TCMA PASSAGES
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The Devils Sinkhole LIDAR Mapping Project

By Allan Cobb & Geary Schindel

The Devils Sinkhole is home to millions of Mexican free-tailed bats for part of each year. Anyone who has ever entered a cave with a large bat population knows that the bats leave behind guano - and LOTS of it! Entering and exploring an active bat cave can be a serious undertaking because of the strong ammonia smell, high temperatures, as well as the slipper rock surfaces. Most active bat caves also contain insects which are feeding on the bats, on the bat guano, and sometimes on the cave explorers. When bats are present, bat caves can be very unpleasant places.

Photo by Travis Scott

Jerry Bellian operating the LIDAR unit.

The Devils Sinkhole is one of the most spectacular spots in Texas. Not only does it have one of the best bat flights available to the public but it is one of the largest and most impressive pits in the state. This naturally formed chamber contains a free fall drop of 145 feet to the floor of a large talus pile. Unless you're a bat, the only way in or out is to rappel and ascend a 7/16 inch diameter nylon caving rope. Now, thanks to the LIDAR project, the general public will get a chance to have a virtual visit to the cave.

This project will actually do more than just create a three-dimensional virtual representation of the cave for general public. The resulting map will also be an invaluable management tool. The map can be used to create images which will be used to calculate the area of the bat roosts; thereby allowing more accurate estimates of the bat populations. The map may also be used to record and measure changes to the cave due to rock fall or erosion. The map will also provide an accurate volume of the cave.

TCMA organized a specialized mapping project of the Devils Sinkhole in conjunction with the Texas Bureau of Economic Geology (TBEG) and Texas Parks and Wildlife (TPWD). Geary Schindel and Allan Cobb directed the project. Travis Scott coordinated the many volunteers for the project. Jerry Bellian from the TBEG provided the technical guidance for the

See LIDAR ⟹ *p. 4*

INSIDE THE PASSAGES

Punkin Cave Survey Project 3
Amazing Maze Resurvey Underway 8
TCMA Board Meeting Notes 6

VIEW FROM THE PALIT

By Linda Palit

Spring! Spring wildflowers, spring cleaning, spring caves. It always seems in the spring people around San Antonio get out into their yards or property, excited with the green and color after the brown of winter. And inevitability somebody finds a new hole on their land that they never saw before, a secret entrance into the underworld that brings up questions, excitement, and possibility. Last night I visited one of those people in Bexar county, and they really did have a hole along their fence line, and it really was about a meter in diameter (well, almost). Even better, it kept going down past the line of sight.

It's always great fun to slip into the darkness and see the unknown; in these cases it is also fun to share the owner's amazement, excitement, and curiosity.

Texas Cave Management Association goes through its own spring. There is always the potential for new growth and new caves that might be a part of the organization if someone works to find a way to make it happen. There are new possibilities, better ways to keep the members informed of caving and volunteer possibilities. There are always new projects begging for a coordinator to step up and be in charge, such as the recently begun mapping projects at Amazing Maze and Punkin Caves which you can read about in this issue of Passages, or participate in next fall and winter. There are fundraising challenges, needs for documentation, new office space at the TSS office which needs organizing, publicity needs, and all the other sorts of activities that make an organization grow and function, limited only by members' imaginations.

Spring is a time of renewal, of possibilities, of excitement and energy. As you enjoy the beauty and energy of the season, grab a few minutes on one of those rainy spring days to imagine what the future of TCMA will be, and to envision your part in it. TCMA exists because of its members' minds and actions; you determine the present and the future. Happy Spring!

