

endemism is not striking. We can only regret that similar analysis and synthesis of knowledge have not been done for all the groups described in this book.

Description of high biodiversity of fig trees and fig insects shows that Guinea's slopes of Mount Nimba represent one of the most important localities of the Afrotropical region. The systematic account is nicely illustrated with colour plates and good-quality drawings. The ecology of fig trees and the biology of their entomofauna described here provide a good insight into one of the most complex plant–insect ecological systems.

A notable analysis of biodiversity is that of the Acridiens, detailing the composition of communities according to habitat and comparing those of Mount Nimba to those of Lamto (Ivory Coast). Interesting insight into the biodiversity of the birds is provided with a detailed analysis of the passerine and nonpasserine communities, on the basis of their status (migrant, resident), habitat and feeding, and social behaviour.

This book represents an interesting global faunistic approach to the study of the Mount Nimba. Such taxonomic work has proved to be crucial and urgent in the context of biodiversity crisis (see Wheeler, 2004). Although I understand that this volume cannot be exhaustive, it is a shame that some animal groups, recently studied at Mount Nimba (e.g. jumping spiders, Rollard & Wesolowska, 2002; small carnivores, Colyn *et al.*, 2000; Gaubert *et al.*, 2002; chimpanzees, Matsuzawa & Yamakoshi, 1996; Humle & Matsuzawa, 2001) have not been taken into account. Another point to underline is that such a natural history book may have been an opportunity to question the future of Mount Nimba biodiversity; and I believe that training of local students would be a key requirement. And so we remain with many questions concerning conservation today, in such an important place for diversity in West Africa.

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How do you manage a national park?

Heterogeneity is a major driver of the function of ecological systems and of their species richness and productivity. Few books illustrate this better than this recent contribution from the savanna lowveld of South Africa. *The Kruger experience* contains a diverse set of papers from a conference held at Berg en Dal in April 2003. Collectively, these describe the way in which the rich biodiversity of the Kruger National Park depends on the high spatiotemporal heterogeneity of its abiotic environment, and the role that science can play in achieving its protection.

For readers unacquainted with the Kruger National Park (KNP), suffice to say that it rates as one of the largest and most important conservation areas in the world, on a par with Kakadu, Yellowstone and the Serengeti. Despite its global significance it is remarkable how little information has previously been published describing its physical environment and diverse biota. This dearth of information can largely be blamed on the apartheid era when South Africa's national

parks were managed in isolation from the rest of the world. As the editors note, this is the first scientific book to be written on 100 years of management and research in KNP. As such, it represents a welcome and timely addition to the conservation literature.

A pertinent question that I found myself asking on first picking up the book was why use KNP to explore the theme of heterogeneity? According to the editors, the park is one of the few unconstrained landscapes in the world today where spatial heterogeneity and ecological response can still operate freely over large spaces and long time scales. KNP sprawls across some 22,000 km² of savanna biome, allowing it to harbour an essentially complete and self-sustaining portion of African savanna. As Steward Pickett points out, this makes the park a globally significant laboratory for studying the role of heterogeneity in ecosystems.

A valuable focus of the book is on the management actions taken to protect the park's biodiversity. The problems faced, the solutions found and the lessons learned are meticulously described so that others can benefit from the Kruger experience.

I found the book's self-criticism of past management actions refreshing, particularly the period of pragmatic intervention (1946–90) when staff used prescribed burning, animal culling, surface water provision and the construction of fences to try to achieve 'desirable endpoints' in the park's condition. It is now widely accepted that these interventions may have contributed to spatial homogenization of the biota. For example, the installation of water-points in previously arid regions is thought to have encouraged water-dependent herbivore species to disperse into areas that were previously inaccessible to them. Similarly, the rigid application of triennial burning is thought to have stimulated bush encroachment and the homogenization of woody vegetation, with concomitant loss of tall trees and open grassland.

The salutary lesson is that adopting a rigid, steady-state approach to wildlife management can impact on biodiversity. KNP managers embarked along this track but have now adopted a novel version of strategic adaptive management (SAM) that encourages ecosystem flux. This aims to protect the park's rich biodiversity, yet also to ensure that human interference is kept to a minimum.

A particularly welcome feature of the book is that it combines the academic perception of biologists with the pragmatic experience of environmental managers. Many chapters are coauthored by both. This synergy reflects the situation on the ground in KNP where an

enduring partnership exists between the two groups: scientists generate the understanding needed to manage the park's resources while managers review this research and take action to support ecosystem integrity. This model is one that other parks would do well to follow.

