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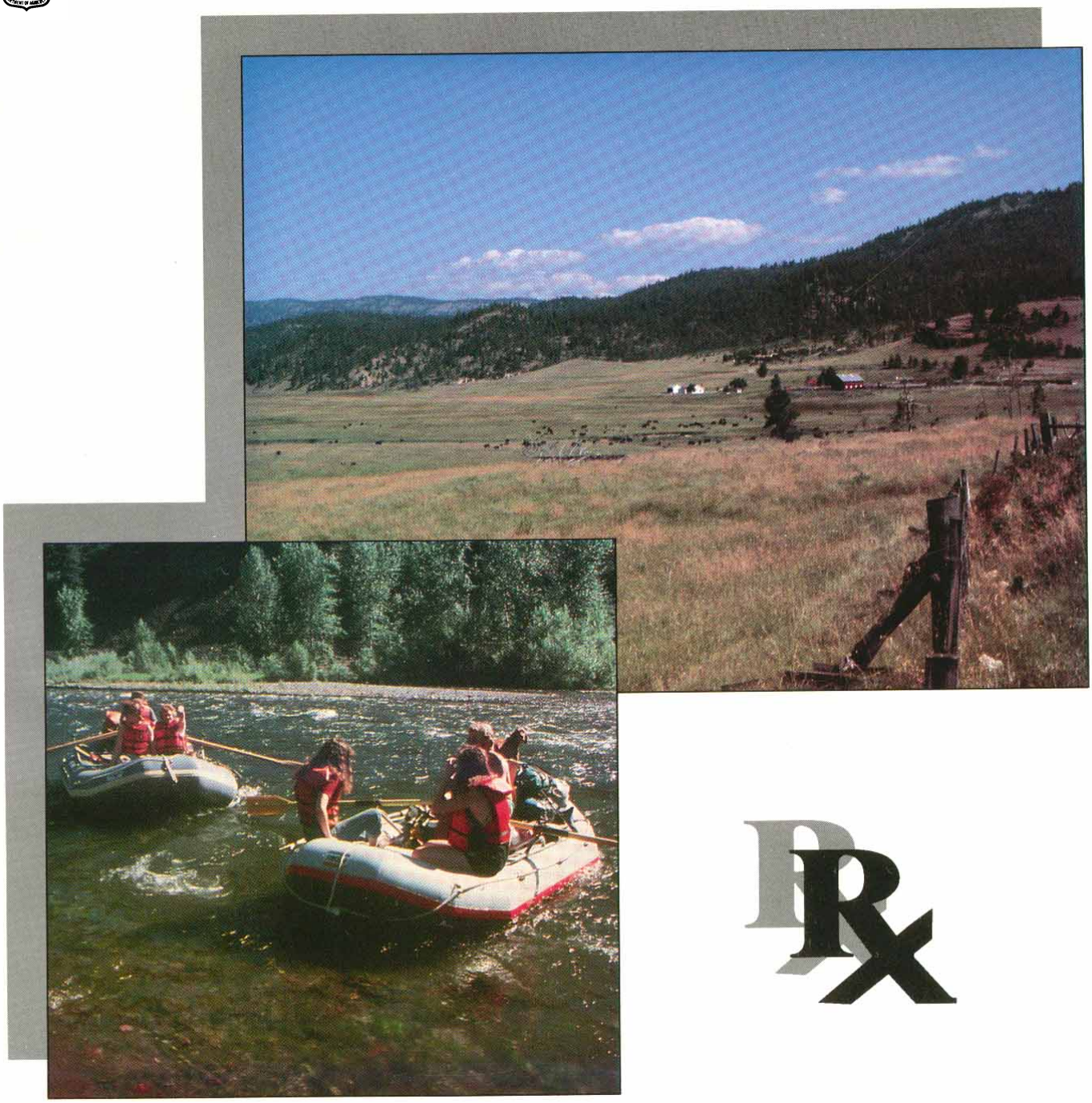
Forest Health in the Blue Mountains: Social and Economic Perspectives

Thomas M. Quigley



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Forest Health in the Blue Mountains: Science Perspectives

Thomas M. Quigley, Technical Editor

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Abstract

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The Blue Mountains of northeast Oregon and southeast Washington are among the most insect- and disease-infested forests of North America. The communities, industries, rural residents, and economies that are highly dependent on the flow of natural resources are being stressed as uncertainty increases over future resource availability. This paper examines, from social and economic perspectives, the historical circumstances that brought about the current conditions; the links that currently exist among natural resources, institutions, and people; and some implications about future direction.

