:

**Elkhorn Steering Committee:** This committee is composed of the Deerlodge and Helena forest supervisors; BLM’s Butte district manager, and the FWP Wildlife Division administrator and regional supervisor. The committee meets at least four times a year; its purpose is to “provide coordinated and cooperative management direction, provide leadership for progressive resource management and development of policy, [and] facilitate implementation of management activities and resolution of issues.”

**Implementation Group:** Group members, who come from various professional disciplines within the agencies, are responsible for overseeing on-the-ground management and developing a landscape analysis, land-management implementation plan, and program of work. They make specific management plans based on the general directions and goals of the MOU and the Steering Committee.



**Extended Team:** This team carries out the directions of the Implementation Group on the ground.

**Elkhorn Ranger:** This Forest Service ranger is responsible only for the Elkhorn Mountains. The ranger, currently George Weldon, serves as liaison between the Implementation Group and the Steering Committee. He ensures that all actions are consistent with the implementation plan and program of work.

**Elkhorn Coordinator:** The coordinator, currently Jodie Canfield, works for the Elkhorn Ranger, serving as “a public and internal contact person as well as staff to three district rangers.” In addition, the coordinator serves as chair of the Implementation Group and coordinates all activities of those involved in Elkhorn management. As Canfield, notes, “I work for all the agencies. The Forest Service pays my salary, but I consider all the agencies to be my employers.”

Although this organizational structure might appear complex and confusing, Canfield comments that having a coordinator in place makes all the difference: “It works okay because *everything* goes through me.” In addition, according to Canfield, “having the MOU is the difference between night and day in the way we are operating. ... The MOU gave us the framework to work together across agency boundaries. It defines the roles of different groups and individuals that are involved in the Elkhorns and how communication and coordination will flow.” However, Canfield noted, “I don’t think it is so much the document as the ideas behind it that really make it work.”

The interagency groups have completed several major projects under this MOU and are currently working on an updated MOU to move the agencies out of the planning phase and into an implementation phase. Among the major joint initiatives completed so far are the following:

**Landscape Analysis:** An analysis of the Elkhorn Range that looks across agency boundaries to examine the existing condition of wildlife, water, soil, vegetation, and natural disturbance regimes in the area’s three major watersheds. It also establishes goals for the desired future condition of resources in the three watersheds, compares existing conditions with those goals, and identifies management opportunities for reaching the goals. The analysis is used to develop an annual work plan that guides the three agencies’ management activities in the Elkhorn Range.

**Travel Plan:** A joint travel plan for the whole Elkhorn Range that determines which roads will be available for public motorized use and in what seasons the roads will be open.

**Bighorn Sheep Reintroduction:** An initiative to reintroduce bighorn sheep into the Elkhorn Range. Sheep were exterminated from the range around the turn of the century.

**Updated Forest Service Plan:** The Forest Service released an updated plan in 1997 for the entire Elkhorn Range, instead of developing plans for areas scattered across Forest Service land within in the range. BLM and FWP contributed to the analysis for the updated plan.

**Ongoing Management:** The agencies are updating allotment management plans, grazing prescriptions, and vegetation treatments based on the management options identified in the joint landscape analysis. They are also completing prescribed burns to improve bighorn sheep habitat, eliminating roads, and implementing new grazing-allotment management plans that better protect riparian resources.

The approach to assessment, planning, and management of the Elkhorn Range has been successful for four key reasons: the development of a shared vision; a formal structure in which all agencies have ownership; clear responsibilities with a designated ranger and coordinator for the entire landscape; and, across all agencies, the commitment of the both line officers and field employees to ensuring sustainable and coordinated ecosystem management. Furthermore, there has been a noticeable change in attitude among Forest Service employees regarding their management role. Ranger Weldon commented that, before the agreement, managers asked, “How do we manage Forest Service lands in the Elkhorns?” Now the question is, “How do we participate in the management of the Elkhorns?”

accomplished through (1) annually comparing the expected outcomes to actual results and (2) every five to ten years comparing the rate and degree of movement towards the desired future conditions and intermediate outcomes. Either of those measures might have three possible outcomes: (1) concluding that management actions are moving the landscape toward the desired future conditions and outcomes; (2) concluding that treatments must be adjusted to more efficiently achieve those conditions (i.e., passive adaptive management); or (3) reevaluating the possibility of achieving the desired future conditions in light of the actual conditions (i.e., active adaptive management), which would require reexamination of the targeted future conditions and the proposed pathways to reach those conditions.

## Adaptive Planning

The planning process embraces an *adaptive-planning* approach. Adaptive planning creates incentives for innovations in planning to be systematically evaluated to ensure continuous organizational learning.

Adaptive management focuses on the learning produced by testing management approaches against actual results, but this is not sufficient to ensure the kind of organizational learning necessary for planning to be effective. An adaptive-planning approach is also necessary to ensure that innovative approaches to assessments are evaluated and shared; new ways of working within a collaborative context are evaluated and shared; and, perhaps most importantly, new roles, responsibilities, and ways of organizing agency staff are

also considered and effective ones shared.

To ensure that plans are implemented within both an adaptive-management framework and an adaptive-planning framework, the Forest Service must ensure that incentives exist for managers and staff to dedicate themselves to the purposes, goals, and strategies developed in the course of the planning process, but treat management activities as opportunities to learn. Personnel performance evaluations must rest on the effectiveness of management strategies in terms of actual results. However, performance must also rest on the willingness of managers to experiment with new approaches, consider new information, and embrace new constituencies interested in contributing to the stewardship of these lands. Adopting an adaptive-planning approach by the Forest Service can go a long way toward creating an organizational culture characterized by diversity, learning, responsiveness, and openness.

Our emphasis on adaptive management and adaptive planning seeks to ensure that a commitment to “continuous learning” about how to do planning, how to develop stewardship capacity, and how to ensure desired on the ground results will come to define the culture of the Forest Service. A critical first step for the Forest Service is to not search for a single approach to collaborative planning but to embrace a diversity of approaches. By approaching planning not as a cookbook for making decisions but as an opportunity to learn, test new ideas, and continuously evolve, the Forest Service can meet the expectations for “conservation leadership” set forth in the National Forest Management Act.

## 4B. The Structure of a Collaborative-Planning Process

This section proposes a structure for a collaborative-planning process for the national forests and grasslands. The proposed process is intended to integrate the strategic vision and goals of the Forest Service into bioregional policies and strategic plans that can then be realized through operational decisions. The process is collaborative at all stages, linking the ideas, energies, knowledge, and capabilities of other agencies, governments, communities, groups, and individuals. The process is also focused at different spatial scales (bioregional, large-landscape, and small-landscape/watershed levels) as relevant to the objective of each stage of the process.

The foundation for this planning process is collaboratively conducted assessments of the land, resources, and people of the planning area. The assessment process provides the context and knowledge through which desired future actions can be identified and selected. Overarching bioregional guidance is then established for pursuing these desired future conditions. With this guidance in place, plans can be developed: the strategic plans needed at the large-landscape level and the site-specific operational plans needed at the small-landscape/watershed level. The process is dynamic because knowledge is ever-expanding, policies and priorities change, and natural and social events occur. The process is also flexible, recognizing that a “one-size fits all” approach is not compatible with the range of issues and opportunities posed by the various national forests and grasslands. Ongoing monitoring and evaluation is a core element of this process, informing future decisions at the same time that it validates or modifies current strategies.

## The Existing Approach to Forest Planning

The purpose of this section is to compare our proposed approach to the planning regulations now in effect, which were proposed in 1979, revised, and approved in final form in 1982. The current regulations resulted in three subnational planning and decision-making levels in addition to the National Assessment and Program. Each planning level is considered a NEPA action because it makes decisions guiding the commitments of land, resources, and money and thus has an Environmental Assessment (EA) or an Environmental Impact Statement (EIS) associated with it (see Table 4-2). The NFMA specifically required that planning “form one integrated plan for each unit of the National Forest System” (Sec. 6(f)1).

While this outline is based on the existing regulations, it is critical to note that the process has not worked in practice as designed. Indeed, recent critiques of forest planning are all based on the difference between what was expected of the planning process and the actual outcomes. Nonetheless, the Committee provides this overview both for comparison to its proposed approach and to remind our readers that a hierarchical policy and management framework is a familiar concept.

At all levels, the forest planning process is inwardly focused on National Forest System lands and resources to the exclusion of consideration of other federal or public lands, much less current or expected conditions on private lands. Public participation is generally limited to “notice and comment,” wherein the public is involved in the initial issue-identification stage and during the comment period on the EIS. While the 1979 draft regulations required the agency to demonstrate how the alternatives

responded to public issues, this requirement was dropped in the 1982 final regulations. As a result, the nexus between public issues and alternatives with different management goals and emphases are difficult to trace.

