

A Tale of Two Paradigms: Multiple Use and Ecosystem Management

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The management of U.S. public lands is at a crossroads as concepts and practices of "competing multiple uses" give ground to "ecosystem management." What are the similarities and differences of the two paradigms, and what does this shift portend for management of the public forests and rangelands? It is possible to contrast these paradigms by exploring, from the two different paradigms (or world views), some fundamental questions about the nature of lands, natural resources, and relationships to people. The exploration demonstrates that the two perspectives can lead to strikingly different conclusions about what constitutes wise and appropriate uses of land. The differences help explain why, in today's social climate, there is strong support for the change to ecosystem management.

BACKGROUND

With the human population growing worldwide, forests and rangelands are becoming more scarce, stressed, and valuable to the people who must share them. These pressures challenge the professionals who must make wise choices about managing lands and natural resources to serve society's needs today and in the future.

But what constitutes "wise and appropriate" uses of land, and what management approaches are best suited to achieving society's goals? Those very questions are the focus of raging debate in this country and elsewhere. Why? Because there is more than a single answer, depending on the particular view (or paradigm) that individuals and organizations have concerning lands, natural resources, and relationships to people.

Two paradigms are vying for position in management of America's public lands today. One is the version of "multiple-use management" that has shaped public land management for the past several decades. The other, "ecosystem management," is increasingly cited as a more appropriate approach for managing public lands and resources. There are vocal proponents and detractors on both sides of the debate.

One effective way to contrast the two paradigms is to explore some fundamental questions and answers about the nature of lands, natural resources, and relationships to people. The questions and answers will demonstrate how the two views can lead to strikingly different conclusions about what is wise and appropriate management.

WHAT ARE THE MOST IMPORTANT USES AND VALUES OF PUBLIC FORESTS AND RANGELANDS?

Multiple-Use Management Answer

America's public lands are for the use and occupancy of Americans. These lands are among several cornerstones for our society

and its economy. They are part of the strong social and economic forces of America, part of the resourcebase that has made us the most powerful economic and political force in the world.

Public land management is subject to the same principles that apply to any other economic operation, be it agriculture or manufacturing. Investments and manipulation result in yields of goods and services.

Under multiple-use management, the most important uses and values are determined by social and economic interests. As Americans identify ways to use and occupy public lands for commercial or recreational (including spiritual) purposes, resources are directed toward fulfilling those demands. As a natural result of our democratic system, people act freely to sustain those uses most important to their lifestyles whether those occur in National Parks, on National Forests, or on Bureau of Land Management lands.

When government policy intervenes or makes radical changes in people's use of public resources, disasters result. A good example is the spotted owl situation in the Pacific Northwest where thousands of families have lost their livelihood by short-sighted public resource decisions. We are literally watching communities there die as a result of sudden changes in permitted uses.

Think of it! What if the founders of this nation had not had access to public lands and resources? America would never have developed or become the beacon of political hope for bil-

lions of people around the world. As a more recent example, what if America had not become an international powerhouse in medical research or had no access to the Pacific yew? Millions of people would never have the hope they do today for the reduction or control of their cancers because we have both great medical technology and a supply of Pacific yew that is available for intensive management.

If we are to sustain our nation's political and economic vitality, and, thereby, maintain our position in the world community, we must continue to make use of public resources. Some people maintain that our use of public resources should reflect and respond to resource management (or mismanagement) in other parts of the world. This is an insane proposition because we can neither anticipate, control, nor plan for resource uses elsewhere.

Equally, if we are to be able to divert economic resources to manage our domestic pollution and resource restoration needs, we must have a strong economy. Public resources play a substantial role in securing that strong economy and associated vital society.

Perhaps the greatest thing about the multiple-use approach to management is that we know it works! It is time-tested, with over 100 years of application. We have no reason to abandon this approach for speculative "ecosystem" or "integrated" approaches that have no track record or popular support.

Ecosystem Management Answer

People's needs from the public lands are diverse and complex, as are the ecosystems involved and the dependent human societies. In answering this question we must not confine our perspective to the U.S. only, because how we use our forests and rangeland resources have ecological, economic, and social effects that are global in scope.

First, there are the subsistence needs: such resources as food, fodder, and fuelwood that dependent peoples must have for their day-to-day survival. In many societies, for example those in rural India, these needs are the most urgent and take precedence over all others. Tribal people are best able to meet their daily needs in the diverse, native forests that have served as larders for countless generations, and that is why these forests are the focus of India's new forest management policy.

There are the educational and scientific uses: the need to learn about how ecosystems operate, because such knowledge is required to manage land and resources wisely. This is a major compelling reason for preserving what is left of the ancient forest. How many secrets does it hold that may be crucial for our own survival? Just think about the Pacific yew, a "trash species" that became famous and extremely valuable overnight because someone discovered its cancer-fighting properties.

There are diverse cultural needs. American society places considerable emphasis on the recreational uses of forests and

rangelands, and the aesthetic values of these ecosystems. Such values are much more than "nice but non-essential" amenities of public wildlands. Today we must consider evidence that such environments may play a significant role in human health and well-being. How else do you explain, for example, the significant improvement reported for certain mental disorders following therapeutic immersion of afflicted people in natural environments?

