The center of the book is followed by two in-depth discussions of data analysis: a review of population size estimation (Chapter 8) and a very thorough (83 pages) and enlightening look at measures of species diversity (Chapter 9). The former kindly leads the reader through the calculations with sample data sets. The latter also uses example data sets to illustrate and compare the (mis)behavior of dozens of indices of species richness, abundance, and diversity. In a philosophical conclusion (Chapter 10), the editors encourage journal editors to publish inventory data in raw form. They also reemphasize to fieldworkers the importance of strict adherence to the recommended guidelines, even in studies in which the purpose is to make comparisons with previous work that used nonstandard methods.

The editors have dressed the book with a detailed Table of Contents (a convenient directory with over 180 entries), 28 tables and 32 figures, a glossary, over 600 literature references, an adequate index with more than 1000 entries, and an address list of the authors and contributors. Errors in typography and grammar are extremely scarce (I found only one); an excellent job of copy editing has resulted in a very clean book. The book contains a very useful set of seven appendices. Some of the topics included therein are the handling and marking of live amphibians, the acquisition and preparation of voucher specimens, nonlethal techniques of tissue sampling for genetic and biochemical analyses, a long list of equipment vendors, and an easy-to-use table of random numbers. The editors have achieved some cohesion among writers and among chapters through an adequate amount of cross-referencing. But, and perhaps unavoidable with over 50 authors and contributors, there are redundancies and contradictions among chapters. For example, the reader can find four separate discussions on the recording of frog calls.

Amphibian biologists will and should continue to rely on their ingenuity and the primary literature to tailor their sampling methods for the species and questions at hand. In addition, because inventory methods focus on population sizes and levels of diversity, their use alone will not lead to an understanding of the mechanisms and causes of change. However, the editors have accomplished their goal: for the purpose of monitoring amphibian populations, they have produced a unique and very practical handbook indispensable to the herpetologist and the concerned citizen alike in their stewardship of amphibians.

Acknowledgments.—This work was supported by Contract #DE-AC09-76SR0019 between the U.S. Department of Energy and the University of Georgia's Savannah River Ecology Laboratory.

LITERATURE CITED


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MOLECULAR BIOLOGY FRONTIERS. BIOCHEMISTRY AND MOLECULAR BIOLOGY OF FISHES. VOL. 2. P. W. Hochachka AND T. P. Mommsen (eds.). 1993. Elsevier, Amsterdam, Netherlands. ISBN 0-444-81663-1. 470 p. $225.75 (hardcover).—Molecular Biology Frontiers is the second volume edited by P. Hochachka and T. Mommsen in a series of five volumes dealing with the biochemistry and molecular biology of fishes. The first volume, published in 1991, was on Phyllogenetic and Biochemical Perspectives. The last three volumes will be on Analytical Techniques (Vol. 3), Metabolic Biochemistry (Vol. 4), and Environmental and Ecological Biochemistry (Vol. 5). These volumes are expected to be in press by the end of 1995. With these five volumes, Hochachka and Mommsen will have covered most of the new field of molecular and biochemical ichthyology. The first volume of the series was very
successful and many of us were awaiting the publication of the second volume dedicated to fish molecular biology.

In the last few years, fish molecular biology has been expanding at a fast pace. As an example, in 1990, a little over 100 genes had been sequenced in fish. Today, more than 1000 entries of fish sequences can be found in GenBank. Although more and more ichthyologists are interested in molecular biology, almost no literature can be found on molecular ichthyology. Therefore, the volume dedicated to the molecular biology of fishes is filling an important gap.

