

with the discussion of mating systems (admittedly something of a pet area of mine), which was a little too cursory given the special challenges that this type of research generates in terms of sampling design, data acquisition and analysis (perhaps something to improve on for the next edition?).

Chapter Five examines intraspecific phylogenies and phylogeography and, given its focus on the use of genetic data to understand historical and contemporary biological relationships, is likely to be the chapter of broadest interest to readers of this journal. The chapter covers phylogenetic reconstruction and interpretation in some detail and overall I think that the authors have done a good job with it. However, there are some bugbears lurking here in that the validity of tree-based methods for examining intraspecific phylogeny is somewhat contentious and this is not adequately discussed, nor do the authors spend sufficient time discussing the increasingly important network analyses that are dominating the phylogeographic literature.

Speciation and hybridization are the subjects of Chapter Six. The authors discuss the theory and nature of speciation, and outline a number of analytical approaches to investigate speciation and hybridization, making good use of case studies to illustrate their points. Given that speciation can be viewed as the ultimate consequence of ecological and evolutionary genetic processes, this chapter would have seemed a fitting point to end the book, but the authors offer one more chapter of case studies on butterflies, ragworts, brown bears and oaks for good measure. There is much to be learnt from these examples, but I personally thought that a table of references for additional reading would have been more appropriate.

Overall, there is a great deal to like about this book. It is well written in a free-flowing, accessible style, is well illustrated with greyscale figures, graphs and tables, and covers a breadth of material that will be of use to many new to the world of molecular ecology. It deals predominantly with the fundamental genetic principles underpinning the various analytical approaches as well as how to design and carry out ecological genetic research, and as such is likely to remain relevant for some time to come. It is an excellent starting point for anyone wishing to familiarize themselves with the burgeoning possibilities that genetics provides for ecology and other field sciences.

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Classical collection

Lomolino, M.V., Sax, D.F. & Brown, J.H. (eds) (2004) *Foundations of biogeography: classic papers with commentaries*. The University of Chicago Press, Chicago, USA. xx + 1291 pp., figs, tables, line diagrams, index. Hardback: price US\$135.00, ISBN 0-226-49236-2. Paperback: price £31.50, US\$45.00, ISBN 0-226-49237-0.

The foundation metaphor used in the title of this book is a very appropriate one. As scientists we build upon the ideas and the work of those who have gone before, yet we often remain neglectful or even ignorant of the foundations of our science. This may be particularly true of biogeographers, possibly because our discipline has emerged from such a disparate array of sciences, so that our foundations are widely spread. The editors of this collection of papers have provided an insight into the origins and development of biogeography and have brought together an accessible resource for all students of the subject, from undergraduates to directors of research programmes.

Two problems evidently faced the editors: which papers should be selected and how should they be arranged? Tackling the second problem first, they decided upon a structure that avoided both a chronological and a geographical or biome approach. They chose instead to arrange papers according to the themes that currently occupy the minds of modern biogeographers and to appoint experts in each of these fields to select the appropriate papers. There are eight sections in all, covering early classics, vicariance and dispersal, species ranges, historical biogeography, diversification, island biogeography, assembly rules and latitudinal gradients in diversity. Clearly, these topics interdigitate, and several of the papers could equally well have been placed in alternative sections, but such overlap should encourage readers to look beyond their own speciality and become immersed in less familiar realms. The section editors provide a useful review of their selection at the opening of each part, tracing the links between papers and the development of the topic concerned.

Selecting papers must have been a nightmare! Where does one begin when taking extracts from von Humboldt's *Essay on the geography of plants*, or Darwin's *On the origin of species*? A further problem when selecting some early papers is that of differentiating between conceptual and survey types of work. Obviously, the former is most effective when based upon the latter, but I wonder whether the work of Edward Forbes, for example, in his collection of data on the molluscs of the Aegean and set out in the form of extensive species lists, really has a place in a volume of this kind. It represents vital and meticulous work, certainly, but is hardly inspirational reading. It could be argued, however, that without basic surveys of species distributions, biogeography would never have moved beyond the purely speculative.

The volume is a large one (over 7 cm in thickness) but it is not difficult to think of other papers that might have been added to the collection. In the sections on Earth history, species ranges and historical biogeography, for example, more could have been included on the developments in physical geography and geology that so profoundly affected biogeographical thinking. An excerpt from Wegener's 1924 paper on *The origin of continents and oceans* is included, but nothing further on the eruption of tectonic thinking in the 1960s. The work of Hallam, Darlington and Marshall presented here rests firmly on such geological foundations. Similarly, glacial theory is neglected. The work of Wells, Flenley and Martin included here can only be fully appreciated in the historical context of the work of Agassiz and other glacial geologists. The importance of molecular biology and isotopic studies in modern biogeography is not covered, but perhaps these developments are too recent to be yet regarded as 'classic'. No doubt they will be seen as part of the foundations of biogeography in the course of time. But suggesting additions is very easy and is a matter of personal opinion and bias. Drawing the line beneath any such collection must have been extremely difficult.

