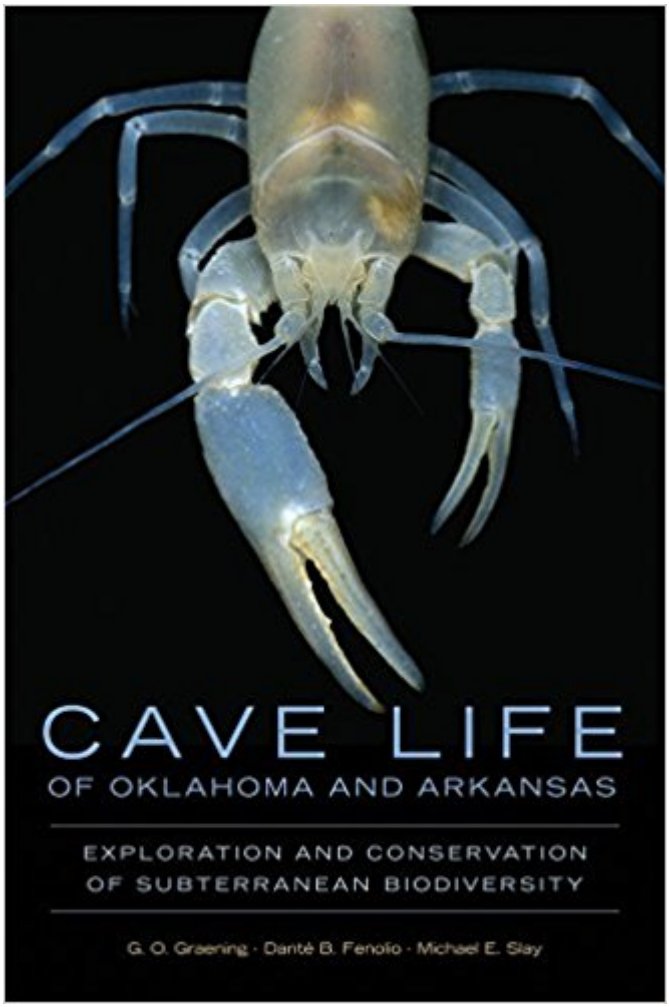
Cave Life Of Oklahoma And Arkansas: Exploration And Conservation Of Subterranean Biodiversity (Animal Natural History Series)

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Synopsis

Speleobiology, the study of cave life, is a relatively new science. The diversity of species that live in caves, springs, and aquifers is just beginning to be documented, and much of the underground world has yet to be explored. The surveys of cave life reported in this book represent an important step forward in understanding the biodiversity of caves in Oklahoma and Arkansas. The project whose research led to the publication of Cave Life of Oklahoma and Arkansas began in the 1970s as a study of Ozark cavefish and expanded to encompass two states and involve a number of research topics and collaborators. The authors and their team donned snorkeling gear, cave suits, and climbing harnesses and descended into caves in Oklahoma and Arkansas to study, inventory, and photograph this hidden world. The result is a comprehensive checklist of the regionâ ™s cave fauna, complete with descriptions of these rare animalsâ ™ distribution and ecological niches. The cast of characters ranges from familiar and charismatic species, such as cave crayfish and gray bats, to rare and bizarre fauna, such as blind salamanders and cave dung beetles. More than 175 full-color illustrations include stunning, never-before-seen photographs (from the cameras of Dave Bunnel, Tim Ernst, and DantÃ© B. Fenolio, among others)of cave animals—even some newly discovered species. The authors also address conservation of subterranean biodiversity, discussing not only threats to cave life such as invasive species, resource extraction, and habitat loss, but also current methods of preservation and protection, including legislation, land acquisition, people management, and cave gates. The bookâ ™s appendices provide a comprehensive cave bibliography and checklists of subterranean animals for each cave. Speleology is critical to science. Subterranean organisms are key indicators of groundwater quality, and their adaptations can lead to advances in medicine. Cave Life of Oklahoma and Arkansas advances our knowledge of, and can thus help us save, subterranean ecosystems—among the worldâ ™s last frontiers.

