

between Argentina, Brazil, and Central America (Mexico, Belize, and the Caribbean), thus ignoring the rest of the Neotropics, particularly the South American Pacific rim countries and Venezuela. This may be an unavoidable result of both the editors' regional bias and the participation of Central American authors in the Cancún meeting. Perhaps this should be the first in a regular series on Latin American mammalogy enabling a more comprehensive coverage in future volumes.

There are few egregious errors in the volume; they stem from failures to reconcile text statements to tabular data. For example, Willig states (pp. 84–85) that except for mormoopid bats, longitude fails to account for more than 10% of the variation in species densities; in fact, his Table 1 shows that 21%, 16%, and 16% of the variation in glossophagine, stenodermatine, and vespertilionid bats is accounted for by longitude (albeit, always less than that accounted for by latitude). A second minor error (perhaps only noticeable to a Chilophile!) is Braun and Mares' statement (p. 441) that Chile's ratio of museums to population is approximately one per million people; in fact, their Fig. 2 and Table 1 show that Chile has one of the lowest ratios for Latin American countries, one museum per 0.395 million people. These errors duly noted, remarkably few typographical errors are evident, and the volume is superbly indexed and referenced. The book is reasonably priced and imminently timely; it is a worthy investment for any worker interested in Neotropical mammals as well as conservation biologists generally. As the volume demonstrates, we don't have much time to make advances in the knowledge of Neotropical mammals and other biota, and to contribute to the development of a long-term conservation policy.—PETER L. MESERVE, *Department of Biological Sciences, Northern Illinois University, DeKalb, Illinois 60115-2861.*

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Mayr, E., and P. K. Ashlock. *PRINCIPLES OF SYSTEMATIC ZOOLOGY.* McGraw-Hill, Inc., New York, xx + 475 pp., illus., 1991. Price (hardbound), \$40.

This revision of *Principles of Systematic Zoology* (Mayr, 1969) reflects the immense changes in systematic theory and techniques that have

occurred during the 22 years since publication of the first edition. Essentially the second edition is a different book, with new material and a total reorganization. Following the introduction, the text is divided into three major sections: Microtaxonomy, Macrotaxonomy, and Methodological Issues. Sections one and three were prepared by Mayr, whereas section two was prepared by Ashlock. An excellent 27-page glossary is provided.

A major contribution to science by Mayr has been the lucid organization and presentation of the strengths and weaknesses of ideas. This book is no exception. The historical perspective, typical of Mayr's work, also strengthens this book. I used it for the primary text for a systematic zoology course at Texas Tech University. In portions of the course, we used the book as the foundation for class discussions, whereas at other times we used recent papers from various sources for that foundation. Consistently, the students understood the material from Mayr's and Ashlock's writings better than that gleaned from review and research articles.

The introduction is exceptionally well done and could be most appropriately paraphrased for an understanding and justification for the study of systematics in beginning biology texts or comparable settings. With the current revival of interest in understanding biodiversity as related to ecology and environmental issues, this chapter is a valuable reference and refresher course.

Sections on microtaxonomy and macrotaxonomy are also excellent primers on systematics at the species and higher taxonomic levels. Considerable effort is devoted to explain the consequences, implications, and applications of various theories and methods. I found the reviews on phenetics, cladistics, and evolutionary classification theory entertaining, although I am sure that died-in-the-wool pheneticists and cladists both will feel inadequately represented. Bias is detectable toward the evolutionary classification. However, considering Professor Mayr's forceful personality, the bias is minimal. These two sections provide adequate understanding of alternative theories to allow any instructor in a university-level course in systematics to exploit them effectively as a jumping off place to defend his or her own biases in systematic theory.

The final section on methodology will be the first to become outdated and for some areas this is happening on a daily basis. Some aspects of the field of systematics are developing so rapidly

(analysis of DNA sequence data, for example) that the usual nine months to a year delay in publication of papers makes most of them dated. Nonetheless, the presentations of Mayr and Ashlock are for the most part sufficiently well organized to provide a needed foundation for the beginning student of systematics.

I found the book to fill a gap in my systematics course and library. I congratulate the authors on the completion of this quality work.—ROBERT J. BAKER, *Dept. Biological Sciences and The Museum, Texas Tech University, Box 43131, Lubbock, Texas 79409.*

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Hoelzel, A. R. (ed.). GENETIC ECOLOGY OF WHALES AND DOLPHINS. International Whaling Commission, Cambridge, 311 pp., 1991. ISBN 0-906975-25-5. Price n/a.

This book resulted from a workshop on the genetic analysis of cetacean populations and was published as Special Issue 13, Report of the International Whaling Commission. The book describes methods and applications of molecular genetics to the study of cetacean population biology and management. It includes chapters describing the theoretical basis of molecular studies and specific studies of whales and dolphins. In the introduction the editor says “this book describes the methodology of a discipline in its infancy.” I agree. There is potential for the use of molecular genetics in population management, but also serious limitations which must be considered.

Many of the studies reported in the book are preliminary because of limited sampling or incomplete lab analyses. I think presentation of these preliminary results is justified because having related studies under one cover is convenient. However, there is a danger that interpretations based on preliminary results are premature and potentially misleading.

The book is divided into five sections. The first includes reports of the Sept. 1989 workshop, a report of the effect of biopsy sampling on individual cetaceans, and a report on understanding whale population genetics with molecular probes (Dover). These are useful as an introduction to the other sections. The second section is a single chapter, a thorough and valuable assessment of

IWC stock boundaries by Donovan. These two sections identify the need for, and potential of, molecular genetics in cetacean population management.

A section on methodologies provides descriptions of biopsy sampling techniques (Palsbøll et al.), biopsy storage procedures (Amos and Hoelzel), the effect of biopsy sampling on the animals (Brown et al.; Weinrich et al.), and identification of the sex of whales with analysis of biopsy samples (Baker et al.).

The last two sections describe population studies and a summary and analysis. The summary and analysis section has three chapters which illustrate the utility and limitations of the molecular data presented in the other chapters. The authors stress that there are limitations to the utility of molecular data and researchers should understand them before committing time and resources to such studies. Some important limitations identified in these chapters are: molecular genetic patterns may reflect historic, not current, levels of gene flow and population structure (Palumbi et al.); methods of estimating effective population size from genetic data are complex, require extensive sampling, and lack precision (Waples); and demographic factors are likely more important than genetic factors in determining minimum viable population size (Lande). Another important cautionary note, raised by Dover in his review of molecular probes, is that using DNA sequence divergence to date population divergences (as molecular clocks) is questionable because rates of evolution vary among genes and taxa. There is debate among molecular geneticists about the best techniques for various applications, and these four chapters provide a good background.

The largest section of the book describes molecular genetic studies of natural populations. These include analyses of protein electrophoresis, mitochondrial DNA, chromosomes, and nuclear DNA (repetitive sequences, DNA fingerprints) and show what can be expected with currently available analyses. Duffield and Wells demonstrate the importance of combining different molecular approaches to characterize population genetic structure.

Protein studies include a notable chapter by Wada and Numachi describing analysis of 45 loci among 18,000 whales. This massive effort provides a valuable compilation of protein variation for whales. Danielsdóttir et al. also present protein electrophoretic data for sei whales.