precise language in discussing the ial traits. In this regard, it may be imply focus on the traits and taxa of a terminological label (eusociality) not represent an evolutionary ens effectively do this by explicitly hey call the "traditional" eusocial optera and Hymenoptera with reiism), despite the fact that some ir to meet the definition of eusocia sterile caste. Of course, the priid a good one at that—for focusing al" species is that there is an enor-30retical and empirical information se groups, making a synthetic volpossible. Nonetheless, one should ito thinking that the kin selection conflict over the partitioning of of general or even primary signifvolution of sociality in the broad

this book is a fine addition to the Ecology and Evolution. It contains is of such theoretical principles as heory, the Shaw-Molher equation, peration models, and of such key nd parameters as relatedness, gereproductive value. For the empirs present invaluable tabular sumiterature citations, of genetic eeding levels, worker reproductios from the Hymenoptera and ok can thus serve equally well as a ner of the population genetics of and could be used as a text for a in social-evolutionary theory. In gest using it together with Breed Lenetics of Social Evolution (1989. Boulder, CO), an edited volume newhat different perspective on e issues and offers slightly greater Crozier and Pamilo volume (inple, a discussion of ecological decial evolution and a phylogenetic study of social evolution). As a population-genetic underpinnings onary theory, Evolution of Social an impressive work.

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Molecular Systematics, 2nd ed. D. M. Hillis, C. Moritz, and B. K. Mable [eds.] Sinauer, Sunderland, MA, 1996 655 pp., \$49.95 ISBN 0-87893-282-8

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Molecular Systematics (2nd ed.) is a text that has become a primary reference for a subdiscipline. Virtually every member of my lab has a copy, and it is the primary reference that I ask Ph.D. students to read in preparation for their comprehensive candidacy exam. We have been using this 2nd edition in my lab for a year now, and every time I pick it up, I discover another reason to praise it.

The 1st edition of Molecular Systematics appeared in 1990 and soon was recognized as an indispensable reference to lab protocols and data analysis for those who were using molecular markers to understand phylogenetic relationships among their organisms. Barbara Mable has been added to the list of editors for the 2nd edition, and, as before, a large number of authors is responsible for the 12 chapters in the book. Most chapters have been updated ably in the new edition, but immunological techniques have declined in use and, consequently, have been left out of the new edition. On the other hand, the polymerase chain reaction (PCR) has revolutionized molecular systematics and has made it accessible to even the most casual practitioner, and so it is not surprising to find a whole new chapter devoted to PCR in the 1996 edition.

The 1st chapter of *Molecular Systematics* is a brief overview of the basic issues and controversies of the field as they stood in about 1995. It serves to whet the appetite for more, but hardly compares in substance to the chapters that follow it. It was nice to see a clear statement that molecular characters are not intrinsically superior to any other source of systematic characters.

A 2-chapter section on sampling follows. The chapter on project design is replete with good, common-sense advice. However, I found it overly pessimistic to say that attempts to combine work on population structure, species boundaries, and phylogenies are "almost certain to be inefficient." Sequences from the same mitochondrial DNA protein coding genes have served me well in studies ranging from gene flow within populations to relationships of genera, and one of the nice features of sequences obtained in intraspecific surveys is that you can downweight 3rd position sites and use the data again for higher level phylogenies. The chapter's takehome message is that any project should be planned carefully to make sure that the type of marker being used is informative about the taxonomic level that is of interest. Also, a project should be built up as a series of iterations that allow feedback and modification of the project design. These points are often neglected, and it is appropriate that they are stated so clearly in this chapter.

The 2nd chapter on sampling is concerned with the collection and storage of tissues. There is a brief

warning on the need to pay attention to permits, but the remainder of the chapter deals with how actually to preserve tissues so that they remain usable. I have not found the advice to minimize drying to apply to insects. In fact, if you can't freeze your specimens or preserve them in ethanol, one of the best things you can do is to freeze-dry them. A 6-page (but still meager) appendix lists synoptic tissue collections worldwide but largely neglects insects. Coordination and standardization among tissue collections is still in its infancy, and there is a serious need to publicize the usefulness of such collections.

The heart of Molecular Systematics is a 6-chapter section on molecular techniques. This section provides a surprisingly complete summary of primary methods of obtaining molecular data for systematic purposes. The first of these chapters deals with isozyme electrophoresis. Except for the unfortunate but understandable fact that only starch gels are discussed in detail, and also a strong bias toward vertebrates, this chapter remains a very useful "how-to" summary of the art and science of allozyme work. An insect-biased version would have devoted more space to issues such as the most efficient ways of resolving numerous loci from tiny amounts of tissue. Future updates of this chapter could benefit from incorporating more references to recently available equipment, such as documentation using video systems.

The next chapter, on cytogenetics, has been improved with new figures and new information on in situ hybridization. Insects finally come closer to getting their due, thanks to the importance of Drosophila genetics. Chapter 6 presents a clear and complete overview of DNA-DNA hybridization. However, few researchers still use these techniques, and the chapter may be a swansong for the field.

