25 Should I Manage the Forest?

Most of this book has addressed active management: Taking actions to achieve habitat goals for a species, a community or contributing to biodiversity conservation, and doing that while also considering the potential for providing wood and nontimber products for people. Many people do not feel compelled to manage their forests. The millions of small private landowners in the United States and Canada may own their forests for reasons other than timber, woodcock, or deer. They just like to have a forest. To walk through it, see it, sit in it, and listen to the birds in it (regardless of species). Except when a disturbance happens, forests change slowly. They provide a place that evokes stability, security, and spirituality. For people who view forests in this way, management is not only unnecessary, it is disruptive and evokes instability, insecurity, and flies in the face of personal spirituality. They may extend those feelings to all forests, regardless of who owns them, because, after all, we are merely temporary tenants on the Earth, regardless of what we pay for the pieces we use. So, for many people doing nothing is a perfectly acceptable management decision (Kittredge and Kittredge 1998). Doing nothing is indeed a management decision.

Other landowners wish to have certain animal species to hunt, wood to sell or burn, leaf colors to enjoy, as well as clean water to drink. They choose a more active management decision. Sometimes, this involves regeneration methods that other landowners and neighbors do not find acceptable. NIMBY—not in my back yard—is a phrase that captures the essence of the disagreement between the two philosophies (Shindler et al. 2002). Some people want to restore a forest to a previous, “better” condition, with “better” being something valued by the landowner, land manager, neighbor, or society. Restoration represents an example of a philosophy associated with active management, just as does “doing nothing” and “commodity production.” These philosophies are all points on a spectrum of values and behaviors. Restoration often represents the middle ground—the production of a desired future condition that is neither utilitarian nor “let nature take its course.” I use restoration as an example of a management philosophy that we can examine more closely.

WHAT DOES RESTORATION MEAN?

Restoration is a noble goal—but restored to what? What is a reasonable target? What is our reference condition? Is it an ecological condition? Cultural? Both? Is it even possible to now “restore” a system that has been changed markedly due to recent intense human activities, climate change, invasive species, or toxic compounds? Higgs (2005) distinguished between the terms “ecological restoration” and “restoration ecology.” *Restoration ecology* is the suite of scientific practices that constitute an emergent subdiscipline of ecology (Higgs 2005). *Ecological restoration* uses practices that represent restoration ecology as well as human and natural sciences, politics, technologies, economic factors, and cultural dimensions (Higgs 2005). Maintaining a broader approach to restoration requires respect for knowledge in addition to science, and especially the recognition of a morality that is beyond the scope of science alone. Some have made an analogy between ecological restoration and human health (Schaefer 2006). Schaefer (2006) suggested that portraying the human body as a metaphor of a natural ecosystem can be useful in identifying the breadth of strategies used to restore the “natural” environment. The use of science in restoration is analogous to the use of technology to address a disease through drugs or surgery, while the cultural and ecological interactions are analogous to restoring health to the human body through a broader holistic/preventative approach to cultivate the mind–body connection (Schaefer 2006). The integration of the tools, concepts, and examples described in this book, in conjunction with cultural values and individual beliefs, can be used to set restoration goals and objectives. It is not just about science, but about the people who use science and other tools to restore a system to meet their needs. “Restoration” to one person may be quite different from what another person pictures in his or her mind. Coming to agreement on what “restoration” means, to both the individuals and the community, is central to setting restoration goals where many people are affected by a management decision. Agreement is difficult, especially where individual property rights enter into the discussions. Some proportion, at times a majority, of the citizens in an area (e.g., the watershed councils that have formed in states across the United States) can agree to share a core set of goals and move the area toward that goal, recognizing that not all landowners will share those goals.

Human Requirements as Constraints on Goals

The historical range of variability (HRV) has often been proposed as a concept that can be used by forest land managers to guide conservation of ecosystem functions and biodiversity (Morgan et al. 1994; Landres et al. 1999; Swetnam et al. 1999; Keane et al. 2009). The rationale for use of the historical range of variability in certain ecosystem properties is that biodiversity was assumed to persist, albeit with fluctuations in populations, over thousands of years of disturbance and recovery. Further, the concept assumes that, as contemporary conditions depart from historical processes and states, the risk of losing species, both known and unknown, increases.

