

well as its costs. Edwards makes numerous suggestions for improving the various conservation markets she identifies, but whether these are efficient or equitable means to our ultimate end, conservation, cannot be discussed within the narrow framework employed.

This is unfortunate because the economic approach to policy analysis advocated in *Dealing in Diversity* can be quite helpful in specifying the trade-offs involved in various policy options *if* all realistic options are considered and *if* our overall goals are kept firmly in mind. Similarly, private initiatives can effectively conserve biodiversity, as numerous examples from the book show. But if I read these examples correctly, they are evidence for carefully tailoring laws and institutions to make conservation easier for the committed and more likely for the uncommitted. Such market mechanisms will be most effective in conjunction with strong environmental laws and continued government purchase and management of land, not instead of them! Edwards' own examples show this clearly. For example, The Nature Conservancy's Pine Butte Preserve is praised for its ecologically-informed management and protection of grizzly bear habitat, justifiably so. But the benefits of these private activities are obviously a function of the large tracts of adjacent, publicly-owned wilderness and of the federally protected status of the grizzly bear.

Edwards begins her book with a quotation from Aldo Leopold: "There is a clear tendency in American conservation to relegate to government all necessary jobs that private landowners fail to perform." She ends with an attack on the Endangered Species Act, whose major accomplishment she takes to be showing the "problems" inherent in "introducing involuntary conservation." Leopold wrote his words as part of an essay titled "the Land Ethic." I think he would have hailed the Endangered Species Act as an impor-

tant step on the way toward such an ethic. He would have applauded its use to compel the thick-headed and the greedy among us to mend our ways. So, I think, would most members of The Nature Conservancy.

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Viewing Nature through Filters

Uncommon Ground: Toward Reinventing Nature. Cronon, W. (editor). 1995. W. W. Norton and Company, Inc., New York. 561 pp. \$29.95. ISBN 0-393-03872-6.

Attend any public meeting on the fate of an endangered species and many different views of nature quickly emerge. Local citizens and resource workers insist that working the land is a tradition that will not harm wildlife. Environmentalists want the delicate ecological balance left undisturbed by any human activity. Developers claim they can mitigate degrading effects and create new habitat while improving the aesthetics of the landscape. In passionate debates species and their habitats can become totems in a morality play in which science may have little or no role. This book examines how culture, society, history, and commerce have shaped our passionate and often conflicted interpretations of nature.

Uncommon Ground is a collection of essays, edited by William Cronon, a professor of history, geography, and environmental studies at the University of Wisconsin at Madison, from an interdisciplinary seminar on the theme of "Reinventing Nature" held at the University of California's Humanities Research Institute in Irvine in 1994. Participants were professors and graduate students from a broad range of disciplines which included geography, history, ecology, communications, literary criticism, landscape architecture, en-

vironmental studies, and ethics. While in residence at Irvine, the group held daylong discussions once a week and as a starting point advertisements, text, and photographs were brought that presented nature in new or unusual ways. These texts are included in *Uncommon Ground* as a series of albums and provide vivid examples of central themes in the interpretation of nature that are discussed in the eclectic essays. In an introductory essay Cronon explores these themes of nature as unnatural, edenic, symbolic, social, and virtual in the context of the seminar's southern California setting.

One recurring theme of particular interest to conservation biologists is the environmental movement's exclusion of humans from nature. A second Cronon essay, "The trouble with wilderness; or, getting back to the wrong nature", traces how this central tenet of environmentalism evolved from our concept of wilderness. National Parks and wilderness areas are supposed to represent the pristine, original state of nature before the disturbance of European settlement. Yet in these areas native human inhabitants have been removed, many threatening species have been extirpated, and area boundaries isolate the ecosystem from the flow of large-scale processes. Such a wilderness does not have a historical or ecological precedent; it is our invention.

Our cultural interpretation of this wilderness myth is a profoundly misguided measure of nature and our relation to it. The focus of the wilderness ethic on the pristine provides little guidance for managing the vast majority of land, often relegating these areas to unregulated exploitation. Furthermore there is no place for humans in this landscape except as visitors. In its essence the primacy of wilderness produces a self-loathing environmentalism because modern people can only degrade nature.

