Preface

One of the most remarkable developments of the twentieth century has been the worldwide growth of public concern for the environment. Efforts to translate that concern into effective public policy have posed formidable challenges for the legal system. Even as our understanding of environmental problems has improved, we have become acutely aware of the complexity and uncertainty that bedevil efforts to trace the effects of human activities on the environment.

In addition to confronting these uncertainties, environmental policy makers must also make decisions that involve profound ethical choices. Environmental regulation determines how much society is willing to invest to protect human life and health, and how fairly environmental risks will be distributed across society. It also reflects the kind of world we aspire to, and the condition in which we will leave it for future generations. As we seek to develop, improve, and refine tools for protecting the environment, our ability to use law to achieve these aims tests our capacity as a society to control our own destiny.

This book explores how the legal system has responded to environmental problems. It includes excerpts from some of the most important essays on environmental law, science, and policy written to date. Drawn from the most influential works in the field, the readings explore environmental policy problems in all their richness and complexity. Reflecting the multidisciplinary nature of the subject, the readings include works by scientists, ecologists, philosophers, legal scholars, economists, historians, and journalists. The readings include not only time-honored classics, but also some rare gems that are not widely known. We hope they will reignite enthusiasm for such important works and the valuable lessons they have to offer.

The process of selecting and editing the readings in this anthology gave us an opportunity to revisit the original works of what has become an astoundingly rich literature. This literature has had a major influence on the environmental law field, but it has generally been hard for students to access, particularly in courses pertaining to environmental law. The articles in this anthology have therefore been edited to make them more accessible for the reader. The original sources from which the material is

drawn are listed in footnotes at the beginning of each reading. We have omitted virtually all footnotes that were contained in the original readings.

We would like to express our appreciation to all those who helped us with the manuscript, including research assistant Rachel Schowalter, the librarians and secretaries at the University of Maryland School of Law, copyeditor Sue Gleason, and the anonymous reviewers who made very helpful suggestions concerning our selection of articles. We also would like to express our appreciation to the contributors who were willing to forgo or reduce their normal permissions fees in order to enable us to incorporate such a rich collection of materials in this reader. Most of all, we are grateful to Laura Mrozek, Administrator of the Maryland Environmental Law Program, and to our editor, Doris Braendel of Temple University Press, for her unwavering faith in and support of the project.

Introduction

This reader is divided into four parts. Part I introduces alternative perspectives on the nature and sources of environmental problems, including ecological, economic, and ethical perspectives. It considers why each of these disciplines provides strong support for pursuing some form of collective action to protect the environment. Chapter 1 considers scientists' concerns about the impact of human activity on the natural environment and how ecologists have fundamentally changed their conception of the natural state of the environment, with important implications for regulatory policy. Chapter 2 examines the classic economic explanation for environmental problems, as well as its criticisms and defenses. Chapter 3 considers the work of philosophers who have struggled to develop principles of environmental ethics that go beyond strictly human-centered perspectives. Chapter 4 examines the emerging environmental justice movement and how it has focused attention on inequities in the distribution of environmental burdens across socioeconomic groups.

Part I considers the diverse justifications for collective action to protect the environment; Part II examines how society has sought to use law to pursue this goal. The early history of environmental regulation is explored in Chapter 5, which reviews how society responded to environmental problems before the emergence of national regulatory programs. Chapter 6 examines the political forces that generated a burst of federal legislative activity to protect the environment during the 1970s and 1980s. Chapter 7 provides a nontechnical overview of the structure of current environmental law and an introduction to the debate over the efficiency and effectiveness of the current regulatory system. Chapter 8 examines the debate over the merits of alternative regulatory strategies, including technology-based regulation and economic incentive approaches.

Part III explores how law is translated into regulatory policy. The important roles of citizen groups and the public in influencing regulatory decisions are considered in Chapter 9. Chapter 10 identifies the forces that have made it extremely difficult for regulatory agencies to implement environmental laws. The growing use of risk assessment by regulatory agencies and efforts to use it to set regulatory priorities are covered in Chapter 11.

