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# Oceanography

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## The Deep

### The Extraordinary Creatures of the Abyss

By Claire Nouvian, The University of Chicago Press, 2007, 256 pages, ISBN 9780226595665, Hardcover, \$45 US

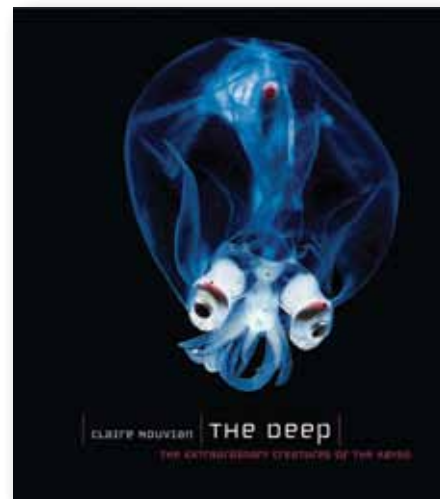
REVIEWED BY ELLEN KAPPEL

“Don’t give away that book!” so exclaimed my 12-year-old daughter after seeing *The Deep: The Extraordinary Creatures of the Abyss* sitting next to the desk at my home office. Amid books on ocean turbulence, numerical modeling, and fluid mechanics, *The Deep* stood out. Its large format (~ 26 x 31 cm) and stunning photographic collection of sea creatures made it an instant hit with my family. Since arriving, *The Deep* has been sitting on my coffee table, thumbed through by kids and adults alike. I sat down and read it cover to cover.

The book is not all photos. After a preface and introduction by Nouvian, 15 short and very readable essays by prominent scientists, along with other short blurbs written by the book’s compiler, provide the background materials needed to fully appreciate the photos. The essays are grouped into two main sections: Life in the Water Column, and Life at the Bottom. Life in the Water column essays include: “The Exploration of the Deep” by Cindy Lee Van Dover; “Midwater Life: Survival in a Harsh Environment” by George Matsumoto; “The Nocturnal Ballet of Sea Creatures” by Marsh Youngbluth; “Living Lights in the Sea” by Edith Widder; “Gelatinous, but Voracious Predators” by Laurence Madin; “From Myth to Reality: Monsters of the Deep” by Clyde Roper; and “Are

Deep-Sea Animals Living Fossils?” by Robert C. Vrijenhoek. Life at the Bottom essays include: “The Deep Seafloor: A Desert Devoid of Life?” by Craig M. Young; “The Polar Depths” by Michael Klages; “The Monterey Canyon” by Gary Greene; “Seamounts: Galápagos of the Deep” by J. Anthony Koslow; “Hydrothermal Vents” by Daniel Desbruyères; “Gas Promotes Mass” by Lisa Levin; “Whale’s End is the Beginning of Life on the Seafloor” by Craig R. Smith; and “Deep Trenches: The Ultimate Abyss” by Kantaro Fujioka and Dhugal Lindsay.

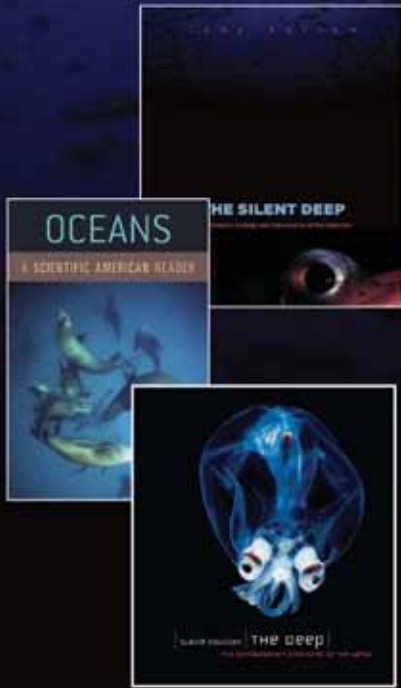
These essays provide general background material about the physical conditions encountered by ocean creatures, how scientists explore the deep-sea, and basic plate tectonics—material that might seem tiresome for professional oceanographers to read, but is perfect for lay persons as young as middle schoolers. There are lessons about specific species and habitats, but also more sobering, cautionary tales about how humans are destroying the fragile relationship between ocean and animal. Two related essays explained that there are more species of hard corals now known from the deepwater habitats (40—2000 m) than from tropical corals, and that over the past few decades, deepwater reefs that would cover an area many times that of Europe have been trawled and destroyed. An essay about whale fall described how “snot worms” consume whale bones and the oil they contain, yet are just one of many creatures that, in succession, eat a whale carcass over the course of



decades. In fact, some animals have only been found on whale carcasses, so-called “whale-fall specialists,” but these animals may face extinction because there are just fewer carcasses to be had. Countless similar “fun facts” fill *The Deep*.

