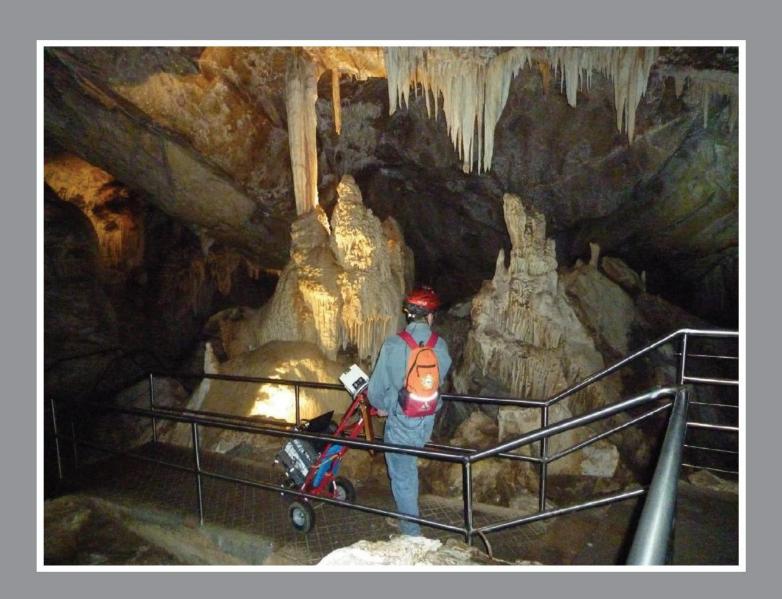
JOURNAL OF CAVE AND KARST STUDIES

December 2014 Volume 76, Number 3 ISSN 1090-6924 A Publication of the National Speleological Society





DEDICATED TO THE ADVANCEMENT OF SCIENCE, EDUCATION, AND EXPLORATION

Journal of Cave and Karst Studies

Volume 76 Number 3 December 2014

Article Integrated Geophysical and Geological Investigations of Karst Structures in Komberek, Slovakia René Putiška, David Kušnirák, Ivan Dostál, Alexander Lačný, Andrej Mojzeš, Jozef Hók, Roman, Pašteka, Martin Krajňák, and Marián Bošanský	155
Article Possible Cavern-Forming Activity at Millennial Time Scales and Its Impact on Variations in Submarine Cave Environments and Habitat Availability, Okinawa, Japan Akihisa Kitamura, Chikako Tamaki, Yosuke Miyairi, Yusuke Yokoyama, and Hideki Mori	164
Article Modern Pollen Record on Bat Guano Deposit from Siju Cave and Its Implication to Palaeoecological Study in South Garo Hills of Meghalaya, India Sadhan K. Basumatary and Samir K. Bera	173
Article Ground Penetrating Radar Investigation of Limestone Karst at the Odstrzelona Cave in Kowala, Świętokrzyskie Mountains, Poland Mikolaj Łyskowski, Ewelina Mazurek, and Jerzy Ziętek	184
Article Three-Dimensional Mobile Mapping of Caves Robert Zlot and Michael Bosse	191
Article Improved Karst Sinkhole Mapping in Kentucky Using LiDAR Techniques: A Pilot Study in Floyds Fork Watershed Junfeng Zhu, Timothy P. Taylor, James C. Currens, and Matthew M. Crawford	207
Article Sinkholes and a Disappearing Lake: Victory Lake Case Study Tamie J. Jovanelly	217
Book Review Coastal Karst Landforms	230

Journal of Cave and Karst Studies Distribution Changes

During the November 9, 2013, Board of Governors meeting, the BOG voted to change the *Journal* to electronic distribution for all levels of membership beginning with the April 2014 issue. Upon publication, electronic files (as PDFs) for each issue will be available for immediate viewing and download through the Member Portal on www.caves.org. For those individuals that wish to continue to receive the *Journal* in a printed format, it will be available by subscription for an additional fee. Online subscription and payment options will be made available through the website in the near future. Until then, you can arrange to receive a print subscription of the *Journal* by contacting the NSS office at (256) 852-1300.