The following ideas reflect a conceptual framework—developed by Dr. Sally Duncan, Dr. Norm Johnson and me—for understanding the range of variability in a way that considers not only HRV as traditionally defined, but also likely future ranges of variability, given ecological processes and conditions that society finds acceptable (Duncan et al. 2010). Authors have often used a probability distribution to reflect the probability of occurrence of certain ecological states or indicators, over some reasonably long period of time (e.g., Wimberly and Ohmann 2004), in order to represent an HRV. The probabilities are derived from the outcome of physical disturbances that have occurred over this timeframe, and typically included Native American disturbances, but not usually contemporary disturbances produced since European colonization. Clearly humans have been, are, and will be, forces of disturbance and recovery in forested landscapes. The range of variability expressed at any time reflects human and biophysical drivers of landscape change, while recognizing both temporal- and spatial-scale dependency. A key component of our understanding of the expression of variability in an ecosystem is the effect of a social range of variability (SRV). SRV reflects the cultural mores that collectively influence the range of conditions that society finds acceptable. Integration of the SRVs of the past, present, and future, with disturbance and recovery during the past, present, and future, interact to define both historical and future ranges of variability in ecosystem indicators: an ecological range of variability (ERV) and a social range of variability (SRV) (Figure 25.1). The ecological range of variability is a product of ecosystem disturbance and recovery from any cause: physical, biological, or human. The patterns of disturbance and recovery, over space and through time, presumably produced a set of conditions that supported biodiversity historically and will influence biodiversity into the future. Societies have been more or less effective in influencing disturbance frequencies, intensities, sizes, and durations over time, with classic examples of recent short-term influences being flood-control dams, fire control, and harvest of old-growth trees. But historical influences of humans on ecological conditions also are apparent. The Kalapuya Americans burned the Willamette Valley regularly, maintaining a savannah system (Boag 1992). Native Americans also contributed to the fire frequencies of the longleaf pine savannahs of the Deep South (Denevan 1992).

The probability distribution of an ecological indicator arising from past disturbances (Figure 25.1) is directly influenced by the social range of variability, which can be described as a probability distribution of ecosystem conditions, which are socially acceptable. For example, rivers channelized or dammed for irrigation and flood control (socially acceptable, at varying levels through time) no longer nourish wetlands during and after flooding (a natural disturbance) (Shafroth et al.

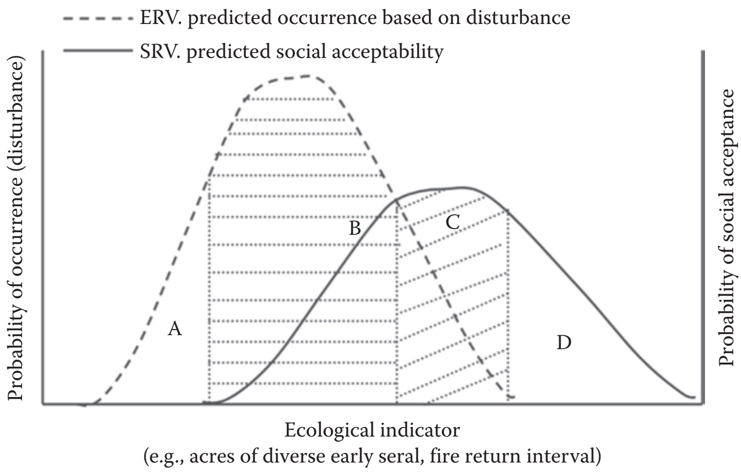

FIGURE 25.1 Conceptual diagram reflecting the interaction between the ecological range of variability resulting from disturbances and recovery in ecosystems and the social range of variability reflecting social acceptability of ecological conditions. It is the tension between these two forces that produce the range of conditions that we see expressed across forested landscape over time.