Keywords: Economics, social issues, forest health.

Preface

The Blue Mountains of northeast Oregon and southeast Washington are composed of a complex mix of ecosystems, habitats, landforms, and economies. Several consecutive years of drought, epidemic insect infestations, and catastrophic fire are threatening the natural resources and the social and economic systems within the Blue Mountains. The general health of the forests is not good and may be worsening. A primary factor leading to the current deteriorated condition has been the exclusion of fire. Past timber management practices also have contributed.

This publication is part of a series on forest health in the Blue Mountains. The goal of this series is to provide a discussion of forest health issues from various science perspectives. The series will include discussions on several aspects: insects and disease; economic and social issues; fire; fish, riparian areas, and water quality; ecology and range; wildlife; and a summary of forest health public forums held throughout the Blue Mountains.

The Blue Mountains Natural Resources Institute has been the focal point for much of the discussion regarding the science issues associated with forest health. This organization, which includes over 60 partners, has broad representation and a strong interest in restoring health to the forests and communities of the Blue Mountains area. The Institute has fostered publication of these papers as one more step in the long process of restoring health to east-side forested landscapes.

Thomas M. Quigley

Introduction[1]

The ponderosa pine *(Pinus ponderosa* Dougl. ex Laws.) ecosystems that once dominated the forested areas of the Blue Mountains reflect an ecological situation dramatically different from the coniferous forests of western Oregon. The east-side forests evolved ecologically under a system of low-intensity, high-frequency fire. The resulting forests were open, parklike stands of pine with abundant grass in the understory. The exclusion of fire and other management actions have led to considerably different conditions today. Pine essentially has been replaced by fir species that are not well adapted to the dry climate and are particularly susceptible to insects and disease. The drought of 1985-90, coupled with epidemic insect and disease infestations and catastrophic fire, has resulted in large-scale public concern about the health of the forests in the Blue Mountains. The social and economic systems impacting the management of the forests have a rich history. Understanding how the health of the forests is linked to the social and economic well-being of the people within the Blue Mountains is key to guiding future policies and management.

Historical Setting

Evolution is not unique to ecological and biological systems. The conditions of the social and economic environment also are complex and evolutionary in nature. And, despite great change in the socioeconomic environment, many institutions and their associated concepts, principles, and assumptions are slow to evolve. We sometimes think of our social and economic systems strictly in terms of the recent past. Yet systems that existed 200 to 300 years ago, such as the distribution of property rights and the link between the Indian culture and natural resources, are still evident today, hot only in current social and economic systems but also in the ways these systems interact with our natural resources.

The historical shaping of the natural resources in the Blue Mountains included the influence of many groups, agencies, and policies. Native Americans called the Blue Mountains home and relied on the resources for sustenance, religious practices, and cultural existence. European settlers passed through, but then they often returned and settled to tap a vast natural resource base and develop an economic and social system strongly linked to commodity production and resource extraction. The area exhibited the cyclical boom and bust of economies associated with resource extraction. The conservation movement that began in the 1960s resulted in laws and regulations that dictate a different thrust for resource management agencies. This evolutionary process of changing resource demands, regulations, and uses has shaped the Blue Mountains that exist today.

The Blue Mountain resources have been used and abused by humans in search of survival, enjoyment, wealth, and fulfillment. This search is unending, and the mechanisms used in this process change as society adjusts to changing values. The key elements driving these processes are the links that exist between people and the communities they live in, the places they frequent or place value in, the natural resources they value, and the institutions they establish.

