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BOOK REVIEW

Ecological Restoration, Global Challenges, Social Aspects and Environmental Benefits

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Ecological Restoration

Global Challenges, Social Aspects and Environmental Benefits

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This book consists of 14 chapters covering important aspects in regards to various terrestrial ecosystems, wetlands, river systems, mine site rehabilitation, marsh ecology and heavy metals pollution. Also aims to fill some of the information gaps in ecological restoration, particularly in under-researched ecosystems around the world. This book is divided into six sections:

PART I. INTRODUCTION

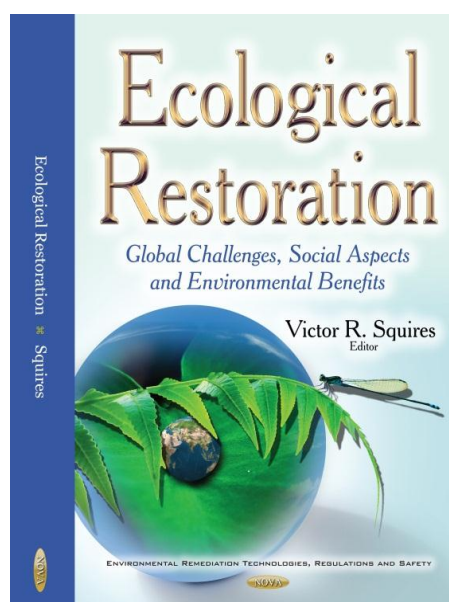
Restoration ecology emerged as a separate field in ecology in the 1980s. It is the scientific study supporting the practice of ecological restoration, which is the practice of renewing degraded, damaged, or destroyed ecosystems and habitats in the environment by active human intervention and action.

Ecological restoration is a valuable endeavor that has proven very difficult to *define*. The term indicates that degraded and destroyed natural systems will be re-established to sites where they once existed. As a discipline Restoration ecology has attracted many adherents and spawned numerous books, research papers and scientific journals. The *Society for Ecological Restoration* is an international group which foster philosophy and practice and promote the concepts and precepts.

PART II. THEORETICAL UNDERPINNINGS

Ecological restoration means different things to different people. This Section begins with an examination of the terminology associated with Ecological restoration and defines how the subject will be dealt with in this book. A commonly accepted definition is "return of an ecosystem to a close approximation of its condition prior to disturbance." The term restoration means the re-establishment of predisturbance functions and related physical, chemical and biological characteristics. Restoration is a holistic process not achieved through the isolated manipulation of individual elements. The holistic nature of restoration, including the reintroduction of animals, needs to be emphasized. Merely recreating a form without the functions, or the functions in an artificial configuration bearing little resemblance to a natural form, does not constitute restoration. The objective is to emulate a natural, self-regulating system that is integrated ecologically with the landscape in which it occurs. Often, restoration requires one or more of the following processes: reconstruction of antecedent physical conditions, chemical adjustment of the soil and water; and biological manipulation, including the reintroduction of absent native flora and fauna.

Squires draws on his rich experience from more than 40 years of field and laboratory research on 5 continents to consider what we mean by the terms *restoration*, *rehabilitation*, *reclamation* and *repair* and



how these perceptions of the various objectives implied in these approaches affects the methods used and the time frame over which 'situation betterment' can be expected.

PART III. Restoration of grossly disturbed landscapes

Here the attention is directed to specific field-based problems with examples from USA, Canada, China, Europe, the Asian sub continent and Australia.

PART IV. Restoration of degraded terrestrial systems

Squires focuses on Wild land degradation and recovery in multiple-use areas, including rangelands under grazing by domestic livestock and wildlife. Examples of proven practices are drawn from North America and Australia.

Shang, Dong & Long analyse efforts at ecological restoration on Qinghai-Tibetan plateau by reviewing the problems, strategies and prospects. Alpine regions, many of them are cold and arid, present particular challenges for management, especially where ecosystems have become degraded.

Junkju presents case studies from dryland regions of Iran and traces the history of efforts to restore ecosystems that have been used for millennia and degraded over the past 60 years or so as human and livestock populations rise and as watersheds dry up.

PART V. Aquatic systems (wetlands, ponds, lakes, rivers, marine)

Here draw on examples from the British Isles and Australia. Contributions cover policy formulation, legislative and other regulatory frameworks as well as efforts by practitioners and resource managers to arrest and reverse ecosystem degradation. Examples of successful remediation as presented.

Stratford & Acreman review experience from the UK in the rehabilitation of degraded wetlands such as ponds, lakes, rivers coastal and marine areas giving special attention to the policy initiatives that underpin rehabilitation efforts.

Fotheringham focuses on Restoration of Saltmarshes and Seagrass ecosystems long the coast of South Australia based on 30 years of work in the near-urban environment where run-off from storm water and commercial salt harvesting have greatly altered the coastal marshes and the adjacent sea grass beds.

Hart et al., turn attention to the matter of an integrated approach to ecosystem restoration within a major river basin management. In particular, **Hart et al.**, review and analyse the challenge of the Murray-Darling Basin Plan in south-east Australia. Transboundary issues and politics are discussed.

PART VI. Unifying perspectives

In this section there is an attempt to highlight the issues that confront policy makers, practitioners and natural resource managers who grapple with philosophical, ethical, political sociological and economic constraints to successful ecological restoration of degraded or "at risk" sites.

Brunckhorst takes up the challenge of reconciling ecological, socioeconomic and cultural values and assesses how these impacts on restoration and rehabilitation efforts. The importance of the social dimension to successful restoration efforts is emphasized.

Squires attempt a synthesis and lays out some lessons learned from past and on-going efforts drawn from the contributions contained within this book but augmented with relevant outcomes from the world literature.

Competing interests

The author declares that he has no competing interests.