What does the future hold for KNP? The final chapter of the book argues that a well-managed national park will provide South Africa with more sustainable benefit from tourism than alternative land uses. A variety of figures for financial yield from ranching, farming and recreation are quoted to support this argument. While the economic rationale may be clear, I couldn't help but doubt if such cold financial logic will be enough to protect the park from the political palatability of land redistribution. After all, the rural black people who surrendered their land when the park was first established have never been properly compensated for their loss. Politicians will need to put this injustice right if the park is to enjoy a secure future.

Most people will find something in *The Kruger experience* to interest them. The target market is not African but global and the book provides new insights into the management of large protected areas surrounded by competing human interests. Biologists, geographers, social scientists and land planners can learn lessons from the challenges facing this globally important conservation wilderness.

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Faster! Faster! Faster! Biological invasions and accelerated evolution

Cox, G.W. (2004) *Alien species and evolution. The evolutionary ecology of exotic plants, animals, microbes, and interacting native species*. Island Press, Washington, D.C. 377 pp, figs, tables, glossary, index. Paperback: price \$40, ISBN 1-55963-009-4. Hardback: price \$75 1-55963-008-6.

A few years ago, I read James Gleick's (1999) book *Faster: The acceleration of just about*

everything. It is an absorbing account of the frenetic world in which we live, and the myriad of technological innovations that are enabling people to do things quicker — the race for instant gratification. I enjoyed Gleick's selection of material to include in his book, but while reading the book I was reminded (no thanks to Mr Gleick who, surprisingly, included no biological examples) that one of humanity's greatest impacts on our world has been to accelerate just about every imaginable evolutionary process. Just as humans have intentionally short-tracked the obstacles to a fast meal, global travel, etc., we have also changed the natural world to such an extent that the processes that maintain and generate biodiversity have been radically changed. Globalization has greatly increased the mobility of people and other organisms, effectively breaking down the physical barriers responsible for the evolution of distinct biotas in different parts of the world. We know that current extinction rates are several orders of magnitude faster than background rates. The current warming spell is faster than any recorded before. Also, humans are introducing new species to areas way beyond their natural dispersal ranges faster than those new species exterminate natives. I recall thinking after reading Gleick's book that biological invasions were, in some ways, analogous to some of the driving forces of acceleration in his narrative. 'There's a book in this' I thought at the time. George Cox's book *Alien species and evolution* could be seen as that book — an ecologist's take on Gleick's paradigm.

There is no shortage of books on the topic of biological invasions; invasion ecologists are being bombarded with information at a frightening rate. Keeping up to date in the field is a substantial challenge. Indeed, invasion ecology is now probably over-served in synthesis and overview. I was, therefore, only mildly excited when I received a copy of *Alien species and evolution*. However, as I delved into the book, I was soon engrossed. It presents an extremely well thought-out and executed exposé of the evolutionary implications of biological invasions. Unlike some recent books on the topic, this one is not simply a review of the literature on invasions — because not much has been written about how invasive alien species have affected or could affect trajectories of evolution. Fully appreciating the wide range of potential effects of invasions on evolution

calls for a very broad knowledge of all facets of biology, and I can think of very few people as well qualified to pull off such an ambitious project as George Cox.

The book is divided into four parts: basic concepts of alien invasion and evolution, processes of evolutionary change and adaptation, evolutionary interaction of aliens and natives, and global evolutionary consequences of alien invasions. All taxonomic groups are covered, and the author does very well at selecting good examples from across the world. All the main issues from the recent literature on invasions are dealt with, often from new angles. As an example of the thoroughness of the treatment, consider Chapter 3 on 'Founder effects and exotic variability'. Here we are first provided with a good introduction and statement of the key questions (assessing genetic variability) using the telling example of the Argentine ant. We then get short but accurate summaries of the main techniques available: allozyme analysis, DNA fragment length polymorphism analysis, microsatellite analysis, etc. Cox then covers key issues relating to founder effects and genetic bottlenecks, genetic variability among alien plants, animals and microorganisms. The chapter ends with a short discussion on the link between genetic variability and invasiveness. This chapter and many others serve as brilliant introductions to particular facets of invasion ecology — very suitable reading for graduate seminars (especially given the very good glossary). I found the book extremely thought-provoking and will dip into it repeatedly.

I hope that this book will make ecologists (and hopefully managers and policy makers as well) realize that the effects of alien species are not only those that manifest themselves quickly and dramatically. Every introduced organism has the potential to alter the trajectories of evolution, with potentially profound implications for all ecosystems on Earth.

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