

# THE CONDUIT

*Building understanding of karst  
through interdisciplinary action*

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## THE CONDUIT

Building understanding of karst through interdisciplinary action



The Conduit is an e-newsletter of the Karst Waters Institute, a 501(c)(3) nonprofit organization.

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Send address changes to [vp\\_communications@karstwaters.org](mailto:vp_communications@karstwaters.org). Please include "add to KWI mailing list" in the subject line when e-mailing. Questions about submitting material can also be sent to this address. Thanks!

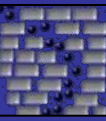
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	<p><b>Dr. Horton H. Hobbs, III</b> Dept. of Biology Wittenberg University Springfield, Ohio</p>	<p><b>Dr. William B. White</b> Penn State University University Park, Pennsylvania</p>
	<p><b>Dr. Jonathan B. Martin</b> Dept. of Geology University of Florida Gainesville, Florida</p>	

Front cover: Peering into a pool in Cruze Cave, Knox Co., Tennessee. This cave was recently explored for biological diversity, and new species of crayfish ectosymbionts and other animals were found. This cave will be part of a new study to understand cave biodiversity in East Tennessee and the Valley and Ridge of TAG. Photo by Annette Summers Engel.



### Welcome to *The Conduit*

This e-newsletter is distributed twice a year to over 700 karst enthusiasts globally.

This issue includes many announcements, including introduction of the Karst Award recipient, Dr. Robert "Bob" Loucks, and details about the awards dinner that will be held March 1, 2014, in Houston, Texas. Several conferences are coming up in 2014, with abstract and manuscript submission deadlines fast-approaching.

President Janet Herman announces the addition of three new Associates of KWI, and there is a research spotlight on East Tennessee cave biodiversity based on a new grant received by myself and some colleagues from the Cave Conservancy Foundation. The project will explore some Tennessee caves in the Valley and Ridge to evaluate biodiversity, including microbiology and geochemistry. This is an exciting venture for karst science. Anyone interested in helping with the field work, describing new taxa that will be uncovered, or that have other interests in the research and data should contact us.

I hope everyone has a prosperous and healthy New Year!

-- Annette Summers Engel

### President's Corner

As I continue this exploration of what it means to be President of KWI, I increasingly appreciate the enthusiastic service of our volunteer past and present Board members and officers who are devoted to the mission of KWI. KWI seeks to advance scientific knowledge of and increase awareness and appreciation for karst water systems for the scientific and general audience. To achieve these ambitious goals, I have appointed three new Associates of KWI who are active in different areas of our mission. On behalf of KWI, welcome Sarah Carmichael, Bill Balfour, and Maria Perez to our karst community. Please read about these three karst scientists who contribute in remarkably diverse arenas in a short article elsewhere in this newsletter. Respect for our professional contributions is rooted in a community of trust among scientists. Toward that end, I added KWI to the list of signatories to the Consensus Statement on Ethics in the Geosciences spearheaded by the American Geosciences Institute. Although the statement is focused on the geosciences, I believe that this code of ethics applies to all aspects of karst science as we explore the biological, hydrological, archaeological, and cultural aspects of karst. The statement follows:

*We, the undersigned representatives of national and international geoscientific societies and professional associations, assert the fundamental importance of protecting scientific integrity and of upholding ethical standards and behavior in the geosciences.*

*Geoscientists have considerable understanding of the processes that have formed and continue to shape our planet, and of the history of change to Earth and life through deep geological time. This understanding of our physical and biological environment is scientifically valid and has a role to play in the formation of policy, our use of the planet and its resources, and in developing our conception of the common good in relation to the Earth.*

*As concerned geoscientists, we wish to ensure that members of our societies, associations, and organizations behave at all times in an ethical manner.*

*We agree to work together to:*

- *Promote informed understanding of the role of ethics in the geosciences*
- *Raise standards of professional practice among our memberships*
- *Develop and promote a common Code of Ethics for geoscientists*

I am proud to say that KWI adheres to the highest standards of professional practice as it advances the knowledge of and communication about karst systems to peer scientists and to the general public.