2002). Suppressed wildfires (socially desirable) can no longer regulate levels of insect and disease populations (natural disturbance) (McCullough et al. 1998). Thus, the ERV and SRV are inextricably linked. Even such disturbances as hurricanes and ice storms, today, may have their frequency affected by "desired" human activity across the planet, which is influencing our climate (Knutson and Tuleya 1999).

Historically, the full range of the probability distribution—in an ecological indicator, including the part that may be socially unacceptable—may have been observed simply because human societies had insufficient influence on biophysical disturbance regimes. Earlier societies could not limit the occurrence of some unacceptable conditions driven largely by biophysical forces (e.g., stand replacement wild fire). However, given the size of the current human populations, and their wealth and technological power, human societies today are capable of exerting significant pressure on the disturbance-based probability distribution, thereby altering possible future outcomes/trajectories. As the SRV departs from the ERV, social pressures can change drivers of ecosystem disturbance, and limit the expression of the ERV (bolded line in Figure 25.1). The more disparate the ERV and SRV, the greater is the potential for society to influence the expression of the ERV. This disparity is often reflected in the various management options considered for an area and the policies guiding the direction of land management. That disparity, or tension between ERV and SRV, will wax and wane depending on changes in social values, as well as changes in nonhuman disturbance dynamics.

Given that human systems and ecosystems are inextricably linked, how can we be sure that decisions made today will not have unanticipated negative consequences in our future or in our children's futures? Science can provide the facts, but people also hold beliefs. Facts can be proven, beliefs cannot. It is through the dynamic combination of knowledge with evolving beliefs that change in societal goals occurs. Many events and experiences, both biophysical and social, affect beliefs and knowledge—hence the ever-changing nature of societal goals.

DEVELOPING A PERSONAL MANAGEMENT PHILOSOPHY

As you go through your professional career you will use a variety of tools to make decisions: scientific data, belief, intuition, and stakeholder opinions, among others. All of these tools pass through the filter of your personal philosophy. Your core values and your beliefs give rise to your behaviors, using all of these tools. Two people using the same tools to make a decision, but having different management philosophies, will often arrive at different decisions. And these differences are not always apparent to those making the decisions. The differences are often questioned by those holding different philosophies, and oftentimes in public settings. It is wise to be prepared to explain your personal philosophy to others; not to impose it on them, but merely to explain it clearly and concisely. Although those with different philosophies may never agree with you, they might understand you, thereby making dialogue possible. It is also important to keep in mind that our personal philosophies usually evolve throughout our lives. Checking in on your personal philosophy periodically through introspection is also prudent when faced with making daily management decisions. In addition, as you move into supervisory positions, you might consider encouraging management teams of all kinds, and at all levels, to similarly reassess their philosophies and share them with each other.

Below I provide a glimpse into my personal philosophy, not to impose it on you, not to try to convince you that it is correct, but to make you think. Some things that I have written you may not agree with, and some may make you angry. If you do get angry, that is fine if it makes you think about why you have that reaction, and how your philosophy differs from mine. Use my philosophy as a springboard to your own.

Our Place on Earth

Humans are a species, and as such we have habitat needs to allow us to persist on this planet. We are simply one of millions of species on this Earth, sharing space, energy, and time together. In my view, resources were not placed on this Earth for us to use by some omniscient, omnipotent, or omni-anything being. We just are. Our life arose from the resources on this Earth around our parents; the material bits of us will return to the resources of the Earth; and our actions during our brief lives form the legacy that we leave to other humans and other species. Each of us is a blip in time and space—or rather seven billion blips, each trying to survive, each using resources that could be used by other people, or other species, on this planet. Each blip arising from the Earth, each returning to the Earth. The Earth is our source, and as far as we know, it is the only source of any life for many light years in any direction. It is prudent to treat it as we would our own home and share it not only with those other individuals and species that are with us now, but also with those that will come after us. In my view, we have a moral obligation to consider the effects of our seven billion lives on the other species with which we share this planet; to not pollute it; to not overuse it; to not poop in our own petri dish. To recognize that we are a part of it, not separate, and how we make collective decisions affects the lives of other people, and other species.

