



CENTRAL OKLAHOMA GROTTTO OF THE NATIONAL SPELEOLOGICAL SOCIETY, INC

C.O.G.nizance

Inside this Issue

Minutes1
 Announcements2
 Treasurer's Report for March and May.....2
 Trip Reports
 No reports this month

Fungus Responsible for Bat Disease Found in State 3
 Bats successfully treated for white-nose syndrome are set free..... 3-4
 Traces of Ancient Earthquakes
 Hidden in Cave Rocks 4-5
 Bones in South African Cave Reveal
 New Human Relative5

Potpourri

The September meeting will be Friday, September 11, 2015 at 7:00 p.m.



COME TO MEETING WOMAN... IT AT JON AND KELLEY'S



MINUTES

CENTRAL OKLAHOMA GROTTTO

Minutes of the June 12, 2015 meeting

Host: the home of COG member Steve Belev, The Skillful Ogre.

Attendees: Dale Amlee, Sue and John Bozeman, Jason and John Talbot, John Van Dyke, Kelley and Jon Woltz, and The Skillful Ogre. For our repast I had purchased 50 pounds of Mexican pastries and diet sodas.

The Honorable Jon Woltz began the meeting at 8:10

OLD BUSINESS – None.

NEW BUSINESS

- Jon told us about a massive sinkhole in Weatherford that appeared after our recent rains and accompanying flooding. It swallowed a significant portion of a city block.
- We discussed the adverse impact of recent flooding upon our current lull in caving. We hope to return to caving in September, all cavers dried out and healed.

TREASURER'S REPORT

Treasurer John Talbot gave his report.

We concluded the meeting at 8:50

ANNOUNCEMENTS

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

*The September meeting will be Friday, September 11, 2015 at the home of Jon and Kelly Woltz..

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 DESTRUCTANS²:

Applications/Products:

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

Submersion in Hot Water: Effective at sustained temperatures 50°C (122°F) 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

TREASURER'S REPORTS

June, 2015 TREASURERS'S REPORT

September, 2015 TREASURERS'S REPORT

INCOME		EXPENSES	
Dividends	00.02	Equipment	\$ 114.95
TOTAL	\$.02	TOTAL	\$ 114.95
CASH ON HAND	\$ 98.09	TOTAL FUNDS AS OF	
CHECKING	\$ 587.59		6/5/2015
SAVINGS	\$ 2,136.93		
TOTAL	\$ 2,822.61		

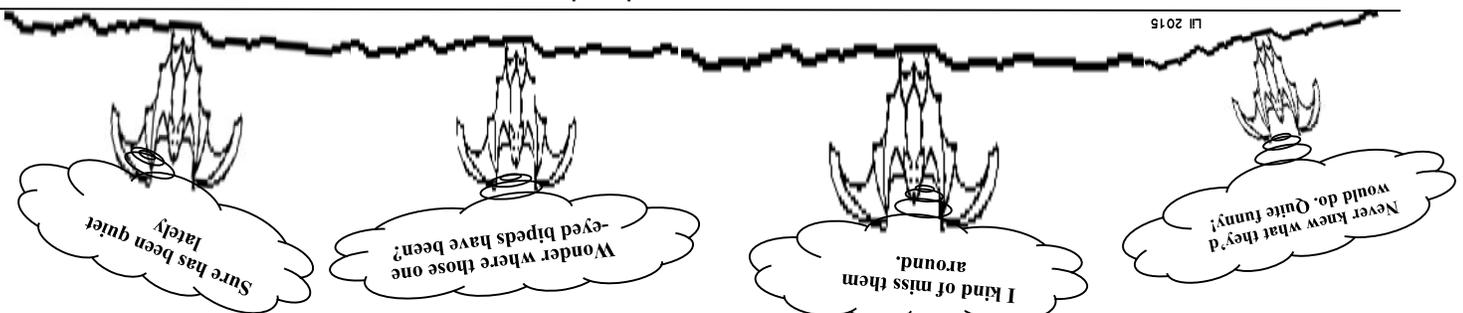
INCOME		EXPENSES	
Dues	\$ 12.00	Dividends	00.32
TOTAL	\$ 12.32	TOTAL	\$ 12.32
CASH ON HAND	\$ 98.09	TOTAL FUNDS AS OF 9/2/2015	
CHECKING	\$ 599.64		
SAVINGS	\$ 2,137.20		
TOTAL	\$ 2,834.93		

PREPARED BY
 TREASURER JOHN TALBOT
 NSS # 30254RE

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TRIP REPORT

No trip reports submitted this month.