Readers who don’t want to tackle the essays—this is a coffee table book after all—can just gawk at the photos and read the captions. The captions provide abundant information about the sea creatures, starting with their name (if known), size, and depth at which it lives. “The spectacle this siphonophore stages when feeding is like a grand fireworks display, as it deploys thousands of toxic, bioluminescent tentacles to lure prey into its fatal snare...” (p. 84–85). “Each year, many unknown gelatinous creatures are found by scientists, but in order for the taxonomic description to give rise to the creation of a new species, the same organism must have been captured several times. Often our observations are singular events, and this is the case for the jelly shown at the bottom...” (p. 75). “The life span of this [cold seep] tube-worm is among the longest in the animal kingdom: 250 years!” (p. 226–227). There’s plenty to be learned simply by

## from the abyss



### THE DEEP

The Extraordinary Creatures of the Abyss

Claire Nouvian

"*The Deep* is not only the most stunningly beautiful book about the sea ever produced, but also a work of scientific substance, articulated by some of the best, most experienced deep-sea scientists of our time."

—Sylvia Earle, National Geographic Society

Cloth \$45.00

For more information and color photos from *The Deep*, go to [www.thedeepbook.org](http://www.thedeepbook.org).

### THE SILENT DEEP

The Discovery, Ecology, and Conservation of the Deep Sea

Tony Koslow

"I know of no other work that provides such a comprehensive review of the history of deep-sea exploration."—Richard Lutz,

Rutgers University

Cloth \$35.00

### OCEANS

A Scientific American Reader

*Oceans* collects more than thirty articles from the past decade of *Scientific American*, including recent pieces written in the wake of the 2004 tsunami.

Paper \$22.50

The University of Chicago Press  
[www.press.uchicago.edu](http://www.press.uchicago.edu)



reading these narrative captions.

*The Deep* has few significant flaws. There's some repetition of information among the essays, but not enough to be annoying. As few people will read this book in one sitting, the repetition may go unnoticed. A handful of mistakes appear, but as an editor I am fully aware that as many times as you've read and edited a document and gone over the proofs, no doubt you'll find a mistake within the first three minutes of reviewing the final, printed copy.

As an editor, I also couldn't help but wonder, "how did the author get so

many gorgeous high-resolution photographs when I seem to struggle for one great cover photo every few months?" In the end, the essays and captions offer an enjoyable education about an environment that only a relatively few lucky people have seen close up. This book is well worth the \$45 investment. People of all ages and backgrounds will enjoy picking it up time and time again. I know that I will.

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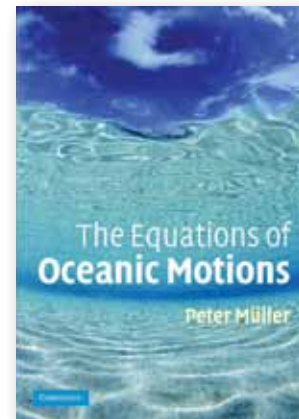
ELLEN KAPPEL ([ekappel@geo-prose.com](mailto:ekappel@geo-prose.com))  
is President, Geosciences Professional Services, Inc. and Editor, *Oceanography*.

## The Equations of Oceanic Motions

By Peter Müller, Cambridge University Press, 2006, 291 pages, ISBN 0521855136, Hardcover \$80 US

REVIEWED BY ROLAND DE SZOEKE

*The Equations of Oceanic Motions* has two primarily pedagogical aims: to establish rigorously the equations of oceanic motions, including the equilibrium thermodynamics of seawater and the molecular transport processes, and to examine systematically the common approximations that are made. In these aims, it succeeds admirably (and very usefully). The book will surely become a standard reference for the ocean dynamist who wants to get the equations and usual approximations right. For me, the book is already worth the price just for its thorough treatment of the Boussinesq



approximation. We all learn the mantra "density in the momentum equation can be replaced everywhere by a constant reference value  $\rho_0$ , except when multiplied by  $g_0$  [gravity]." But then, how exactly does one square the conservation of volume (not mass) with the transport equations for heat and salt and the equation of state? Here it's done right, without cutting corners or (to mix metaphors) sweeping dust under the rug. Who are the book's intended audiences? The earnest dynamicist has already been men-