Best wishes for the new year,

*Janet O Herman*



### KWI Happenings

#### Institute and Board Members meet in Denver, Colorado

The Fall Institute meeting was held October 26 at the Hyatt Regency in Denver, prior to the annual Geological Society of America meeting. More than half of the Board members and Institute officers and Associates. Some Board members were also included by conference call. The fall meeting is a planning meeting, and includes a summary of summer activities.

The meeting started with announcements of new Associates (see article in this issue of *The Conduit*), and continued with a discussion of KWI goals. Issues discussed included Institute awards and organizational structure, upcoming meetings in The Bahamas, a 'culture and karst' conference being planned by Board members Dorothy Vesper and Bill Jones, and a potential ice and karst workshop introduced by new Board member Matt Covington. Reports and updates were given for the Wilson scholarship fund and committee, for the Institute budget, for the Awards banquet, and from the Communications department regarding the website and publications. Planning for the 25<sup>th</sup> anniversary in 2016 sparked enthusiastic discussion.



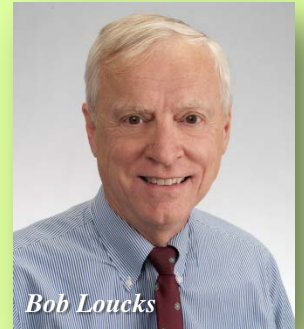
*Some KWI Board and Institute members, Denver, CO.*

**The next Institute and Board meeting will be in Houston, Texas, on March 1.**

### Upcoming 2014 Karst Award Banquet – March 1, 2014

The 2014 Karst Award honoree is Dr. Robert 'Bob' Loucks. The banquet will be held March 1, 2014, at 7 pm at Americas in Houston, Texas. Dr. Loucks will speak at the annual banquet. His presentation will be on the topic of "How Modern Karst Studies Lead to Understanding the Development and Burial Evolution of Paleokarst Reservoirs." For information on the banquet and how to reserve your seat, please see the Karst Award Dinner Announcement.

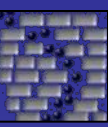
Dr. Loucks received a B.A. from SUNY Binghamton and the Ph.D. from The University of Texas at Austin. He started his research career at the Bureau of Economic Geology, The University of Texas at Austin in 1976 and then worked for Cities Service and ACRO research Laboratories until he returned to the Bureau of Economic Geology in 2000 as a Senior Research Scientist and a member of the Jackson School of Geosciences Graduate Studies Committee.



*Bob Loucks*

Loucks has conducted research and made contributions in sedimentology and diagenesis of carbonates, sandstones, and mudrocks. In each of these rock types he has concentrated on the origin of pore networks and their evolution during burial; his ultimate goal has always been the improvement of reservoir-quality prediction. His work on pore networks has included discovering nanopore types in shale-gas and shale-oil systems, establishing micropore types and origins in limestones, defining evolution of pore types in sandstones, and characterizing collapsed cavern and fracture systems in carbonate and evaporite paleokarst. His research on carbonate paleokarst has contributed to the understanding of oil and gas in carbonate strata: specifically, the origin of vug/fracture pore networks and the distribution and heterogeneity of reservoirs. The recognition of how and when cave systems collapse with burial has led to identification of such collapsed systems on seismic data. Loucks' present research on evaporite paleokarst systems is identifying the depositional and diagenetic processes that determine whether evaporite karst will lead to a reservoir or seal.

Loucks is author or co-author of nearly 150 articles, many of them on paleokarst processes and reservoirs. He has been recognized with several research awards, including the American Association of Petroleum Geologists Robert R. Berg Outstanding Research Award and the Jackson School of Geosciences Outstanding Research Award. He was selected as an APPG Dean A. McGee International Distinguished Lecturer, as a Permian Basin Section of SEPM Honorary Life Member Awardee, and as an Honorary Research Fellow, School of Geological Science, Kingston University, Kingston upon Thames, Surrey, UK. He has received several best paper and presentation awards, including the 2000 and 2010 Wallace E. Pratt Awards for best AAPG Bulletin paper, 2006 and 2010 A. I. Levorsen Awards for Best Paper, 2008 and 2011 EMD President's Certificate for Excellence in Presentation, SEPM Excellence of Presentation Award, A. Philpott Excellence of Presentation Award, SEPM Excellence of Poster Presentation Award, and Gordon Atwater Best Poster Award.



