CENTRAL OKLAHOMA GROTTO
OF THE NATIONAL SPELEOLOGICAL SOCIETY,INC

C.O.G.nizance

Inside this Issue

The October meeting of the Central Oklahoma Grotto will be held Friday, October 10 , 2015, at 7:00 p.m. The meeting will be at the home of Art Wallace.

HAPPY HALLOWEEN!

ANNOUNCEMENTS

*Northwest trips are scheduled the third Saturday of every month. Contract Sue or John Bozeman for details.

*The October meeting will be Friday, October 9, 2015 at The home of Art Wallace.

National White-Nose Syndrome Decontamination Protocol - Version 06.25.2012

The fungus *Geomyces destructans* (*G.d.*) is the cause of white-nose syndrome (WNS), a disease that has devastated populations of hibernating bats in eastern North America. Since its discovery in New York in 2007, WNS has spread rapidly through northeastern, mid-Atlantic, and Midwest states and eastern Canada. It continues to threaten bat populations across the continent. For the protection of bats and their habitats, comply with all current cave and mine closures, advisories, and regulations on the federal, state, tribal, and private lands you plan to visit. In the absence of cave and mine closure policy, or when planned activities involve close/direct contact with bats, their environments, and/or associated materials, the following decontamination procedures should be implemented to **reduce the risk of transmission** of the fungus to other bats and/or habitats. For the purposes of clarification, the use of the word "decontamination," or any similar root, in this document entails both the 1) cleaning and 2) treatment to disinfect exposed materials.

Under no circumstances should clothing, footwear, or equipment that was used in a confirmed or suspect WNS-affected state or region be used in a WNS-unaffected state or region. Some state/federal regulatory or land management agencies have supplemental documents1 that provide additional requirements or exemptions on lands under their jurisdiction.

I. TREATMENTS TO REDUCE RISK OF TRANSFERRING *GEOMYCES DESTRUCTANS*2:

Applications/Products:

The most universally available option for treatment of submersible gear is:

Submersion in Hot Water: Effective at sustained temperatures ≥50ºC (122ºF) for 20 minutes

Secondary or non-submersible treatment options (for a minimum of 10 min.) include:

PRODUCTS: **Clorox® (6% HOCl) Bleach**
Lysol® IC Quaternary Disinfectant Cleaner
Professional Lysol® Antibacterial All-purpose Clean

MINUTES

CENTRAL OKLAHOMA GROTTO

Minutes of the meeting of September 11, 2015

Host: the luxury home of Kelley and Jon Woltz
Attendees: Dale Amlee, Sue & John Bozeman, John and Jason Talbot, John Van Dyke, and S. Beleu the Skillful Ogre
The Honorable Jon Woltz began the meeting at 8:03

OLD BUSINESS – none

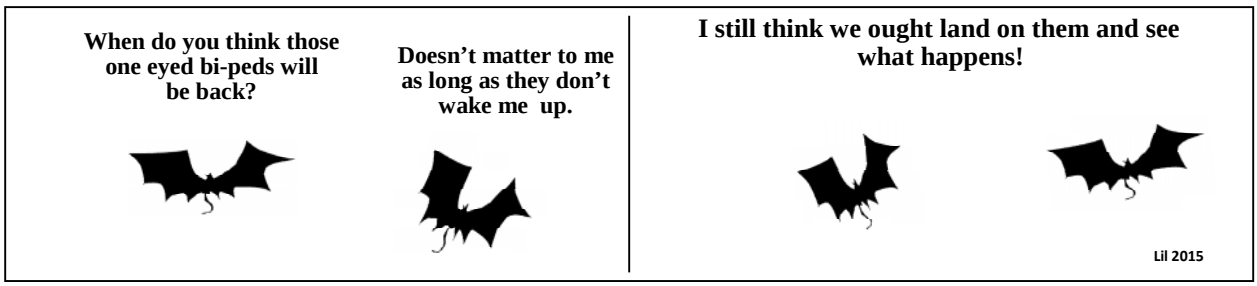
NEW BUSINESS –

- we talked about the caving trip of the following 3rd Saturday
- we voted that Matt Brasher should be made a member