All critical readers will find here some of the authors and works that have inspired their own thinking. Wilson, McArthur, Simberloff, Diamond, Whittaker and Elton are all well represented, together with many other great names whose work has helped biogeography to emerge as a scientific discipline in its own right. Having this book upon your shelf will ensure that you are never short of reading matter. The papers it contains provide answers to many of the

questions that the science of biogeography has faced in the past, but they also pose additional questions for the biogeographers of the future. Having examined the wide range of research areas that underlie biogeography, one is tempted to take the foundation imagery one step further: with such deep and extensive footings, the discipline should stand secure and be in a position to support new structures in the future. The knowledge of our foundations that this book provides will undoubtedly contribute to continued building programmes.

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A resolution of Mediterranean landscape and vegetation change

Mazzoleni, S., di Pasquale, G., Mulligan, M., di Martino, P. & Rego, F. (eds) (2004) *Recent dynamics of the Mediterranean vegetation and landscape*. John Wiley & Sons, Ltd, Chichester, UK, xiv + 306 pp., figs, tables, line diagrams, halftones, index. Hardback: price £130.00, €195.00. ISBN 0-470-09369-2.

Since the 1980s, the Mediterranean region has been the focus of widespread research into establishing the extent of land degradation, particularly desertification. Interdisciplinary and multinational projects, such as MEDALUS (Mediterranean Desertification and Land Use), have been funded by European Union grants to gather relevant information, which has resulted in several books (for example, Brandt & Thornes, 1996). Among other research, experimental sites were located across southern Europe in an attempt to establish relationships between land use/vegetation and precipitation, and annual runoff and sediment loss. While some extreme rates of soil loss were recorded, in general the MEDALUS results suggest that recorded soil erosion rates at the scale of field plots and the extent of the problem of land degradation are not as great as was once feared. Concurrently, landscape researchers have undertaken detailed historical surveys of land-cover changes. Interpre-

tations of mapped data, and aerial photography since the 1940s, show a considerable expansion of shrubland and forest cover, contrary to the expectations of both climate-driven and anthropogenically induced desertification. The results of these studies form the core of this book.

Recent dynamics of the Mediterranean vegetation and landscape provides detailed examinations of shrubland and forest expansion across the Mediterranean. The temporal focus is restricted to the last 50 years. This is an attempt to bridge the gap between 'historical and contemporary studies' (p. xiii). A longer-term perspective to the recent trends is provided in two introductory chapters. Quézel provides an overview of the large-scale vegetation systems of the Mediterranean (e.g. sclerophyllous forests, broad-leaved forests, matorral, etc.) and their development during the Holocene, emphasizing the anthropogenic rather than climatic debate about the spread of sclerophyllous evergreen taxa. Di Pasquale *et al.*, provide a brief historical account of forest exploitation throughout the region. These two chapters are followed by case studies, each of which may be read as a stand-alone chapter. There is some commentary on the problems attached to interpreting historical data, and also the difficulties of using remote sensing, given the relatively coarse resolution of satellite imagery compared with the spatial heterogeneity and complex spectral signatures of Mediterranean vegetation systems.

Case studies come from Portugal, Spain, Southern France, Italy and Greece, as well as extra-Mediterranean countries such as Switzerland and Slovenia. Most of these are written by authors from these countries. Hence, the emphasis is primarily on Mediterranean Europe, although there is a complementary chapter on vegetation and landscape dynamics of Morocco. The prime factor behind forest expansion is land abandonment, especially of economically and topographically marginal areas, as a consequence of post-second world war socio-economic patterns. Tables of land-use change, from documentary sources, maps and aerial photographs, and changing demographic structures, exemplify each study. Graphs, diagrams and maps are well used to illustrate these data. In consequence there is a wealth of detailed information on landscape change over the past 50 years. In one study (Epirus, Greece) there is an

attempt to provide an anthropological context to the debate about land degradation. Information from local inhabitants revealed that they did not perceive soil erosion or the existence of badlands as symptomatic of land degradation; the 'real' degradation was the undesirable, rapid spread and growth of forest cover.

A chapter that links climate change, land-use change and desertification complements the case studies. This concludes that, whereas many Mediterranean regions are climatically marginal and ecosystems may be close to a threshold that separates stable soils and vegetation production from a positive feedback loop that leads to degradation, desertification is not universal. Instead, there is sufficient spatial variability in Mediterranean landscapes and temporal variability in their climate to ensure that vegetation and landscape degradations are limited in extent, and are likely to continue as such. While this conclusion is not new, having been cogently argued by Grove & Rackham (2001), this book provides compelling evidence to reinforce it.

The value of this text lies in its detailed case studies that provide a resolution of landscape and vegetation change, which longer-term studies inevitably lack. It also serves to remind us how rapidly vegetated landscapes can change and it details the complexities of vegetation dynamics. The case studies are complemented by a lengthy set of references, many of which relate to non-English language publications. However, it is a mark of the time taken to organize an edited text that there are very few published since 2000.

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