### Upcoming Conference Announcements

#### 9<sup>th</sup> International Symposium on Subsurface Microbiology (ISSM)

This symposium will be held October 5-10, 2014, in Pacific Grove, California, USA. This is the 9<sup>th</sup> ISSM meeting to explore the link between microbiology, the subsurface environment, and microbial ecosystems. Various themes for the meeting include Cave, Karst, and Fractured Rock Microbiology. Abstracts will be accepted until April 1, 2014. Visit <http://www.2014issm.com/>.

#### 22<sup>st</sup> International Conference on Subterranean Biology

The International Society of Subterranean Biology (SIBIOS) will hold the 22<sup>nd</sup> International Conference on Subterranean Biology 31 August – 5 September 2014 in Mexico, Juriquilla, on the campus of Universidad Nacional Autónoma de México, Querétaro state. Watch for conference updates, or contact [icsb2014mx@gmail.com](mailto:icsb2014mx@gmail.com) for more details.

#### 6<sup>th</sup> International Workshop on Ice Caves

The 6<sup>th</sup> International Workshop on Ice Caves (IWIC-VI) is coming to Idaho Falls, Idaho, USA, on 17-22 August 2014. Papers are welcome on any topic involving cave ice. The submission deadline for full manuscripts and extended abstracts is 14 April, 2014. For more information, visit <http://www.iwic-vi.org/index.html>.

#### DeepKarst 2016

This conference will be from April 11-14, 2016, in Carlsbad, New Mexico, USA. Hypogenic karst is formed by rising groundwater. For more conference details, visit <http://deepkarst.org/>

### Karst Award Dinner Announcement for 2014

The 2014 KWI Awards banquet will be Saturday, March 1, 2014 at 7 PM. In addition to Dr. Loucks' presentation, other awards will be given, including the William Wilson Scholarship

The banquet will be held at Americas, 21 Waterway Avenue, The Woodlands, TX 77380.

Dinner will cost \$75 per person, and includes hors d'oeuvres, dinner with choice of entrees, & basic beverages. Wine and beer will be available as a cash bar option.

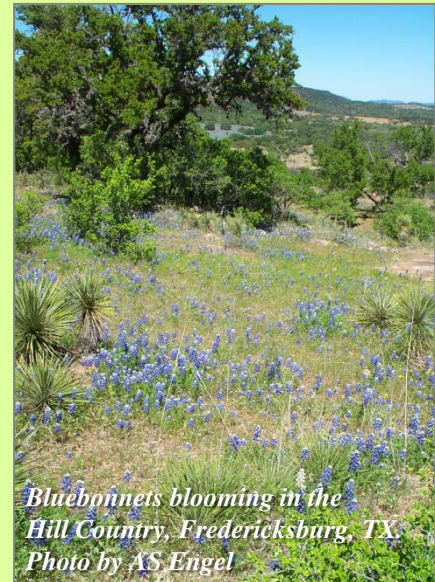
Reserve your seat(s) by EITHER

- 1) Sending a check for \$75 per person to  
Karst Waters Institute, PO Box 4142, Leesburg, VA 20177  
OR
- 2) Go to <http://www.karstwaters.org/dinner-announcements.php> and enter your reservations via Paypal (cost \$77.54 per person)

Houston is a destination location, with the Houston Space Center, Museum of Fine Arts, Children's Museum, Museum of Natural Science, Contemporary Arts Museum, and is a short trip to other locations, like 3 hours from San Antonio or Austin, and 4 hours from the Hill Country.