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Punkin Cave Survey Begins

By Jim "Crash" Kennedy

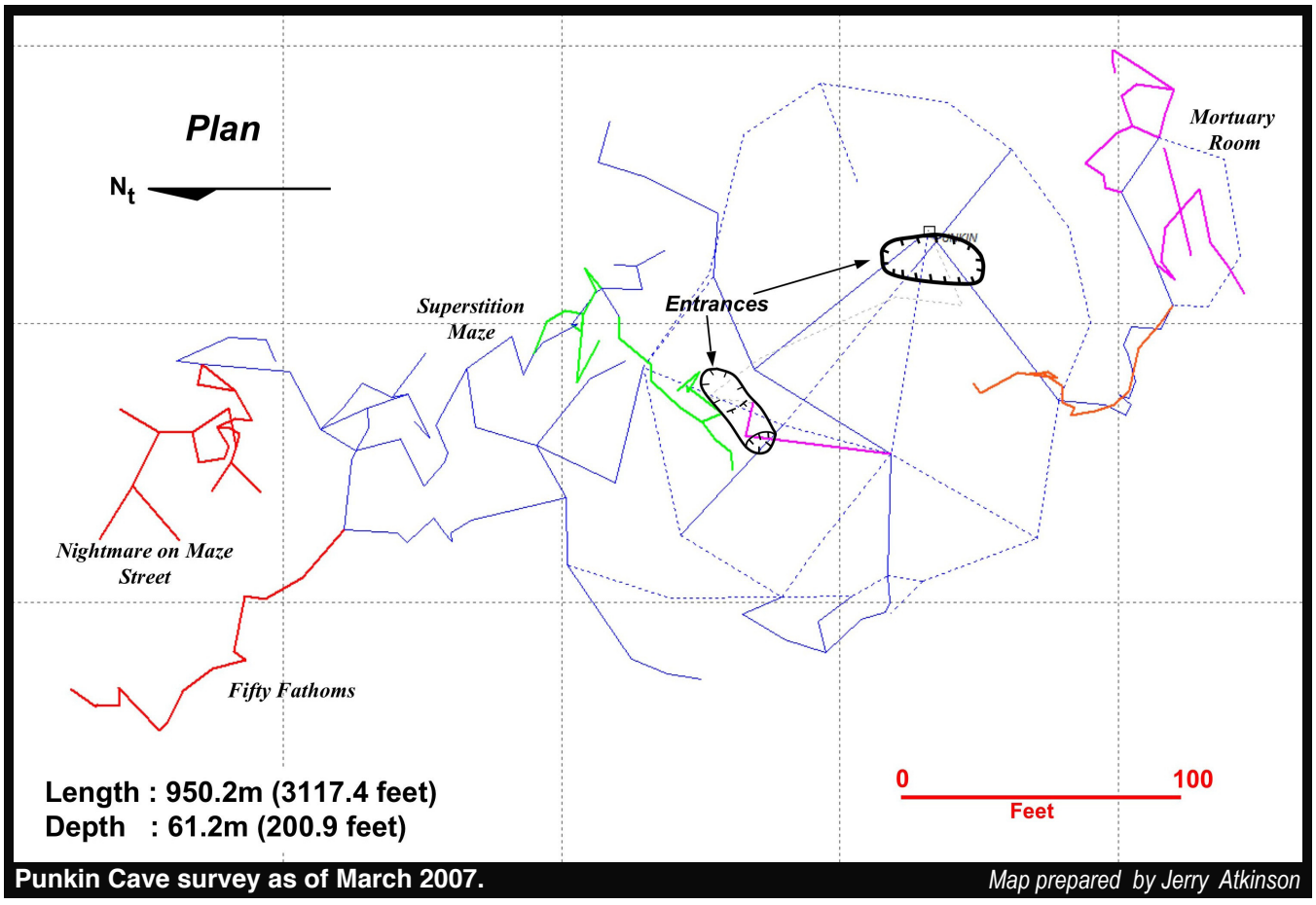
Deep Cave gets all the attention. Punkin Cave must be suffering some kind of inferiority complex. I wanted to do something about it. I had been in the cave briefly during one of the Deep Cave mapping trips before TCMA bought the property, so I knew that Punkin was far more extensive that most people realized. Little did I know that I would be spearheading multiple survey trips into the cave, with no apparent end in sight.

Punkin Cave is a large, complex cave in the Carta Valley area. Like many of the other caves nearby, it shows signs of a hypogene origin, in other words bottom-up dissolution by rising sulfuric acid. Such caves often feature extensive boneyard mazes. Combine those with some breakdown mazes caused by the massive entrance collapse and you have one big rambling, complicated cave. But there is good airflow almost everywhere. It is so strong in places that it has redistributed large amounts of dry bat guano from the main roosting areas throughout the mazy extremities of the cave. Most passages don't "end", they just get too small for humans, and they still have airflow.

The first official modern survey trip was in 2005, on 19 March. Jim Kennedy, Pete Lindsley, and Clark Giles mapped 122 meters, putting in a couple of splay shots to brass screws set as permanent stations in the Entrance Room. We then took the survey down a steep rift on the southern end of the cave (the "R" survey). This led to the flat-ceilinged Mortuary Room, named for the numerous goat bones found below the rocks there. That day's trip mapped 178 meters and made the cave 44.7 meters deep.