The current planning process has ten steps, to be followed in order, because they mirror the process requirements for developing an EIS. The initial steps identify public issues and management concerns, define planning

**Table 4-2.** Current planning structure and purpose.

Type of plan/ responsible official	Geographic boundary	Purpose
Regional guide/ Chief	Forest Service Region	Reflect RPA goals and objectives; Display tentative RPA resource objectives (targets) for each planning area; cover standards and guidelines for addressing the major issues which need to be considered at the regional level to facilitate planning (maximum clearcut sizes, appropriate silvicultural method, management strategies for wide-ranging species, etc.)
"Forest plan"/ Regional forester	National Forest	Develop multiple use goals and objectives, identify the quantities of goods and services to be produced, subject to minimum management requirements for protection of wildlife habitat, soil and water quality. Ensure viability of vertebrate species. Address local issues and develop alternatives showing minimum resource development and maximum biological potential, with costs and benefits. Toward these purposes, allocate land among different management emphases, set standards and guidelines for management within each emphasis, calculate the land suitable for timber production, calculate an upper limit on timber removals, estimate ecological, economic, and social effects on a programmatic basis; set project goals and aggregate budget and human resource requests for projects. Make non-wilderness allocations or wilderness recommendations where applicable. Develop monitoring and evaluation requirements. At least one alternative was to be directed toward meeting the RPA target stated in Regional Guidance.
Project/ ??	Depends on objective of project	Propose actions to achieve goals of plan, assess site-specific effects; estimate budgets needed and outputs that will result. Mitigate adverse environmental effects.

criteria, and develop an assessment of the current conditions and management of the national forest or grassland. This assessment is called the “analysis of the management situation,” and it includes demand-and-supply conditions for resource commodities as well as their production potentials on the National Forest System lands. To date, these analyses are production-oriented, calling for benchmark analysis of the minimum and maximum physical and biological production capabilities of significant goods and services, along with their associated costs and benefits. These analyses are monetary benchmarks that maximize present net value of major commodity resources, estimate current production of these goods and services, and develop projections of demand. Although the current regulations require protection of soil and water resources as well as assurance that viable wildlife populations will persist across their usual range, these aspects are usually considered only after meeting timber-harvest targets in most plans.

Although the RPA expected that “the new knowledge derived from coordinated public and private research programs will promote a sound technical and ecological base for effective management, use and protection of the Nation’s renewable resources” (RPA Sec. 2(4)), the 1982 regulations reflected the commodity-production orientation of the time. As a result, the information developed for and used in forest planning did not sufficiently address the ecological issues of increasing concern to scientists and the public and therefore led to underestimated or downplayed environmental effects of commodity production in EIS analyses. Repeated appeals of forest plans and projects as well as lawsuits continue to raise this inconsistency with legal requirements.

The collaborative-planning process detailed in this section evolved from a recognition of the strengths and shortcomings of the existing forest-planning process, the lessons embedded in the experiences of planners who

have experimented with different approaches, the numerous formal critiques of the current planning process, and an understanding of the fundamental objectives of *any* planning process as described at the beginning of this chapter.

## The Assessment Process

Independent information that is an objective and realistic portrayal of conditions is required for policies, strategies, and decisions to be built, evaluated, and changed in a scientifically credible manner. In the past, the analysis of ecological and social conditions and trends was performed as part of regional guidance and forest planning. The Committee believes that assessments have such an important role in providing a credible information base for policy development and decision making that they should be organized as a separate task. Most critically, assessments do not produce decisions and, therefore, should not be made to function under the NEPA processes associated with decision making. When assembling information is distinct from decision making, everyone involved focuses more easily on conditions, trends, problems, and risks instead of on the options for decisions (see Table 4-3).

Assessments are not just “buckets of facts.” Rather, assessments provide the context for proposing ways to achieve long-term goals of sustainability. To inform the development of desired future conditions and develop potential strategies and pathways of management to achieve them, one necessary result of the assessment process is the identification of elements for conservation strategies along with scientifically credible procedures for evaluating the effectiveness of strategies in achieving sustainability. Since sustainability demands an integrated understanding of the ecological, economic, and social conditions and prospective

changes, collaborative planning will also require integrated information. Information is needed at two primary scales: bioregional assessments are essential for defining desired future conditions and developing conservation strategies; small-scale assessments are necessary for choosing treatments and activities to achieve desired goals and conditions.

These assessments need to be timely and so should be completed in a relatively short period of time: within a year or two for a bioregional assessment and within six months

to a year for a small-scale assessment. In addition, the trust of participants and nonparticipants alike is enhanced when the assessment process includes independent review as a normal part of the process. For example, in the case of the Southern Appalachian Assessment, a multistakeholder group reviewed the scientific and technical adequacy of the assessment. This group included professionals from local and national nongovernmental organizations, which greatly contributed to the perception of independence and openness. Summary infor-

**Table 4-3.** Proposed assessments.

Type	Geographic boundary	Purpose
bioregional	ecological	Assess ecological sustainability (species viability and ecosystem integrity) under current policies across all ownerships. Suggest elements for constructing strategies for sustaining ecological systems where problems are detected. Assess the current and potential contributions of the National Forests and Grasslands to economic and social well-being. Use a participatory approach as well as independent scientific analysis to assess the social context and history of the region, including demographic changes, economic patterns and trends, and institutional arrangements. Address a variety of scientific and technical issues as suggested by public issue groups. Develop a sense of social identity with the region so as to allow local issues to be connected to a regional context.
sub-regional	sub-basin	When a regional assessment covers a very large and heterogenous land area, there may be a need for the information to be disaggregated to the sub-basin level, including additional analysis of information related to the particular area.
watershed assessments (landscape assessments)	landform	Use information from bioregional assessments and large landscape plans to refine desired future conditions and pathways to those conditions. Address local issues of ecological sustainability and multiple use, including those defined by local issue groups. Use a participatory approach to assess current economic and social conditions and pathways for long-term social and economic sustainability.

mation produced by assessments should be made widely available.

## Bioregional Assessments

Bioregional assessments are driven by our need to understand the historical conditions, current conditions, and trends on forests, rangelands, and watersheds with respect to sustainability. Bioregional assessments are the foundation of independent information necessary for collaborative planning. The Southern Appalachian Assessment is an example of an assessment designed to inform the planning processes on five national forests, so that each of them could address issues of regional concern in context, as well as more clearly understand their unique and important contributions to the larger region (see Sidebar 4-2). The science assessment of the Interior Columbia Basin Ecosystem Management Plan (ICBEMP) provides an assessment of species and ecosystems in the Columbia Basin as the foundation of bioregional guidance and planning. Thus, bioregional assessments are directly linked to bioregional guidance and to large-landscape planning processes.

These assessments are collaborative problem-based analyses of issues of public and scientific concern regarding what is known about the lands and resources within a large geographic area. Bioregional assessments should develop an integrated and synthetic analysis of the best scientific and technical information about the historical and current diversity of native plant and animal communities, the productive capacity of ecological systems in the bioregion, the social and economic context, existing institutional arrangements, and current stewardship capacity. To achieve this goal, assessments should at least:

- 1) Define the focal species for use in the analysis of species diversity in planning and develop procedures for estimating the viability of focal species, threatened and

- endangered species, and sensitive species. Apply these procedures to estimate the viability of these species under likely management in the region while allowing, to some degree, for uncertainties that may develop (e.g., changing levels of funding, natural disturbances, and competition from exotic species). As a result of this analysis, highlight risks to species viability.

- 2) Define measures of ecological integrity and develop procedures for estimating the level of integrity in different ecosystems in the bioregion. Apply these procedures to estimating ecological integrity under the likely management in the region. As a result of this analysis, highlight risks to ecological integrity.

- 3) Suggest elements necessary for developing conservation strategies for species and ecosystems during the policy- and decision-making processes.

- 4) Perform a historical analysis of forest, rangeland, and watershed conditions. Suggest major issues and problems arising from the current condition of these resources relative to their historical conditions. Make estimates of the range of historical variability for a number of resources, including the composition and structure of the different vegetative types in the region and the size, intensity, and frequency of natural disturbances.

- 5) Analyze the demographic changes and migration trends of human populations, economic patterns and trends, social organization, and stewardship capacity of existing institutional arrangements.

- 6) Compile or develop information on the contribution of the national forests to the economic and social well-being in the bioregion, identifying those uses, products, values, and services of special significance to the communities and economies of the region and the nation.

7) Respond to questions developed through public-participation processes to ensure that the assessment is relevant to people's concerns.

## Small-Scale (Watershed) Assessments

Small-scale assessments, commonly called watershed assessments in many parts of the country, develop integrated information for small, ecologically identifiable geographic areas. One function of these small-scale assessments is to apply the findings of bioregional assessments along with the definition of the desired future conditions from the large-landscape, strategic planning process to a defined geographic area. Boundaries for these assessments range from small river basins, mountain tops, or other landscape units that nest within area of the relevant bioregional assessments and large-landscape planning areas.

