**BOOK REVIEWS**

*Oceanic Anglerfishes: Extraordinary Diversity in the Deep Sea.* Theodore W. Pietsch. 2009. University of California Press. ISBN 978-0-520-255-5. 576 p. $85.00.—How does one begin to review a mega-monograph and a life’s work? Maybe it is best to let the author himself outline from his preface: . . . “My purpose in writing this book is to bring together a diverse and previously scattered array of facts and data surrounding an astonishing assemblage of deep-water oceanic fishes commonly referred to as the devilfishes or sea devils, and scientifically known as the deep-sea ceratioid anglerfishes” . . . [the book is] “designed to satisfy the needs and interests of students and professionals in ichthyology; but to a greater extent I hope that these fascinating creatures have been presented in such a way that this book will be enjoyed by all those who find excitement in the wonders of the natural world.”

Ted Pietsch more than achieved his purpose. The 576 8 1⁄2 × 11-inch pages with 69 color illustrations, 15 black and white photographs, 229 line illustrations (many done by the author himself), and 20 tables support, enliven, and accentuate his work. This book is not simply a taxonomic and systematic study of the suborder Ceratioidei (Lophiiformes), but it is a comprehensive biology of the deep-sea anglerfishes, which is the title of Part One of this monograph. Part Two is a classification of the deep-sea anglerfishes.

In the first chapter of Part One, Pietsch starts, as one might expect, from the perspective of someone interested in the history of ichthyology (Pietsch 1984, 1985), with an Introduction and Historical Perspective. He succinctly introduces the cast of bizarre fishes and their places among the Lophiiformes. It all started with the discovery of a strange fish by a Captain Holboll who sent the specimen to Reinhardt in 1833. Reinhardt described it as *Himantolophus groenlandicus* in 1837. Pietsch continues the history through the years along with reproductions of the original illustrations from Reinhardt, Lütken, Clarke, Collett, and Garman. He then continues through modern times, especially with Erik Bertelsen (aka Bertel). Bertelsen became the all-time ceratioid master beginning with a *Data Report* monograph on the group in 1951. Pietsch worked on and off with Bertel for 25 years and dedicates this book to him. He finishes this section with a review of the works of contemporary ichthyologists, including himself.

Other chapters in Part One also include “What Makes an Anglerfish,” which is a review of anatomical characters. Due to the disparate morphology of females, males, and larvae, a separate section has to be written for each, as well as a section on characters shared by the three groups. The chapter on “Biodiversity” is a vividly illustrated overview of the 11 families, 35 genera, and 160 species in the suborder (120 pages). “Evolutionary Relationships” gives a detailed overview of the 71 characters used to build a strict consensus tree and comments on recent molecular evidence. “Geographic Distribution” discusses seasonal and vertical distribution along with 33 world maps showing species distribution. “Bioluminescence and Luring” is a fascinating chapter that reviews what is known about the angling device, luminescence and its control, bacterial symbionts, and their biological significance. “Locomotion, Food, and Feeding” is also included in this chapter which describes locomotion in larvae, females, and males. It also includes a section on jet propulsion. Food and feeding covers jaw and head anatomy and related functional morphology culminating in a review of the very specialized *Thaumatichthys*, where the esca is a forked organ on the roof of the mouth. “Reproduction and Early Life History” covers discovery of attached small specimens by Seamundsson in 1922 and Regan’s discovery that the attached small specimens are dwarf males. A family-by-family account of the variable nature of the parasitic attachment, a discussion of obligatory and facultative parasitism, and its relationship to phylogeny are provided.

Part Two is called “A Classification of Deep-sea Anglerfishes,” and while the first few pages of this Part are a detailed listing of all the valid 160 species, the following 197 pages go into far more than a classification. The author states that this section “is presented for readers who require more detailed systematic information than presented in the main portion of the book”; and indeed it is! Never again will anyone need a vast reference library to work with these animals. Females, males, and larvae are treated separately at each level (family, genus, and species) in a concise, detailed outline of distinctive characters, distribution, and comments. A full set of identification keys from order to species for females and males is provided. A methods section is invaluable for basic and not so basic information on how to study these fishes. For example, Pietsch cautions that measurements of these soft specimens are not as useful as one might expect due to net damage and shrinkage. Bertelsen noted that large *Ceratias* shrank between 6.4 and 11.3% when measured at sea in 1971 and then re-measured in 1974. In addition, this Part contains tables allocating nominal names to currently recognized names. One table is based on females and one on males. This Part ends with a list of codes for 90 repositories holding the 6,310 females and 785 males referred to in the volume. There is also a short glossary followed by 689 citations in a reference section.

I have not read every line of this book, but what I have read is not only well written but also documented. The book design and layout are excellent. The illustrations are well chosen. The black and white figures are crisp and sharp, and the color is beautifully reproduced. The only thing that I found a minor problem is that wherever species are listed (in the biodiversity section of Part One or classifications and detailed descriptions in Part Two), they are not ordered alphabetically or by date of description. This requires finding the species in the index, especially with genera with a large number of species.

Roy Troll painted the jacket for the book in the somber blacks and grays of the deep-sea. In the background is an antique bathysphere with two figures peering from inside, maybe Beebe and Barton. However, I would prefer to think that is Bertel and Ted observing a sea of anglerfishes. Anyone interested in biodiversity, the deep-sea, bioluminescence, or function and anatomy would be interested in this