

## LIBRARY LETTERS



### Molecular ecology for the masses

Beebee, T. J. C. & Rowe, G. (2004) *An introduction to molecular ecology*. Oxford University Press, Oxford, UK. xxiii + 346 pp., figs, tables, line diagrams, halftones, glossary, index. Paperback: price £25.99, ISBN 0-19-924857-5.

University courses that cover the study of ecology and evolution with molecular tools ('Molecular Ecology') are now common, yet at present, there are few choices of textbook available. As someone who has taught an undergraduate course in Molecular Ecology and Evolution for a number of years, often without an appropriate single text, I was eagerly anticipating this book and have not been disappointed. *An introduction to molecular ecology*, as the cover notes make clear, is targeted at undergraduate students and the content lives up to its stated aim, pitching the level and style exactly right. Despite this, there is plenty here for graduate students and researchers new to the field. Chapters include a history of molecular ecology, molecular biology for ecologists, molecular identification, behavioural ecology, population genetics, molecular and adaptive variations, phylogeography, conservation genetics, microbial ecology, molecular ecology and genetically modified organisms. Key points are highlighted in margin notes, and bulleted summaries are found at the end of every chapter. Technical descriptions of data generation and analysis, which, although important, are always the least popular topics for students, are confined to two appendices. The book also includes a valuable glossary and bibliography.

The cover notes pick out the book's 'Clear illustrations in all chapters...' and this is indeed a strength. The simple illustrations, often taken or modified from key papers, are generally clear and well judged, providing the type of summary that a student could learn and reproduce. The generally good illustrations, however, are in sharp contrast to the photographs and more artistic figures, which are at times very bad indeed. The first two figures in the book, for example, illustrating plumage differences in wagtails and crows, are fuzzy, depressingly grey, have lines or whole

areas missing and look as if they have been repeatedly photocopied. The accompanying map of Europe seems to have been hand drawn from memory with the loss of several regions. This is unfortunate since such figures detract from the otherwise professional appearance of the book. A trend I noticed is that many of the photographs have little academic content, merely illustrating a koala, a thylacine or colour variants of the European stoat when these case studies are mentioned in the text. In general, I like this, since showing 'Martha', the last passenger pigeon, is a useful device to keep students engaged. This strategy is often let down, however, by the poor image quality and lack of colour. The overly simplistic, two-colour line drawing of Lady's slipper orchid for example neither informs nor keeps students engaged and the book would be much better served by a good photograph or nothing at all.

When considering the areas I know in most detail, I find the authors to be well read, clear and balanced in their treatment of the subject matter. Generally, their choice of case studies is excellent, modern and wide ranging, although occasionally there is not as much detail as I would like. In Chapter 7, 'Phylogeography', I would have expected to see a discussion of different types of phylogeographical structure (I–V, *sensu* Avise, 2000) and how this might relate to population history. Some readers may find their examples a little Euro-centric, and brief reference to comparative phylogeographical work in other parts of the world might help students understand the fundamental importance of phylogeography for ecology, conservation and evolution. Similarly, Chapter 8, 'Conservation genetics', has only brief coverage of many topics. It is very difficult, however, to cover such enormous and involved topics as conservation genetics and phylogeography in single chapters. Beebee and Rowe do make a good attempt and are largely very successful.

There is a tendency in both journals and books to ignore the molecular ecology of 'small uncoloured organisms' in favour of larger and (some would say) more attractive taxa. I was therefore pleased to see a chapter on microbial ecology included in this book.

I find the second chapter, 'Molecular biology for ecologists', a little unnecessary. The authors are not alone among text book writers in choosing to give an introduction suitable for those with little background in the area. In this case, however, I wonder whether there are any ecology degrees taught that do not also insist that their undergraduates learn the most fundamental concepts in genetics. The structure of DNA, DNA replication and the genetic code are likely to be new to almost none of their intended audience and text books describing such basic genetics are often the most common books in a biology library. Other areas of this chapter describing genome content, mutation and mutation rate might, however, be more useful as they relate more directly to later chapters. Although this text is not perfect, overall I am very pleased indeed with it. It has found the right level, covered a broad area and highlighted important concepts with good case studies. I enjoyed reading it and shall certainly recommend it as an appropriate text to my own students.

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### REFERENCE

Avise, J.C. (2000) *Phylogeography: the history and formation of species*. Harvard University Press, Cambridge, MA, USA.

### Sampling the variety of life

Leather, S. (ed.) (2005) *Insect sampling in forest ecosystems*. Methods in Ecology Series (eds Lawton, J.H. and Likens, G.E.) Blackwell Publishing, Oxford, UK. xii + 303 pp., figs, tables, line diagrams, halftones, index. Paperback: price £34.99, ISBN 0632053887.

Trees are truly remarkable, and there are many remarkable trees, as Thomas Pakenham (1996, 2002) has shown us through his superb