TREASURER'S REPORT

John Talbot e-mailed his report to Sue but she didn't check her e-mail to print it and bring it with her to the meeting. But it is printed within these hallowed pages. We concluded the meeting at 8:52

WHAT BATS TALK ABOUT



TREASURER'S REPORTS

OCTOBER, 2015 TREASURERS'S REPORT

INCOME			**EXPENSES**
Dues	$	30.00	
Dividends		00.02	
TOTAL	**$**	**42.00**	
CASH ON HAND	**$**	**98.09**	
CHECKING	**$**	**563.51**	
SAVINGS	**$**	**2,136.67**	
			TOTAL FUNDS AS OF 10/2/2015
TOTAL	**$**	**2,798.27**	*PREPARED BY TREASURER JOHN TALBOT*

TRIP REPORT

Cherylsbad Cave, Woodward County, OK
Trip Date: September 19, 2015
Personnel: Dale Amlee, Matt Brasher (provisional member), Sue Bozeman and Jon Woltz
Written by Sue Bozeman

We had not been able to go caving for months. Dearth of capable personnel (illnesses and injuries) prevented our trips since January. Our dear landowner kept the faith, however, and welcomed us to use the guest house for the day.

We started at the entrance of a pit that Jon had exited in January. It was leaf-filled and a shallow funnel. Unfortunately, there are many shallow, not-so-shallow and downright DEEP sinks out there. The ancient passages have been intersected by a number of cave-ins and it took us awhile to have Jon find the one he had exited -- and placed a couple of limbs crossing the exit hole. Matt and Dale had scrambled down one and told Jon that it was pretty tiny, but did go down a goodly bit. Jon scrambled down, thinking it was a bit deeper than what he remembered, but when he got to the actual hole, he recognized the limbs he'd put in place after he had exited.

We started our survey where a piece of twine crossed over the limb and extended down into the hole. From there, we surveyed up and overland and back to the main cave entrance survey point. Once there, we went inside to the closest survey point and headed for the pit from the inside. A mere 3 more survey points completed the circle. Accuracy is to be determined by the Compass cave survey program -- hopefully to be included with this newsletter. Or -- as an update at the meeting! Come one, come all -- see what we've done -- there!

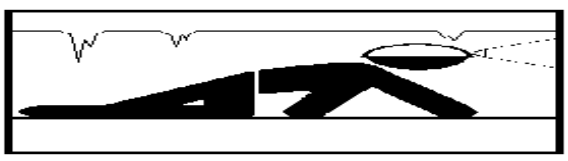
There is a short stretch of passage beyond the pit, which is blocked by breakdown and lies under the sink above that is part of a double-sink and enterable by mice, crickets and water, but no humans. That ended the survey of this upper part of the cave.

After the completed survey to the pit (name to be determined by Jon Woltz and not to exceed 26 characters in length), we explored some of the lower side tunnels and leads that remained in this area. Much yet to do and a bunch of it is soggy. Dale took Matt down to the main water passage and then upstream to the rimstone dam area. Getting there, you encounter a side passage with looks like it might be the downstream connection to the upper arm's tunnels.

We saw couple of bats very upset at our occupying their tunnel space, a frog and a tiger salamander.

If the Fall rains haven't begun by the next scheduled trip, we might be able to tie in 3 separate tunnel exits.

This was my first trip back after 2 surgeries for a broken patella back in January 2015. Not altogether happy with my abilities, I felt able to cave without endangering any other caver -- but I do need more strength and will work to make it so.



POTPOURRI

Only above-water microbes play a role in cave development

From Science News, September 2, 2015
http://www.sciencedaily.com/releases/2015/09/150902140810.htm

Only the microbes located above the water's surface contribute to the development of hydrogen-sulfide-rich caves, suggests an international team of researchers. Since 2004, researchers have been studying the Frasassi cave system, an actively developing limestone cave system located 1500 feet underground in central Italy.

Limestone caves can form when solid limestone dissolves after coming in contact with certain types of acids. The resulting void is the cave system.

"We knew from previous research that microbes do play a role in cave development," said Jennifer Macalady, associate professor of geosciences, Penn State and co-author of a paper published today (Sept. 2) in *Chemical Geology*. "What we were trying to assess was the extent of that contribution, which would help us understand how caves all over the world, as well as on other worlds, form."