Part IV of the reader presents a global vision of the future of environmental law. Chapter 12 traces the rapid growth of international environmental law, which is generating numerous multilateral treaties and has become a major concern in the negotiation and implementation of international trade agreements. Chapter 13 considers diverse visions of the future of environmental law and policy and an assessment of why it is so difficult to reach consensus on environmental issues.

Part I

Perspectives on Environmental Problems

Humans care deeply about the environment—for good reason. The quality of our lives ultimately depends on the quality of our surroundings, and the environment encompasses everything that surrounds us. The health of the environment is crucial to our own health, as well as to the productivity of our economy and to our capacity to derive aesthetic enjoyment and spiritual inspiration from our surroundings. How we feel about the environment helps define who we are; it reflects some of our deepest values and concerns, and it shapes the legacy we hope to leave future generations.

The four chapters comprising Part I of this reader explore different perspectives on *the nature and sources of environmental problems—ecological, economic, and ethical. Read together, they provide a powerful illustration of the importance of multidisciplinary perspectives in this field. No single discipline can provide the answers to environmental policy questions. Environmental policy makers often must make decisions that raise fundamental ethical concerns, and usually, even after consulting the best available information, they must act in the face of considerable uncertainty.*

Scientists were among the first to sound the alarm about the effects of human activity on the health of ecosystems. As they gathered data that suggested frightening trends, they real-

ized the need to mobilize other disciplines in an effort to change public attitudes and policies toward the environment. Economists view environmental degradation as a product of market failures that imply that resources are not being used efficiently. They endorse collective action to supply public goods like clean air and clean water though they also caution against certain kinds of regulatory policies whose inefficiencies they decry. Environmental ethicists contend that the environment should be protected for its own sake as an ethical imperative with intrinsic value over and above human-centered concern for the impact of environmental degradation. The environmental justice movement has brought fairness to the forefront of policy debates by focusing on the disproportionate concentration of environmental risks in poor and minority communities. Despite the diversity of these views, the different disciplinary perspectives from which they spring, and the different policy advice they produce, each provides a strong rationale for some form of collective action to protect the environment, as explained in the chapters that follow. Although this consensus may be highly general, it has considerable importance for understanding the legal system's response to environmental concerns.

CHAPTER 1

Ecological Perspectives

The readings in this chapter reflect the evolution of scientific concern over the effects of human actions on the environment. The authors revel in the beauty and complexity of the natural world, while worrying about the long-term effects of human activity. Recognizing the incredible complexity of ecosystems, they are reluctant to risk definitive predictions, but they have no doubt that anthropogenic activity is altering the natural world at an unprecedented and frightening pace.

The first two readings are the work of self-taught ecologists. George Perkins Marsh traveled extensively in Europe and Asia during the nineteenth century while serving as the U.S. ambassador to Turkey. His observations of environmental degradation in countries with long histories of natural resource exploitation inspired his 1864 work *Man and Nature; or, Physical Geography as Modified by Human Action.* Marsh presented an extraordinarily well-documented challenge to society's embrace of industrial progress by focusing on the environmental damage caused by industrial development. Marsh's work was surprisingly influential; in particular it boosted the late-nineteenth century campaign to establish national parks. A second edition of this work, entitled *The Earth as Modified* by *Human Action,* was published in 1874.

In the excerpt contained in this reader, Marsh describes how human activity has transformed the landscape around the world. He acknowledges that some human impact is inevitable and that many of these effects are beneficial, particularly from a human-centered perspective. But he argues that technology has so dramatically increased the scale of human ability to alter the environment that nature's limits can be readily exceeded, causing irreversible damage with severe consequences for humans. A visionary for his times, Marsh anticipates the possibility that human activity will cause climate change. His ideas embrace the concept of what today is known as "sustainable development," by stressing the importance of respecting the earth's carrying capacity.

