

some gems of unique insight and wit, and each chapter reads easily, with recent citations reflecting the freshness of this approach.

Although some of the phyla covered are not known from New Zealand (e.g., Cyclophora, Xenoturbellida, Placozoa), they are not ignored, with comments on the likelihood of finding representatives; an example of forward as well as global thinking. Reflecting the "new animal phylogeny," only a few phyla are not granted their newfound elevated (e.g., Acoelomorpha) or lowered (e.g., Echiura) positions.

Whether amateur or professional, scientist or policymaker, readers will grasp insight into the diversity of animal life, the importance of the New Zealand fauna, and guidance as to where our ignorance lies. This is an important puzzle piece in the global biodiversity jigsaw.

D. TIMOTHY J. LITTLEWOOD, *Zoology, Natural History Museum, London, United Kingdom*

OCEANIC ANGLERFISHES: EXTRAORDINARY DIVERSITY IN THE DEEP SEA.

By Theodore W. Pietsch. Berkeley (California): University of California Press. \$85.00. xii + 557 p.; ill.; index. ISBN: 978-0-520-25542-5. 2009.

This is a classical treatment of the exceptionally diverse and bizarre ceratioid anglerfishes. The book begins with eight chapters on the biology of anglerfishes, including reviews of what is known about their evolutionary relationships, biogeography, and three components of their unique biology: luring and bioluminescence, feeding biology, and life history. No reader will reach the end of this section without a deep sense of amazement at what evolution has produced in these highly predatory fishes that locate and attract prey and mates with glowing lures and live in the sparsely populated ocean below 1000 meters. The second part of the volume is a complete compendium of accounts for all families, genera, and species of the group. Every turn of the first 300 pages reveals one or more photographs or diagrams of these exquisite fish: the diversity of the lure, or esca, mounted at the end of the modified first dorsal spine, the wide gaping mouth filled with long raptorial teeth, the blob-like body that screams out with a lack of athleticism, and the disquieting parasitic male, attached to the side of a female and reduced to little more than gonads. Complete efforts such as this are rarely seen in publications today, in large part because the task is so daunting. But Pietsch has been a serious student of these animals for 40 years and the experience shows. No doubt the book will find an appreciative audience among professional fish biologists, but I could not help but see its potential to inspire younger people.

The author has produced a first-rate volume that conveys the wonderful, often bizarre world of one of the most enigmatic groups of animals on the planet. What young student would not be drawn in by these spectacular creatures, and all of the attending biological mysteries awaiting discovery? Bravo.

PETER WAINWRIGHT, *Evolution & Ecology, University of California, Davis, California*

PACIFIC SALMON ENVIRONMENTAL AND LIFE HISTORY MODELS: ADVANCING SCIENCE FOR SUSTAINABLE SALMON IN THE FUTURE. *Proceedings of a symposium held in Anchorage, Alaska, 13–14 September 2005. American Fisheries Society Symposium, Volume 71.*

Edited by E. Eric Knudsen and J. Hal Michael, Jr. Bethesda (Maryland): American Fisheries Society. \$69.00 (paper). xii + 464 p.; ill.; no index. ISBN: 978-1-934874-09-7. 2009.

Pacific salmon, *Oncorhynchus* spp., are at once a very valuable commodity in commercial fisheries, much sought after in recreational fisheries, a critical economic and cultural resource for Native Americans, a symbol of the Pacific Northwest region, keystone components of their ecosystems, and are also critically endangered or at risk in parts of their range. They are thus the subject of a huge and diverse scientific literature. Part of this literature addresses the need to understand past fluctuations in abundance, forecast future trends, guide habitat restoration, and manage the many competing fisheries within and between nations that exploit salmon. Because salmon are so important, the models of their population dynamics are especially well developed.

This book, the result of a symposium on salmon population modeling, includes 22 chapters organized into six sections: perspectives on salmon life-history modeling; advances in salmon biology; statistical models that incorporate life-history information; habitat-based models; incorporating uncertainty into models; and management applications of models. Like most edited symposia, this volume will primarily appeal to specialists (i.e., those working on population modeling and salmon biology), but there are a number of papers with a much broader scope, including Hilborn's excellent introduction and outline of key challenges for future modeling efforts. Several papers are essentially good reviews of aspects of salmon biology that affect their population dynamics, including climate change and ocean ecology (Nielsen and Ruggerone) and stream habitat use and carrying capacity (Cramer and Ackerman). Other chapters deal more explicitly with the modeling process, such as that by Peterman et al. on integration of environmental variables into models, as well as Hamazaki's paper on use of life-history, stage-

specific information in spawner-recruit models. Scientists working on population modeling in other kinds of fishes, and animals in general, will find a wealth of ideas in this volume, resulting from the tremendous amount of information on salmon biology and the intense pressure to manage them for the conflicting benefits of fisheries, ecosystems, and the salmon themselves.

