sustainability, from Toman about the "safe-minimum standard" as a way of evaluating actions, and from Perschel about the critical need for leadership to catalyze change (a need abundantly clear in the Pacific Northwest). Julie Gorte expands on a theme that appeared both in Booth's book and in other chapters of this book: economic disruption caused by curtailed logging in the Pacific Northwest can be significantly reduced if individuals and institutions at all levels commit to easing the transition.

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That society can somehow define sustainability independent of natural constraints seems the latest incarnation of the hubris that has brought so much trouble in the past.

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My ecological hackles were raised by Jeff Romm, who, in an excellent chapter on involving communities in sustainability, went too far and presented sustainability as solely a social and values issue. One increasingly hears that argument, and it scares the hell out of me. That society chooses what it wants to sustain is obviously true; that society can somehow define sustainability independent of natural constraints seems the latest incarnation of the hubris that has brought so much trouble in the past. Jeff, my apologies if I misread you. My favorite chapter in this section is the opening one by Alice Rivlin, who offers three eminently logical social prerequisites for sustainability: "a revolution in education about public choices"; "society-wide efforts to manage change in constructive ways"; and "campaign finance reform." It is only through the latter, she argues, that the political system can be made more responsive to the longer-term issues that are the essence of sustainability.

Defining Sustainable Forestry provides an excellent, well-edited review of a broad range of thinking on sustainability and, like *Valuing Nature,* is suitable for the classroom as well as the home bookshelf.

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■ **Saving Nature's Legacy: Protecting and Restoring Biodiversity.** Reed F. Noss and Allan Y. Cooperrider. Island Press, Washington, DC, 1994. 417 pp., illus. $48.00 (cloth, ISBN 1-55963-247-X), $27.50 (paper, ISBN 1-55963-248-8).

A consensus has arisen among leading scientists representing the disparate disciplines that collectively constitute the field of conservation biology: the loss of the Earth's biological diversity is occurring at an unprecedented rate and, as a component of this diversity, we are losing something of immeasurable value to us. These points are clearly and forcefully made by Noss and Cooperrider in *Saving Nature's Legacy.*

If Noss and Cooperrider are correct in both their assertion of broad scientific concern and the significance of the loss, why does the impoverishment of our natural legacy preoccupy such a small segment of the world's population? Why is the loss of biodiversity not a dominant theme of discussion among our political leaders at global, national, regional, and local scales? Clearly, one reason is that few of us explicitly understand or acknowledge the value of nature, ultimately expressed through the continued integrity of ecological and evolutionary processes. Further, we are unaware, or refuse to admit, that the complete expression of these processes is realized only in systems represented by a full complement of plant and animal species.

The authors begin with a clear operative definition of biological diversity, followed by a rich discussion of the extent of its loss and some practical methods to arrest the decline. Their coverage of human-induced threats to ecological and evolutionary processes is exhaustive, at least for ecosystems of the United States. They present the scientific basis for the problems and offer a set of management guidelines for dealing with the problems particular to most of the Earth's major ecosystems (i.e., forest, rangeland, and water). In terms of its thoroughness and the discussion of practical approaches to environmental problem resolution and benchmarks for success, I believe this book to be one of the best syntheses published. It will be valuable to both practicing scientists and concerned citizens.

Given all this, why is the authors' most critical message-the importance of values and responsibility to conservation of biological diversity-allocated the fewest pages and withheld until the end of the book? Noss and Cooperrider, like many of their potential readers, were trained first to think as "scientists." Their advocacy for nature's legacy likely arose secondarily, as it has for many of us, by

experiencing firsthand the loss of research areas and the population declines of our study organisms. Science, we are taught, is value free; only the practitioners who successfully separate fact from value are worthy of being called scientists. Those who cross the line and let their values influence what they choose to study or affect the inferences they draw from the findings are no longer scientists but advocates, no longer objective but biased. Unfortunately, this perspective still pervades the scientific community.

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If the scientific community tenaciously holds to the false belief that science is value free, how can it challenge the public with the compelling arguments needed to make the protection of biodiversity a priority?

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Little wonder, then, that the loss of biological diversity does not dominate political debate. If the scientific community tenaciously holds to the false belief that science is value free, how can it challenge the public with the compelling arguments needed to change human behavior and make the protection of biological diversity a priority? The decline in species and ecosystems will not be arrested on the basis of "pure" scientific arguments alone. In contrast, success is contingent on first acknowledging that biological diversity has value for current and future human generations, and then on accepting our responsibility for the just bequest of "nature's legacy" to future generations.

I applaud Noss and Cooperrider for openly discussing the importance of values in the practice of the environmental sciences. I trust that their provocative views on this issue will lead other scientists to recognize that the ecological sciences are not value free, nor should they be. I strongly recommend this book, but I suggest you read the last chapter first.

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■ So Shall You Reap: Farming and Crops in Human Affairs.

Otto T. Solbrig and Dorothy J. Solbrig. Island Press, Washington, DC, 1994. 284 pp., illus. $27.50 (cloth, ISBN 1-55963-308-5).

So Shall You Reap is a short overview of the evolution of agriculture. The Solbrigs call on the hindsight gained from reviewing the historical relationships among agriculture, social organization, and the environment to help guide future agricultural development. They ask how we can feed an anticipated doubling of population without causing massive environmental degradation. Given our long history of food production systems that have overrun their environmental limits, this is a troubling question. The Solbrigs' ambitious effort to bring biology into history, and then to bring history into policy, is worthy of high praise, even though we feel that it falls a bit short in the end.

The most satisfying sections in the book cover the domestication and influence of individual crops, from the major grains and legumes almost 10,000 years ago to rubber in the past century. Wheat, barley, oats, rye, rice, maize, beans and peas, potatoes, sugar, cotton, coffee, and tobacco, along with industries such as textiles, wine making, and sugar refining, are all woven into the text in a nontechnical and assured style. Chapters on early agriculture, the domestication of plants, and sugar cane and industrial agriculture stay close to the ground and are well cultivated. Sadly, livestock are not granted similar care but left to wander unherded around the fringes of the discussion.

The Solbrigs attempt to synthesize these elements into a sweeping theory of human environmental history. From the end of the Pleistocene, humankind has seen repeated cycles of population growth that pushed the limits of productive capacity, which stimulated the invention of new agricultural systems, which was followed in time by increased production, renewed population pressure, and environmental degradation-a kind of widening Malthusian-Boserupian spiral. The Solbrigs follow primarily the Western side of this development through a series of stages of intensification from the adoption of agriculture in the Middle East; to the rise of irrigation civilizations; to farming in the classical Mediterranean; to medieval "open-field" farming; to the rise of farming for the market; and finally to modern scientific, Industrial agriculture.

Unfortunately, this insightful model is not systematically developed and supported. It wanders through the text rather than structuring it. The chapters that deal with this historical problem chain are uneven and frequently contradictory.