The advent of European settlers in the Blue Mountains marked dramatic shifts in the links among people, places, communities, systems, and natural resources. With little understanding of past use patterns by Native Americans and, perhaps, little concern about the long term, the quest for wealth, enjoyment, and fulfillment led to privatization of the most

[1] Concepts and ideas presented in this paper grew, in large part, from discussions with colleagues, especially Jack Thomas, George Stankey, Roger dark, Robert Lee, and Dick Buscher.

productive land (which traditionally was used extensively by Native Americans). Swamps were drained, valuable and accessible tracts of timber were cut, destructive dredge mining in fertile mountain valleys was commonplace, rangeland was overgrazed especially by transient sheep, and agricultural crops were planted on virtually all sites deemed suitable. The privatization of land resulted in most productive sites (those thought capable of supporting a family in an agricultural setting) being carved into multiple ownerships, a move founded in the Jeffersonian model of colonization and government (Gates 1979). The residual, essentially Federal land, is where much of the social and economic debate occurs today.

The motivations of the 18th and 19th centuries for land ownership were considerably different than the motivations of society at the end of the 20th century. The distribution of property rights results in a system not well suited to solving issues today. The anadromous fish issue is a prime example. The Forest Service manages over 50 percent of the watershed area accessible to anadromous fish, and 60 to 70 percent of the stream reaches of prime importance to these fish are controlled by private landowners.[2] If social values dictate a need to address fish habitat, both public and private ownerships clearly need to be involved. Solutions will be difficult given the present system of incentives and disincentives.

Economies of the Blue Mountains reflect a strong natural-resource dependence. Mills were developed primarily to process large pine, ranching relied heavily on the productivity of riparian areas on public as well as private land, agricultural practices used as much land as was available, and the residents became accustomed to large open areas with free access. We plowed our fields to the streambank, built mill capacity to handle large logs, grazed riparian areas heavily, burned our stubble, and expected free access to public land. For the most part, all parties were seeking survival, enjoyment, wealth, and fulfillment; acting according to their best understanding; and driven strongly by the profit motive. These approaches to resource use have been considered the standard. To move to a new standard has an impact. But, the move to a new standard is driven by new understanding, changes in societal values, shift in demand for resources, or change in law and regulation.

As humans, we crave stability over instability and growth over decline. We develop policies, enact laws, and evolve institutional systems designed to foster stability and a hope for an improved future. We tend to institutionalize the systems that are "good" for today, but those systems may not be capable of adjusting to changing values, perceptions, demands, and available resources. Social and economic systems are dynamic and in many respects unpredictable. We interact within these systems in an effort to obtain predictability so that investors will invest, workers will make themselves available, and institutions will provide jobs, goods, and services.

The management of public land has been driven by a production-oriented model (Kessler 1991). The focus has been on a stable provision of goods and services. Goals and targets were the result. We now have allowable sale quantities for timber, animal unit months of grazing, and visitor days of recreation. For 80 years, society pushed to

[2] Sedell, Jim; Everest, Fred. Action plan to identify salmon habitat problems and solutions. Study proposal. On file with: Pacific Northwest Research Station, Forestry Sciences Laboratory, 3200 S.W. Jefferson Way, Corvallis, OR 97331.

conquer nature and have it provide a steady stream of readily measured outputs. We were production oriented and, for the most part, meeting our goals.

Instability and unpredictable changes in social and economic systems can result from change in societal values (major shift in what is deemed good or right), major outside disturbances (for example, fire, war, earthquakes, depressions), and major scientific discoveries (for example, link of an agricultural product to cancer). The inevitable changes that occur are perceived by society as either "good" or "bad" depending on the consequences brought by the change. Massive dislocations, large-scale unemployment, and famine carry with them very different public images than a cure for tuberculosis or demand for lean meat.

