Setting Goals and Objectives in Managing for Healthy Ecosystems

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Section I.4 focuses on policy goals and objectives — the explicit policy targets that provide meaning and definition to the platitudes that typically dominate much of the political discourse on ecological policy. To move beyond the realm of policy platitudes (e.g., protect our planet, assure sustainable development, embrace smart growth, implement community-based environmental protection, perpetuate our cherished natural legacy, restore degraded ecosystems, achieve ecosystem health) and toward policy evaluation and implementation requires that society, through its mechanisms of governance, decide which societal values and preferences to adopt. Societal values and preferences are the criteria society uses to select from among opposing policy goals and objectives.

Scientific input is important in selecting policy goals and objectives because not all goals are feasible. Even among the goals and objectives that are ecologically feasible, decision makers, and especially the public, rarely understand the ecological consequences of each option. Ecological policy goals typically conflict, may be mutually exclusive, and have ecological consequences, each of which are known with varying levels of certainty.

Ecological goals and objectives are often cast in terms of ecosystem *restoration*, but exactly what ecological feature does society wish to restore and to what extent? What makes one ecosystem more important to society than another? For example, if society wishes to receive the benefits of a roadway, should the adverse ecological effects of highway construction be mitigated? If so, how should they be mitigated? As Zedler and Callaway illustrate in Chapter 21, not all ecological restoration efforts replace what was lost, nor can even the trajectory for restoration be predicted in advance.

Many discussions about goals and objectives end up enmeshing values and preference within the scientific information essential to evaluate the consequences of policy options. For example, scientists providing technical information in policy discussions are often accused of offering *normative science* by implicitly advocating policy and value judgments under the banner of impartial science. Normative science is science based on implicit policy preferences. An example of normative science is the use of adjectives such as *degraded* or *healthy* in describing the condition of a particular ecosystem. Such terminology under the guise of "science" conveys the message as to which ecological state is (or should be) desired and which is not. Often scientists are unaware that they have moved from science devoid of a policy preference to science that

* The views and opinions expressed do not necessarily represent those of any organization with which Dr. Lackey is affiliated.

implies that a particular policy option is preferred. The notion of ecosystem health is often criticized because of its tacitly derived value and preference character. In Chapter 22, I review the characteristics of normative science and propose a proper role for scientists to play when providing information in policy deliberations.

Debates over goals and objectives often become the crux of approaches to addressing ecological policy problems. For example, ecosystem management has burst on the land management agencies in North America as the policy approach for this century. What exactly is ecosystem management and how does it differ from past approaches to implementing ecological policy? Does it only apply to publicly owned lands, or are private lands within its scope? Is ecosystem health sufficiently robust to underlay implementation of ecosystem management? Fitzsimmons provides a critical review of the concept of ecosystem health as a basis for managing lands in North America in Chapter 23.

Most governmental policy favors, even encourages, economic development, but how do such policies relate to concepts of ecosystem health? Do healthy ecosystems imply that human populations are prospering? In some sections of the world, it appears that relatively pristine ecosystems support (by Western standards) a very unhealthy human population. If an organization such as the World Bank has alleviating poverty as one of its central policy goals, how is this goal reconciled with "healthy" ecosystems? Anderson (Chapter 34) explores the often confusing and contradictory worlds of *ecosystem health* and *economic development.*

Food security is of widespread concern and a feature of many governmental goals and objectives, but how does it relate to ecological policy? For many years agriculture operated by reducing biological diversity and channeling photosynthesis through a few plants and animals. Few would argue that biological diversity, at least in a general sense, is important to past and continuing agricultural development, but what should be the relationship between biodiversity and agriculture given that the amount of "natural" ecosystems being converted to farming continues to increase? Thrupp (Chapter 35) evaluates the relationship of biological diversity and agriculture from the perspective of assuring a long-term food supply.

Ecological goals and objectives deal with more than producing food and fiber. How does a person's perception of quality of life relate to ecological policy? There does appear to be, at least for some people, a connection between what are often described as healthy ecosystems and their perceived quality of life. Is this relationship true only under circumstances where people are relatively affluent? In Chapter 24, Ewert explores the connection between perceived quality of life, recreation in natural ecosystems, and individual policy preferences.

Traditionally, economic development has been predicated on the natural resource development model. Early in the development of a country, its economy tends to be extractive. As the economy develops and expands, the economy generally shifts toward manufacturing and possibly toward a "service" economy. Is this the most desirable trajectory? Are concepts of *natural capital* useful in describing more effective approaches to economic sustainability? In Chapter 25, Collados provides a critical look at natural capital and ecological sustainability and their implications for developmental policies of nations.

The chapters in this section attempt to move beyond the platitudes so typical of ecological policy discourse. Each author critically evaluates the nature and character of potential goals and objectives and, in some cases, how such goals might be achieved. Some of the chapters also document what are clearly inappropriate goals because they rely on the values and preferences of scientists, rather than reflecting the values and preferences of society.

About the Author

Dr. Bob Lackey is professor of fisheries science at Oregon State University. In 2008 he retired from 27 years with the Environmental Protection Agency's national research laboratory in Corvallis where he served as Deputy Director among other senior science and management jobs. Since his very first fisheries job mucking out raceways in a California trout hatchery, he has worked on an assortment of natural resource issues from various positions in government and academia. His professional assignments involved diverse aspects of natural resource management, but mostly he has operated at the interface between science and policy. He has published over 100 articles in scientific journals. Dr. Lackey has long been an educator, having taught at five North American universities and currently teaches a graduate course in ecological policy at Oregon State University. Canadian by birth, he is a U.S.-Canadian dual-citizen living in Corvallis, Oregon.

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