

## Ecological Restoration

**F. A. Comín (ed.): Ecological Restoration: A Global Challenge. Cambridge University Press, New York, USA, 2010, 291 pp. illus, maps, 25 cm, Hardback, ISBN 978-0-521-87711-4**

Eric J. Gustafson

Received: 9 June 2010 / Accepted: 29 June 2010 / Published online: 10 July 2010  
© US Government 2010

Ecological restoration has increased in prominence in recent years as environmental policies have slowed the rate of environmental degradation in many parts of the world and practitioners have looked for active ways to reverse the damage. Because of the vast number of types and contexts of degraded ecological systems, the field of ecological restoration is still very much in its infancy. The principles of landscape ecology are vitally important to the restoration of virtually any ecosystem function, because spatial pattern and ecological function are tightly linked. Because of these complexities, there is a tremendous need for research, synthesis and guidelines to aid restoration practitioners. This volume, edited by Francisco Comín, has the stated goal to offer “strategies for extending ecological restoration on a global scale” and “provide useful ideas and tools for the everyday work of practitioners, professionals, researchers and students.” In the preface the editor identifies two main aims for the book: 1) convey the need to develop ecological restoration practices on a global scale to improve our world, and 2) convey the need for ecological restoration to positively integrate and contribute to socioeconomic development.

The book is a collection of contributed chapters. Part I is entitled “Global perspectives for ecological

restoration,” and it provides some general background about ecological restoration, carbon science, economics and ethics. Part II consists primarily of restoration case studies. While the book meets some of its stated goals, I found it somewhat unsatisfying because of the uneven quality of the chapters and the lack of coherence and synthesis of the volume as a whole. The chapters are not well connected, and even the restoration theme is weak in some of them. Although most chapters have some interesting and often novel ideas, few contain a section that attempts to synthesize the content of the chapter into some general principles that might be useful for those attempting a restoration effort in another place. Furthermore, the volume is not systematic or comprehensive, so its use as an introductory text is not advised.

The book begins with a Preface by the editor, Francisco Comín. I was immediately put on guard by the explicitly ideological and political tone, which would have reduced the credibility of the rest of the volume if the chapters were not so clearly independent of each other. Between the Preface and the first chapter there is a glossary of abbreviations and acronyms used throughout the book. This is a very nice touch. Chapter 1 was also written by the editor, and it provides some background about the great environmental challenges of our time to provide the rationale for ecological restoration. This came across a bit like “preaching to the choir” because it was not written to reach the skeptic or the uninformed.

---

E. J. Gustafson (✉)  
USDA Forest Service Northern Research Station,  
Rhineland, WI 54501, USA  
e-mail: egustafson@fs.fed.us

Chapter 2 provides a very in-depth treatment of the carbon cycle, past CO<sub>2</sub> levels and the methods used to study the carbon cycle. There is also an excellent section on the variability of carbon dynamics at various scales, but there are only two pages on using restoration (and protection) to help meet Kyoto targets. Chapter 3 focuses on the use of carbon markets to finance restoration. This chapter includes a discussion of carbon management at the landscape level, and concludes with a sober discussion of how the sometimes conflicting goals of carbon sequestration forestry and ecological restoration can nevertheless occasionally provide some synergy. Chapter 4 was written by Bob Costanza, and takes an ecological economics approach to the restoration of natural capital. Although the chapter is clearly written, it is quite general and difficult to apply. The main argument consists of superficial descriptions of several global models and some simplistic economic assumptions, which is purported to show that a restored earth is both feasible and cost-effective. Clearly, this chapter requires some follow-up reading! Chapter 5 describes a “focal restoration” model that features not just “technical” restoration, but also includes cultural and social elements. Chapter 6 explores the ethical dimension of restoration, but constructs no arguments and draws no conclusions. In these last two chapters of Part I, one gets the sense that ecological restoration has a strong social component.

Part II considers restoration through case studies at various scales from around the world. Chapter 7 is a practical example of reforestation in tropical agricultural landscapes in Australia and Vietnam. This example explicitly applies landscape ecology and landscape-scale coordination to a forest restoration problem. Chapter 8 provides a very general, national-level description of ecological degradation and restoration efforts in China, which is likely to be very informative to non-Chinese practitioners. As expected, the Chinese tend to use top-down, governmental approaches. Chapter 9 provides a global perspective on the restoration of wetlands, and briefly describes several case studies where the socio-economic challenges were significant. Chapter 10 focuses on the coastal zone, but most of the text is negative (describing degradation) rather than positive (restoration). This is one of the few chapters in Part II without a

specific case study. Chapter 11 was written by Richard Forman, an author needing no introduction to landscape ecologists. Landscape ecology is prominent on every page of the chapter, which focuses on finding spatial solutions to mesh nature and people. The case studies are fascinating, although they are more geared to planning than restoration. However, they each attempt to restore landscape ecological function rather than ecosystem function, *per se*. There is a focused discussion of how spatial pattern can be managed, planned and restored to make urban environments more livable, more sustainable, less energy intensive and provide a higher quality of life. Chapter 12 examines the use of ecological models in restoration contexts. As a modeler, I was disappointed with this chapter because models have such great potential to help guide restoration efforts, but this single, narrow example does not do justice to this potential. Chapter 13 provided a very interesting conclusion to the volume. Amos Brandeis provides narratives of two ecological restoration projects that also served to reduce conflict and poverty. The first involves the cooperation between Israelis and Palestinians to restore a badly degraded river running from Palestine to the Mediterranean, and the second involves restoration of a lake in Burkina Faso. The chapter concludes with some general principles for building collaborations that are critical for the success of such projects.

So, how well does the volume achieve its stated purposes? 1) The examples given in the book are certainly not global in scale, but they are from locations around the world. The volume does not really develop, synthesize or critique (evaluate) restoration practices. The examples, case studies and analyses (which, incidentally, rarely occur together) contain some good insights, but there is little progress towards general principles, theory, general strategies, or even lessons learned about general approaches to avoid. 2) Although not synthetic, there is a great deal of material on the need to integrate restoration and socioeconomic development scattered throughout the volume. Some is explicit and in-depth (e.g., chapters 3 and 4), and some is included in narratives (e.g., chapters 7, 9 and 11). It is interesting to note that the most successful examples involved grassroots efforts, but Comín seems to advocate a decidedly top-down, governmental approach in the Preface.