

S. Mansourian, D. Vallauri, and N. Dudley (eds.): Forest restoration in landscapes: beyond planting trees

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Global-scale climate change, a burgeoning human population, and the rapid expansion of the world's economy have all placed incredible pressures on environmental systems to sustain their production of goods and services. Furthermore, our developable frontiers have virtually run out—we must learn to make due with the landscapes we have already exploited. To aid in this endeavor, the Worldwide Fund for Nature, a.k.a. the World Wildlife Fund, or “WWF” has recently initiated a program of large-scale forested landscape restoration in both developing and developed countries. *Forest Restoration in Landscapes* is a compilation of WWF experiences in the establishment, maintenance, and evaluation of these efforts. The stated goal of this work is to “...synthesise in an easily accessible format the knowledge and expertise that exists and also to highlight areas that need further work.”—no small task, indeed.

Forest Restoration in Landscapes is separated into 5 parts, 14 sections, 59 chapters, and a single appendix, for which summarizing even just the titles would fill this review. Each of these chapters is written by one or more contributors from a wide range of WWF offices, non-governmental

organizations (NGOs), consultants, academicians, and governmental agencies. Briefly, this book is organized to provide perspectives on large-scale restoration, identify key preparatory steps for restoring forested landscapes, implement restorations, and present the lessons learned from WWF projects. The editors of this work have eschewed detailed descriptions of specific landscape restorations in favor of brief synopses intended to integrate a variety of projects around chapter themes like “Impact of Forest Loss and Degradation on Biodiversity,” “Perverse Policy Incentives,” “Using Nontimber Forest Products for Restoring Environmental, Social, and Economic Functions,” “Restoring Tropical Montane Forests,” and “Best Practices for Industrial Plantations,” amongst many others. This organizational strategy allows for a range of topics to be covered in limited and sometimes inconsistent detail, with an emphasis on the developing world and tropical forest ecosystems.

Forested landscapes are broadly defined by Mansourian et al. to include unmanaged (relatively pristine) ecosystems, naturally regenerated landscapes used for timber production, agroforestry-dominated landscapes, agricultural and pastoral landscapes with remnant patches of timber (including abandoned lands), and tree plantations, regardless of their origin. Throughout this work, key concepts like reference conditions, metapopulation dynamics, connectivity of

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habitats, and patch size and effectiveness are supplemented with relatively new perspectives on management, such as multifunctionality, eliminating perverse policy incentives, and restoring “naturalness” to landscapes. Furthermore, the authors of several chapters highlight how the WWF’s approach is inherently hierarchical in both ecological structure and restoration implementation, with landscapes occupying the middle level between ecoregions and sites.

There are many aspects of *Forest Restoration in Landscapes* that I found quite valuable. Some of the chapters of this book critically evaluated the restoration efforts of the past, regardless of their good intentions. For example, the widespread planting of exotic tree species to “restore” degraded ecosystems drew strong criticism from contributors addressing invasive species, non-native forest types, and others concerned about the social well-being of agricultural communities suddenly forced to deal with tree cover (often off-limits to them) in areas that once provided their livelihoods (even if many were ultimately unsustainable).

In particular, I appreciate that the WWF’s view on restoring forested landscapes transcends simple species conservation to embrace socio-economic realities. Though there may still be considerable debate over the appropriate level of human intervention in systems designed to protect natural attributes, restoration cannot occur assuming the complete absence of people even under the most ideal circumstances. Landscape restorations are inherently complex, expensive, and time intensive, and ignoring the role of local populations and global pressures on resources is an obvious recipe for failure. For example, one of the most under-appreciated threats to forested landscapes over much of the globe is the use of wood for cooking and heating. While developed nations have largely abandoned wood as an energy source, it is the only viable option for billions of people more concerned about survival than biodiversity, ecosystem services, or sustainability. Not surprisingly, a restored forest is of very limited ecological value if it cannot develop the desired complexity because of unsustainable fuelwood collection.

Assuming that the chapters accurately reflect on-the-ground interpretations of WWF landscape management policies, I believe *Forest Restoration in Landscapes* reflects a reasoned approach to livable, working landscapes that recognizes the needs of both human and natural communities. For instance, tree planting is not considered inherently bad under many circumstances. In fact, this book may have been better served with the subtitle “Planting Trees and Beyond” because of how much time was spent on the artificial establishment of tree cover. Examples considered appropriate by the contributors include enrichment plantings to return shade-tolerant, dispersal-limited species to existing forests, or the use of native species for plantations, to even the limited use of exotic species to stabilize rapidly crumbling landscapes and local economies. The somewhat grudging recognition of the role of properly applied industrial plantations and large-scale commercial ventures struck me as a noticeably pragmatic departure from many environmental organizations and NGOs.

While generally effective in conveying the potential of well-integrated, large-scale, naturally-oriented restoration on forested landscapes, the sheer number of brief and often superficial accounts of frequently redundant case studies meant that many chapters repeated the same basic materials and definitions, which in turn added unnecessarily to the book’s length. The chapters on monitoring and evaluating restoration success, for example, would have been more effective if combined. Certain individuals within traditional federal and industrial land management programs may also bristle on the emphasis of using restoration standards and objectives defined by international agencies and NGOs. Some of the terminology given was strangely worded (e.g., the use of the term “monocyclic logging” to refer to a commercial clearcut), and a wider array of figures and charts would have better disseminated some of the information than the bulleted lists used instead. The authors also sometimes fail to recognize how some “cultural” differences may not translate well internationally—coca grown in the Amazon (mentioned in Chapter 34), though a staple of considerable local value, is also

a contributor to the illegal cocaine trade worldwide—a fact not mentioned at all.

One should not approach *Forest Restoration in Landscapes* expecting a step-by-step guide to renewing forested landscapes—there are more specific works on tropical forest restoration, agroforestry, and general restoration ecology and management. Nor can one expect long-term accounts of the projects described since the overall program only started in 2000 (one case study from

Madagascar was initiated in 2003, only 2 years before its publication). Rather, the WWF focuses on presenting possible large-scale solutions for sustaining both natural and human environments, with a considerable amount of somewhat idealistic public policy and socio-economic advice thrown in for good measure. Personally, I found *Forest Restoration in Landscapes* a useful addition to my reference library.