POTPOURRI

Fungus Responsible for Bat Disease Found in State

Russ Horton
Wildlife Research Supervisor
May 19, 2015

Three tri-colored bats, *Perimyotis subflavus*, from a privately owned cave in eastern Oklahoma's Delaware County have tested positive for the fungus, *Pseudogymnoascus destructans*, that is associated with the disease known as white-nose syndrome. This disease has been confirmed in seven hibernating bat species across the eastern United States. With these new findings, Oklahoma becomes the third state where the fungus has been confirmed, but the disease is not present.

Bats are crucial to a healthy ecosystem. They play a key role in keeping insect populations including agricultural pests and mosquitos under control. In cave systems, they also provide nutrients for other cave life through their droppings. "While disheartening, these results are not totally unexpected," said Melynda Hickman, wildlife diversity biologist with the Oklahoma Department of Wildlife Conservation. "This fungus has been documented in several counties just across the state line in Arkansas," she said. To date, this finding marks the westernmost case of the fungus in the United States. The fungus thrives in cold, humid environments and invades the skin of bats. White-nose syndrome disrupts the hibernating behavior of the bats, resulting in depletion of their fat stores. There are no known human health implications associated with white-nose syndrome. The detection of the fungus resulted from participation in a national study led by researchers at the University of California-Santa Cruz with funding and support from the National Science Foundation. Surveillance efforts in Oklahoma are conducted in collaboration with the U.S. Fish and Wildlife Service and include swabbing the muzzle and wings of hibernating bats along with the surrounding cave wall (substrate).

"One positive aspect of the Delaware County finding is that although three bats have tested positive for the fungus, no dead bats were observed in the cave and there were no visible signs of the disease on any of the hibernating bats," Hickman said. "Furthermore, all of the substrate samples from this cave were negative for the fungus," she said. The Wildlife Department and its many partners are committed to continuing surveillance for this fungus in Oklahoma. After a suspected case of white-nose syndrome in Oklahoma in 2010, the Wildlife Department created the Oklahoma Bat Coordinating Team, composed of at least 20 entities that have direct bat and cave management responsibilities. The team created a communication plan involving scientific cooperators, interested parties, stakeholders and user groups on bat and cave management, bat research and bat diseases in Oklahoma. The team has been active in creating the state's white-nose syndrome response plan and participating in disease surveillance work in multiple cave systems in Oklahoma. For more information about white-nose syn-

drome, including the national response plan for managing the disease and ongoing research, visit the national white-nose syndrome website at whitenosesyndrome.org

Bats successfully treated for white-nose syndrome are set free

Corbin Hiar, E&E reporter
Published: Wednesday, May 20, 2015

Scientists released into the wild last night some of the first northern long-eared bats successfully treated for white-nose syndrome, a deadly fungal disease that has decimated the species in recent years.

The northern long-eared bats recovered after being treated with *Rhodococcus rhodochrous*, a common bacterium. A volatile organic compound released by the bacterium has been found to inhibit the growth of the fungi that cause white-nose syndrome.

The bats were released at the Mark Twain Cave Complex near Hannibal, Mo., by scientists from the Forest Service and Georgia State University.

Forest Service spokeswoman Jane Hodgins said in an interview that the exact number of bats that were infected and successfully released was still being compiled. Some were little brown bats, which are not protected under the Endangered Species Act, she said.

The service and its partners plan to publish results of their findings soon, said Katie Gillies, the director of imperiled species for Bat Conservation International.

The advocacy group was among about a dozen organizations that helped fund or collaborate on the field trial, including the Nature Conservancy, the Missouri Department of Conservation and the privately owned Mark Twain Cave Complex.

"While more research is needed before we know if our current discovery is an effective and environmentally safe treatment for white-nose syndrome, we are very encouraged," said Michael Rains, who directs the Forest Service's Northern Research Station and the Forest Products Laboratory.

The service has been researching the fungal disease since 2012 because bats are an integral part of forest ecosystems, Hodgins said.

Last winter, agency scientists and Georgia State researchers collected bats from caves in Missouri and Kentucky that were suffering from white-nose syndrome, which causes bats to wake up during hibernation, burn through their fat reserves and eventually starve. The bats were then tested and exposed to *R. rhodochrous* in a laboratory setting.

But Gillies said in an interview she believes it may be possible to synthesize the volatile organic compound that the bacterium emits and pump it into caves of infected bats via a medical nebulizer.

"The bacterium is naturally occurring, and the volatile organic compounds are also natural, so there is

(continued on page 4)

no reason to think it would have any adverse effects to humans or other wildlife," she said. Its effect on other cave fungi, however, is an area in need of further research.