In a related essay titled after a bumper sticker in the Pacific Northwest "Are you an environmentalist

or do you work for a living?", White examines how work has been separated from nature. Environmentalists often view work in nature as the cause of degradation except for certain forms of primitive farming which are sentimentalized. The failure to include work in a land ethic cedes rural support to the Wise Use movement and their emphasis on the exclusionary rights of owning property. It also implies that environmentalists belong to a privileged and leisured class.

Although this book explores some of the reasons the environmental movement has gone astray, it also chronicles a range of provocative interpretations of nature. Several essays explore the symbolic values nature acquires in culture and society. Olwig contrasts the American wilderness ideal with Danish efforts to maintain and recreate a pastoral countryside with small villages. Merchant chronicles how the idea of wilderness was influenced by the Christian image of Eden and its tale of human expulsion from an ideal nature. Slater shows how this sort of "edenic narrative" influences American and European interpretations of the rainforest in Amazonia. Spirn describes how Frederick Law Olmstead created landscapes that challenge our separation of artifice and nature, city, and countryside.

The influence of science and economics on images of nature is explored in several essays. Nature as virtual reality is explored in an intriguing essay by Hayles. Although cyberspace may seem the most abstracted and unnatural of worlds, the way we construct it highlights many of our fundamental assumptions about the workings of nature. Haraway describes ways that changes in natural science have influenced ideas about race and kinship. In an age of efficient capitalism it is inevitable that one concept of nature is as a commodity peddled to urban dwellers. Davis and Price examine the irony and insight produced when attempting to package an im-

age of nature at Sea World and The Nature Company, respectively.

The theme of nature as "contested terrain" is examined in three essays. Ellis discusses the search for a "root cause" of all environmental problems in his comparison of the ideas of Barry Commoner and Paul Erhlich. Proctor examines the Spotted Owl issue and suggests that such controversies can only be resolved with a reinvention of ethics that are anthropogenic, tied to a sense of place, and encompass a moral pluralism. Chiro's essay describes how minority culture has shaped an environmental justice movement that values an urban environment which mainstream environmental organizations often ignore.

With all these perspectives on how culture influences the interpretation of nature, can science provide an unbiased glimpse of nature's fundamental essence? Barbour explores how a theory of natural order can rapidly shift in his review of Gleason's organismic and Clement's individualistic concepts of plant communities. He claims this shift was strongly influenced by changes in social and cultural perspectives that emphasized individualism. For Barbour this implies that theories attempting to understand the organization of nature are relative, cultural constructs or "filtered, personalized version(s) of nature". However, even if ecological theories change in response to culture, each new paradigm shift requires improving the fit of the theory to an expanding set of data. Ecology may not generate a set of nature's laws in the same sense as physics and mathematics, but it can refine interpretations of nature with models that better approximate ecosystems dynamics.

If individual and cultural perspectives shape our interpretations of nature, can we ever understand what is truly nature without these filters? In the book's final essay, "Toward a philosophy of nature," Harrison proposes it is impossible because of a paradox that follows the Heisenberg

principle; It is because we try to comprehend nature that we are not an immediate part of it. This curious irony leaves humans in search of a place in the world.

"The myth of human exceptionality has been supplanted of late by the myth of biological continuity. Recent research efforts in the social and natural sciences seem determined to prove—indeed, presume to have already proved—that there is no essential, irreducible distinction between humans and animals. Each one of our prized faculties—language, cognition, megalothymia—is shown to appertain in one degree or another to other species. Precisely at the moment when we have overcome the earth and become unearthly in our modes of dwelling, precisely when we are on the verge of becoming cyborgs, we insist on our kinship with the animal world. We suffer these days from a new form of collective anxiety: species loneliness. It is an anxiety that does not quite know how to deal with the guilt that nourishes it" (p. 428).

This essay's combination of evocative aphorisms and eloquent prose is worth the price of the book alone.

My only criticism of the collection concerns the overlap between essays because most of the authors come from closely allied fields. Of the many disciplines that shape our view of nature, I most sorely missed the perspective of an economist, legal scholar, mathematician, and physical scientist. Still the breadth of this volume and the diversity of perspectives will provide even a renaissance reader with both the familiar and the foreign.