*Natural Bridge Caverns, TX.  
Photo by AS Engel*



*Bluebonnets blooming in the  
Hill Country, Fredericksburg, TX.  
Photo by AS Engel*

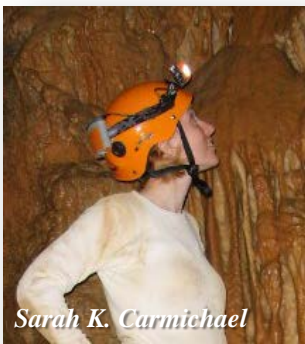


*Mission San José, San Antonio Missions National Historical  
Park, San Antonio, Texas. Photo by AS Engel.*

### Meet KWI's New Associates

-- Submitted by Janet Herman

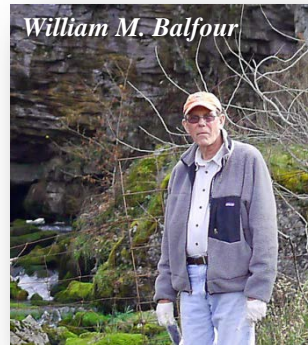
There are many ways to participate in KWI to advance its mission. Regardless of the role a participant in KWI plays, there is one certain fact – all effort is made by a volunteer. Some volunteers are serving critical functions in KWI activities yet do not hold titles as Board members or Officers. In recognition of particularly important or timely contributions, the President of KWI can make short-term appointments of Associates. Our three new Associates as of January 1, 2014, have been appointed for three-year terms.



Sarah K. Carmichael

**Sarah K. Carmichael** is an Assistant Professor in the Department of Geology at Appalachian State University in Boone, North Carolina. Her training as a mineralogist gives her analytical expertise that supports her investigation of the origin of manganese oxide deposits in caves in the southern Appalachians. Her work involves chemical analyses, mineralogical characterizations, and microbiological determinations. Her timely contributions to the scientific understanding of cave mineralogy as influenced by human-introduced organic matter have been made in presentations at the KWI Carbon and Boundaries in Karst meeting, Geological Society of America meeting, as well as in publications in *Geomicrobiology* and *Journal of Cave and Karst Science*. Sarah is a truly interdisciplinary scientist with a special commitment to public outreach and education. In addition to her involvement in KWI specialty conferences, she is advising KWI on our web presence.

**William M. Balfour** is a Professional Geologist in Virginia and Tennessee and an active speleologist in the southern Appalachians. In his career, Bill has led the West Virginia Speleological Survey, the Virginia Speleological Survey, and has been repeatedly recognized by the National Speleological Society where he is Fellow (1978) and recipient of Certificate of Merit (1994) and the Lew Bicking Award (2012). Working as a consulting geologist in West Virginia, Bill nonetheless finds time to volunteer for KWI, specifically as a researcher on the Muddy Creek Basin Project with Bill Jones. For that project investigating karst groundwater, Bill participates in dye tracing and spring monitoring. With a small amount of funding for equipment and supplies from the Cave Conservancy of the Virginias, Bill is volunteering his time to advance our understanding of karst systems.



William M. Balfour



Maria Alejandra Perez

**Maria Alejandra Perez** is more interdisciplinary than most of us. Both a Prof-Doc Fellow in the Department of Geology and Geography and an Adjunct Faculty member in the Department of Sociology and Anthropology, Maria studies the intersection of culture and society with caves and the karst landscape. Originally from Venezuela and currently conducting research in the United States, Maria focuses on cross-cultural attitudes toward cave modification, a topic about which many karst scientists are passionate. She says, "Exploring human-cave relations, from a historical, phenomenological, and political perspective provides broader context to speleological practices." Maria brings this knowledge to her work with KWI to convene a specialty conference on Culture and Karst. Co-conveners Dorothy Vesper and Bill Jones find Maria's perspective to be essential to building a conference program that will appeal to historians, authors, anthropologists, and karst scientists.

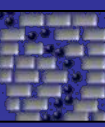
### News about KWI Officer, Harvey DuChene

The Rocky Mountain Association of Geologists (RMAG) honored **Harvey DuChene** with the 2013 Outstanding Scientist Award for his scientific contributions and widespread work in the field of speleology on November 9, 2013, at the Rock Busters Ball, the RMAG annual formal dinner and celebration. Harvey is a Professional Geologist in Colorado, and has had a long and successful career in the oil and gas business, having played a significant role in several field discoveries.

Harvey's extraordinary spirit arose during the late 1960s and early 1970s when he was exposed in Carlsbad Caverns to the "darndest things I ever saw." Harvey was part of the mapping and exploration teams in Lechuguilla Cave in New Mexico. Lechuguilla offered unique scientific value, and Harvey authored and co-authored numerous papers from 1989-2000 about the research. His work supported the concept that caves can be formed from sulfuric acid dissolution. The full citation is published in *Outcrop*, the newsletter of the RMAG, vol. 62(11), November 2013, p. 29.