Like bioregional assessments, all federal agencies with responsibilities within the area should use a coordinated effort to address all lands within the geographic area being studied. Similarly, small-scale assessments need a collaborative approach to create a mutually understood base of information regarding a specific area, involving relevant federal, state, and local agencies as well as tribes, various organizations, local associations, and citizens. People often think and care about lands and resources at the scale of watersheds or other identifiable geographic places. This "sense of place" makes it easier to meaningfully engage people in small-scale assessments. A participatory process should be used whereby communities and groups assess their social and economic well-being with the larger regional social and economic assessment as a base of information for comparative analysis. When successful, these assessments will also have a collection of stories and reflections from the people of the

area in addition to quantitative and qualitative analyses of resources and conditions.

Small-scale assessments generally come after the development of a strategic direction for a larger landscape. They interpret the implications of the large-landscape strategies for specific watersheds or other small landscapes:

- 1) They develop a "place-based" analysis that provides context for small-landscape planning and the actions to implement decisions.
- 2) They refine the estimates of desired future conditions and current conditions for the watershed that were developed during large-landscape planning by using detailed information for the watershed. Fitting the desired future conditions from large-landscape planning to the uniqueness of individual watersheds is an important first step in bringing the landscape strategic direction home to the local area. Developing improved estimates of the current conditions of important ecological, social, and economic relationships sets the stage for identifying the management necessary to move toward the desired future conditions.
- 3) They refine the estimates of management opportunities made during large-landscape planning to move the current conditions in the watershed toward the desired future condition.

## Defining Desired Future Conditions

The link between developing assessments and building decisions is defining the desired future condition. Defining a desired future condition requires extended public dialogue because it is a social choice affecting current and future generations. As a future-oriented



## 4-2. Coordinated Forest Plan Revision in the Southern Appalachians

The national forests in Alabama, the Chattahoochee-Oconee National Forests, the Cherokee National Forest, the Sumter National Forest, and the Jefferson National Forest are currently revising their forest plans.

As these forests in the southern Appalachians were conducting their forest-level efforts to describe the analysis of the management situation (AMS), they were also using information for the larger-scale analysis in the Southern Appalachian Assessment. The SAA then provided information that fed back into the AMS for each of the forests, putting each into the context of the larger Southern Appalachian Area.

SAA teams provided current, scientifically credible data for other required planning steps, including evaluating and reconsidering roadless areas in public lands within and adjacent to national forests for wilderness designation and the review of lands designated not suited for timber production in the plan. Both of these are high-profile public and agency issues.

Early in the process, the preliminary issues were developed out of the findings of the SAA. These evolved into the 12 common issues around which the plan revisions are being built. The forests, working with their local publics, then identified additional issues more specific to each national forest. Alternative development has been an iterative process, moving between the subregional level and the local level, bringing in comments and viewpoints from both levels to build themes around which the alternatives will be formed.

Public involvement was an integral part of the SAA and has contributed to its credibility. In the forest-plan revisions, the public involvement has been carried on at two levels or scales. The local level is mainly guided by the forests, while the subregional level involves frequent, five-forest meetings of planners and resource specialists. Meetings at both levels have been open for public attendance and comment.

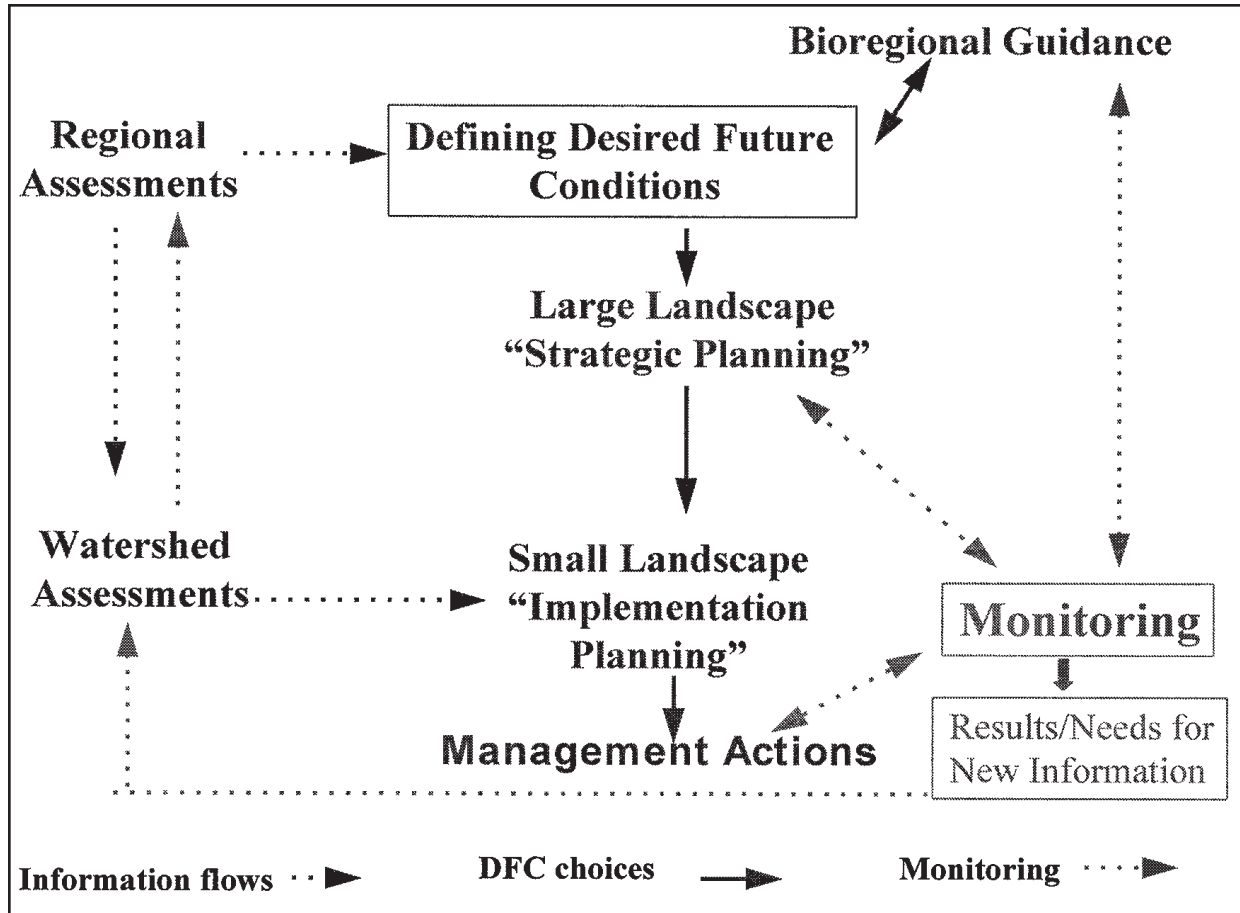
The final decision on these forests will be five separate decisions documented in separate EISs. However, the coordination identified above will ensure that the needed consistency occurs across administrative boundaries.

choice, a desired future condition seeks to protect a broad range of choices for future generations, avoid irretrievable losses, and guide current management and conservation strategies and actions. Nonetheless, given the dynamic nature of ecological and social systems, a desired future condition is also dynamic and thus is always revisited during monitoring, external review, and evaluation of performance. (See Fig. 4-1.)

## An Ecological View

From an ecological perspective, desired future conditions are those that will sustain ecological integrity over the long term. Understanding how disturbance events have influenced the distribution of terrestrial and aquatic habitats provides a basis for representing expected landscape conditions relative to potential management strategies. Assessment

**Fig. 4-1.** Defining desired future conditions and monitoring results.



procedures that address the dynamic aspects of ecological processes in the context of spatial and temporal disturbance history can provide a framework for establishing target ranges for desired future conditions.

The concept of desired future condition is less meaningful at small spatial scales because it explicitly considers the mix of habitats (type and seral-stage) generated by processes that are only observable at the large-landscape scale. To sustain ecological systems and preserve ecological integrity, management must allow for the dynamic processes that accompany disturbance-recovery cycles and protect essential energy and material transfers that take place during disturbance events. When these ecological processes are operative at a landscape scale, a mosaic of habitats occurs in various stages of postdisturbance recovery. Given the dynamic nature of ecosys-

tems, the distribution of terrestrial and aquatic habitats constantly changes. As a consequence, desired future conditions must include variability as an integral and essential component of habitat and population objectives.

Attainment of desired future conditions could be assessed by comparing the distribution of terrestrial and aquatic habitats following management to that expected under natural-disturbance regimes. The management challenge is to ensure that human activities do not significantly alter the frequency, severity, or distribution of disturbance events to such an extent that they shift them to a different level or that they surpass the capacity of the ecosystems to recover. To ensure resilience, management practices must not disrupt those energy and material transfers that promote habitat maintenance or recovery. An appropriate goal for management activities would be to

mimic, to the extent possible, natural disturbance events in terms of their severity, spatial extent, and recurrence interval.

## A Social and Economic View

From a social perspective, desired future conditions are those that will sustain the capacity for future generations to support cultural patterns of life and adapt to evolving societal and ecological conditions. Understanding how past patterns of social life in historical and prehistorical times and how economic uses have changed over time provides a context for assessing current conditions. However, different parts of society and different stakeholders will offer different interpretations of both the past and possible future, reinforcing the importance of the deliberative process of collaborative planning.

