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- Evolution of caves in response to base-level lowering. Worthington, S. R. H., 3–12
- Possible fossil cenotes or blue holes in the Carboniferous Limestone of the Derbyshire Peak District, UK. Ford, T. D., 13–18.
- Geological and morphological observations in the eastern part of the Gran Caverna de Santo Tomás, Cuba (*results of the “Santo Tomás 2003” speleological expedition*). Parise, M., Valdez Suarez, M. V., Potenza, R., Del Vecchio, U., Marangella, A., Maurano, F., and Torrez Mirabal, L. D., 19–24.
- Investigating the nature and origins of Gaping Gill Main Chamber, North Yorkshire, UK, using ground penetrating radar and lidar. Murphy, P. J., Parr, A., Strange, K., Hunter, G., Allshorn, S., Halliwell, R. A., Helm, J., and Westerman, A. R., 25–38.

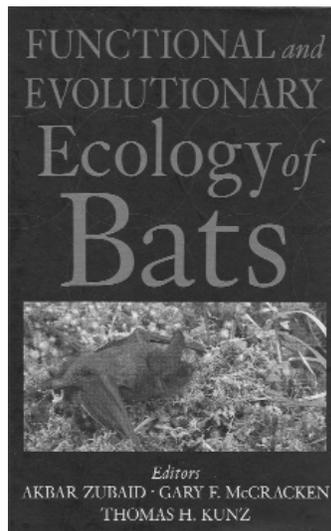
REPORTS

- Hydrology of the Oronte-Sin rivers karst, northwestern Syria. Mahford, R. F., 39–42.

FORUM

- Abstracts of the 16th BCRA Cave Science Symposium, School of Geography, Earth and Environmental Sciences, The University of Birmingham, March 5, 2005, 43–48.

BOOK REVIEWS



Functional and Evolutionary Ecology of Bats

Akbar Zubaid, Gary F. McCracken, and Thomas H. Kunz (eds.), 2006, Oxford University Press, New York, 342 p. ISBN 9-780195-154726, hardcover, 6¼ 9½ inches, \$74.50.

Based primarily on papers presented at the 12th International Bat Research Conference (August 2001, Universiti Kebangsaan Malaysia, Kuala Lumpur), *Functional and Evolutionary Ecology of Bats* highlights many of the innovative methodologies in current use for the study of these elusive and secretive mammals. With 39 invited contributors, this text presents a wealth of detailed information about the interaction of bats and their environment. Chapters are well written and nicely illustrated with clear and relevant graphs, tables, or figures. Each chapter is well referenced.

The book is divided into three sections. Section I focuses on aspects of physiological ecology, emphasizing energetics and metabolism, thermoregulation, and hibernation. Section II presents various aspects of functional anatomy, notably tooth structure, wing form and function, aspects of quadrupedal locomotion, and evolution of skull morphology in relation to feeding behavior in fruit bats. Section III is a consideration of roosting ecology and population biology, including discussions of population genetics, life-history traits, social behavior, mating systems, and roosting ecology.

Throughout the book, species-specific aspects of anatomy, physiology, energetics, and behavior are considered in relation to the animal’s environment and lifestyle. Adaptations are discussed with respect to potential benefits and costs. The usefulness of various models in the study of energy metabolism and temperature regulation is presented and put into perspective to habitat selection. The importance of micro- and macrohabitats—both cave and non-cave—is stressed.

In considering various aspects of cave environments in relation to roost suitability and energy metabolism of bats, this volume should have broad appeal to anyone interested in the intricacies of cave biology. It will be of particular interest to environmental physiologists, ecologists, behaviorists, mammalogists, evolutionary biologists, and lay readers with a back-

ground in biology and an interest in structural and functional design (i.e., biological form and function). This is an invaluable reference work for bat biologists that calls attention to some of the modern technological breakthroughs being made in the study of bats.

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International Journal of Speleology: 40 Years of Speleological Science

CD ROM reprint compiled by Jo De Waele, 2005. €8 in Europe, €12 elsewhere. Information at www.ijs.speleo.it.

The International Journal of Speleology is the official journal of the International Union of Speleology. It is published by the Società Speleologica Italiana. The full contents of the first forty years of the journal, 1964–2004, were published on a CD for the Fourteenth International Congress of Speleology in Greece in August 2005. The CD comprises 33 volumes. While there have always nominally been four numbers per volume, only volume 6 was actually published in four issues, and there are 59 issues in all. The CD also contains a *Manual of Karst Water Analysis*, by Wiesława Ewa Krawczyk, undated but apparently from the early nineties. During its early years, the journal was predominant devoted to biospeleology, but more recently all aspects of speleology have been equally represented. Notable single-topic issues include “Symposium on Speciation and Adaptation in Cave Life,” published in two parts in volume 16 number 1/2 and 17 1/4 (1987–88), “Gypsum Karst of the World,” 25 3/4 (1996), and “Proceedings of the Eighth International Symposium on Vulcanospeleology,” 27 1/4 (1998).