Book Information

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Customer Reviews

Conservation biologist G. O. Graening teaches at California State University, Sacramento, and is founder of Natural Investigations Company, an environmental consulting firm.Dante B. Fenolio is a wildlife photographer and directs the conservation program at the San Antonio Zoo.Michael E. Slay is Ozark Karst program director with the Ozark Highlands office of The Nature Conservancy.

Cave Life of Oklahoma and Arkansas: Exploration and Conservation of Subterranean Biodiversity. G. O. Graening, DantÃ© B. Fenolio, and Michael E. Slay. University of Oklahoma Press (Animal Natural History Series), Norman; 2011. ISBN 978-0-8061-4223-4. 6 by 9 inches, 226 pages, hardbound. $59.95.This small but expensive book is sort of a hybrid between an introduction to cave biology and its conservation in the area and a formal contract report for the Subterranean Biodiversity Project. A casual reader can get a pretty good notion about the principles of cave biology from parts of the text and the color photos, but he'll have to put up with an awful lot of pedantry and pseudo-science along the way, because the book is very heavily biased toward the report aspect. The authors have compiled an extensive record of animals seen in caves in Oklahoma and Arkansas, with 1355 taxa listed, 690 to the species level, in Appendix A. Much of the data resulted from generally brief visits to a large number of caves, where eyeball searches were used. But a considerable amount was obtained from extensive surveys of literature, from scientific papers to caving-club magazines. The authors recognize that this has resulted in a rather unsystematic database of a pretty random collection of observations, but that doesn't discourage them from applying lots of statistics. The actual scientific value of the book is the list of fauna and the caves in which they were observed, which in principle makes it possible to at least create distribution maps. However, that won't be easy in practice, because they've elected to put the distribution data in Appendix B, which is the list of caves and the serial numbers of the taxa in Appendix A that were seen in each of them. That means that to find out where a given species has been found one must search for its number throughout that fifteen-page Appendix B. It would have been a whole lot better to number the caves, not the taxa, and list the cave numbers for each taxon

in Appendix A, with just the names (or, often, just cave-survey numbers) of the caves in numerical order in Appendix B.The authors seem to think they were being paid by the number of literature citations they could cram into the text, and so the innocent reader is subjected, for example, to numerous citations for things that are common knowledge about biospeleology and can be found in any introduction to the subject. It's a rare paragraph that doesn't have several intrusive citations. Some pedantry, such as a half-page list of the collecting permits the project had, is easy to skip over, but then there are things like the information that they used "Access 2007 (Microsoft Corp., Redmond, Washington)." Who cares what database they used? Who else makes Access? How many Microsofts are there?The pseudo-science comes in when the authors apply statistical techniques to their data, despite its acknowledged limitation and biases. For example, for each site they recorded qualitative data such as how extensively it is visited, lightly, moderately, or heavily. Then they applied a statistical test to see whether this "affects" species richness. In this case, they find that the most heavily visited caves have the greatest biological diversity, to their surprise, but this is just because cavers prefer to visit longer caves. Correlation is not causation. They fit curves to scatter plots of things like site richness versus site length, even though there is no theoretical reason to expect the data to fit that particular form of equation. In one case, they fit both linear and exponential functions to the same data, displaying the best-fit coefficients to four allegedly significant digits with no confidence intervals. Both fits give $p < .0001$. What p is that? I doubt the authors know; it just fell out of the software. The mathematical qualifications of the authors may be judged by the statement that the number of taxa found at a site tends to increase exponentially with the number of specimens collected.In truth, there is a good bit of useful information buried in this book, and I suppose even a lay reader who is not as easily annoyed as I am could learn some things from it. But I shudder to think of the graduate students who will accept this book as a good model for their theses and dissertations. It is an excellent example of what happens when somebody carelessly leaves statistics software lying around where anybody can get at it.--Bill Mixon

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