Assessments offer independent information about social, economic, and cultural conditions against which differing perspectives can be compared. This process will provide a mosaic of explanations and perspectives. However, while choosing a particular desired future condition is a social choice, this choice is bounded by the necessity of ensuring ecological sustainability. Thus, the desired future condition represents common goals and aspirations, not private wants and needs.

## Choosing a Desired Future Condition

Information produced by assessments can contribute to our understanding of processes of the natural and social worlds, but it cannot determine which choice is right. Rather, informed expert and public dialogue is essential to guide what should be done. The first step for decision making is to use a public forum for defining desired future conditions.

# A Spatial Approach to Decision Making

Just as assessments are conducted at large and small geographic scales, so do planning issues vary by geographic, social and political scales. As indicated in Table 4-4, decision making can occur at the bioregional scale when necessary, and always at the large and small-landscape levels. Decisions at each of these levels would come under the requirements of NEPA. Since the geographic size of a planning area would vary according to the physical, ecological, social, economic, and political context, the Committee chose to use these generic delineations to indicate this flexibility.

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**Table 4-4.** A spatial approach to collaborative planning.

<b>Information</b>	<b>Decision Making</b>
Bioregional assessments	Bioregional policy
Small-scale (e.g., watershed) assessments	Strategic planning of large landscapes
	Operational planning of small landscapes

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The following discussion outlines all three possible planning and decision levels. However, the need for bioregional guidance for large-scale conservation strategies will vary by region. One result of bioregional assessments will be the identification of the need for bioregional guidance for conservation strategies. Examples today would be the conservation strategy for the red-cockaded woodpecker across the Southeastern states, the northern goshawk in the Southwest, the northern spotted owl, and anadromous fish in the Pacific Northwest.

# Bioregional Guidance

The bioregional guidance has three purposes. The first is to develop strategies for conserving focal species as well as threatened, endangered, and sensitive species. These strategies apply the procedures for estimating species viability developed in the bioregional assessment. The second is to develop strategies for conserving system integrity, again relying on procedures for estimating the level of ecosystem integrity in different ecosystems in the bioregion developed in the assessment. The bioregional assessments also identify elements for developing these strategies. The third is to develop strategies for promoting sustainability across the region, including consideration of the current and expected trends in social values, needs for environmental services (like water quality), and changes in economic relationships.

Given that strategies to ensure sustainability depend upon adequate stewardship capacity, bioregional guidance is ideally jointly developed by the relevant federal agencies along with state and local government partners, tribes, and others having jurisdiction over the area's land and resources. This capacity can be enhanced by developing institutional arrangements, government programs, and community-based conservation organizations. Focusing upon the stewardship capacity of a region will greatly enhance the capacity of the National Forest System to achieve its goals.

## Large- and Small-Landscape Planning

At the large-landscape level, collaborative planning develops goals for different parts of the landscape and crafts strategies to ensure the sustainability of species and ecosystems along with proposed pathways of activities to achieve these goals. At the small-landscape

level, planning determines the mix of activities and projects likely to meet the goals of the strategic plan.

Collaborative planning at both the large- and small-landscape scales needs to address all lands within the geographic area. Whenever possible, existing plans, including current forest plans and the plans of other agencies and governments, should be used as beginning points along with the requirement to respond to issues and problems identified in the assessment process. The likely management of nonfederal lands (state, tribal, and private) must be considered to help understand the context and likely cumulative effects of federal land management. Coordinated decisions affecting all federal lands within the planning area would ideally result at both levels.

## Strategic Planning for Large Landscapes

The purpose of strategic planning is to set a clear course of action for a specified period of time. A strategic plan answers the questions: "What are conditions and outcomes (desired future conditions) that we should seek on the national forests and grasslands to provide for ecological sustainability and to contribute to economic and social sustainability? How will their accomplishment be measured? What kinds of actions do we need to take to achieve them? And what will it cost?"

Large-landscape planning focuses on developing an integrated set of conservation strategies to achieve ecological sustainability along with opportunities for resource use and management to contribute to economic and social sustainability. Of critical importance is that the management of the National Forest System is placed within a regional context based upon the bioregional assessments as well as other information. The strategic planning level is the "large-landscape planning" because the ecological scale of resource issues generally extends beyond the boundaries of a

### 4-3. Red-Cockaded Woodpecker

The Forest Service has been involved in red-cockaded woodpecker (RCW) management since the bird was listed in 1970. National Forest System lands are critical because 12 of 15 recovery populations identified in the Fish and Wildlife Service's 1985 recovery Plan depend on national forests. In the late 1980s, 67% of Forest Service recovery populations were experiencing serious population declines.

The Southern Region's management strategy uses an ecological approach to management and established habitat management areas (HMAs), set management-intensity levels, mimics natural/historic fire regimes, established longer timber rotations, and provides for a full range of vegetation-management options ranging from single-tree selection to clearcutting.

The HMAs are a landscape-level strategy designed to overcome the past effects of habitat fragmentation and demographic isolation. Approximately 2 million acres of pine and pine-hardwood forests have been included in 26 HMAs scattered across 11 national forests. The RCW strategy applies only to land within HMAs.

The strategy will be implemented in two steps. First, the affected forest plans were amended to designate tentative HMAs and establish tentative population objectives. In these tentative HMAs, timber harvest will be restricted to thinnings, irregular shelterwood, uneven-aged silvicultural methods, or clearcutting for restoration of desirable pine species until forest plans are revised in one to three years to fully incorporate the strategy. Then the strategy will be incorporated into the individual forest plans through scheduled plan amendments or revisions, including a forest-level analysis of effects. A full range of management options will be considered through this process, and permanent HMAs tailored to individual national forests will be designated.

The regional forester chose this two-step approach because it meets the recovery needs of the RCW across its range while allowing individual national forests flexibility to integrate the strategy with other resource uses, social needs, and economic factors specific to their geographic areas. Decisions, such as delineation of final HMAs, allowable (timber) sale quantities, timber harvest rotation lengths, and the mix of forest-regeneration methods used to perpetuate RCW habitat are best made at the local level.

single national forest. Measuring the capability of management activities to conserve the species and ecosystems of interest can occur only when the implications of decisions at different levels for these species and ecological systems can be added up. Yet, the total value is often greater than the sum of its parts. The decisions must logically fit together in this regard. If bioregional guidance is available, it will be used to make sure that these decisions, in aggregate, provide the needed protection for species and ecological systems.

In large-landscape planning, an analysis of the management situation is part of the process of defining the desired future conditions and, thus, is done early in the process. It should cover the historical development of landscape conditions and outcomes along with current problems. This analysis should realistically portray likely landscape conditions and outcomes over time without active management, including the effect of natural disturbance. This analysis then becomes the basis for discussing the need for, and type of, actions

## 4-4. Northern Goshawk

The goshawk was listed as a sensitive species by the Southwestern Region in 1982. After reviewing the status of northern goshawk in early 1990, the regional forester established a task force and a separate scientific committee to review northern goshawk management needs. The scientific committee, with representation from the Southwestern Region, Rocky Mountain and Intermountain stations, and Colorado State University, took an analysis approach that examined northern goshawk biology and the habitat needs of 14 of the goshawk's major prey species in its food web. Past president of The National Wildlife Society, Clait Braun, said that this was the first example of a food-web-based management strategy in North America. This information was synthesized to develop a set of management objectives, desired forest conditions, and management recommendations. Many members of federal, state, private organizations, and academia offered input during the preparation of the recommendations. The development process was sometimes difficult and confrontational, but helped build a common understanding of the complexities of managing habitat for both goshawk and prey populations. Scientific credibility was critical to the Committee. The management recommendations developed by the committee were peer reviewed by government-agency personnel and academics. The National Wildlife Society and the American Ornithologists Union put together a blue ribbon task force to review the recommendations and gave them very high marks. The committee's final report was published by the Rocky Mountain Forest and Range Experiment Station as a general technical report in 1992. The recommendations represented a shift in emphasis from even-aged, evenly spaced forests to uneven-aged and irregularly spaced forests with:

- Longer rotations between cutting entries
- Fewer roads, with fragmentation kept to a minimum
- More downed logs and woody debris left intact
- Thinning primarily done from below to maintain mature trees
- Retention of three to five reserve trees in created openings for future snags/downed logs
- Management for a diversity of vegetation components, such as oak and aspen
- Reduction of densities to a more open forest similar to presettlement patterns

Input from both the task force and scientific committee were used to establish interim guidelines for the goshawk, with an environmental assessment completed in October 1991 to evaluate the effects of implementing the interim northern goshawk management direction. After the expiration of the interim guidelines, a supplement to the original environmental assessment was prepared, and another set of interim guidelines published in June 1992 to guide specific project design. At this time, a notice of intent to prepare an environmental impact statement to amend the forest plans for all national forests in the Southwestern Region to include new standards and guidelines for both the goshawk and the Mexican spotted owl was issued. In the summer of 1996, the record of decision amending all forest plans was signed.