Left to right: H. DuChene, Debra Higley (RMAG President), and Ron Pritchett (MC).



### Wilson Scholarship in Karst Science Announcement

The William L. Wilson Scholarship in Karst Science was established in 2002 to recognize the significant karst science contributions of the late William (Bill) L. Wilson. Bill Wilson used a variety of techniques, and unusual creativity, to tackle some of the most difficult karst science questions in Florida and elsewhere. He developed the leading karst consulting company in the United States, Subsurface Evaluations, Incorporated. To stimulate the development of new, energetic, motivated, and creative karst scientists, and to remember the person of Bill Wilson and his dedication to karst science, the scholarship has been established in his memory. The value of the scholarship as a one-time award is \$1,000.

To apply for the William L. Wilson Scholarship, the following conditions exist:

- 1) The applicant must be currently enrolled in, or have been accepted into, a masters degree program at an institution of higher education in the United States. PhD students are not eligible.
- 2) A written proposal of the planned karst study must be submitted. It is limited to 1000 words or less for the narrative, not counting figure captions and references. The research topic should be one concerning karst science, from the field of geochemistry, geology or hydrology. A very simple budget indicating how the funds would be used should also be included (it does not count in the 1000 word limit). Applicants are requested to not recycle master's thesis proposals as applications.
- 3) Academic transcripts of undergraduate, and any graduate work, should be submitted. Copies issued to the student by their institution are preferred.
- 4) Two letters of recommendation, with one of them from the student's advisor or mentor, should be submitted. These letters should be submitted as e-mails by the letter writers.
- 5) Applications are due by **February 17, 2014**, submitted electronically as a single pdf file (application, transcripts, etc.).

Send applications to Dr. Jonathan B. Martin [jbmartin@ufl.edu](mailto:jbmartin@ufl.edu), Department of Geological Sciences - University of Florida.

Questions regarding the scholarship should be addressed to Dr. Martin. Applicants will be notified in early March of the decision of the Scholarship Committee. Publications derived from supported research should acknowledge the Karst Waters Institute and the William L. Wilson Scholarship. For more information, go to: <http://karstwaters.org/scholarship/>

### Research Focus – Biodiversity of East Tennessee Caves

--Submitted by Annette S. Engel (Univ. TN; [aengel1@utk.edu](mailto:aengel1@utk.edu)) and Matthew L. Niemiller (Univ. KY; [cavemander17@gmail.com](mailto:cavemander17@gmail.com))

The Cave Conservancy Foundation (CCF) approved a research grant, "Distribution and conservation of cave biodiversity in the Valley and Ridge," that provides funding to conduct biological inventories, document species occurrences that define geographic extents, and examine spatial patterns of biodiversity, endemism, and sampling effort. Of the >50,000 caves reported in the United States, over 1,138 cave-restricted animals have been described. These troglobionts (terrestrial obligate cave species) and stygobionts (aquatic obligate cave species) possess traits uniquely associated with life in perpetual darkness and limited food resources. One of the richest karst areas in the United States is in TAG (Tennessee, Alabama and Georgia), with Tennessee currently ranking 2<sup>nd</sup> to Texas for the most obligate subterranean species. But, recent examinations of cave biodiversity spatial patterns, species richness, and endemism in Tennessee identify that only 5% of Valley and Ridge caves have faunal records and several undersampled areas exist, including much of northeast Tennessee extending from the more intensely inventoried southwestern Virginia karst. As such, it is possible that many TAG cave species await discovery and description.

With CCF funding, we will explore East Tennessee caves and conduct biological inventories, and microbiology and geochemistry studies, to characterize ecosystem-level processes. The team includes Kirk Zigler (Univ. of the South), Danté Fenolio (San Antonio Zoo), and K. Denise Kendall (Univ. KY).

As the 2-year project gets underway, we welcome inquiries from scientists who are interested in collaborating with us, interested in describing new taxa collected from the caves, or are interested in assisting with field collection. Other inquiries about the research are also welcome.