



***Life in the Dark: Illuminating Biodiversity in the Shadowy Haunts of Planet Earth*** (2016) by Danté Fenolio. Johns Hopkins University Press, Baltimore. Hardcover, 317 pages, 9" x 11" format, ISBN 978-1-4214-1863-6. Available for \$39.95. Reviewed by Danny A. Brass.

In this intriguing text, Danté Fenolio takes readers on a remarkable tour of some of the most unique and extreme environments on Earth. From the abyssal depths of the deep ocean to the subterranean worlds of caves, this impressive collection of photographic essays provides a celebration of biodiversity in realms that exist in perpetual darkness.

Largely hidden from the eyes of casual observers, lightless environments hosting unique ecosystems are as diverse as the animal life they support. They include the vast expanse of the ocean floor, tiny cracks and fissures in rocks or soil, and the labyrinthine world of caves. In some environments, such as large bodies of water or transitional zones near cave entrances, light availability exists along a spectrum. Once beyond a certain point, however, the environment becomes one of eternal darkness, in which only highly specialized organisms can survive.

The lack of sunlight has profound implications for survival. In its absence, plant photosynthesis cannot occur. As a result, these tend to be energy-poor environments; cycling of nutrients is dependent either on the influx of material from the world outside the dark zone or on chemical-based sources (e.g., hydrothermal vents in the deep sea). A host of other unique environmental challenges exist in such locales, and nyctophilic (dark-loving) animals have adapted accordingly.

*Life in the Dark* is an interesting and well-written text that affords readers a broad overview of life in these extreme environments.<sup>1</sup> Following an introductory chapter, the book is divided into six sections: The Deep Sea, Dark Freshwater Habitats, Fossorial Wildlife, Subterranean Life, The Parasites Within, and Conservation. Each section features discussion of the unique aspects of that particular environment and a selection of organisms (global in scope) adapted to live there. The latter includes some brief notes (ranging from a few sentences to a long paragraph) on their natural history and one or more high-quality and visually stunning full-color photographs. The text is free of technical jargon or hard-to-grasp concepts; it is primarily aimed at general readers, with little or no background in the biological sciences.

This book will be of interest to readers curious about the range of adaptations (including both form and function) to different lightless environments. It will certainly serve to increase one's appreciation for the variety of organisms often encountered in caves.

In the final pages of the text, Fenolio makes an impassioned plea for renewed efforts on behalf of the worldwide conservation of biodiversity. In doing so, he appeals to aspects of responsible stewardship as well as practical interests.

<sup>1</sup>An assortment of titles discussing the natural history of troglodytes are available. Other books that selectively discuss animals adapted to living in dark environments include *In the Dark Cave* by Richard Watson and Dean Norman (2005, Star Bright Books); *The Deep: The Extraordinary Creatures of the Abyss* by Claire Nouvian (2007, The University of Chicago Press); *The Biology of Caves and other Subterranean Habitats* by David C. Culver and Tanja Pipan (2009, Oxford University Press); *Cave Life of Oklahoma and Arkansas: Exploration and Conservation of Subterranean Biodiversity* by G. O. Graening, Danté Fenolio, and Michael E. Slay (2012, University of Oklahoma Press); and *Shallow Subterranean Habitats: Ecology, Evolution, and Conservation* by David C. Culver and Tanja Pipan (2014, Oxford University Press). Of course, a vast number of books on bats, an always-popular subject, are also in print.