Implementation of the recommendations has progressed beyond a single-species approach. Particularly on the Kaibab National Forest, where the largest known concentration of goshawks in the Southwest is found, the goshawk guidelines are being integrated into desired conditions for the landscape to sustain as much mature forest matrix across the landscape as possible to maintain the flow of ecosystem functions and interactions across the landscape through time. The public is involved in the development of desired conditions. While complete consensus is not typically possible, particularly with respect to how dense the forests need to be within the context of sustainability, much common ground has been identified.

Forest users support a more clumpy landscape with a mix of age classes of trees; the use of prescribed fire and some thinning to reduce dense forest conditions; more diversity in tree species; and having large, old trees present in the ecosystem. Public involvement is not limited to the development of desired conditions. In one demonstration area, the Forest Service is working collaboratively with the Southwest Forest Alliance in the development of prescriptions for the area.

The Forest Service's Rocky Mountain Research Station is in its eighth year of intensive monitoring of the northern goshawk on the Kaibab Plateau. Research topics include population trends, reproduction, food habits, occupancy, and fertility and mortality rates at a landscape scale. Monitoring will be used to evaluate current management strategies for the goshawk and to identify any needs for change.

Has management for the goshawk been successful? The purposes of the plan amendment was to incorporate the latest information on habitat needs and to contain clear standards and guidelines to guide project design, which the amendment provided. However there is the larger question of whether the management will lead to stable or increasing goshawk populations, whether management will sustain ecosystem processes, and whether management is socially acceptable. For these larger issues, success is typically "in the eyes of the beholder." Forests have not been able to move towards desired conditions as rapidly as they would like because of injunctions against timber sales, which have prevented desirable thinning operations related to forest-health issues. Monitoring is providing insights into population dynamics. The U.S. Fish and Wildlife Service has not listed the northern goshawk as a threatened or endangered species after three listing attempts. While complete public acceptance has not been achieved (and is unreasonable to expect), much common ground has been laid for current and future management of the forests.

that may be needed to move landscape conditions and outcomes toward the desired states.

Strategic planning for large landscapes should:

- 1) Set goals for different parts of the landscape expressed in terms of the desired future landscape conditions necessary to achieve ecological sustainability along with expected uses, benefits, services and products available

to contribute to economic and social sustainability. Given the likely conditions that will occur on nonfederal land in the future, the federal agencies need to develop a vision of the future condition of publicly owned forests, rangelands, and watersheds to ensure ecological, economic, and social sustainability.

- 2) Compare the current condition of the landscape, derived from the bioregional

assessment and other information, to the desired condition.

3) Develop a strategy for moving to the desired condition. Make an estimate of the suite of actions (type, amount, and budget) needed to move from existing conditions to a desired future condition in the context of likely unplanned disturbances.

4) Estimate likely effects of pathways of treatments and management actions on species and ecosystems as well as on economies and communities over time. This work would estimate the viability of focal, threatened and endangered, and sensitive species and of the level of system integrity. It would also analyze the potential effects of strategies and pathways of activities on the social and economic systems at regional and local scales within the context of anticipated external influences on these systems.

Generally, these decision processes should be completed within one year, and policies and decisions should be revisited as issues arise or conditions demand.

In the large-landscape planning, an analysis of the management situation should be done early in the process. It should cover the historical development of landscape condition and outcomes and current problems. This analysis should realistically portray likely landscape conditions and outcomes over time without active management, including the effect of natural disturbance. This analysis then becomes the basis for discussing the need for, and type of, actions that may be needed to move landscape conditions and outcomes toward the desired states.

### Operational Planning for Small Landscapes

The purpose of operational planning at the small-landscape scale is to determine the mix of activities and projects needed to meet

the goals in the strategic plan. The distinctive quality of operational planning for small landscape is the development of projects and activities in combination to consider cumulative effects, propose implementation schedules, specify measurable performance standards, and prepare budget and staffing plans. Proposed suites of activities and projects are generally developed in six months and remain in effect for the duration of the activities. New activities can be added at any time with consideration of cumulative impacts and consistency with the general strategic intent. A technical-field-review process helps evaluate effectiveness of the projects in meeting the goals. This is the planning level that is the linchpin of adaptive management in that it is a continuous cycle of implementation, monitoring, evaluation, adaptation, and change.

From the process of defining activities to meet long-range goals, planning teams should estimate the kinds of staff needed to accomplish these activities, the budgets necessary to carry them out, and the kinds of cooperative actions necessary to build sufficient implementation capacity. Once there is a relatively clear set of proposed activities at the field level of the organization, the planning analysis then goes through the structure of the agency, always focused on how the next level up in the organizational hierarchy can best help achieve the proposed activities. In this way, the resource-planning process is integrated with the management planning that includes the staff and budget resources required to carry out the specified projects and activities.

It is difficult to estimate the budgets, resources, and outputs that will be forthcoming at the strategic-planning level. Only in the proximate activities of a site-specific implementation plan can estimates of inputs and outputs be established, accountability measures applied, and links to budgets for multiple-purpose projects be defined.

The need to consider connected actions and cumulative effects and to enable the public



to understand the geographic context within which the actions will occur argues for an approach to project planning that considers a larger geographic area than that usually covered by a single project. These areas of interest will rarely follow national forest boundaries and cover from 10,000 to 150,000 acres.

There are times when controversial projects or decisions threaten to derail a small-landscape planning process. Sometimes these issues are controversial because of their immediate effects (e.g., a decision to close part of a campground because of the presence of bald eagle nesting sites). Sometimes the controversy stems from strongly different perspectives on the issue or resource. And other times, there are extremely important but very site-specific issues, as in the case of a location sacred to several Indian tribes but also of important local interest. In all such cases, it is reasonable to allow for highly site-specific planning processes to emerge from the nature of the problem. Decisions made in these cases can be added to the small-landscape plans. In such cases, it would be appropriate to evaluate them separately, but the cumulative effects of the project must be analyzed with other projects before including them in the small-landscape plan.

Because planning is a creative, educative, and learning process, effective problem solving at the level of the site-specific small-landscape scale depends on allowing local managers to recognize and work within local conditions in achieving the desired conditions of the landscape. This approach relies on the creative powers of national forest managers and the collaborative group planning the management of these complex systems to improve the reliability and effectiveness of policies at the local level.

At the same time, issues of trust, the ability of local managers to develop local actions, and the success of implementation all become greater as the amount of discretion increases. Consequently, part and parcel with

this discretion is the need for independent evaluation of how well site-specific implementation plans achieve the strategic goals, including highlighting creative solutions and innovative approaches. The credibility of the planning process rests in part on the routine application of an outside check that can independently verify that plans and their implementations are science-based. These outside checks can highlight and reward creative approaches to the challenging issues faced in the management of the national forests and rangelands. The knowledge that an evaluation will be held at the end of the planning process should, by its very presence, encourage collaboration between managers, specialists, and scientists as the plans are developed. Without the independent evaluation of the specific projects and their implementation, it is difficult to justify flexibility at the local level.

Specifically, small-landscape planning should:

- 1) Identify management activities that will be undertaken to achieve the desired future conditions based on management opportunities suggested in the watershed assessment.
- 2) Estimate the effects of these activities on the path to achieving desired future conditions.
- 3) Estimate cumulative effects based on “real-time” analysis, not simply hypothetical projections, using information from small-scale assessments as well as bioregional assessments. Whenever activities are added at the small-landscape level, cumulative effects analysis should always be performed as part of the decision process.
- 4) Determine how management activities will be monitored, or whether special monitoring will be needed (e.g., whether large-landscape monitoring questions are sufficient).

- 5) Determine budget and staffing needs and ensure that both are adequate before activities are undertaken.
- 6) Provide for independent field review as part of the monitoring process.
- 7) Use an adaptive-management approach of continuous planning, action, monitoring, and change.

## Monitoring and Evaluation

Just as defining the desired future condition is the link between information and decision making, so monitoring and evaluation link decisions and implementation. The general purposes of monitoring are to evaluate the effectiveness of management approaches (are expected outcomes resulting from management activities?), ensure the reliability of implementation (have the policy standards and guidelines adequately controlled management actions?), and validate the assumptions used in predicting the consequences of different management approaches (have social, economic, or ecological conditions and assumptions changed?). An adequate plan contains the methods and proposed measurements for monitoring at the bioregional, strategic, and operational levels.

It is important to note that what to measure in a monitoring protocol will vary by the scale of the planning process. At the bioregional level, monitoring focuses on large-scale ecological processes as well as large-scale social and economic processes. In this way, bioregional monitoring can both indicate when strategies are leading to the desired conditions at the system level and provide benchmarks for strategic- and operational-level evaluation. At a strategic planning level, monitoring needs to allow managers to assess the effectiveness of strategies and complex pathways of treatments

and actions in achieving desired future conditions. At the operational planning level, monitoring is more focused on the effectiveness of specific management activities or suites of activities in achieving specific goals. Depending on the degree of uncertainty related to whether a suite of activities is likely to achieve desired goals, the monitoring approach needs to support a passive or active adaptive-management approach, as discussed below.

