

SPECIES DIVERSITY IN SPACE AND TIME.

By Michael L. Rosenzweig. *Cambridge and New York: Cambridge University Press.* \$74.95 (hardcover); \$27.95 (paper). xxi + 436 p; ill.; index. ISBN: 0-521-49618-7 (hc); 0-521-49952-6 (pb). 1995.

All naturalists know that some habitats, eras, and lifestyles are richer in species than others. But why? In this book, Mike Rosenzweig provides an invaluable, timely overview of patterns in species diversity, and of our current understanding of the mechanisms generating these patterns.

The book opens with the patterns themselves, which range widely from the classical species-area relation, to changes in species diversity over ecological and evolutionary time scales, to patterns in body size and food web structure. Because diversity arises from the interplay of speciation and extinction, modulated by the evolution of resource and habitat specializations, the book next examines these processes in some detail. The final half of the book returns to the empirical patterns, and interprets them in the light of evolutionary and ecological dynamics. The book concludes with a précis of tantalizing unsolved problems, such as the relation of productivity and species diversity. It is dedicated to Robert MacArthur, who was instrumental in articulating the problem of species diversity.

The book contains the best account by far in the literature of the species-area relation. A general message emerging from the book is the fundamental importance of area as a regulator of species diversity, through its effect on speciation potential, extinction rates, and the evolution of habitat specialization. For example, the latitudinal gradient in species richness may arise simply because the tropics have more area available to generate and harbor species than do higher latitudes. Another general, more subtle message, is the need to consider processes at multiple levels of biological organization and temporal and spatial scales when interpreting diversity patterns. This message is conveyed by example, as Rosenzweig deftly weaves together insights from a range of biological disciplines, from behavioral ecology (e.g., habitat selection) to paleobiology, in pursuing his quarry.

Not all parts of the book are equally compelling. In particular, to me the material on food web structure seemed dated, in part because the patterns rest on datasets now widely recognized to be inadequate in important respects. But this is a minor cavil. The core of the book concentrates on problems of fundamental importance both in basic ecological science and in the discipline of conservation biology. Written in an engaging, chatty style, this book is a landmark contribution to ecology and evolutionary biology, and it should be widely read and studied.

The publishers should be commended for the publication of an inexpensive paperback edition, which makes the book ideal for graduate seminars.

ROBERT D HOLT, *Systematics & Ecology, Museum of Natural History, University of Kansas, Lawrence, Kansas*



REPRODUCTION & DEVELOPMENT

DEVELOPMENTAL BIOLOGY: A GUIDE FOR EXPERIMENTAL STUDY.

By Mary S Tyler. *Sunderland (Massachusetts): Sinauer Associates.* \$18.95 (paper). xi + 172 p; ill.; index. ISBN: 0-87893-834-6. 1994.

This book is a well-written, clever laboratory manual for students taking a course in developmental biology. Included are experiments on slime molds, sea urchins, fruit flies, chicks, planarians, and frogs, as well as descriptive chapters on using the microscope and making embryological tools. As with any published lab manual, the particular choice of labs may not fit a given instructor's syllabus. For example, the frog lab wonderfully describes taking a field trip to a local pond to collect egg masses. Students far from a natural source or taking the course during winter term, however, may be frustrated. The manual would be more adaptable if the amphibian chapter had included information on ordering egg masses or injecting *Xenopus*. It is also unfortunate that zebrafish and nematodes, two of the most exciting model systems studied today, are not included. This manual serves as a guide to basic biochemical mechanisms and morphogenesis, but it is not a guide to the molecular analysis of development (no gels or blots are included).

This manual is designed for students clever enough to discover some of the key concepts of early development by themselves, given eggs or embryos, a range of chemicals, and embryological tools. The writing is skillful and provides students with much information, but does not lead them toward one "correct" answer. This is a successful and beneficial approach for motivated students.

The bibliography at the end of each chapter is especially useful because it is annotated. Students can read brief, tantalizing notes about each article, geared to making them run to the library. The manual is also full of great tidbits of information that as an instructor I am always trying to look up. Just what is the concentration of caffeine in a cup of coffee? This manual belongs on the shelf of every person teaching a developmental biology course with a laboratory. If the choice of labs fits your syllabus, it would be an excellent guide for your students. If