This collection of essays should be read by all natural scientists for its challenge to our fundamental assumptions about the world we study. Although the book explores many popular interpretations of nature it also provides an insightful critique of the limits of modern environmentalism. Perhaps of more importance, the essays also break ground toward a reinterpretation of our place in nature. This challenge, in the words of

the writer Barry Lopez, is "to find some place between the extremes of nature and civilization where it is possible to live without regret." It is, as Cronon says, an effort to find our home, for that "... is the place where finally we make our living. It is the place for which we take responsibility, the place we try to sustain ...". Within the contrasting symbols of nature in our culture and in the conflicting rhetoric at public meetings is a struggle to interpret a nature we share, a struggle to find our uncommon ground.

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Taking Care of Plants

Principles and Practice of Plant Conservation. Given, D. R. 1995. Timber Press, Portland, Oregon. 292 pp. \$39.95. ISBN 0-88192-249-8.

The Conservation of Plant Biodiversity. Frankel, O. H., Brown, A. H. D., and Burdon, J. 1995. Cambridge University Press, Cambridge. 299 pp. \$27.95. ISBN 0-521-46731-4.

The two books reviewed here speak to very different audiences and take definitely different, though not incompatible, slants on conservation biology. Perhaps their audiences are distinguishable by the amount of biological knowledge that is assumed, on the one hand, and the amount of attention to policy design, on the other.

Given's *Principles and Practice of Plant Conservation* is an attractive book that sets out the widest possible view of the field of plant conservation, from biology to ethics. As you might expect from a project sponsored by The World Wildlife Fund and the World Conservation Union (IUCN), it seeks to do this from a global perspective and draws attention to areas and topics of special concern for conservation efforts

present and future. Beginning with a discussion of the global biodiversity crisis, the book reviews aspects of plant ecology and biology most obviously related to the conservation focus, such as the nature and implications of species and intraspecies diversity, reproductive strategies, and population dynamics. The author pays attention to the design of databases and other archival resources, *ex situ* and *in situ* techniques, public education, and conservation legislation, concluding with a chapter aimed at summarizing and relating the principal elements of biology, economics, and policy-making that constitute the "state of play" for plant conservation. This makes for a book that will be useful to a wide readership, but the scope of topics covered in such a space must vary inversely with the depth of coverage of most topics. Thus it serves to introduce the issues and concepts of the field, but might often leave the reader wanting more details or analysis on very many points, especially the biology behind the conservation, and, oddly, the importance of conservation of domesticated plants and their relatives, which gets surprisingly short shrift.

The *Conservation of Plant Biodiversity* by Frankel et al. is a book to which one might turn for some of that depth. The book clearly reads like a joint work, and its production is not up to Cambridge University Press's proofreading standards, but its determined focus on the origins, implications, and management of genetic diversity gives it a valuable depth and coherence. Policy and research concerns are integrated throughout the exposition, but the emphasis is on the biology. A very large proportion of the book considers issues and science related to the conservation of domesticated plants and their wild relatives in a way that complements the conservation of wild species. This makes clear that the study of domesticated species contributes greatly to our understanding of the ecology of rare plants.

The book's first section lays out the conservation problem from a genetic point of view—the origins and nature of genetic diversity, and the kinds of evidence we have about the ecology and conservation status of plant biodiversity from this point of view.

The second section of the book comprises three chapters that build on the science expounded in the first section to discuss the importance of population biology in conservation strategy and the *in situ* and *ex situ* preservation of wild and domesticated species. Again, science and conservation practice are skillfully interwoven, and the whole is integrated well with the discussion of genetic diversity in the first section of the book.

The book's third section argues for a conservation strategy centered on the protection of biodiversity in communities. The final three chapters explore this in depth by reviewing basic concepts and issues in plant community biology, and their implications—how to choose what to save and where to save it, and how to design and manage a reserve after deciding on a target species or community.

The Conservation of Plant Biodiversity is written for a reader with considerable knowledge of biology because despite their care in explicating much of the science (especially the ecology), the authors assume familiarity with genetics and molecular-genetic techniques. That said, this book is a solid contribution, as a reference or as a text.

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Finding the Pot of Gold

Environmental Grantmaking Foundations. Environmental Data Research Institute. 1995. Rochester, NY. 794 pp. \$70.00. ISBN 0-9631948-2-1.