Published By The National Speleological Society

Editor-in-Chief Malcolm S. Field

National Center of Environmental Assessment (8623P) Office of Research and Development U.S. Environmental Protection Agency 1200 Pennsylvania Avenue NW Washington, DC 20460-0001 703-347-8601 Voice 703-347-8692 Fax field.malcolm@epa.gov

Production Editor

Scott A. Engel CH2M HILL

2095 Lakeside Centre Way, Suite 200 Knoxville, TN 37922 865-560-2954 scott.engel@ch2m.com

> **Journal Copy Editor** Bill Mixon

JOURNAL ADVISORY BOARD

Penelope Boston **Gareth Davies** Luis Espinasa **Derek Ford** Louise Hose Leslie Melim Wil Orndorf Bill Shear **Dorothy Vesper**

BOARD OF EDITORS

Anthropology

George Crothers

University of Kentucky 211 Lafferty Hall george.crothers@uky.edu

Conservation-Life Sciences

Julian J. Lewis & Salisa L. Lewis

Lewis & Associates, LLC. lewisbioconsult@aol.com

Earth Sciences

Benjamin Schwartz

Department of Biology Texas State University bs37@txstate.edu

Robert Brinkman

Department of Geology, Environment, and Sustainability Hofstra University robert.brinkmann@hofstra.edu

Mario Parise

National Research Council, Italy m.parise@ba.irpi.cnr.it

Exploration

Paul Burger

Cave Resources Office National Park Service • Carlsbad, NM paul_burger@nps.gov

Microbiology Kathleen H. Lavoie

Department of Biology State University of New York, Plattsburgh, lavoiekh@plattsburgh.edu

Paleontology Greg McDonald

Park Museum Management Program National Park Service, Fort Collins, CO greg_mcdonald@nps.gov

Social Sciences

Joseph C. Douglas

History Department Volunteer State Community College joe.douglas@volstate.edu

Book Reviews

Arthur N. Palmer & Margaret V. Palmer

Department of Earth Sciences State University of New York, Oneonta palmeran@oneonta.edu

The Journal of Cave and Karst Studies (ISSN 1090-6924, CPM Number #40065056) is a multi-disciplinary, refereed journal published three times a year by the National Speleological Society, 6001 Pulaski Pike NW, Huntsville, AL 35810-4431 USA; Phone (256) 852-1300; Fax (256) 851-9241, email: nss@caves.org; World Wide Web: http://www.caves.org/pub/journal/. Check the Journal website for subscripion rates. Back issues are available from the NSS office.

POSTMASTER: send address changes to the Journal of Cave and Karst Studies, 6001 Pulaski Pike NW, Huntsville, AL 35810-4431 USA.

The Journal of Cave and Karst Studies is covered by the following ISI Thomson Services Science Citation Index Expanded, ISI Alerting Services, and Current Contents/Physical, Chemical, and Earth Sciences.

Copyright © 2014 by the National Speleological Society, Inc.

Front cover: LiDAR mapping in Lucas Cave, Jenolan. See Zlot and Bosse, in this issue.



GUIDE TO AUTHORS

The Journal of Cave and Karst Studies is a multidisciplinary journal devoted to cave and karst research. The Journal is seeking original, unpublished manuscripts concerning the scientific study of caves or other karst features. Authors do not need to be members of the National Speleological Society, but preference is given to manuscripts of importance to North American speleology.

LANGUAGES: The Journal of Cave and Karst Studies uses American-style English as its standard language and spelling style, with the exception of allowing a second abstract in another language when room allows. In the case of proper names, the Journal tries to accommodate other spellings and punctuation styles. In cases where the Editor-in-Chief finds it appropriate to use non-English words outside of proper names (generally where no equivalent English word exists), the Journal italicizes them. However, the common abbreviations i.e., e.g., et al., and etc. should appear in roman text. Authors are encouraged to write for our combined professional and amateur readerships.

CONTENT: Each paper will contain a title with the authors' names and addresses, an abstract, and the text of the paper, including a summary or conclusions section. Acknowledgments and references follow the text.

ABSTRACTS: An abstract stating the essential points and results must accompany all articles. An abstract is a summary, not a promise of what topics are covered in the paper.