Stability in existing systems clearly is enhanced by establishing output targets and meeting them. Although risk is always present, it increases substantially when societal values are rapidly shifting and targets are not being defined or met. Multimillion dollar investments and thousands of jobs are linked to these resource outputs. Small rural communities, churches, businesses, schools, and families all feel the impacts when shifts occur. The stronger the links among people, places, communities, systems, and natural resources, the greater the potential disruption. This is not to say that these changes are not inevitable or are not demanded by a larger public; there always will be the question of who pays the social and economic cost for change and who receives the benefit. In many respects, the problematic nature of the issues owe their existence to the paradigms that existed when policies, procedures, property rights, and use patterns were developed. An important point is that we now have what we have, and change, for whatever reason, will have its economic and social costs. This is not a unique situation. Adjustments to change in values have occurred in many settings, such as reductions in coal mining, closures of steel mills, and reductions or elimination of whaling fleets.

The social and economic systems that exist in the Blue Mountains are a result of values and paradigms that have evolved for over 100 years. The strategies that are applied and the mechanisms used to achieve those strategies rely heavily on private property rights, access, and use of natural resources. If values are shifting and paradigms changing, the evolution necessary to realize the new set of values, demands, and uses may be highly disruptive to the current systems in place.

Grant County, Oregon, has been the subject of economic studies since the early 1960s and can serve as an example of rural resource-dependent economies of northeast Oregon and southeast Washington. Agriculture and lumber exports accounted for 75 percent of the basic income brought into the county in 1964 (Bromley and others 1968). In 1979, the resource-dependent industries accounted for over 60 percent of all business activity in the county (Obermiller and Miller 1983). Ranchers depended on Federal land for about 35 percent of their summer forage (Bedell 1984), and if given a 25-percent reduction in Federal grazing, the majority of the ranchers would reduce their herd size (Quigley and others 1986). Intensive grazing management was favored by many ranchers because it results in higher profits (Quigley and others 1991). By the 1980s, the cultural heritage of the local area Indians, loggers, and ranchers was not being threatened by range management strategies but was threatened by outside factors, primarily changes in values and policies (Patterson 1982). In the early 1980s, recreationists in Grant County were highly aware of the natural environment and expressed strong opinions about specific practices affecting that environment (Sanderson and others 1986). Thus, the link among people, places, communities, systems, and

natural resources is strong in Grant County, and it is clear that economic and societal disruptions and impacts will result from any substantial shift in resource availability.

There are indications that societal values and, perhaps, the paradigm underlying the perceptions of natural resource use are changing. Kennedy and Quigley[3] surveyed Forest Service employees to determine their values and their perceptions of society's values. Most Forest Service employees believe that society's values have shifted toward a stronger emphasis on recreation, water, and wildlife with less emphasis on timber and grazing. Their own values reflect a similar trend. As agencies begin the process of institutionalizing these perceptions and become more diverse organizations, more emphasis will be placed on these amenity resources. The result will likely be a trend away from high targets for commodity resources. Given the strong link to natural resource flows that exist in the Blue Mountains, attendant social and economic disruptions likely will follow.

This potential blow to the timber industry and employees is accentuated by recent increases in per capita production within the industry. The trend has been fewer workers in the wood products industry per million board feet of lumber produced (Hibbard 1990). This trend, combined with the uncertainty created by efforts to address the threatened and endangered species issues, results in definite lack of optimism within rural communities concerning their ability to cope with changing times (Hibbard 1990).

The Forest Health Issue

Forest health problems in the Blue Mountains are pervasive. Insect and disease infestations and wildfire potential are on private nonindustrial, Indian, Federal, State, and industrial lands. The private nonindustrial management model, the private industrial management model, and the public land management model have uniformly resulted in deteriorated health. Thus, the forest health problem is not a reflection of failure of a given institutional approach to resource management. This may, in part, be the result of the common philosophical origin of the different models. The problem of forest health must be addressed for all ownerships, and a common understanding is essential to working out a consensus approach to the solution.