Living Simply and Sustainably

Energy can be changed from one form to another, but it cannot be created or destroyed. The total amount of energy in the universe is constant, merely changing from one form to another. The laws of thermodynamics apply to humans and all other life forms. From a practical standpoint, there is a solar constant so energy input is a zero-sum game. Allocating more energy to human needs and desires leaves less energy for other organisms. How do we redistribute energy on Earth to allow coexistence with other organisms? Reducing population growth is an obvious first step. The carrying capacity for humans on Earth is likely around 12 billion (Cohen 1995), but what is the carrying capacity of the Earth for humans while ensuring the coexistence with other forms of life? Have we surpassed it already? Quite likely. Granted that technology and scientific advancement can provide us with a marginal gain in our ability to support humans and other species, but we are faced with the fact that there is only so much energy to be allocated to all species and organisms. Technology is simply fussing with the edges, fine-tuning the allocations. We will reach a point of diminishing returns on technological advancements to increasing human carrying capacity (Czech 2003).

If we were to seriously start now in reducing human populations, there will be lag time to population reduction. Consequently, reducing energy consumption is another step. Our lives are based on growth economies. Consumption is good; it spurs economic growth. For how long? If money is indeed a surrogate for energy, and there is a solar constant, then how can energy consumption continually increase? It cannot. Accepting stable economies rather than continually growing economies is something that contemporary societies must begin to grapple with or the differences in the quality of life between the "haves" and the "have nots" will continue to increase, leading to greater and greater political instability (Briggs and Weissbecker 2011).

Even if we reduce populations, control consumption, live more simply, and reduce carbon emissions and other pollutants on our Earth, will it lead to continued coexistence with other species? Much depends on not only how much of the Earth's renewable resources we consume, but where and when. Even doing nothing comes at a cost. The location, frequency, and the intensity of resource-use matter to our own long-term well-being, and the well-being of other species. There are limits to the resistance and resilience of the ecosystems in which we all live. As we use the Earth to meet our own needs, it is important to remember that it must be given the time to recover from those uses, to allow ecosystems to express resilience to both human and natural disturbances.

Leaving the World a Better Place

We all have our own ideas of "better." Much of how various people define "better" has to do with their timeframe. Better today, this week, next year, or the next generation? Taking the long view, and assuming that most people, most of the time, will want to leave the world a better place for future generations, then it becomes clearer that we cannot have it all now and in the future too. We could live in a way that allows us to be happy and prosper and also allows those who come after us to live lives as good or better as ours. We can provide that next generation with the management options they would need to develop and implement their own definitions for "sustainable." Leaving such a suitable legacy for our children takes commitment and discipline and will mean that societies with the most will have to be more satisfied with not having even more (Figure 25.2). The insatiable appetites for resources from rich countries pass the burden of production and loss of sustainability on to other societies. If we enter the global arena of natural resources management as an equal, sharing the benefits and the costs with other societies, then I suspect that the image of the "haves" would improve significantly among the "have nots." This would not only provide us

FIGURE 25.2 Management philosophies often involve insurance that there are always intergenerational opportunities for use of wildlife and forest resources.

with an opportunity to live in greater harmony than we do now, it would also provide all children of the future the options and opportunities that many do not enjoy now, including the opportunity to live on a diverse living planet.

SUMMARY

Management of the Earth's resources to meet human needs and provide habitat for various species is dependant on the values and beliefs of people. We all approach management with the tools of science, beliefs, opinions, and culture, and pass those tools through the filter of our own philosophy. Defining a philosophy of forest and habitat management is important as you interact with others holding, oftentimes, different views. Developing and articulating your philosophy of management is something that should be done at the outset of your career, and revisited periodically, as your personal philosophy evolves throughout your life.

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