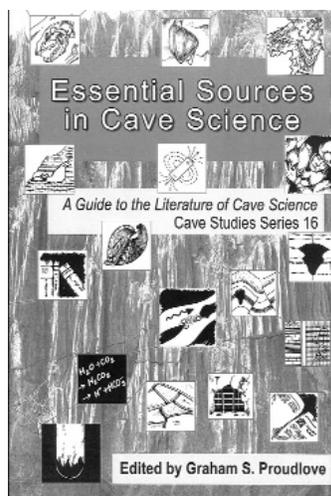
The CD is readable on both Windows and Macintosh computers and requires a web browser and Adobe Acrobat Reader. The Flash player is also required, but it isn't clear how important it is for anything other than the unnecessary multi-media auto-run file that executes when the CD is mounted. This could be bypassed by directly opening the file *index.htm*, which contains fields allowing searches by issue, author, or word in the titles, abstracts, or keyword lists of all the papers. The searches, however, require special database engines included on the CD, and whether these will work on whatever computer you have five years from now is questionable. Fortunately, the database of information, including pointers to the articles in the 486 MB of PDF files in directory *pdf/*, is present as an ordinary text file *db/articles.xml* or *data/articles_mac.xml*, so you

could do simple searches with the Find command on any word processor. Where necessary, all of the titles and abstracts have been translated into English for the database, which facilitates the search but makes it impossible to tell what language the article will turn out to be in. The PDF files of the articles will probably remain readable as long as you have a computer that can read data CDs at all, maybe another twenty years.

Except for the final two volumes, for which the original computer files were available, the PDF files for all articles consist of grayscale facsimile scans. Few pages of the journal have actually included grayscale illustrations, and space limitations and the use throughout of grayscale images have required that the scans be only 100 dots per inch, which is marginal for the text, especially in the small text used for footnotes and captions, and is inadequate for some of the illustrations. I hope that the original scans of thousands of pages were made and archived at a higher resolution, so that it won't eventually have to be done all over again. I was able to produce smaller files by scanning some old papers myself at 200 dpi black-and-white bitmap for the text and 400 dpi, either bitmap or grayscale as needed, only for the illustrations.

All of the content of the CD and the search capability are also free at www.ijs.speleo.it, and papers from new issues are being added as they are published. However, the CD is inexpensive and can be ordered on-line with a credit card at the same web site, so I recommend buying a copy. Any one of the single-topic issues would be worth the price.

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Essential Sources in Cave Science: A Guide to the Literature of Cave Science

Graham S. Proudlove (ed.), 2005. British Cave Research Association, Cave Studies Series 16, 56 p. ISBN 0-900-265-31-0, softbound, 8.1 11.5 inches, £4.50, plus postage. Orders and inquiries: Ernie Shield, Village Farm, Great Thirkleby, Thirsk, Great Britain, YO7 2AT. See publications-sales@bcra.org.uk.

The British Cave Research Association (BCRA) is the scientific arm of the British Caving Association. *Essential Sources in Cave Science* is an addition to their Cave Studies Series, which consists of introductory publications aimed at two targets: the sport caver who has become interested in sci-

entific speleology, and karst specialists who need to know the major references to work outside their own field. This booklet provides a welcome service to both groups.

An introductory overview describes the scope of cave science and explains the referencing system. In this book the subject is divided into the following sections, each is contributed by a well-known specialist in the field: Geology (Dave Lowe), Geomorphology (Tony Waltham), Hydrology and hydrogeology (Chris Groves), Chemistry (Simon Bottrell), Geophysics (Phil Murphy and Tony Waltham), Radon physics (Clark Friend), Communication in caves (David Gibson), Radiolocation (David Gibson), Other aspects of physical speleology (Graham Proudlove), Speleogenesis (Dave Lowe), Minerals and speleothems (Charlie Self), Paleo-environments (Andy Baker), Biology (Graham Proudlove), Bats (John Altringham), Archaeology and paleontology (Andrew Chamberlain), Conservation and management (Graham Price), and Speleology (Ric Halliwell).

Each category has an introduction explaining the nature of the topic and why it is important, as well as an indication of progress in the field and where the field is headed. The main body of each section is a list of published references organized by author. A very useful feature is a brief description of each publication that indicates its strong points. The book also includes a list of periodicals published by speleological societies, as well as references to their Web sites. A concluding section by Dave Checkley describes the BCRA Cave Research Initiative, which invites members to participate in a variety of cave-science projects.

The reference lists are international in scope and appear to include the most significant publications, although, in keeping with the likely readership, with a strong tilt toward the British literature. Readers with no access to a large university library may have difficulty finding some of the publications. However, each section also includes a highly relevant list of Web-based resources. Who would want to miss browsing the Web site of the Explosives User Group?

The most direct competition is the karst bibliography edited by Northup *et al.* (1998). Although it is much more complete than the BCRA booklet, it obviously does not include publications from the last decade. Other sources of information on karst literature include the recent encyclopedias edited by Gunn (2004) and by Culver and White (2005). All three books are massive and scholarly. In contrast, the slender BCRA publication is less expensive, highlights more clearly the most significant publications, and is probably more inviting to the average caver.

Although this book is aimed at general cavers and karst scientists, it would also be a useful guide for professionals who are unfamiliar with karst but who need to know important sources in karst science to apply to their own fields. In addition it serves as a status report on the progress that has been made in cave science.

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