THOMAS P. QUINN, *Aquatic & Fishery Sciences, University of Washington, Seattle, Washington*

EELS AT THE EDGE: SCIENCE, STATUS, AND CONSERVATION CONCERNS. *Based on a symposium held in Québec City, Canada, 11–13 August 2003. American Fisheries Society Symposium, Volume 58.*

Edited by John M. Casselman and David K. Cairns. Bethesda (Maryland): American Fisheries Society. \$69.00. xxvi + 460 p.; ill.; index. ISBN: 978-1-888569-96-4. 2009.

Many freshwater eel (family Anguillidae) populations are undergoing a worldwide collapse. Their decline during the last three decades has been catastrophic—once the most abundant fishes by biomass of many temperate and subtropical river systems, they have, in many regions, been extirpated or reduced to but one percent of their former levels.

A symposium was held in 2003 to discuss the problems and their potential solutions. The editors have herein assembled 67 international participants as authors. Their contributions consist of 27 chapters separated into five parts: Overviews (three papers); Science, Ecology, and Life History; (ten papers); Status and Dynamics (five papers); Movement, Migration, and Barriers (three papers); and Stock Assessment and Management (six papers). Also included are the transcribed panel discussions from the symposium, the traditional Haudenosaunee Closing and Blessing, the text of 17 poster presentations, and the Québec Declaration of Concern entitled Worldwide Decline of Eel Resources Necessitates Immediate Action.

Diadromous fishes are particularly susceptible to human perturbations. Anadromous fishes (such as salmon) face problems similar to those that threaten catadromous eels in that few survive to return to their spawning grounds, and both face the prospect of habitat destruction and barriers (such as dams), while excessive overfishing further reduces their numbers. The semelparous life-history strategy of freshwater eels and Pacific salmon was key to their extraordinary abundance prior to the late 20th century, and is now contributory to their demise.

The chapters range from adequate to good and some are excellent. With few exceptions, papers focus on the capture and management of temper-

ate eel stocks (five of the 15–16 anguillid species) without any mention of the role that these anguillids play in their respective ecosystems. It would be useful to explain the consequences of their removal from the food webs of inland waterways (as salmon biologists now do) in order to capture the attention of an unconcerned citizenry.

JOHN E. MCCOSKER, *Aquatic Biology, California Academy of Sciences, San Francisco, California*

FISH LARVAL PHYSIOLOGY.

Edited by R. N. Finn and B. G. Kapoor. Enfield (New Hampshire): Science Publishers. \$139.00. xv + 724 p.; ill.; species, common name, and subject indexes. ISBN: 978-1-57808-388-6. 2008.

A science book might be judged on three criteria: Is it timely, does it fill a gap? Is it scholarly, providing authoritative coverage of a subject? Is it interesting, offering readers a stimulating mental boost? This volume fulfills each criterion.

The book is timely. Diverse audiences should find it complementary rather than duplicative. Readers with a particular interest in the biology of early fish life stages may have publications that focus on larval fishes (E. Kamler. 1992. *Early Life History of Fish: An Energetics Approach*. London: Chapman and Hall; R. C. Chambers and E. A. Trippel. 1997. *Early Life History and Recruitment in Fish Populations*. London: Chapman and Hall; L. Solnica-Krezel. 2002. *Pattern Formation in Zebrafish*. New York: Springer), but none with broad coverage in physiology. Readers in fish physiology can consult one of the volumes in the series *Fish Physiology*, edited by W. S. Hoar, D. J. Randall, and others (1969–2006. New York: Academic Press), or a book that is more modest in scale, but very up to date (D. H. Evans and J. B. Claiborne. 2006. *The Physiology of Fishes*. Third Edition. Boca Raton (FL): Taylor & Francis). These volumes provide little or nothing for those with a particular interest in early life stages.

The chapters in the current book are scholarly and most are interesting. Many of the authors explained why the physiology of larvae is distinctive enough to merit separate consideration. Justifications included the diversity of larval forms, the importance of larvae in aquaculture or population biology, issues arising from ontogeny and organogenesis (e.g., the absence of gills and attendant challenges of ionoregulation), distinctive features of larval ecology, and the tradeoff between rapid growth and stable canalized development.

This volume is organized into seven parts: Ontogeny; Respiration and Homeostasis; Nutrition and Energy; Sensory Physiology; Movement; Control and Defense; and Functional Changes in Form. Some of the chapters I found especially interesting were those