The second trip was 18 June 2005. Jim Kennedy, Chris Vreeland, Clark Giles, and Kerry Lowery put in 211 meters of "ER" survey, defining some of the walls of the Entrance Room, mapping the obvious high lead on the northeast wall, and venturing

See PUNKIN ⟹ *p. 5*



Punkin Cave survey as of March 2007. *Map prepared by Jerry Atkinson*

LIDAR *(from p. 1)*

LIDAR unit. Randy Rosales of TPWD provided the access to Devils Sinkhole. Kevin McGowan provided photographic images of the cave walls, and Dan Holman provided photo-documentation of the project. However, the project could not have taken place without the hundreds of hours of volunteer support. Many cavers donated hours of their time – from working in the cave to providing surface coordination, to food services.

This project was performed using a technology called LIDAR. LIDAR, short for Light-Imaging Detection and Ranging, is a remote sensing technology. LIDAR creates a three dimensional point cloud which a computer uses to create a model of the object imaged. It can be used is used for many purposes such as measuring distance or speed, calculating area and volume, or comparing change over time. TCMA and the TBEG used LIDAR to create a three-dimensional map using the distance measuring aspect of LIDAR.

In addition to creating the 3D map, the LIDAR unit measures the intensity of the returning laser and uses this to create an image that looks much like a black and white photograph. Later, during post-processing of the data, sophisticated software is able to "drape" digital photos over the map to create a color version of the map. The software is also capable of creating virtual version of the cave so one can experience the cave without having to rappel into the cave and walk in the guano.

The field work for project took place over three weekends: one in November and December of 2006 and a final weekend in February 2007. Winter dates were selected because the bats migrate south. This created the most pleasant working conditions for the cavers and did not disturb the bats.

Photo by Travis Scott

Don Arburn, Kevin McGowan, and Linda Palit at the bottom of the pit with some of the equipment that was lowered into the cave.

Photo by Travis Scott

Lisa O'Brian going beyond where most visitors turn around.

Caver volunteers worked both in the cave and on the surface to make sure that the project succeeded. Large amounts of gear had to be moved into and out of the cave, which required rigging hauling and lowering systems.

The down side to working in the winter meant that cavers had to brave the cold and chilly conditions on the project. Cavers spent their days working and nights huddled around the campfire. The spirits of the cavers were raised by the excellent food prepared by Joe Ranzau and the kitchen staff.

Geary Schindel and Allan Cobb would like to thank all those who participated in and supported the project. Their efforts and donations made possible the collection of unique and specialized data. We would like to offer special thanks to the TBEG for the use of the LIDAR equipment and TPWD for their support and access to Devils Sinkhole.

For a list of donors who provided support for this project, see pg 8.

PUNKIN (from p. 3)

into the northern mazes. We realized those areas were far more complex and intimidating than anyone realized, and set some obvious tie-in stations in two (so far) distinct mazes: the Superstition Maze (from station ER13) and the Nightmare on Maze Street. This trip also spawned the naming theme used in the cave, that of the Halloween horror. It fit the cave name, so why not?

Pete Lindsley slipped an unannounced survey in on me on 18 March 2006. Together with Don Arburn, Jon Cradit, and Weston Cradit, they mapped 313 meters of "A" survey, further defining the perimeter of the Entrance Room. I'll bet they didn't even need headlamps for most of the survey!

We dove back into the mazes with gusto on a UT Grotto trip on 4 November 2006. My team included Gary Franklin, David Ochel, and Mike Sisson. We continued surveying in the Nightmare on Maze Street (the MS survey), and also mopped up some other leads of the ER survey, namely the Western Parallel and Hellmouth, for a total of 125 meters. Wes Schumacher led Tone Garot, Saj Pierson, and Matt Zapitello into the Superstition Maze (SM survey). They got 41 meters surveyed, and oddly enough, started trending deep under the Entrance Room. Both teams ended up with more leads than they finished, but enthusiasm was high for a return trip.

An all-out assault was scheduled for 3 March 2007. Four survey teams entered the cave. Pete Lindsley led Stephen Bryant, Kevin Lillie, and Bill Stephens back to the Mortuary Room to add another 89 meters to the "R" survey, mopping up some side leads and taking the cave to -50m. Allan Cobb drove in that morning (and drove back out right afterward) to lead Don Arburn, Lee Jay Graves, and Wayne Hutchins down to the Mortuary Room to survey one of the alternate routes back up to the Entrance Room. This route is now called the Trick or Treat route, the tricks mainly being the guano avalanches triggered by moving breakdown. Wes Schumacher led the same team from November, with the addition of Chris Vreeland, back to the Superstition Maze to mop up leads and find new ones. They pushed their survey well underneath the small entrance, but failed to gain any more depth. My team was also the same as November, with the addition of Charles Pekins. We tried to mop up leads off the Nightmare again, but instead found a new large room (Sleepy Hollow) with leads that went everywhere. While I retrieved a dropped LED light during a break, I found another large rift heading down fast. Mike took off exploring, and we decided to map down one route through this area. It headed off to the northwest and reached a new low point at -61.2m before pinching down. There are lots more leads out this way, and maybe one will go still deeper.