In hydrogen-sulfide-rich caves, microbes "eat" the hydrogen sulfide through a process known as aerobic respiration, Macalady said. The byproduct of this process is the creation of sulfuric acid, which has the potential to dissolve limestone and contribute to cave growth.

"The main goal of our study was to investigate what happened to hydrogen sulfide in the cave, because when the microbes use hydrogen sulfide for energy, this, along with oxygen, leads to the production of sulfuric acid," said Macalady.

The researchers measured oxygen levels and the amount of chemicals degassing -- changing from liquid to gas state -- throughout several parts of the cave system. The Frasassi system has cave pathways that formed 10,000 to 100,000 years ago as well as currently actively forming cave pathways, allowing the researchers to compare their measurements and identify the factors contributing to active development.

"What we found is that in certain conditions, the hydrogen sulfide in the water escapes as a gas into the air above the water instead of being 'eaten' by microbes below the water surface," said Macalady. "As a result, the underwater microbes only partially burned hydrogen sulfide. Instead of creating a byproduct of sulfuric acid, they created pure sulfur as a byproduct, which is not corrosive to limestone."

In contrast, the microbes above the water's surface completely "ate" the hydrogen sulfide. This process results in the creation of sulfuric acid, which dissolves limestone and contributes to cave growth.

Macalady says that the results would apply to all limestone caves that are rich in hydrogen sulfide, which includes more well-known caves such as Carlsbad Caverns and Lechuguilla Cave in New Mexico and Kap-Kutan Cave in Turkmenistan.

In October's Physics World: Taking the rigor of physics to the netherworld...

http://**www.eurekalert.org/pub_releases/2015-10/iop-iop100215.php**

A handful of scientists are combining their favorite hobby with their day job, to form the emerging field of "speleophysics" - exploring how underground caves form, evolve and move water from one place to another.

Writing in October the 2015 issue of *Physics World* magazine Stephen Ornes describes how a small group of physicists from around the world are trying to merge physics, chemistry and mathematics to unlock the secrets of caves.

One area of interest is the formation, evolution and movement of 'karst' - a general term for the landforms that have been sculpted by dissolution or soluble rocks such as limestone.

"There are still so many open questions in speleogenesis (cave formation)" explains Franci Gabrovšek, a physicist at the Karst Research Institute in Postojna, Slovenia. "Caves are the last parts of Earth which are not yet explored ... they are so full of surprises, and when you progress to the next step, you never know what your next challenge will be."

The route to pursuing 'speleophysics' is a circuitous one for these researchers. In the article, Gabrovšek describes the challenges of finding collaborators at the dawn of the internet age.

Another 'speleophysicist', Matt Covington, based at the University of Arkansas, explains how a lecture discussing theories on mapping galaxy formation led him to wonder if physics equations could be applied to caves, and subsequently to join forces with Gabrovšek.

Mapping and studying caves differs noticeably from exploration, explains Covington. "You experience the cave at a slow pace and absorb a lot of information about the cave that you wouldn't necessarily observe if you were just going through."

There's also a practical concern at stake in speleophysics - roughly 20% of the fresh water supply in the US, and about 10% in Europe - comes from karst aquifers. This water can move quickly through the labyrinthine network of channels within a cave and its movement can be dramatically effected by flooding or seasonal changes.

"You put a pollutant in somewhere, and you don't know where that pollutant with come out" adds Gabrovšek.

Not surprisingly, most of the researchers began caving as a hobby, before realizing this ideal way to combine it with their profession.

Remote cave study reveals 3000 years of European climate variation

http://www.sciencedaily.com/releases/2015/06/150615103959.htm

June 15, 2015, University of New South Wales

Summary: Research on limestone formations in a remote Scottish cave has produced a unique 3000-year-long record of climatic variations that may have influenced historical events including the fall of the Roman Empire and the Viking Age of expansion. The study of five stalagmites in Roaring Cave north of Ullapool in northwest Scotland is the first to use a compilation of cave measurements to track changes in a climate phenomenon called the North Atlantic Oscillation.

Roaring Cave in Scotland. A study of its limestone has produced a unique 3000-year-long record of climatic variations that may have influenced historical events including the fall of the Roman Empire and the Viking Age of expansion.