In addition to evaluating the effectiveness of actions in meeting goals, performance reviews of individuals, organizational capacity, adequacy of budgets and staffing, and stewardship capacity are also critical components of a monitoring plan. Performance evaluation needs to assess whether the agency and administrative unit are effectively organized to carry out management activities, to learn through adaptive management, and to build and maintain stewardship capacity.

A monitoring plan sets forth the specific characteristics to be measured over a sufficient period of time to assess status or trends related to performance. In monitoring ecological sustainability, the monitoring protocol includes (1) what characteristics of the ecological system to measure, (2) how to link changes in these characteristics to elements of ecological integrity, and (3) how to use information produced by this analysis to improve future management decisions. In monitoring social and economic sustainability, the protocols can draw from the assessments and identify sensitive factors that were identified along with measurable indicators related to integrated measures of risk and resiliency. Critical to effective monitoring will be a clear delineation of the characteristics to monitor at the bioregional, large-landscape, and small-landscape levels.

Four types of monitoring can be considered: (1) Implementation monitoring asks the question, have the management standards and guidelines been used as anticipated to guide strategic and operational decisions? (2) Effectiveness monitoring asks, are the standards

and guidelines producing the desired future conditions as anticipated at both the large-landscape and small-landscape planning levels? (3) Validation monitoring asks, are the basic assumptions about cause-and-effect relationships used to predict the outcomes of strategies and pathways of treatments valid? (4) Anticipatory monitoring asks, what factors (human-induced or natural stressors) could compromise the attainment of sustainability in the near and long terms?

Given the importance of monitoring for ecological sustainability, a critical step will be to broadly define ecological attributes to include any biotic or abiotic features of the environment that can be measured. The convention has been to refer to the measured attributes as “indicator variables” under the assumption that their values are indicative of the integrity of the larger ecosystem to which

they belong. The Committee adopts this definition and extends it to include the concept of focal species. These are species that fulfill the indicator criterion and provide specific insights into the biological diversity of the ecological system at different scales.

Because it is impossible to monitor and manage every aspect of ecological sustainability, shortcuts to monitoring are needed. Elsewhere, this report discusses the value of focal species as surrogate measures to the integrity of the larger ecosystem and to biological diversity in general. In addition, it is prudent to measure attributes that act as early warning signals to loss of ecological sustainability before unacceptable losses occur. One way to narrow the list of candidate indicators is to first list those factors that may compromise sustainability. Given this list of stressors, the aspects of the environment that

## 4-5. Focal Species

Resources are inadequate to assess the viability of all species occurring on national forest lands. This observation led the Committee to propose the use of the focal-species concept, a comprehensive term referring to a species whose measurement provides substantial information beyond its own status. The proposal is that the Forest Service monitor those species whose status allows inference to the status of other species, are indicative of the soundness of key ecological processes, or provide insights to the integrity of the overall ecosystem. This procedure is a necessary shortcut because monitoring and managing for all aspects of biodiversity is impossible.

No single species is adequate to assess compliance to biological sustainability at the scale of the national forests. Thus, several species will need to be monitored. The goal is to select a small number of focal species whose individual status and trends will collectively allow an assessment of ecological integrity. That is, the individual species are chosen to provide complementary information and to be responsive to specific conservation issues. Thus, the Committee proposed for consideration a broad list of species categories reflecting the diversity of ecosystems and management issues within the NFS.

The task is difficult. No body of knowledge currently exists to unambiguously guide the selection of focal species. Because of this uncertainty, the selection will be controversial and subject to change as new knowledge accumulates. Pragmatism, however, requires that a reliable assessment of overall biodiversity be attainable without assessing each species individually.

will be most indicative of stressor action can be selected and monitored. This form of monitoring is anticipatory, and it also provides insights into cause-and-effect relationships between stressors and expected ecosystem responses.

Particularly relevant to the Forest Service planning process, however, is the value of monitoring as a tool to assess attainment of the sustainability goal. In a sense, a plan is a hypothesis of how an ecological system may respond to management actions. The only way to determine the outcome of the hypothesis is to observe and measure the system. A lack of concordance between expectation and observation could lead to a revision of the plan or to changes in management standards and guidelines. Thus monitoring is much more than just measurement; it must include analysis and an assessment of current management assumptions and methods.

The following list summarizes the key components of an effective monitoring program for those lands dependent upon Forest Service stewardship.

- 1) Specify the goals of ecological sustainability in measurable terms.
- 2) Characterize the threats and stressors that may compromise ecological sustainability.
- 3) Develop conceptual models that outline the pathways from stressor action to ecological effects.
- 4) Select the indicators of sustainability that are responsive to anticipated stressors.
- 5) Determine the necessary detection limits for the indicator variables.
- 6) Establish critical values (or distributions) for the indicator variables that will trigger management intervention to prevent a loss of sustainability.
- 7) Establish how the monitoring results will inform the management decision-making process.

## Adaptive Management

Within an adaptive-management framework, the key challenge for managers is to identify when changes in management activities are needed because of either lack of effectiveness or changes in external conditions. The concept of adaptive management begins with this kind of learning: Is what we are doing achieving the goals we think it is, and, if not, what changes need to be made? Considered within an adaptive-management perspective, a strategy or decision is considered a hypothesis about how ecological, social, and economic systems can be expected to respond to planned management actions.

Most public land-management agencies assert that they are managing the nation's resources according to an adaptive-management paradigm. In general, this suggests a structured process of reducing uncertainty about environmental responses to management by viewing management actions as experiments. The term experiment is important here because it suggests a degree of scientific rigor based on explicit principles of experimental design. It is the Committee's opinion that this rigor is, in fact, currently absent from most management practices, and these actions are incorrectly portrayed as adaptive management.

Adaptive management views management actions as experiments and accumulates knowledge to achieve continual learning. There are three ways to do adaptive management: (1) trial-and-error learning, in which initial management choices are made based on current understanding and successful prescriptions are made routine; (2) passive adaptive management, in which existing data are reviewed and used to inform decisions within a given management approach; and (3) active adaptive management, in which different management approaches are tested in similar circumstances,

the results are evaluated, and the information is used to select approaches and decisions. Of these alternative ways to learn, passive and active adaptive management accelerates the rate of learning how to best manage ecological systems.

Monitoring the extent to which management strategies and actions achieve expected goals is clearly necessary, but it is also important to monitor whether expected social, economic, ecological, budget, staff, and political conditions persist. Indeed, monitoring “external environmental conditions” is an essential management role and a defining feature of strategic planning. Such monitoring is anticipatory because it focuses attention on factors that may stress or change the system and it seeks explanations for the cause-and-effect relationships between these stressors and expected responses.

The managerial role is not only to undertake monitoring activities and analyses but also to respond to findings to promote continuous learning. That is, the only way in which learning is possible is to observe if the system responds as envisioned or if social and economic conditions meet expectations. A lack of concordance between observation and expectation would lead to a revised model of how the ecological systems function and respond to management or to a reassessment of how social and economic systems respond to change. Thus, monitoring should be viewed as an ongoing process and an essential component of responsible stewardship.

Active adaptive management can be difficult, time-consuming, and expensive. The challenge arises from the requirements of experimentation, including (1) replication and randomization of management treatments and the need for control areas, (2) the formulation of competing models (or hypotheses) of how the system will respond to management, (3) an initial assessment of the “truth” of the different models (model likelihoods), (4) a statement of each hypotheses (model) in terms of measur-

able variables, (5) monitoring the results of the experiment to determine which model is most parsimonious with the results, and (6) updating model likelihoods based on an analysis of experimental results. The next round of management decisions is then based on the results of the previous experiment, with greater weight given to the model best supported by the existing data. The process is iterative, continuing until uncertainty about system response has been reduced to an acceptable level.

Given the involvement of scientists and the need for a clear experimental protocol for active adaptive management, it is not possible to cast all management actions as active experiments. The Committee suggests that the adaptive-management paradigm be adopted when the environmental consequences of the action are highly uncertain or when the management action may result in significant or irreversible loss. This linkage between science and management presents an obvious opportunity for collaboration between the management and research branches of the Forest Service.

The difficulty and expense of intensive monitoring for active adaptive management makes routine monitoring even more important. Routine monitoring can be structured as an early warning system to alert managers if expected outcomes are not regularly occurring and if key assumptions made about the external forces and stressors are no longer valid. Such information can alert managers to the need to involve field specialists and scientists in evaluating the information. At times, it will be important to have independent field reviews of management activities and monitoring processes both as a check on the adequacy of monitoring approaches and as a means of enhancing public trust in management.