The book's excellent new chapter on the PCR reaction is authored by Stephen Palumbi and contains a general overview of the technologies involved in this reaction. Although insects tend to be neglected, there is plenty of information here that can be readily adapted to insects, including many practical protocols. The section on universal primers is a good case in point. One of the students in my lab already has used it to design primers for a nuclear gene in insects. Fortunately, entomologists also can refer to Simon et al. and Brower and Desalle (1994. Ann. Entomol. Soc. Am. 87: 651-701 and 702-716, respectively). In addition, entomologists can purchase sets of more-or-less universal mitochondrial and nuclear primers from the University of British Columbia (c/o John Hobbs, Biotechnology Lab, Room 237 Wesbrook Building, University of British Columbia, Vancouver, BC, Canada, V6T

The chapter on DNA fragments and restriction sites has been rewritten and reorganized and now covers new developments like RAPDs. The section on trouble shooting would have benefited by more attention from the editors, for several statements of

problems beg the question of how the problems were diagnosed in the first place. For example, DNA "breakage during isolation" is to be remedied by "gentle extraction," while "DNA degradation due to old tissue" is to be remedied by "us(ing) fresh tissue." The problem is that the symptoms are the same—DNA has become degraded into small fragments—and it would have been more useful to have given advice on how to distinguish the causes.

DNA sequencing and cloning is covered in a separate chapter. Some of the material found in the chapters on PCR and restriction sites is revisited, albeit from another angle. The new color plate demonstrating chromatographs from an automated sequencer is not well chosen; the caption states that peaks are consistently unreliable by the 4th panel, when I would have discarded most of the chromatograph after the 1st panel. As with previous chapters, this one provides an excellent source of information on a range of techniques but should not be expected to provide sufficient detail to substitute for an internship in an up-to-date lab where these techniques are already being used.

The final section of *Molecular Systematics* contains 3 chapters on the analysis of molecular data. The first of these, written by B. Weir, is a terse but still useful distillation of the principles of population genetics as applied to intraspecific differentiation. It stands on its own but also serves well as a primer to Weir's more extensive text, *Genetic Data Analysis II* (1996. Sinauer, Sunderland, MA).

Swofford et al.'s chapter on phylogenetic inference is by itself worth the price of the book. The salient points of phylogenetic analysis of molecular data are laid out in a very useful form. The coverage is not only up to date but may strongly influence the ways in which systematists analyze their data during the coming years. Furthermore, it provides a view of

what Swofford's upcoming analysis package, PAUP*, is like. A useful appendix listing other programs and software packages completes the chapter. Don't expect to be able to read this chapter in an evening. It contains so much information, most new to the repertoire of mainstream molecular systematists, that it is likely to take a long, slow grind to simply make a first pass through it. In spite of that, it is fairly cleanly written.

The final chapter is written by the book's editors and concerns appropriate choices of techniques, controversies in data analysis, and applications of phylogenetic analysis to comparative methods. Like the rest of the book, this chapter will provide something new and useful for anyone, whether a neophyte or a seasoned practitioner.

When it first came out, I was pleased to see that the 1996 edition came in a paper cover rather than the awkward plastic spiral binding of the first edition. Unfortunately, the first page of my copy has already come unglued and several other pages are threatening to come unstuck from the backing. I also have discovered that one consequence of my heavy use of the book is that I have smeared the ink with my sweaty hand in several places. On the other hand, except for text books for courses, I haven't used any other books enough to put them through the torture tests that I have subjected this one to.

In short, you should buy this book if you have anything at all to do with molecular markers in evolutionary biology. The library copy will have a long line of people waiting to borrow it and will probably be worn ragged by the time it gets to you.

Felix Sperling ESPM—Insect Biology University of California Berkeley, CA The Isometopinae (Heteroptera: Min Europe and the Middle East A. E. Akingbohungbe pelar Tertiary, Ibadan, Nigeria, 19 170 pp., \$30 ISBN 978-32616-5-7

ISOMETOPINAE IS A subfamily of Miric all its members are predacious. The e cataloged in Schuh (1995. Plant B1 New York Entomological Society, Palearctic species will be catalog coming vol. 3 of the Catalogue of t the Palaearctic Region (1997. B. Rieger [eds.]. The Netherlands E ciety, Amsterdam), and the single. is listed in the Zoological Catale Hemiptera: Heteroptera, vol. 27.3 G. F. Gross [eds.]. C.S.I.R.O., Col lia). Akingbohungbe's monograp species of Isometopinae from Afi rope east through the Middle Ea are not clearly stated.

The book opens with a brief followed by a general account o ology. Generally regarded as t Miridae, isometopines have ocell predacious; other mirids lack or cious, are probably secondarily feed on small soft-bodied arthrop are possible candidates as biolog In this section Akingbohungbe g ment) further evidence for a I also in some anthocorids. Man groups can be found on the tru species (habitat specific) and t able prey; because the prey to (actually host specific), the pre themselves host specific, where not be.

There are 6 pages of morpho well as many drawings and SE characters are both systematic groups) and phylogenetic (sor polarizing differences).

The section "Status of the Is ers its taxonomic history as a family and presents the base views. Here the author gives guments that the Isometopinae of Miridae and that it is mono describes the subfamily forme clearly demarcated). Akingbe tribes, Diphlebini (not treat World; although the author Isometopini, and Myiommini. two Myiomma and Slaterop