Marsh concludes by warning against assuming that anything in nature is too small to be of significance. Contrasting this with the ancient legal maxim *de minimis non cu-*

rat lex, Marsh notes that, even if law does not concern itself with trifles, "in the vocabulary of nature, little and great are terms of comparison only; she knows no trifles, and her laws are as inflexible in dealing with an atom as with a continent or a planet." Thus, although humans may be unable to fully comprehend the range of their impact on the natural world, they "are never justified in assuming a force to be insignificant" just "because its measure is unknown, or even because no physical effect can now be traced to its origin."

Aldo Leopold's keen appreciation of the natural world was acquired in large part through his experience working as a national forest manager. Part of his job was to kill "bad" predators, such as wolves and mountain lions, which eventually helped him realize the folly of human efforts to manage the natural world. Leopold describes nature as a "biotic pyramid" and "a slowly augmented revolving fund of life." Leopold's field observations convinced him of the necessity of developing an entirely new ethic to govern humans' relationship with nature. Rejecting the prevailing model of humans as "conquerors" of the natural world, Leopold articulates his own "land ethic," which has become perhaps the quintessential statement of environmental consciousness. Published posthumously in *A Sand County Almanac,* Leopold's land ethic articulates a simple ethical principle focused on ecological impacts: **"A** thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."

The third reading in this chapter is an excerpt from Eugene Odum's classic ecology textbook. Odum emphasizes the importance of realizing that humans are part of a larger biotic community on which human welfare ultimately depends. He discusses the meaning and importance of resource conservation and the need to consider the environment holistically. Citing Leopold, Odum warns that tampering with any part of nature may affect the whole, an important lesson of ecology that he concedes is not yet widely appreciated.

Biologist Edward **O.** Wilson transports us to an Amazon rain forest as a violent thunderstorm approaches after dark. The jungle is teeming with life, though most of it cannot even be discerned by human senses. Wilson uses this particular storm to illustrate how nature's awesome violence renews and rejuvenates the jungle ecosystem. He describes the rain forest as a place of perpetual change, whose diversity and excitement can barely be appreciated by the human eye. It is a place where organisms compete for survival in a marathon that is "always beginning somewhere in the forest." Wilson observes that "it is diversity by which life builds and saturates the rain forest," as many organisms fail to survive but are replaced by others that thrive in the rich environment. He concludes that diversity holds the key to understanding why life has been carried far beyond the rain forest environment to survive in some of the harshest environments on earth.

Wilson contrasts the benificent violence of the rainstorm with the destructive violence wrought by human activity, which is rapidly depleting biodiversity. Wilson's deep appreciation for the diversity of life springs from his wonderment at the seemingly impossible odds of successfully threading the gauntlet of 3.8 billion years of

evolutionary history. While he celebrates science's growing understanding of the incredible complexity of the rain forest, Wilson bemoans "the ultimate irony of organic evolution: that in the instant of achieving self-understanding through the mind of man, life has doomed its most beautiful creations." He reports that scientists have identified only 1.4 million of the 10 to 100 million species estimated to be on the planet. Yet one-fifth of these are expected to vanish in the next few decades due to human actions that are extinguishing species, like "caus[ing] lights to go out all over."

Dan Tarlock explains how science has changed our concept of nature in recent years, with the theory of a stable balance of nature being displaced by a "new ecology" that views the natural world as a chaotic, constantly changing set of ecosystems. Tarlock explores how the new ecology has undermined some of the assumptions on which environmental policy was founded. He explains that the demise of the "balance of nature" concept does not mean that human activity is just another factor to be tolerated regardless of its environmental effects. There are limits to the carrying capacity of ecosystems, and the new discipline of conservation biology is trying to understand what some of those limits are. Tarlock concludes that the "new ecology" and the demise of the equilibrium model of nature complicate the task policy makers must confront in making decisions in the face of considerable uncertainty. He maintains that management strategies should become more adaptive to facilitate changes in response to new scientific information.