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Review of the Marine Mammals of the Gulf of Mexico

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Review

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praisal of the fish species. A list of each species (by family) with scientific and common names, identification, native range, nonindigenous occurrences, means of introduction, current status, impact of introduction, and remarks follows. There is a map for each species that indicates what states are involved. Following the chapters on each introduced species, there is a section on records of introduction of fish species that are not substantiated. The 65 pages of cited literature are an excellent starting point for anyone interested in the topic. The appendixes summarize the information in the book through a listing of all species by family (page references would help this part); a glossary of terms; listings by state of foreign, native, and hybrid fishes. The book is well organized and edited. The project was sponsored by the American Fisheries Society, thus carefully reviewed before publication. I was very interested in checking for nonindigenous fishes introduced into Utah and a nearby lake, Lake Utah. Carp were introduced into the Lake in the late 1800s, displacing and eliminating native (trout) species. The authors had included these species. The book will be a valuable addition for both public and personal libraries.

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MARINE BIOLOGY. *Third Edition.*

By Peter Castro and Michael E Huber; original artwork by William C Ober and Claire W Garrison. Boston (Massachusetts): McGraw-Hill Higher Education. \$65.00. xix + 444 p; ill.; index. ISBN: 0-07-012197-4. 2000.

Marine biology is a popular subject taught at hundreds of colleges and universities. It is a cumulative and interdisciplinary science that builds upon aspects of basic biology, ecology, and oceanography, and to combine all of these subjects into a single textbook that covers each in sufficient detail, while still maintaining focus on the integrated whole, is a tall order. Several such books in today's market attempt to deliver on this point, but few do. Castro and Huber's well-written book, although not perfect, comes as close as anyone else.

This second edition is intended to meet the needs of entry-level college students not planning to major in a natural science. Nonetheless, the authors recognize the importance of presenting students with a relatively broad span of very basic, introductory science, which is done throughout the volume as specific, sometimes cleverly presented examples. The book has four main parts. The first part provides an overview of the history of marine science and how scientific research is done (i.e., the scientific method—which they treat better than similar introductory textbooks in that they do not preclude the value of exploration and discovery),

marine geology and plate tectonics, and basic physics and chemistry of the oceans. Part Two covers the basics of life in the marine environment, beginning with an overview of general physiology and anatomy, and continuing with a broad-brush presentation of virtually all the main life-forms found in the oceans. Although seemingly an overwhelming task for readers to absorb so much material—all life-forms in the sea—the authors do not bog down in detail and somehow manage to pull it off. The authors cleverly insert much of the same material, by way of more detailed and specific examples, into the third part of the book, which covers marine ecology and the various marine environments (intertidal, estuaries, shelf seas, coral reefs, pelagic realm, and deep sea). The first three parts are then woven nicely into the final part on human interactions with the sea, including sections on living and nonliving marine resources, human impacts (such as pollution), and concluding with aspects of legal and policy issues.

The book reads very easily, packs loads of information, and has numerous sidebars with interesting, sometimes anecdotal, aspects of the subject at hand. The artwork is excellent. On the whole it is a very good volume that surely would meet the needs of a first-year course for nonscience majors. The one big detraction: most of the photographs have been overexposed and appear overly dark and sometimes are hard to make out.

DAVID W TOWNSEND, *School of Marine Sciences, University of Maine, Orono, Maine*

THE MARINE MAMMALS OF THE GULF OF MEXICO. *The W. L. Moody, Jr, Natural History Series, Volume 26.*

By Bernd Würsig, Thomas A Jefferson, and David J Schmidly; cetacean paintings by Larry Foster. College Station (Texas): Texas A&M University Press. \$34.95. xix + 232 p + 64 pl; ill.; index. ISBN: 0-89096-909-4. 2000.

This attractive, well-written book by three internationally recognized marine mammal experts reviews the marine mammals of the Gulf of Mexico. The first chapter summarizes the evolution and taxonomy of the carnivora, cetacea, and sirenia, and then discusses the physiology, ecology, natural history, and behavior of these three groups, including a thought-provoking estimation of cetacean intelligence. The second chapter summarizes the physical environment of the Gulf of Mexico, with an up-to-date discussion of the warm and cold-core rings that spin off of the main loop current in the Gulf.