# The Integrated Land- and Resource-Management Plan

The NFMA calls for development of an integrated land- and resource-management plan for each unit of the National Forest System. How does that fit with this proposal? In the approach presented here, the integrated land- and resource-management plan for each administrative unit of the National Forest System is the repository of policies, strategic directions, implementing decisions, and adaptive-management plans made at all levels of the planning and decision process. As a foundation of administrative policy and guidance, it includes budget and staffing needs for implementation as well as procedures and timing for monitoring and review. It includes monitoring processes as well as ongoing results and subsequent changes in both implementing and strategic decisions.

As critiques of past “forest planning” acknowledge and the Committee’s analysis confirm, when the administrative units were also the planning units (e.g., under the 1982 regulations for planning), cross-boundary and multijurisdictional issues related to large-scale ecological processes were neglected. Partly, this inattention was caused by a lack of information produced by limiting the scope of information to the administrative unit by having the “analysis of the management situation” one of the steps of forest planning. Partly, however, it was the result of competitiveness among line officers and an inward-looking approach to information, analysis, and planning. Nonetheless, what resulted were forest plans that took little account of neighboring national forests and seldom considered management issues that crossed administrative lines (unless mandated to do so, as in the case of wilderness planning).

We envision the forest plan as a living document, holding in its covers the current agreements and strategies affecting a particular national forest or grassland. The boundaries of national forests may not be appropriate as planning units, but they are the primary administrative unit for carrying out the management of these lands. Each of the three levels in the planning and decision-making process described above would probably need a NEPA document (an EIS or EA). As described here, the forest plan would probably not be part of a NEPA process because it serves as a mechanism for compiling the results of a set of large-landscape strategic policies and small-landscape proposed actions.

Thus, the land- and resource-management plan should be in the form of a loose-leaf notebook that contains all of the policy directions, strategies, and implementation proposals from decisions that have been made at all levels of the planning process. It should be the official repository of decisions big and small that have been made and reviewed in the strategic and landscape-level planning processes. It must also contain the monitoring methods that will be implemented as well as the evaluation results from monitoring. Because this model of the land- and resource-management plan is different than that employed during the first round of NFMA planning, the process of plan amendment is also different. Rather than a formal process involving review and comment, these loose-leaf plans are dynamic and evolving, readily reflecting and accommodating the outcomes of adaptive management. Thus, as decisions are revisited and revised in response to changing social understanding, natural and social events, and policy priorities, the loose-leaf notebook can immediately reflect those changes. Consequently, any amendments made to these plans reflect decisions that have been made and reviewed elsewhere.

## 4-6. What Is Your Long-Term Plan and How Will It Make the World a Better Place?

People find it difficult to support what they do not understand. Furthermore, most people have little time for in-depth analysis of any particular public-policy issue, such as the management of the national forests and grasslands.

With that in mind, the Committee of Scientists conducted a survey of the regional offices and ranger districts of the national forests. As part of the survey, we asked the following questions: What simple, straightforward explanation do you have of your long-term plan for the lands you administer? How will your plan make the world a better place?

We wanted to learn whether explanations of long-term plans for the national forests and grasslands were readily available to the general public. We were interested in information that a citizen could quickly obtain and easily understand, not only about the long-term plan for a particular forest but also about the future landscapes and outcomes that were the goals of that plan. We also were interested in explanations about why each plan was wise public policy.

The Committee was surprised at the responses received. Few such explanations exist. None for the President's Plan for Northwest Forests, despite its importance and the millions of dollars spent to construct it. Few, if any, for the current land-management plans for the national forests across the country. None that give an image of the future landscape that is the goal of a particular plan.

The responses did include some explanations of what Forest Service managers would like to achieve at a project level as well as lots of discussion about ecosystem management. Nevertheless, a simple explanation of an existing long-term plan was rare indeed. We did see some glossy picture books about the National Forests that looked remarkably like those created to showcase our national parks. And we received many detailed, voluminous documents, mostly associated with what that purported to explain the long-term plans. Although those tomes may be useful for court cases, we believe they have little to offer the general public.

Why are readily understandable, long-term plans for our national forests and grasslands unavailable to the American people? What are the implications of this void? We believe that if the Forest Service expects to gain public support for its policies, it must make a far greater effort to explain those policies to the people. Rebuilding trust and confidence in the Forest Service would seem to require connecting the management plans containing the Forest Service vision of the future to the people whose lands these are.

New employees in the Forest Service would also benefit from a ready source of information about the larger goals and future conditions that they will be helping to achieve. We realize that the Forest Service has been undergoing a transition in management over the past few years. Still, a short, straightforward explanation of the existing long-term plan and the vision for the landscape it will create, should soon be in every national forest and ranger district in the land. And it should reflect the variety of values, conditions, and actions in the plan. Numerous other public and private organizations have prepared such explanations; it is time for the Forest Service to do so.

# Adaptive Planning

Adaptive management focuses on the learning produced by testing management approaches against actual results, but that is not sufficient to ensure the kind of organizational learning necessary for planning to be effective. An adaptive-planning method is also necessary to ensure that innovative approaches to assessments are evaluated and shared; new ways of working within a collaborative context are evaluated and shared; and, perhaps most importantly, new roles, responsibilities, and ways of organizing agency staff are also considered and effective ones shared. Adaptive planning often begins with trial and error as innovative approaches emerge across the agency. For example, the reorganization of the Green Mountain National Forest as a completely team-based organization so as to facilitate both collaborative planning and

collaborative management. The next step will be to compare their experiences with those on the Rogue River National Forest and others that are trying out team-based organizations.

A passive adaptive planning approach builds from these innovative efforts in that those that seem to work are continued and shared by word of mouth with others, prompting new innovations. But, to develop a strong and effective collaborative-planning process, an active-planning approach is needed now. This means that the innovations around the country would be systematically studied and compared. Indeed, the diversity of places and people across the National Forest System naturally give rise to a range of approaches to producing information, establishing relationships with scientists, bringing together the stakeholders and constituents of the area, and developing useful land- and resource-management plans. This diversity is important to maintain, but through comparison and analysis, principles for success can be identified that lead to innovations that improve collaborative planning.

## 4C. Other Considerations

### The Roles of the National Assessment, RPA Program, and Annual Report

The decennial assessment called for by the Renewable Resources Planning Act (RPA) was originally intended to be a vehicle by which the current conditions and future expectations for all lands and resources in the United States would be periodically assessed. Indeed, the RPA grew out of efforts to develop a national land-use-planning process in response to escalating demands for resources and rapidly

expanding cities and towns. While some states, most notably Oregon, responded with state planning laws and there were specific planning efforts, like that in the Coastal Zone Management Act, land-use planning at the national level simply did not have political support. The RPA approach was to have the Forest Service, in collaboration with other governments and landowners, develop a national-level assessment. This information could then serve as a tool for public and private planning at all levels to better coordinate land uses across public and private ownerships. Given its historical context, the RPA assessment emphasized the supply and demand for the different multiple uses, such as timber, forage, and recreation, across the different ownerships. It paid relatively little attention to characterizing ecological



conditions, especially those that had a strong regional flavor, such as threatened and endangered species.

Today, things have changed. Sustainable forest ecosystems are now a global priority. Criteria and indicators for nations to use in assessing the status of their forests have broad international agreement, as evidenced in the Santiago Agreement of 1995. The RPA assessment can use these criteria and indicators for assessing national sustainability. Thus, the RPA assessment has a new role in providing national information to the international community as well as providing an evaluation for the United States on the status of its forests and rangelands. This review is directly linked to the Government Performance and Results Act requirements. The role of RPA is essential in providing a broad context for understanding the contribution of the National Forest System lands to sustainability. It cannot, however, be expected to provide a detailed evaluation of ecological sustainability in the different regions of the country. That information must be developed through regional assessments.

The RPA national assessment of land and resources can contribute to national forest planning in a number of ways:

- 1) It shapes our understanding of the conditions on all forests and rangelands across the country as well as likely demand and supply considerations. The regional analyses on forest and rangeland trends on nonfederal ownerships are especially valuable.
- 2) It provides linkages to international ecological and social issues, such as the role of forests in addressing global-climate-change policy, protecting biodiversity, recognizing customary and traditional rights of indigenous peoples, ensuring long-term economic and social benefits from forests, and sustaining temperate and tropical forests.

- 3) It provides a forum for discussing sustainability on forest lands with diverse ownerships.

- 4) It can highlight ecological systems at risk.

The RPA Program was originally envisioned as a master plan for the management of the National Forest System lands with the assumption that the inputs (especially budgets) needed to provide high levels of outputs (especially commodities) would naturally follow. It has rarely worked as intended in the 25 years since its passage. The RPA Program, for all its good intentions, called for input and output goals that became divorced from the land and the dynamic management that goes on at the local level. Its targets have forever lagged behind the changing conditions and values expressed at each national forest and grassland. In addition, presidents and legislatures have largely ignored the program, responding more directly to their own priorities for management of the national forests and grasslands and the realities of limited budgets. Similarly, regions and their individual national forests and grasslands have largely ignored the RPA Program in planning. This result is not surprising because it is difficult to express the goals for management of each national forest and grassland through a set of resource-production targets set at the national level.

