

Restoration of the world in one book

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Our once and future planet:
Restoring the world in the
climate change century

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AUTHOR:

Paddy Woodworth

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REVIEWER:

Roy A. Lubke

EMAIL:

r.lubke@ru.ac.za

AFFILIATION:

Department of Botany, Rhodes
University, Grahamstown,
South Africa

POSTAL ADDRESS:

Department of Botany,
Rhodes University, PO Box
94, Grahamstown 6140,
South Africa

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Shortly after the International Conference of the Society of Restoration Ecology in Madison, Wisconsin, USA in October 2013, Paddy Woodworth launched his book on restoration of environments from around the globe. Paddy Woodworth, who is a well-known investigative journalist from Ireland, has been following the world's restoration ecologists around for the last 8 years to get a first-hand account of their work. When I met him at the International Conference of the Society of Restoration Ecology in Spain in 2005 he had just started on the book and I suggested that he come to South Africa to look at restoration projects here. He subsequently did and I met him in Grahamstown to show him some of the restoration after removal of aliens in Grahamstown by the Working for Water (WfW) programme. His chapter on 'Greening the Rainbow Nation: Saving the World on a Single Budget' is surely the definitive account of the WfW project and a fascinating example of how the aspirations of numerous individuals have played out to result in clearing of aliens with the hopeful restoration of natural systems that will increase biodiversity and water and empower local people. The programme is not without its critics, but has nevertheless persevered, as is explained in this book.

Woodworth is an expert on all types of reporting and has made a thorough in-depth study of some 18 different restoration projects around the world. His investigations are from first-hand examinations of the ecological studies from extensive visits to the sites and discussions with the instigators of the projects, be they scientists, engineers or critics of the restoration work. Paddy grew up in this investigative environment in Ireland and has many projects to his credit. His first book, *Dirty War, Clean Hands: ETA, the GAL and Spanish Democracy* (Cork University Press, 2001), reached number two on the bestseller list in Ireland, and sells well in the UK, the USA and Spain.

Woodworth states that 'ecological restoration is a message the world is waiting to hear' and in this book he has provided a scholarly and most informed account of the current state of restoration ecology. The emphasis in this book is to inform both the lay reader and the experts of these many world-renowned restoration projects and also to give an up-to-date account of the state of the science. Essentially the book is an excellent critique of science at work. Ecological restoration is not an ivory tower academic subject but rather a nuts and bolts approach to the application of scientific methodology in a world that has been increasingly damaged by the pressure of the human population explosion and consequent damage to many environments and habits. Destruction of ecosystems has resulted in the displacement or destruction of many of the biota (plants, animals and microbes) that inhabited these sites. Restoration ecology is generally regarded as the way that plants are restored to degraded areas resulting in the re-creation of suitable habitats for animals and other organisms. Woodworth adopts a broader definition as to the way that nature or even individuals may be restored to be functional in today's world. Reading the book will make it apparent that this broader view is perhaps how we should look at the natural world. Ecologists need to emerge from their own small niche of ecological studies.

In some 515 pages of text and notes, this book fully describes ecological restoration and gives an account of restoration practices in many parts of the world. There are chapters on restoring (or conserving):

- migrating whooping cranes in North America
- the 'wilderness' in the precincts of the city of Chicago
- degraded ecosystems in South Africa
- the cultural landscape in northern Italy
- Irish forests and bogs
- natural vegetation in Western Australia
- tropical forests in Costa Rica
- natural animal populations in New Zealand
- rainforests and eco-agriculture in Mexico

The reader will be fascinated by these chapters as Woodworth describes the salient information in detail on how the restoration process has been undertaken, what the resultant end product is and how this fits in with the 'world concepts' of restoration practice. Ardent scientists may be disappointed to find few tables, figures or photographs that describe the process. However, the descriptions in the text of the way in which the process has been undertaken are very illustrative of the restoration problems and resulting methodology. The index is extensive and adequate to allow easy access to the topics covered in the book.

One failing of the book is the lack of a map to show the location of the restored sites, which are dotted around the world. I was also disappointed that the restoration accounts do not have adequate reference to the important plant species which are invaders or used in restoration projects. The species are mostly referred to by their common names, which may require further research to establish what these important species are and from where they came. For example, Jaragua, a small city in Brazil, has given its name to a tropical thatching grass from Africa – *Hyparrhenia rufa* – that has been introduced to replace the cleared rainforests in much of Latin America. Similarly, *Gmelina arborea* (Verbenaceae), a fast growing small Asian tree introduced into Costa Rica that outcompetes the invading grasses and is used as a pioneer for forest restoration, is simply called 'gmelina'. Practitioners will probably also find the book lacking in practical guidelines and approaches to ecological restoration. However, these guidelines are available elsewhere, including the Internet. The book is structured to explain the

practice and current state of the science of restoration ecology with many case studies, and is not a manual on 'how to do it.'

In the Preface, the structure of the book is described as being a personal exploration of restoration to give the reader access to all the main topics in restoration. The book is divided into four main strands:

- Strand one – 'Travelling toward Restoration' (Chapters 1–3) in which the basic tenants of restoration ecology are addressed in the way that the author has uncovered them.
- Strand two – 'On the Ground, Around the World' investigates the ecological, social and geographical context of restoration projects from around the world. This strand comes in two sections (Chapters 4–6 and 9–12) and is the most intriguing section of the book as Woodworth has made a thorough analysis of the science behind the projects and personalities involved as well as many of the pitfalls in the projects and how they have been addressed. He backs his study with numerous references and notes, many being emails or recorded discussions with the persons involved. From these project analyses one realises that ecological restoration is not just science.
- Strand three – 'Restoration begins at Home' (Chapters 7 and 13) explores the restoration of forest and bogs in Woodworth's native Ireland. This strand is essentially similar to the previous one but applies to Ireland.

- Strand four – 'Pause for Thought, Time for Theory' (Chapters 8 and 14), like the first strand, explains the theory behind restoration and the development of the science of restoration ecology as Woodworth's study of the subject has continued through the years. The processes and concepts of restoration ecology are clearly explained in words and diagrams in these sections, but, more importantly, Woodworth has examined the philosophies and concepts that have been developed by the current role players in the science. Unfortunately this book comes too late to contain the contributions of one of our most notable restoration ecologists – the late Professor Tony Bradshaw, whose ideas and models are carried on today, although their proponent is unknown to many younger researchers.

The concluding chapter sums up the content of the book, and looks at why we should restore. Woodworth surmises that the first lesson is psychological as one must overcome the barriers from despair to hope. Despair as one faces a destroyed landscape to hope in that restoration is possible. He sees ecological restoration as 'the capacity to galvanise individuals, communities and societies to action'...and that we can 'have a constructive relationship with the world around us'. The final sentences conclude: 'Some things are getting better. But there is still a lot of very hard work to be done.' We can but hope that the restoration ecologists and practitioners will take up the challenge.