A major contributor to deterioration of forest health, the conversion of pine stands to fir stands, did not initially raise alarms—in fact the fir promised faster growth rates and shorter rotations than pine. Models based on these factors were developed and optimistic timber projections were made. Now there is question whether the fir stands can, in fact, be brought to full rotation age (Gast and others 1991). There are both biological and social issues here. Science did not adequately predict the consequences of pine to fir conversion, and society must now determine whether the costs associated with changing the fir stands back to pine are acceptable and necessary. Conversely, society must weigh the costs associated with not converting back to pine. The forest planning process needs to be re-examined given this new understanding and production estimates revisited. The forest planning process itself assumes a level of predictability and results in projections of resource flows. The demand side of the planning process, social and economic, and the supply side, biological and economic, are dynamic. Perhaps the

[3] Kennedy, James J.; Quigley, Thomas M 1989. How entry-level employees, forest supervisors, regional foresters, and chiefs view Forest Service values and the reward system Conference summary report prepared for the Sunbird Conference, second meeting of forest supervisors and chiefs, 1989 November 13-16; Tucson, AZ. 25 p.

outcome of the planning process could highlight the dynamic nature of the processes through adaptive management approaches and monitoring.

The management of forested ecosystems in the Blue Mountains is complex. Smith (1990) recently provided an assessment of the stress and risk elements associated with the health of U.S. forests. He sites four primary areas of stress and risk: limited nutrients, limited water, extremes in climate and topography, and ecosystems that evolved in the presence of fire. All four of these are present in the Blue Mountains. Limiting management to fire protection in the forested ecosystems of the Blue Mountains likely will not result in clean water, viable fish habitat, and abundant recreation opportunities in healthy forests (Gast and others 1991). The current ecosystems, even in areas where the only management activity has been the exclusion of fire, are not "natural." Past management practices, especially fire exclusion, have resulted in ecosystems that did not exist before human manipulation. But, the reintroduction of fire in an unmanaged context may, for many sites, result in impacts deemed unacceptable socially and economically.

The current forest health issue is not the only issue that must be addressed. There is strong concern about whether the production-oriented model is even appropriate today. The population of rural communities themselves reflect a diversity of opinion that only a few decades ago was not imagined. People are expressing increased concern about the characteristics of the forest (biodiversity, old growth, endangered species, long-term productivity, and sustainability) as opposed to only valuing the short-term outputs. These pressures are causing the Forest Service to examine its operations from a new perspective (Kessler 1991). The situation is exacerbated in the Blue Mountains by the forest health issue. The social and economic issues must be addressed from both short- and long-term perspectives.

Short-Term Perspective

Efforts to minimize economic and social disruptions in the short term must be weighed against any reductions in long-term productivity, biological diversity, ecological processes, and the ability to achieve the desired future condition of the forest and range. Real difficulties arise in determining the desired future condition for the forest and range lands and in the pressing need for immediate decisions when a true lack of knowledge exists. In an ideal setting, a decision process includes participation from the array of interested persons to describe the desired future condition for each parcel of land. The possible outputs consistent with this desired future are enumerated and any tradeoffs and interactions defined and agreed upon. All parties then are aware of the anticipated characteristics of the land and its outputs. Through adaptive management and monitoring, variation from the anticipated state results in a participative process to redefine the desired future and intermediate flow of goods and services.

We do not live in this ideal world as yet, but something approximating it is needed now. The potential social and economic implications of forest health are significant (table 1). It is apparent that tradeoffs and compromise will be part of the decision framework. Short-term answers may not be feasible with a consensus approach. Even identifying the interested parties is difficult and time consuming.

Establishing a common understanding of the science involved in the forest health issue is a key element to finding common ground for addressing remedies. After factual information is known and understood, honest differences of opinion on treatments will exist, but areas of compatibility also will be discovered. Acting on these areas of compatibility may well hold a key to discovering even more areas of compatibility.