White-nose syndrome has killed more than 5.7 million American bats in the eastern United States and Canada in the past decade, and led the U.S. Fish and Wildlife Service to implement federal protections for the northern long-eared bat last month (*Greenwire*, April 1).

Republicans have criticized the threatened listing. They say it restricts forestry and other economic activities that could affect bats but does nothing to cure white-nose syndrome, which is the main reason for the northern long-eared bat's precipitous population decline.

Traces of Ancient Earthquakes Hidden in Cave Rocks

LiveScience.com By Becky Oskin

April 23, 2015 10:35 AM

PASADENA, Calif. — Shattered cave formations in the central United States may preserve one of the longest records of powerful earthquakes in this region.

Historical records from European settlers provide vivid accounts of deadly earthquakes in states such as Missouri, Tennessee and Illinois. For instance, in 1811 and 1812, people saw the ground ripple like ocean waves when the New Madrid Fault Zone unleashed earthquakes thought to be greater than magnitude 8.

However, no written accounts exist from before Europeans arrived. And most earthquake faults in the Midwest are hidden deep beneath the surface, so scientists can't dig into the earth and date rocks disturbed by earlier shaking. Without a good tally of past temblors, it's hard to say when future quakes will strike.

Geologist John Tinsley says smashed cave formations could provide a new way to fill in the seismic gap. Strong earthquakes in the central United States disturbed many caves at the same time, Tinsley said yesterday (April 21) here at the annual meeting of the Seismological Society of America. [Photos: The World's 7 Longest Caves]

"Caves have long been used as time traps of one sort or another," Tinsley told Live Science. From the oldest human art to Neanderthal fossils, caves can protect and preserve delicate remains for millions of years.

Thousands of caves riddle the subsurface near the three major fault zones that threaten the Midwest and East Coast: the New Madrid Seismic Zone, the Wabash Valley Seismic Zone and the East Tennessee Seismic Zone.

Earthquakes can crack cave formations in an instant, leaving cave floors littered with rock. Relying on tips from local cavers, for nearly a decade Tinsley has searched for caverns where all of the broken rocks fell at about the same time. The youngest minerals in the fallen rocks can yield the "kill date," said Tinsley, an emeritus research scientist with the U.S. Geological Survey in Menlo Park, California. Colleagues figured out when the broken cave formations stopped growing by measuring the ratio of two radioactive isotopes in the rocks.

The results, from nearly 50 caves in the Ozark Mountains in Missouri and Arkansas, suggest at least four major earthquakes on the New Madrid Seismic Zone

have rippled through the caves, Tinsley reported at the meeting. [The 10 Biggest Earthquakes in History]

"We kind of took a long shot and it seems to be paying off," he said.

Damaged stalactites called soda straws fell from cave ceilings during the 1811 and 1812 earthquakes, and also around the years A.D. 1450, A.D. 900 and 2350 B.C. Less reliable results also suggest quakes around the years A.D. 1640 and A.D. 300 — more data from additional caves are needed to confirm these earthquakes, Tinsley said.

Early results from caves in southern Indiana, near the Wabash Valley Seismic Zone, and in Tennessee, in the East Tennessee Seismic Zone, suggest earthquakes are fewer and far between in these regions. The damaged cave growths hint at strong quakes hitting every 6,000 years, Tinsley said.

Tinsley noted that the cave evidence is only a circumstantial argument for ancient earthquakes. That's because floods and erosion can also collapse many cave rocks at the same time. Even a blundering bat can knock down the delicate soda straws, he said. Humans have also altered caves in the central and eastern United States for thousands of years.

The strong match between Tinsley's results and earlier geologic studies strengthens the case for earthquake spelunking.

"I'm enthusiastic because they are able to ground-truth it," said Will Levandowski, a research geophysicist with the USGS in Golden, Colorado. "It's not a replacement for paleoseismology on these faults, but it's a great tool on a local to regional scale," said Levandowski, who was not involved in the research.

For instance, the cave records match evidence of older earthquakes from liquefaction studies conducted by other researchers. Big earthquakes cause liquefaction, in which sodden silt, sand and mud jiggles like gelatin from earthquake shaking. Liquefaction leaves behind distinctive patterns in these sediments, such as sand blows. Earthquakes also trigger color changes in cave growths, which researchers have matched to major earthquakes.

"There are three suites of observations that are yielding the same set of dates," Tinsley said. "The fact that each of these approaches are yielding the same result is not an accident."