In other cultures, forests, trees, animals, and other components of nature may have immense spiritual and religious importance that we can't begin to understand from our own cultural perspective.

There are, too, needs that clearly are economic in nature. Forests and rangelands serve people by yielding products, which in turn generate cash flow, support lifestyles and livelihoods, and sustain employment in dependent communities.

Many societies today are learning that the economic potential goes well beyond the traditional commodities produced from forests and rangelands. They see that they may be better able to achieve economic and quality-of-life goals not from commodity production, but instead by sustaining the diversity, beauty, and natural character of their native ecosystems.

For example in Central and South America (and parts of the U.S. as well), "ecotourism" is playing an increasingly important role in national, regional, and local economies. The key to economic success here is to retain the special qualities that attract this

new breed of forest user, including the diversity of native plants, animals, and human cultures that exist there.

And very importantly, there are the ecological services provided to the global community, which includes humans. We know that forests and rangelands perform vital functions such as water conservation, nutrient cycling, and oxygen recharge. These functions, important to overall planetary health, are undermined by human activities that diminish biological diversity and disrupt ecosystem integrity. Some may argue, "But how do you measure the value of these services?" The point is simply this: they are important beyond measure!

WHAT CONDITIONS OF FORESTS AND RANGELANDS WILL BEST MEET THESE NEEDS?

Multiple-Use Management Answer

Forest and rangeland conditions should be regulated to supply a sustained flow of goods and services for the American people. As people come forward and identify their needs and proposed uses, lands should be assessed for their productive capability and assigned various conditions that support production, whether preferences are for timber or wilderness experiences.

Once lands have been placed in categories responsive to use demands, treatments and investments should be oriented toward maximizing sustained supply. Treatments and investments should be the most economically and socially efficient ones possible. For instance, timber condi-

tions (the result of cutting and investment) should be equally and evenly divided into age classes that will sustain timber flow for the foreseeable future. The most efficient methods for treatment should be used, including clearcutting and seedling plantations.

The process of assigning lands to different productive purposes should be open to the public. But, once decisions have been made about what multiple uses will be made of which locations, public land managers should meet the production targets the decisions call for. Otherwise, the conditions of the land will not be supporting and sustaining communities and related economies over the long haul. People have to have supplies they can depend on in order to reap adequate returns on their investments.

Ecosystem Management Answer

We have seen that people's needs from forests and rangelands are numerous and complex, and include subsistence, educational and scientific, cultural, and economic values as well as planetary health and survival. Given these complex needs, what conditions of forests and rangelands must we strive for to best meet the interests of society?

The human body is a good analogy here. We all know that our well-being and productivity is best when our bodies are intact, whole, and healthy. The same applies to that level of biological organization that we recognize as the ecosystem.

Ecosystems must be kept healthy and whole, so as to sustain the vital ecological functions

that make up the life support system of the planet. Related to this is the importance of resilient ecosystems that can better withstand the pressures of a growing human population and associated stresses, such as global climate change.

The ecosystems we manage must be diverse, to continue providing the great variety of uses and values needed by society. And since biological diversity is related to ecological complexity, maintaining the structural and functional integrity and complexity of ecosystems is a key concern.

Ecosystems that are healthy, complex, and resilient will be productive in the long term, and better able to continue yielding those goods and services needed by humans and sustain the other life forms with whom we share the planet.

In summary, society's interests are best met by ecosystems that are diverse, complex, whole, healthy, resilient, and productive over the long term. Reductions of diversity or ecological complexity are symptomatic of a degraded ecosystem—one whose long-term productivity and resiliency are in question.

WHAT MANAGEMENT STRATEGY CAN BEST ACHIEVE THESE CONDITIONS?

Multiple-Use Management Answer

Multiple-use management requires that managers make a good-faith effort to identify public values and uses and then put the land into condition to meet those demands. Managers should be hired and given incentives to

ensure that productive potential is met.

The best managers are experts hired for the knowledge of their discipline, whether range, timber, or recreation management. They should be placed in charge of those lands and resources identified for specific protection or production purposes and left alone to manage in a professional manner. The less interference they have, the more likely they will be able to supply the full potential of resources to meet multiple demands.

With the experts in place, investments in and treatments of the resources should be oriented toward outputs of needed goods and services. Management should place the land in a condition with the maximum potential for meeting public demands, sustained for long periods of time.

Ecosystem Management Answer

Without question, ecosystem management is required to achieve the conditions of lands and resources that best meet society's interests. This management strategy recognizes ecosystems as the basic organizational units of land and natural resources management. The primary goal of ecosystem management is to sustain the diversity, complexity, health, resilience, and long-term productivity of ecosystems. Any management that lessens diversity, reduces ecological complexity, and impairs resiliency or long-term productivity is detrimental to the interests of society.