STYLE: The *Journal* consults The Chicago Manual of Style on most general style issues.

REFERENCES: In the text, references to previously published work should be followed by the relevant author's name and date (and page number, when appropriate) in parentheses. All cited references are alphabetical at the end of the manuscript with senior author's last name first, followed by date of publication, title, publisher, volume, and page numbers. Geological Society of America format should be used (see http://www.geosociety.org/pubs/geoguid5. htm). Please do not abbreviate periodical titles. Web references are acceptable when deemed appropriate. The references should follow the style of: Author (or publisher), year, Webpage title: Publisher (if a specific author is available), full URL (e.g., http://www. usgs.gov/citguide.html) and date when the web site was accessed in brackets; for example [accessed July 16, 2002]. If there are specific authors given, use their name and list the responsible organization as publisher. Because of the ephemeral nature of websites, please provide the specific date. Citations within the text should read: (Author, Year).

SUBMISSION: Effective February 2011, all manuscripts are to be submitted via Peertrack, a web-based system for online submission. The web address is http://www.edmgr.com/jcks. Instructions are provided at that address. At your first visit, you will be prompted to establish a login and password, after which you will enter information about your manuscript (e.g., authors and addresses, manuscript title, abstract, etc.). You will then enter your manuscript, tables, and figure files separately or all together as part of the manuscript. Manuscript files can be uploaded as DOC, WPD, RTF, TXT, or LaTeX. A DOC template with additional manuscript

specifications may be downloaded. (Note: LaTeX files should not use any unusual style files; a LaTeX template and BiBTeX file for the Journal may be downloaded or obtained from the Editor-in-Chief.) Table files can be uploaded as DOC, WPD, RTF, TXT, or LaTeX files, and figure files can be uploaded as TIFF, EPS, AI, or CDR files. Alternatively, authors may submit manuscripts as PDF or HTML files, but if the manuscript is accepted for publication, the manuscript will need to be submitted as one of the accepted file types listed above. Manuscripts must be typed, double spaced, and single-sided. Manuscripts should be no longer than 6,000 words plus tables and figures, but exceptions are permitted on a case-bycase basis. Authors of accepted papers exceeding this limit may have to pay a current page charge for the extra pages unless decided otherwise by the Editor-in-Chief. Extensive supporting data will be placed on the Journal's website with a paper copy placed in the NSS archives and library. The data that are used within a paper must be made available. Authors may be required to provide supporting data in a fundamental format, such as ASCII for text data or comma-delimited ASCII for tabular data.

DISCUSSIONS: Critical discussions of papers previously published in the *Journal* are welcome. Authors will be given an opportunity to reply. Discussions and replies must be limited to a maximum of 1000 words and discussions will be subject to review before publication. Discussions must be within 6 months after the original article appears.

MEASUREMENTS: All measurements will be in Systeme Internationale (metric) except when quoting historical references. Other units will be allowed where necessary if placed in parentheses and following the SI units.

FIGURES: Figures and lettering must be neat and legible. Figure captions should be on a separate sheet of paper and not within the figure. Figures should be numbered in sequence and referred to in the text by inserting (Fig. x). Most figures will be reduced, hence the lettering should be large. Photographs must be sharp and high contrast. Color will generally only be printed at author's expense.

TABLES: See http://www.caves.org/pub/journal/PDF/Tables.pdf to get guidelines for table layout.

COPYRIGHT AND AUTHOR'S RESPONSIBILITIES: It is the author's responsibility to clear any copyright or acknowledgement matters concerning text, tables, or figures used. Authors should also ensure adequate attention to sensitive or legal issues such as land owner and land manager concerns or policies.

PROCESS: All submitted manuscripts are sent out to at least two experts in the field. Reviewed manuscripts are then returned to the author for consideration of the referees' remarks and revision, where appropriate. Revised manuscripts are returned to the appropriate Associate Editor who then recommends acceptance or rejection. The Editor-in-Chief makes final decisions regarding publication. Upon acceptance, the senior author will be sent one set of PDF proofs for review. Examine the current issue for more information about the format used.

ELECTRONIC FILES: The *Journal* is printed at high resolution. Illustrations must be a minimum of 300 dpi for acceptance.