Tinsley said he plans to continue collecting earthquake records from caves in the central and eastern

(continued on page 5)

United States for as long as his knees hold out. But the next big research hurdle is to figure out where the cave-rattling quakes were located and how big they were. "We've just gotten to the point where we can prove we're seeing something," Tinsley said. "Now we want to understand how these things are getting broken."

Bones in South African Cave Reveal New Human Relative

By lynsey chutel and malcolm ritter, associated press

MAGALIESBURG, South Africa — Sep 10, 2015, 10:42 AM ET

Scientists say they've discovered a new member of the human family tree, revealed by a huge trove of bones in a barely accessible, pitch-dark chamber of a cave in [South Africa](#).

The creature shows a surprising mix of human-like and more primitive characteristics — some experts called it "bizarre" and "weird."

And the discovery presents some key mysteries: How old are the bones? And how did they get into that chamber, reachable only by a complicated pathway that includes squeezing through passages as narrow as about 7½ inches (17.8 centimeters)?

The bones were found by a spelunker, about 30 miles (48 kilometers) northwest of Johannesburg. The site has yielded some 1,550 specimens since its discovery in 2013. The fossils represent at least 15 individuals.

Researchers named the creature *Homo naledi* (nah-LEH-dee). That reflects the "Homo" evolutionary group, which includes modern people and our closest extinct relatives, and the word for "star" in a local language. The find was made in the Rising Star cave system.

The creature, which evidently walked upright, represents a mix of traits. For example, the hands and feet look like *Homo*, but the shoulders and the small brain recall *Homo*'s more ape-like ancestors, the researchers said.

Lee Berger, a professor at the University of the Witwatersrand in Johannesburg who led the work, said *naledi*'s anatomy suggest that it arose at or near the root of the *Homo* group, which would make the species some 2.5 million to 2.8 million years old. The discovered bones themselves may be younger, said Berger, an American.

At a news conference Thursday in the Cradle of Humankind, a site near the town of Magaliesburg where the discovery was made, bones were arranged in the shape of skeleton in a glass-covered wooden case. Fragments of small skulls, an almost complete jawbone with teeth, and pieces of limbs, fingers and other bones were arrayed around the partial skeleton.

Berger handed a skull reconstruction to Deputy President Cyril Ramaphosa, who kissed it, as did other VIPs. Berger beamed throughout the unveiling.

The researchers also announced the discovery in the journal *eLife*. They said they were unable to determine an age for the fossils because of unusual characteristics of the site, but that they are still trying.

Berger said researchers are not claiming that *naledi* was a direct ancestor of modern-day people, and experts unconnected to the project said they believed it was not.

Rick Potts, director of the human origins program at the Smithsonian Institution's Natural History Museum, who was not involved in the discovery, said that without an age, "there's no way we can judge the evolutionary significance of this find."

If the bones are about as old as the *Homo* group, that would argue that *naledi* is "a snapshot of ...

the evolutionary experimentation that was going on right around the origin" of *Homo*, he said. If they are significantly younger, it either shows the *naledi* retained the primitive body characteristics much longer than any other known creature, or that it re-evolved them, he said.

Eric Delson of Lehman College in New York, who also wasn't involved with the work, said his guess is that *naledi* fits within a known group of early *Homo* creatures from around 2 million year ago.

Besides the age of the bones, another mystery is how they got into the difficult-to-reach area of the cave. The researchers said they suspect the *naledi* may have repeatedly deposited their dead in the room, but alternatively it may have been a death trap for individuals that found their own way in.

"This stuff is like a Sherlock Holmes mystery," declared Bernard Wood of George [Washington](#) University in Washington, D.C., who was not involved in the study. Visitors to the cave must have created artificial light, as with a torch, Wood said. The people who did cave drawings in Europe had such technology, but nobody has suspected that mental ability in creatures with such a small brain as *naledi*, he said.

Potts said a deliberate disposal of dead bodies is a feasible explanation, but he added it's not clear who did the disposing. Maybe it was some human relative other than *naledi*, he said.

Not everybody agreed that the discovery revealed a new species. Tim White of the University of [California](#), Berkeley, called that claim questionable. "From what is presented here, (the fossils) belong to a primitive *Homo erectus*, a species named in the 1800s," he said in an email.

At the news conference in South Africa, Berger disputed that.

"Could this be the body of *homo erectus*? Absolutely not. It could not be *erectus*," Berger said.

Malcolm Ritter reported from New York.



Central Oklahoma Grotto is a non-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 month'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>

The September meeting will be
At Jon and Kelly's house,
Friday, September 11, 2015.



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