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ECOSYSTEM
MANAGEMENT

Additional Actions Needed to
Adequately Test a Promising
Approach

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Messrs. Chairmen and Members of the Subcommittees:

We are pleased to be here to discuss our report on a new, broader approach to managing the nation's lands and natural resources called "ecosystem management."¹ The ecosystem management approach recognizes that plant and animal communities are interdependent and interact with their physical environment (soil, water, and air) to form distinct ecological units called ecosystems that span federal and nonfederal lands. In response to your and Representative Dicks's requests, we identified (1) the status of federal initiatives to implement ecosystem management, (2) additional actions required to implement this approach, and (3) barriers to governmentwide implementation.

In summary, our work, which we generally limited to the four primary federal land management agencies,² showed that these agencies have initiated efforts to implement ecosystem management. In addition, the administration's fiscal year 1995 budget request includes \$700 million for ecosystem management initiatives. However, if this approach is to be effectively implemented, the policy goal for ecosystem management needs to be clarified and certain practical steps need to be taken that clearly identify what must be done and which agencies and parties must be involved. Finally, our work has shown that implementing ecosystem management governmentwide faces several significant barriers, including (1) noncomparable and insufficient data, (2) disparities in federal agencies' missions and planning requirements that hamper interagency coordination, and (3) incentives, authorities, interests, and limitations that constrain federal and nonfederal parties' efforts to work together effectively.

Before discussing these matters in more detail, I will provide some background information.

BACKGROUND

The four primary federal land management agencies, the numerous land units they manage, and the many laws governing their management form the current federal land management framework. This framework is part of a larger national land and natural resource use framework. This larger framework includes many

¹Ecosystem Management: Additional Actions Needed to Adequately Test a Promising Approach (GAO/RCED-94-111, Aug. 16, 1994).

²The four primary federal land management agencies are the National Park Service, the Bureau of Land Management, and the Fish and Wildlife Service within the Department of the Interior and the Forest Service within the Department of Agriculture. Together, these agencies manage about 30 percent of the nation's total surface area and about 97 percent of all federal lands.

federal and state agencies that have regulatory or tax authority or financial or technical assistance programs that can greatly influence the use of natural resources and other activities on private lands.

Ecosystem management recognizes that humans are a component of most ecosystems; thus, human activities and uses are integral to ecosystem management. Proponents of ecosystem management believe that coordinating human activities across large geographic areas would do more to maintain or restore the health of ecosystems than the current practice of managing legislatively or administratively established land units and individual natural resources. They also believe that this approach would better ensure the sustainable long-term use of natural resources, including the production of natural resource commodities such as timber and forage and other uses such as recreational activities. Hence, proponents believe that this approach would help to avoid or mitigate future ecological and economic conflicts by providing greater flexibility to coordinate activities over larger land areas.

STATUS OF FEDERAL INITIATIVES

Since the late 1980s, many federal agency officials, scientists, and natural resource policy analysts have advocated the adoption of ecosystem management to better address declining ecological conditions. At the local level, some federal agency field offices have entered into collaborative arrangements with both federal and nonfederal agencies, as well as with private landowners and representatives of other interests, to address problems or issues of mutual concern. In addition, in some instances, the agencies have entered into cooperative agreements with other federal agencies to address specific ecological concerns. And, over the past 2 years, all four of the primary federal land management agencies have independently announced that they are implementing or will implement an ecosystem approach to managing their lands and natural resources.

The movement toward ecosystem management is reflected in the administration's fiscal year 1995 budget request, which includes (1) \$610 million for the initial stage of a governmentwide effort to implement ecosystem management, including accelerated funding for three ecosystem management pilot projects, and (2) \$90 million for a fourth pilot project.³ The budget request also states that

³The four pilot projects are to restore (1) the old-growth forests of the Pacific Northwest, (2) the ecological health of south Florida, including the Everglades and Florida Bay, (3) the ecological health of the Anacostia River in Maryland and the District of Columbia, and (4) natural resources damaged by the March 1989 oil spill from the supertanker Exxon Valdez in Alaska's Prince William Sound.

to implement ecosystem management, the administration is considering the following principles: (1) managing along ecological rather than political or administrative boundaries, (2) ensuring coordination among federal agencies and increased collaboration with state, local, and tribal governments; the public; and the Congress, (3) using monitoring, assessment, and the best science available, and (4) considering all natural and human components and their interactions. In addition, both the Forest Service and the Bureau of Land Management have proposed reducing the number of separate budget expenditure categories for different resource activities, such as timber and wildlife, in order to provide the increased flexibility that they believe they need to fund multiple purpose activities of ecosystem management.

IMPLEMENTATION OF ECOSYSTEM MANAGEMENT

The initial stage of a governmentwide effort to implement ecosystem management will require clarifying the policy goal for ecosystem management and taking certain practical steps to apply the principles being considered by the administration.

Clarifying the Policy Goal

Currently, ecosystem management has no clear policy goal, and the term has come to represent different things to different people. While there is no governmentwide legal requirement to maintain or restore the health of ecosystems as such, other laws do require federal agencies to give priority to (1) sustaining multiple uses on federal lands and (2) providing minimum levels of protection to individual resources. If meeting these mandates depends on the health of ecosystems, then priority will have to be given to maintaining or restoring a minimum level of ecosystem integrity and functioning over production and other uses of resources at nonsustainable levels. The administration has not, however, clearly identified the priority to be given to the health of ecosystems relative to existing levels of human activities when the two conflict.