Credit: Courtesy of UNSW

University of New South Wales Australia-led research on limestone formations in a remote Scottish cave has produced a unique 3000-year-long record of climatic variations that may have influenced historical events including the fall of the Roman Empire and the Viking Age of expansion.

The study of five stalagmites in Roaring Cave north of Ullapool in north-west Scotland is the first to use a compilation of cave measurements to track changes in a climate phenomenon called the North Atlantic Oscillation.

'Our results also provide the longest annual record of this important phenomenon, which has a big impact on the climate in Europe,' says study leader, UNSW Professor Andy Baker.

'It confirms that the during the Medieval Warm Period between 1080 and 1430 the oscillation index was in an unusually prolonged positive phase, which brings increased rain to Scotland and drier conditions in the western Mediterranean,' says Baker, of the UNSW Connected Waters Initiative Research Centre.

'Our results also reveal there was another persistent positive phase between 290 and 550, which coincides with the decline of Rome and a period of intensified human migration in southern Europe during the Dark Ages.

'This was followed by a persistent negative phase between 600 and 900 which may have provided warm and dry conditions in northwestern Europe that made it suitable for westward expansion by the Vikings, although the precise timing of this event is contested.'

The study is published in the journal *Scientific Reports*.

The North Atlantic Oscillation climate index measures the air pressure difference between Iceland and the Azores islands off the Portuguese coast, and is a record of the strength of the westerly winds in the North Atlantic.

Roaring Cave, or Uamh an Tartair, in northwest Scotland, is a shallow cave beneath a blanket of peat that has accumulated during the past 4000 years.

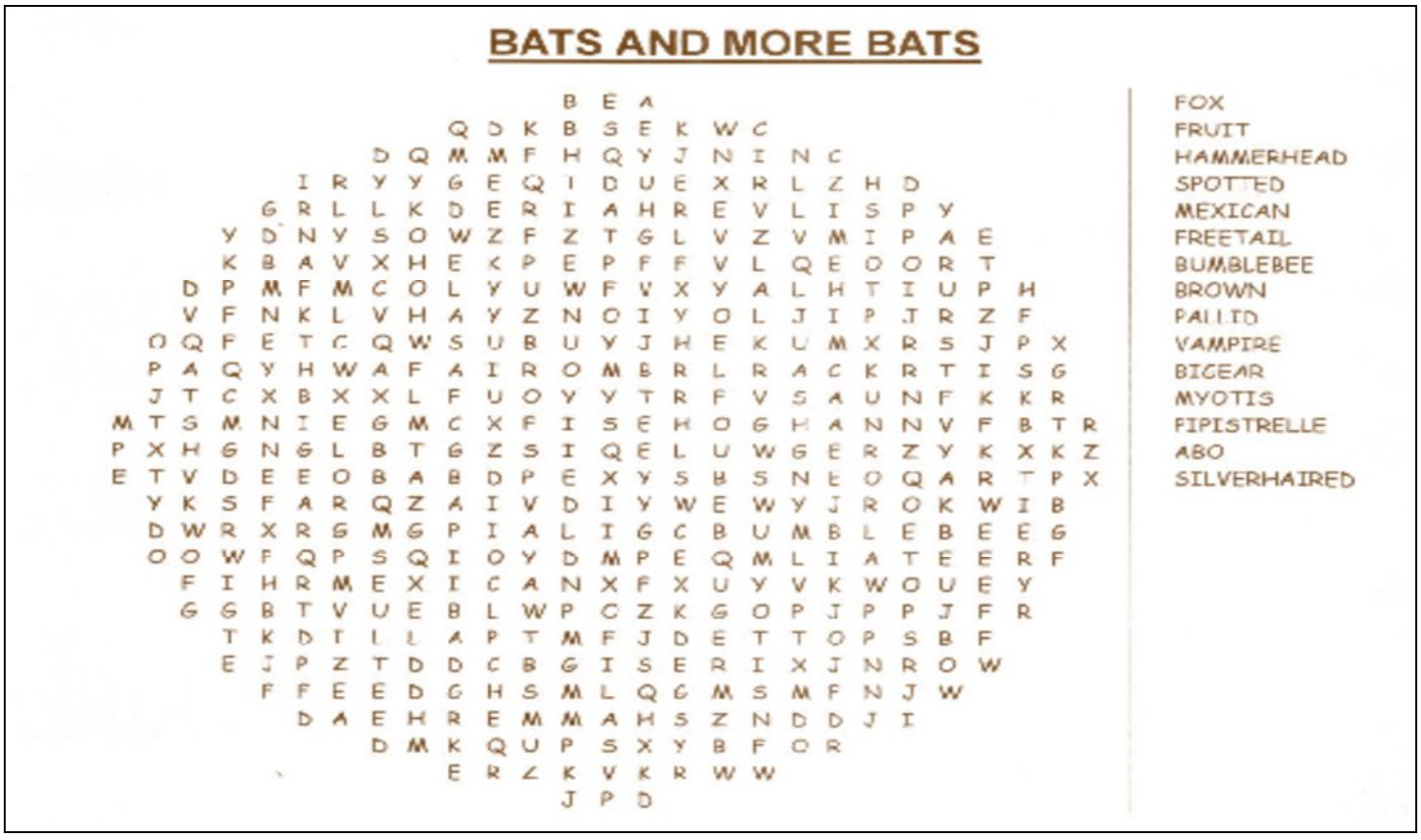
Rainfall levels in this region closely correspond with the strength of the oscillation index in winter, with higher precipitation when it is positive. And the upward rate of growth of stalagmites in the cave is very sensitive to rainfall -- the more water in the peat, the more slowly the stalagmites grow.