Table 1—Possible social and economic implications of the forest health issue

Item	Possible implication
Smoke management	Dramatic increase in prescribed fire may adversely impact the air quality and visibility
Wood products	May shift in short term to small-diameter logs as removal of fir and damaged trees occurs
	May shift to longer rotation period in long term with small-diameter logs between primary harvests
	May shift to a low volume of harvest on public lands
	May include additional salvage in total volume harvested
	May increase chipping on site to reduce fuel loads
Employment	Potentially low harvest volumes may reduce employment
	May have a shift in the size and training requirements of the workforce
	Tending forest stands in poor health may create jobs for forest workers but may not require the same skills as those displaced by low harvest volumes
Funding treatments	Increased need to invest in areas with no immediate harvest volume
Landscape management	Need to manage landscapes across ownership boundaries rather than stands
Nongame management	Stand may support a different mix of nongame species
Big game management	Stands may become significantly less dense, thereby requiring change in management
	Restoring and maintaining forest health may result in increased recreation opportunities in the long run
Anadromous fish	Threat of catastrophic fire, increased sediment, reduced riparian vegetation, diminished water quality
Shift in management	Main thrust is toward achievement of a particular desired future condition for the land and determining a compatible mix of outputs and resource conditions through time—rather than vice versa
Diversification of economies	Challenge in face of possible changes in resource availability
Decisions on marginal lands	Lands with high fir content but low economic values and high risks of additional insect outbreaks and fire are placing other more valuable sites under increased risk

Table 1—(continued)

Item	Possible implication
Economic efficiency	Anticipate economic models will show costs exceeding benefits (measured in product values) during transition to achieve healthy forests
	Difficulty in defining and quantifying the long-term benefits of healthy forests
Social acceptability	Concern that forest management put forests in poor health so why allow management to continue to operate—credibility concern
	Concern that the proposed changes to achieve healthy forests may not be viewed as acceptable by the public
Sustainability	Concern whether the mix of products and the characteristics of the land are sustainable under the management strategy imposed
Biological diversity	Broad issue of global significance with little scientific knowledge available on how to manage for this on landscapes in the Blue Mountains
Long-term productivity	National issue that must address the question, Productivity of what and for whom?

To initiate the short-term process, an in-depth economic analysis and social assessment of the forest health problem can identify sites where little controversy exists in recommended management to address forest health. These sites likely would be productive from a commodity frame of reference, recommended practices would be socially acceptable, and political support for action would be present. Management then could set priorities and begin the process of restoring and maintaining forest health on those sites.

In essence, the short-term approach should state what is known and not known scientifically, initiate an in-depth economic and social assessment of forest health, put resources into areas where little controversy exists over desired future condition and management to get there, and test a process of involving a larger group of public in the decision and management process of forest management.

Long-Term Perspective

In the long term, the economic and social issues of forest health cannot be separated from broad issues surfacing as national concerns. I would frame the question of long-term productivity and Sustainability in much the same way as Clawson (1975) posed the key forest policy issue of the day. Clawson asked, "Forests for whom and for what?" I ask, "Productivity and Sustainability of what and for whom?" We must discover a new process that leads to decisions with more ownership and consensus, and less litigation. By developing an interactive decision process that includes science, interested parties, resource managers, and the public, perhaps we can come closer to this goal.

The long term must include adjustments in bureaucratic processes. The individual-resource approach to budgeting, the linkage of budgets to output targets, the linkage of

timber stand improvement funds to harvest revenue, and lengthy processes necessary to begin on-the-ground activities are examples of barriers to restoring and maintaining forest health in the long term. Initiating studies, testing alternative approaches, and demonstrating results on a large scale are activities that need to begin now.

Somehow we must move beyond fixing broken pieces of the system. We must discover a way to ensure that species do not become endangered, that entire ecosystems can be restored to a healthy state, and that maintenance of healthy ecosystems can coexist with healthy economic and social systems. Discovering how to allow humans to achieve their quest for survival, enjoyment, wealth, and fulfillment and simultaneously manage ecosystems resilient enough to maintain productivity, biological diversity, and the sustainable flow of goods and services is the challenge.

I think the real work in restoring forest health may resemble Berry's (1991) thoughts on saving the planet. "The real work of planet-saving will be small, humble, and humbling, and (insofar as it involves love) pleasing and rewarding. Its jobs will be too many to count, too many to report, too many to be publicly noticed or rewarded, too small to make anyone rich or famous." Starting now with the myriad of actions necessary is the key. Searching for a single grand answer that will result in fame and fortune is not productive.

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