How does ecosystem management work to achieve this goal? First, it recognizes ecosystems as

dynamic entities that are sustained in nature by disturbance regimes such as fire, flood, storm events, and insect outbreaks. These dynamic forces result in characteristic patterns and processes on the landscape—what we would recognize as “natural” forest and rangeland environments.

Appropriate management works within nature's blueprint, rather than creating a landscape drastically different from that which would be sustained by the forces of nature.

Is even-age management appropriate? That depends on the ecosystem. The answer may be “yes” where some force of nature, such as stand-replacement fires, shaped the landscape into a mosaic containing even-age stands. By this reasoning even-age management would not be appropriate in the temperate rainforests of Alaska, where the landscape is shaped by wind rather than fire, and occurs as extensive blankets of uneven-age forest.

Second, in the planning process we must formulate management objectives that will drive management along the desired path of ecosystem health and sustainability. This requires objectives that relate to conditions of ecological structure, function, and composition. These must be measurable attributes that allow us to evaluate ecosystem response and to monitor ecological health and condition. We must use these objectives in the budgeting process, and to reward the performance of our professionals.

The public forests and rangelands are important sources of many products and services

needed by the American people. Therefore, we must also formulate objectives for the uses to be provided. However, these desired outputs do not represent the drivers of management but instead the rewards or by-products of effective ecosystem management.

HOW SHOULD PEOPLE BE INVOLVED IN MANAGEMENT OF PUBLIC FORESTS AND RANGELANDS?

Multiple-Use Management Answer

People have the opportunity to be involved in management of public lands through existing, workable government processes. These include lobbying Congress for the passage of laws, working with public agencies in decision-making processes such as those associated with the National Environmental Policy Act and the National Forest Management Act, and use of the legal system.

In fact, the multiple-use approach to management represents all three of the government processes: authorization by Congress, implementation by federal agencies, and review and modification by the court system. People have opportunities to be involved in all aspects of these processes. These opportunities include, however regrettably, the use of the courts to stop or delay objectionable activities if the other processes do not serve to get the litigants what they desire.

In the case of land management agencies, people have the opportunity to be involved in agency deliberations at several, formal points clearly identified in regulations. Among these are:

scoping, draft document review, final document review, and decision record. This involvement provides fair access for everyone. As people compete for different results from the processes, alternatives are framed, evaluations are made, and compromises formulated.

These opportunities and processes work. They reflect the competitive nature of our society—one of its greatest virtues. If competition forces compromise, or sometimes creates "winners" and "losers," then so be it; this way only the best ideas and actions survive in the crucible of controversy and conflict.

Once decisions are made, people should accept that the democratic process has worked and the decision is based on that process and the expertise of agency professionals.

Ecosystem Management Answer

We have seen that people's needs and values for wildland ecosystems are diverse, complex, and dynamic. So, too, are the expectations that people have for management of public lands and resources. If managers are to remain responsive to society, they must constantly and meaningfully involve people in the planning and decision-making process.

We have learned, in very painful fashion, that it is unwise to second-guess people's desires, or to judge what is good for society from our own technical perspectives. Consider the public involvement process that we have used in national forest planning for several decades now.

To begin, we assumed that people's interests could be effectively represented by a particular set of "multiple uses," including outdoor recreation, timber, wildlife, fish, and water. The choices we gave people were how much of which output they wanted: how many board feet of timber, animal-unit-months of grazing, recreation user days, pairs of spotted owls, and so on. Each management alternative had projections of these outputs.

And because these were regarded as competing uses, we presented the choices in terms of trade-offs of this resource against that one. Talk about placing people and interests in a conflict situation! (And now you see why so much time and attention is spent over arguments about "conflicting resources.")

Through their appeals and lawsuits, many people are telling us that these choices do not fully represent their interest in the public lands. The choices are always framed in terms of what will be removed from the land, when many people's interest is more focused on the condition of the lands and resources that remain in the course of product removal.

What do people value and expect from their lands? This is something that must be worked out individually for every public forest and rangeland, through close involvement of people in all phases of planning. Every unit of public land occupies not only a unique ecological setting, but a unique cultural and economic environment as well. The only way to determine what is best and ap-

propriate for a given forest or rangeland is to work it out with the people whose lives and livelihoods stand to be affected.

CONCLUSION

The two perspectives presented here, multiple-use management and ecosystem management, have certain features in common. Both place great value on the public lands and resources, and both strive to meet the needs and interests of the American people. Just what the American people need and want, however, is viewed differently in each case. Moreover, the fundamental view of lands is different in each case.

In the multiple-use view, land is seen primarily in terms of the uses that can be produced for human use and enjoyment. This is why multiple-use management is based largely on concepts and models of agricultural production.

The ecosystem view recognizes plants, animals, soils, topography, water, climate, and ecological processes as complex systems having diverse linkages to human societies. The ecosystem view reaffirms old conservation themes about the wholeness, balance, and stability of communities in nature. Management models for ecosystem management are likely to be based upon our understanding of ecosystem structure, process, and relationships to humans and their activities.

Both paradigms will have important applications in land and resources management. In today's social climate, the trend is definitely toward ecosystem management on U.S. forests and rangelands in public ownership.