Since there is no governmentwide requirement to maintain or restore the health of ecosystems as such, the practical starting point for ecosystem management will have to be to maintain or restore the minimum level of ecosystem health necessary to meet existing legal requirements. As the understanding of ecosystems increases through the experience gained from ecosystem management initiatives, including the four pilot projects, needed changes to existing legislative requirements can be sought to better define and achieve the minimum required level of ecosystem integrity and functioning.

Establishing Practical Steps

The administration has not specified the steps required to apply the principles of ecosystem management included in its fiscal year 1995 budget request. We identified certain practical steps that we believe need to be taken to implement the principles being considered by the administration. In taking these steps, the federal government will have to make difficult public policy decisions about how it can best fulfill its stewardship responsibilities.

The first step would be to delineate, on the basis of reasonable ecological and management criteria, the boundaries of the geographic areas to be managed as ecosystems. In general, fulfilling ecosystem management's potential to protect natural resources and sustain long-term natural resource commodity production and other uses requires that the geographic areas to be managed as ecosystems be large enough to (1) capture the complexities and linkages among the components and processes of the ecosystems and (2) allow for consideration of the effects on the ecosystems of activities originating across ownership boundaries. Hence, the areas to be managed as ecosystems generally will have to be larger than any one federal land unit or ownership, will include private and other nonfederal landholdings, and may cross state boundaries.

Once a geographical area to be managed as an ecosystem has been delineated, its ecology needs to be understood on the basis of the best available data in order to determine how the ecosystem's integrity and functioning can be maintained or restored. Among the actions required to implement this step would be determining the minimum level of integrity and functioning needed to maintain or restore a healthy ecosystem.

After an understanding of an ecosystem's ecology has been gained, management choices must be made concerning (1) the desired future ecological conditions, (2) the types, levels, and mixes of activities that can be sustained while still achieving these conditions, and (3) the distribution of these activities over time among the various land units within the ecosystem. The extent to which ecosystems receive protection above the minimum levels necessary to maintain or restore their integrity and functioning will depend on public policy decisions involving trade-offs among ecological and socioeconomic considerations and will likely vary by ecosystem.

The extent to which desired ecological conditions can be maintained or restored and long-term commodity production and use can be sustained will depend in large measure on the extent to which disparate private landowners and government agencies can reach agreement on the desired conditions and the actions needed to achieve them. Not only will this agreement require unparalleled

coordination among federal agencies, but it will also require extensive collaboration and consensus-building among federal and nonfederal parties that emphasize technical assistance, market-based incentives, and voluntary cooperation and recognize private property rights and state and local jurisdictional authorities.

Finally, ecosystem management requires the flexibility to adapt on the basis of new information. This process requires continually researching, monitoring, and evaluating the ecological conditions of ecosystems and, where necessary, modifying management on the basis of new information to better accommodate socioeconomic considerations while ensuring that minimum or desired ecological conditions are being achieved.

BARRIERS TO IMPLEMENTATION

Our work has shown that the administration's initiatives to implement ecosystem management governmentwide face several significant barriers. These include (1) noncomparable and insufficient data that hinder understanding of ecosystems, (2) disparities in missions and planning requirements that hamper interagency coordination, and (3) incentives, authorities, interests, and limitations in the national land and natural resource use framework that constrain collaboration and consensus-building between federal and nonfederal parties. It is likely that the governmentwide implementation of ecosystem management may ultimately require changes not only to the existing framework of laws governing federal land management but also to other federal authorities and programs that influence the use of natural resources and other related activities on nonfederal lands. While ecosystem management should provide a basis for making more scientifically informed policy decisions and more accurately predicting their consequences, it cannot provide definitive answers to what will essentially always be public policy questions such as (1) the importance of maintaining or restoring the health of ecosystems relative to shorter-term values and concerns and (2) the types, levels, mixes, and distribution of human activities over time among various federal and nonfederal land units within an ecosystem.

Messrs. Chairmen, in our report we recommended the development of a strategy to implement ecosystem management that (1) clarifies the policy goal for ecosystem management, (2) translates the general principles in the administration's fiscal year 1995 budget into practical steps that clearly identify what must be done and which agencies and parties must be involved, and (3) identifies barriers to implementing ecosystem management and options for

overcoming them. The White House Office on Environmental Policy,⁴ the Department of the Interior, and the Department of Agriculture's Forest Service, in their comments on our report, agreed with this recommendation. We also recommend that progress in implementing this strategy in the pilot projects and other ecosystem management initiatives be collectively assessed and reported as part of the yearly budget and appropriations process.

In conclusion, Messrs. Chairmen, we recognize that, compared with the existing federal approach to land management, ecosystem management may require greater flexibility in planning; in budgeting, authorizing, and appropriating funds; and in adapting management on the basis of new information. However, we believe that if ecosystem management implementation is to move forward, it must advance beyond unclear priorities and broad principles. Clear goals and practical steps for implementing ecosystem management need to be established and progress in implementing this approach needs to be regularly assessed and reported.

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Messrs. Chairmen, as you requested, we will continue to monitor the development and implementation of the administration's ecosystem management strategy and the efforts by the administration to (1) carry out the steps needed to implement ecosystem management and (2) identify barriers to ecosystem management and options for overcoming them. Also, as requested, we will evaluate the administration's related fiscal year 1996 plans and budgets. At your request, we will also examine issues related to ecosystem management on nonfederal lands that may constrain effective collaboration and consensus-building with nonfederal parties.

This concludes our statement. We will be glad to answer any questions that you or other Members of the Subcommittees may have.

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⁴The White House Office on Environmental Policy established and chairs an Interagency Ecosystem Management Task Force to implement an ecosystem approach to environmental management.

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