'We painstakingly measured the thickness of each annual growth ring in five stalagmites taken from the cave, including one that provides a continuous annual record spanning more than 1800 years,' says Baker.

By overlapping the five stalagmites they obtained a proxy record of the climate at the cave during a 3000-year period from about 1000 BC to 2000 AD.

'Our research provides a climate context for some of the big human migration events in Europe and allows us to start building hypotheses about the impact of environment on societal change,' says Baker.

The team includes researcher from UNSW, the University of Lausanne in Switzerland and the University of Arizona in the U.S.



Central Oklahoma Grotto is a nor -profit organization and a chapter of the NSS (National Speleological Society), Cave Avenue, Huntsville, AL., 35810. Dedicated to cave conservation and safety, C.O.G. published general information in a monthly newsletter ($6.00/year) and detailed cave surveys and related Speleological items in a yearly publication, The Oklahoma Underground ($3-$8/issue) Membership is by sponsor and is $12 per year for adults, $6 for spouses and students, and $3 if under 18. Central **Oklahoma Grotto meets once a month on the second Friday of each month. For information, write Lil Town, 25692 Mosier Circle, Conifer, CO 80433: All submissions to the newsletter should be sent to the editor:** Lil Town, 25692 Mosier Circle, Conifer, CO 80433: Telephone: (580)471-1238: E-mail: cavemoose@gmail.com. The deadline for submissions for any particular mont 's issue is the 20th day of the previous month. If you wish material returned. Please include a SASE with submission. All materials in this newsletter is available for reproduction, provided proper **credit is given with the article when you print it. Trade publications are welcomed.** ***Cave softly and safely!*** Website: http://www.okcavers.co

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will be
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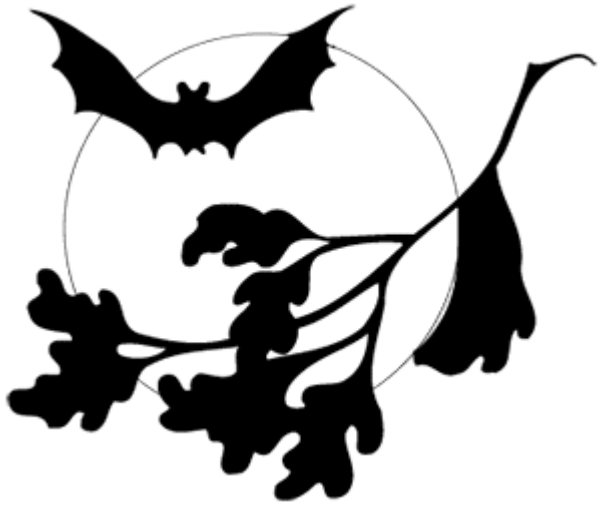

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