We believe that the RPA Program (and its successor) could provide overall policy guidance for the national forests and grasslands by recognizing their role within the context of other ownerships, as specifically required in the law. At its best, the RPA Program can be a strategic vision of the management emphasis for the national forests and grasslands in the context of the management of all lands, including lands in other countries, by pointing out the unique contributions of lands within the National Forest System. As an expression of a clear strategic vision, the RPA program could provide policy guidance for the large and

small-landscape planning processes discussed below. The recent statement of the Chief of the Forest Service regarding the importance of watershed protection in achieving ecological sustainability is the beginning of such a strategic vision.

The annual report to Congress called for in the RPA is the direct connection to the Government Performance and Reporting Act. The planning process proposed below should make it possible to track actual improvements in land and resource conditions, actual achievements given budget appropriations, and necessary changes to meet the primary goals of the National Forest System. It is essential that the annual report become an integral part of the overall planning process, so when actual performance is assessed, it is possible to identify needs for strategic change, needs for new management approaches, needs for new research, and needs for new partnerships to achieve common goals. The annual report would provide the big picture for the units of the National Forest System as they engage in their own annual performance review and evaluation processes

## Integrating Budgets into Planning

Past forest plans developed both the goals for forest management and a set of actions (such as timber harvest, road construction, trail building, wildlife-habitat improvement, and campground maintenance) to achieve those goals. These actions were generally developed without limiting budget projections to recent appropriated budget levels. Rather, the plans were developed to help define the budget that would be needed, based on conclusions reached by the Forest Service, after much analysis and public involvement. This approach often led to disappointment during plan implementation as Congress appropriated

less money than envisioned and targeted the funds it did allocate to a different mix of actions and outputs than those called for in the plans.

For planning to be meaningful, it needs to bear a relationship to the current and likely future situation. To achieve this correlation, there must be some relationship between the plan and the budget available, as discussed in Chapter 5. The estimated rate of attainment of desired conditions should be keyed to expected budgets, and how increased or decreased budgets will affect the rate of progress should be analyzed. The details of actions to achieve progress toward these goals, however, should be left to implementation planning. As part of strategic planning, the budget needs for maintaining the desired future condition should be examined; if they appear unrealistic, less expensive desired future conditions should be considered.

The actions outlined in the small-landscape management decisions, updated on a yearly basis, should be the basis for the budget requests. Budget shortfalls will affect the actions taken and the rate of progress toward goals; they do not automatically trigger a revision in the strategic plan. If it becomes clear that Congress is unlikely to fund accomplishment of the management goals, then the large-landscape strategies and policies may need revision. During revision, a comparison should be made between the expected and actual budgets in the past so that future strategies are based on realistic budget expectations.

## The Opportunity of NEPA

Agency processes for planning, decision making, and appeals all assume a single-agency approach. As a result, agency processes are generally inwardly focused and offer little up-front opportunity for broader involvement in

the assessment, planning, and decisional processes. NEPA is intended as a process to disclose the evidence and reasoning used in making commitments of federal resources or budgets. Because it is a process that applies to all federal agencies, it is an opportunity for integrating and coordinating single-agency processes. There have been some attempts at such coordination in the past, such as using a lead agency when several agencies are involved.

At the level of bioregional guidance and large-landscape planning levels, the decisions are strategic and largely programmatic and thus provide natural opportunities for multiagency coordination. Ideally, a more unified federal approach to planning and assessment will evolve. In the meantime, however, the NEPA process was intended as a mechanism to enhance working relationships across agencies in the process of developing their plans and activities.

At the level of small-landscape plans and project decisions, NEPA processes are opportunities for integrating the information from the different assessment levels with the strategic direction from the large-landscape planning. The rationale for decisions should naturally flow from these sources, along with the processes of public engagement.

However, there are several aspects of current law and regulation that pose significant barriers to an effective NEPA process at the small-landscape planning level. First, the analysis requirements for individual projects or activities are substantial. A fairly complex and complete EA is usually prepared for each project in anticipation of postdecisional appeals or even lawsuits. From the perspective of current planners and managers, these analysis and documentation requirements are significant impediments to the integrated, multi-project/activity planning we envision for the small-landscape plan.

Second, the real challenge at the small-landscape planning level is twofold: the statutory requirement for postdecisional project-

level appeals currently inhibits planners and managers from bundling projects out of concern that one highly controversial project can delay or derail several projects. This is a real problem. The Committee has posed a solution: developing more complex public discussions of controversial projects and integrating the decisions about these projects into the small-landscape plan at a later date. This solution does not grapple with the second, more fundamental problem: by law the agency must settle postdecisional project appeals within 45 days. This means that the EA must have sufficient analysis and documentation to serve as an appeal document or even as evidence in a lawsuit, should that occur.

Third, and perhaps the most difficult problem, is that the current EA/EIS process assumes a one-time decision. The very essence of small-landscape planning is an adaptive management approach, based upon monitoring and learning. Although small-landscape planning can more readily do real-time cumulative-effects analysis (meaning that actual activities in the area and the relative contribution of new activities can be assessed, not just vague forecasts based on historical conditions), this kind of analysis is difficult to integrate with a one-time decision approach. Developing a decision disclosure and review process that is ongoing and uses monitoring information to adjust or change treatments and activities will need to be a high priority for realizing the potential of the small-landscape plans.

Thus, NEPA provides a real opportunity for working toward greater harmonization among agency planning and decision processes. At the same time, its emphasis on one-time decisions is inconsistent with an adaptive-management approach. This problem may require that a new process for disclosure and review emerge, either through changes in administrative rules or changes in law (e.g., the project-level appeals process) through legislative processes.

## 4D. Summary

The collaborative-planning approach outlined here reflects the knowledge gained through experience during the past 20 years. The basic spatial structure of the planning process is consistent with innovations tested over the past decade. The principles for collaborative planning emerged from scientific study of planning and managerial experience.

The Committee attempted to weave these current innovations into an overall conceptual framework for planning. The process outlined here, which ultimately seeks to achieve the overarching objective of sustainability, uses the dynamic elements of (1) defining desired future conditions and (2) monitoring and

adaptive management to link the hierarchical assessment and decision-making processes. It is not possible for collaborative planning to be successful without a strong monitoring and adaptive-management approach. Similarly, without the independence of the assessment process from decision making, the trust needed to collectively define desired future conditions is undermined. Relationships are the basic medium of collaboration, so this planning framework seeks to build and strengthen the relationships necessary for effective stewardship of the national forests and grasslands.

### 4-7. Multiproject NEPA Documents: Benefits, Problems, and Chances for Success

The Committee has argued for small-landscape plans to develop in a coordinated fashion the projects needed to achieve the goals outlined in the large-landscape plans. The Forest Service has some experience with this approach through an approach called a multiproject environmental assessment (EA) or environmental impact statement (EIS), in which a number of projects for an area are addressed in one NEPA process. Harriet Plumley, Planner on the Siuslaw National Forest helped the Committee conduct a study of recent attempts at the multiproject approach to understand their benefits and the problems with their development, when they worked, and when they did not.

The following benefits of multiproject documentation:

1. It provides a way to analyze cumulative effects of all activities planned for an area, especially a watershed. (NEPA regulations require that *cumulative actions* that have cumulatively significant impacts should be discussed in the same impact statement.)
2. It addresses *connected actions*, as required by NEPA regulations
3. It allows for analysis of *similar actions* planned for a geographic area. (NEPA regulations require that similar actions be analyzed together if combination is the best way to assess their combined impacts or to display reasonable alternatives.)
4. It provides a better opportunity to identify and prioritize activities needed for protection of resource sustainability and balance of resource use.

5. It provides an opportunity to work with local public/community interest groups to design a landscape plan and to perform any subsequent environmental analysis needed to implement recommended projects.

6. It provides an opportunity to save time and money by focusing on one comprehensive NEPA project.

The problems that were identified were:

1. Multiproject NEPA documents become too cumbersome, including too many purpose and need statements, leading to too many issues and too many alternatives to be addressed sufficiently for NEPA; it is difficult to provide all the site specificity required by NEPA for all the alternatives and issues; and it requires too much documentation for “white-hat” projects.

2. Preparation of the document takes too long and is too expensive. Several focused EAs and CEs could be prepared and implemented more quickly.

3. For projects that are highly controversial, it is risky to combine too many projects in one NEPA document. All the projects could be delayed because of the appeal of one controversial project.

4. NEPA documents should focus on projects with a 1- to 2-year planning horizon. New information about species habitats and other environmental issues changes too quickly to ensure that a multiproject plan could last longer than 2 years.

Overall, if there are any controversial projects in the analysis area and agreements have not been worked out with concerned parties ahead of a NEPA decision, (1) the decision could be appealed on process points (e.g., lack of site specificity, lack of adequate public involvement, and lack of adequate range of alternatives); (2) the NEPA decision will be difficult for the Appeal Deciding Officer to uphold; and (3) the forest will withdraw the decision or extract the appealed portion of the project from the decision and handle it later in a separate NEPA analysis.