A comprehensive series of dramatic color plates is followed by a synopsis of, and dichotomous keys to, the cetaceans in the Gulf. Two keys are included, one based on external appearance, the other based on skull morphology, both of which would admit

tedly be of limited use for sightings at sea. This could be remedied by including a description of the blows in the key, rather than in the species accounts, and by the inclusion of other field identification criteria (such as surface profiles). The skull diagrams are an interesting inclusion, detailing the diversity of morphological adaptations in the cetacea. A complete historical account of cetacean research in the Gulf summarizes the surprisingly limited geographical coverage of past studies, notwithstanding the focus on some areas, and highlights the magnitude of the remaining gaps in our knowledge.

The species accounts provide a brief but complete summary of each species found in the Gulf. I enjoy knowing the etiology of each scientific name, and I have found this information helpful to students learning and remembering the scientific names. The final chapter on the worldwide status and conservation of marine mammals renders this a useful reference for a general marine mammal course. The color paintings offer a somewhat redundant culmination to this wonderful book, given the number of color plates in a previous section. I found the text easy to read, engaging, and amazingly free of typographical errors. It has something to offer everyone from beginning students to marine mammal specialists.

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PROCEEDINGS OF THE 11TH INTERNATIONAL BRYOZOOLOGY ASSOCIATION CONFERENCE. *Based on a workshop held at the Smithsonian Tropical Research Institute, Balboa, Republic of Panama, 26–31 January 1998.*

Edited by A Herrera Cubilla and J B C Jackson. Balboa (Panama): Smithsonian Tropical Research Institute. \$60.00 (paper). xi + 448 p; ill.; taxonomic index. ISBN: 1-891276-13-1. 2000.

LIMNOLOGICAL ANALYSES. *Third Edition.*

By Robert G Wetzel and Gene E Likens. New York: Springer. \$49.95. xv + 429 p; ill.; index. ISBN: 0-387-98928-5. 2000.

Successful training of analytical scientists involves more than a presentation of theoretical underpinnings and detailed protocols of contemporary techniques. The “science” and “craft” are necessary but not sufficient for mastery of a scientific discipline. The elusive element in this training process—I call it the “art of science”—is formulation of the question, bringing together many pieces into a coherent awareness of a subject. Generally this is the role of a patient mentor, prodding the student beyond “what” and “how” to think about “why” they observe what they do.

Limnological Analyses is exceptional for its ability

to convey the art of science as well as theory and craft for investigation of lakes and streams. In 29 chapters, the authors provide a set of revised and updated procedures representing the full scope of contemporary limnology. Their treatment ranges from bacterial production to examination of lake and stream ecosystems and includes pelagic, littoral, and benthic processes. Where controversies exist they are noted and referenced without fanfare. Rather than presenting a comprehensive “methods manual,” the authors present learning “exercises” by selecting one or two well-accepted procedures known to give high-quality results that are broadly available to scientists in the field or well-equipped laboratories; they omit procedures requiring uncommon, highly specialized equipment. For example, the exercise on Organic Matter presents a brief discussion of characteristics of dissolved and particulate organic matter, collection procedures, protocols for two methods of analysis (high-temperature combustion and the wet chemical oxidation), example calculations, 3 options for analytical exercise, 12 questions for further thought (no, the answers are not in the back of the book), a list of apparatus and supplies, and a solid list of references—all in 10 pages. If this were Chopin, the chapters would be “études.”

This is the third edition of what has become the “industry standard.” How does it differ from the previous edition? Although the topics addressed are virtually the same, each has been updated to include recent advances during the past decade. Increased awareness of the importance of the microbial loop is seen in several of the chapters. Emphasis continues to be placed on assessment of processes in an ecosystem context. The largest addition is inclusion of a picture key to provide a starting point for identification of common freshwater macroinvertebrates. Lacking was inclusion of many fluorometric procedures that are coming into use because of their increased sensitivity over spectrophotometric procedures and the increased availability of inexpensive, reliable fluorometers.

This edition surpasses its stated modest intent “to provide a series of coupled field and laboratory exercises” (p vii) in limnology. Throughout, reading it is like the experience of being mentored or of taking a “master class” from 2 scientists as well known for the science they have produced as for the students they have trained. I recommend this volume to anyone who teaches limnological techniques at the graduate level, those interested in staying abreast of contemporary limnological procedures, and anyone interested in reading science taught well.

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