The volume consists of 21 chapters, authored by some of the best researchers in the field, covering four major areas. One category of papers deals with general concepts in fish molecular biology. Since most molecular ichthyologists are now working with mitochondrial DNA (probably over 80% of GenBank entries), it was logical to start this book with the "Evolution of mitochondrial DNA in fishes " (Chapter 1, by A. Meyer). Population biologists will be interested in a paper on DNA fingerprinting in fishes (Chapter 3, by J. M. Wright). Recently, Fugu was proposed as a model for a lower vertebrate genome project. This claim revived an interest in chromosome mapping of fish, which is the subject of Chapter 4 (by J. L. Goodier and W. S. Davison).

A second category of papers deals with the structure and function of a number of genes of particular interest to the ichthyologist. The growth hormone, prolactin, and somatolactin genes (Chapter 2 by M. Rand-Weaver and H. Kawauchi), oncogenes (Chapter 5 by R. Van Beneden), cytochromes P450 (Chapter 6 by J. J. Stegeeman), antifreeze proteins (Chapter 12 by P. L. Davies, K. V. Ewart, and G. L. Fletcher), corticotropin-releasing factors (Chapter 15 by K. P. Lederis, T. Ichikawa, D. Richter, and C. Schronrock), vasotocin neuropeptides (Chapter 16 by J. Heierhorst, K. Lederis, and D. Richter), other neuropeptides (Chapter 17 by N. M. Sherwood and D. B. Parker) and insulin (Chapter 20 by S. J. Chan, Q-P Cao, S. Nagamatsu, and D. F. Steinert) are the genes studied in this volume.

The promoter structure and the expression of metallothioneins (Chapter 10 by L. Gedamu and M. Zafarullah; and Chapter 11 by P-E. Olson), antifreeze proteins (Chapter 13 by S. L. Chan, G. L. Fletcher, and C. L. Hew; and Chapter 14 by Z. Gong and C. L. Hew), estrogen-receptors (Chapter 18 by Y. Valotaire, M-G. LeRoux, and P. Jego), vitellogenin (Chapter 19 by C. B. Lazer and M. E. MacKay), and stanniocalcin (Chapter 21 by G. F. Wagner) are the topics of a third category of manuscripts that deal with the most recent outbreaks of gene expression. The two previous categories presented the editors with the difficult task of choosing the genes to be discussed. One might wonder why two papers are devoted to metallothioneins and three papers to antifreeze proteins, whereas other interesting genes were left apart. Nevertheless, the papers cover most of the aspects of structure, function, and regulation of fish genes, and students and ichthyologists alike can use this book as a reference.

Perhaps the most important aspect of the advent of molecular biology of fishes is its application to aquaculture. This area was not forgotten by the editors of this volume. Three chapters (Chapter 7 by J. C. Thornton, R. A. Garduno, and W. W. Kay; Chapter 8 by B. Pojajdjak, B. Dixon, and G.R. Stuart; and Chapter 9 by P. B. Hackett) focus on bacterial fish diseases, the immune system, and transgenic fishes.

Although fish molecular biology is becoming increasingly popular, very few books covering this subject are available. Therefore, this volume on molecular biology of fishes is most welcome. The exceptional quality of the contributions will make it a success. My only regret is the elevated price of this volume, making it unaffordable for many students and researchers.—GIACOMO BERNARDI, Department of Biology, University of California, Santa Cruz, California 95064.

VERBREITUNG, OEKOLOGIE UND SCHUTZ DER SCHLANGEN DEUTSCHLANDS UND ANGRENZENDER GEBIETE [Distribution, Ecology and Protection of the Snakes of Germany and Adjacent Regions]. Michael Grushwitz, Paul M. Richard Podlouky, Wolfgang Völki, and Michael Waitzmann (eds.). Meriaiensia (Supplement to Salamandra) 3:1-431 (15 December 1995). Black-and-white and color photographs, maps. DM 98.90 (=$25.90 for members DM 22.50).—This interesting volume, the contents of which well match the title, derives from a 1991 conference of the German Society of Herpetology and Terrarium Studies but transcends the data there offered. It provides extensive information about the animals and about their current status in a region long and densely inhabited and utilized by man. The analysis shows the substantial changes that