All told, the March survey blitz netted 387m. Team 1 got 89m, team 2 had 60m, team 3 ended up with 79m, and my team racked up 160m. Punkin Cave now has 950m of survey, including a lot of splay and perimeter shots. This last survey moved it from the 56th to the 29th deepest cave in Texas. And there is so-o-o-o much more to do.

Many questions remain about Punkin Cave. Where is the air coming from, and where is it going? Will it ever connect to Deep Cave? Are there any big passages underlying the stuff we are currently mapping? What kind of fractures or structural controls have the passages formed along? And will we ever get out of the bat guano? Enthusiasm runs high amongst the surveyors, with a high return rate. Preference is being given to returnees, but any available spaces, up to the TCMA-allowed maximum, are open to new surveyors with vertical experience.

The Punkin Cave Survey Project is being coordinated by Jim Kennedy, who is organizing the survey trips, Jerry Atkinson, who is organizing the data, and Pete Lindsley, who is drafting the map. The three-dimensional nature of the cave is going to make a traditional map depiction difficult, but the WALLS lineplots accompanying this article should help give everyone an idea of the layout of this fascinating cave. Thanks to TCMA for managing this property, and to all Texas cavers who have helped support its purchase.

TCMA has a new address!

Texas Cave Management Association
P.O. Box 7427
Austin, Texas, 78713

You can still find us at our website:
www.tcmacaves.org

TCMA BOARD OF DIRECTORS MEETING NOTES
Meeting Date: Sunday, January 14, 2007 / Location: Colorado Bend State Park, TX

MINUTES
The minutes of the General Membership meeting of October 22, 2006 were presented. Kennedy notes that the last sentence of fundraising makes no sense, all agree to strike last sentence. Also add Bill Bentley as the PBSS grotto rep. The minutes were approved as amended – APPROVED

OFFICER REPORTS
Vice-President Report - Read by Russell, Julie apologizes for missing meetings last year due to work conflicts and asks not to be elected this year. She thanks everyone and states she will continue her work for TCMA in Austin on development and karst issues.
Treasurer Report - S. Schindel gives the Treasurer Report: She notes that this is a year-end report for 2006 but does not yet have some amounts such as the mortgage and Edward Jones. Michelle is updating the Treasurer's file into Quickbooks. Discussion about cash flow and that a lot of it comes from our bond until 2019. $7000 in money market.

COMMITTEE REPORTS
Acquisition Committee - Ranzau is working on Collars Cave. Echo River Cave is also an option (near Honey Creek).
LIDAR Committee - Cobb reports that two trips have happened so far and the third was rescheduled until the Feb 1st weekend. Jerry Bellian expects that we will complete it on the next trip. It is going well and the park is happy with the progress.
Database Committee - Ron Ralph reports that he is updating the address in the database. He enters new member info from Julie Jenkins and feeds it to S. Schindel. However, he needs to coordinate with them to be sure he captures all the data. We all need new login information. We have about 148 active members.
Website Committee - Butch Fralia is working on it – Palit states that you can send him item for the site. Ranzau reports that we will switch web service to Authorize.net. It will be easier to manage the site and do transactions under the new service and the costs are about the same. Discussion about preserve pages and email links.
Fundraising Committee - Cobb asks if anyone is interested in taking over the committee. Bill Mixon's truck was donated and sold quickly for $3200, which TCMA got. Palit notes that $1775 was raised in the auction. Discussion about whether to hold one again this year. Kennedy notes that its one of the entertainment events at TSA and that he would auctioneer if Bill Steele can't do it. Kara Ditmer is suggested as a good person to organize it. Ranzau suggests that we should be selective about what we auction off (other items can go to silent auction.). Cobb also brings up doing a breakfast at TSA – Ranzau volunteers to do. We usually make ~$600. Help will be needed. Cobb notes that its been a while since there has been a Texas Women Texas Caves calendar. Cobb will volunteer to coordinate this. He notes that it needs to be done by June and its hard to get people together in time so we will do just a color Texas Caves calendar for 2008. For 2009, there a Texas Cavers calendar. For 2010 (to be sold as ICS) it will be a full Texas Women calendar. Suggestion to make it just TCMA caves.
By-laws Review - Russell provides a handout of the proposed by-laws changes to bring them into the electronic age and remove unused and irrelevant items including

- Add email option in addition to written requests
- Update membership categories such as removing Associate membership
- Add voting rights section
- Update number of directors

Also discussion on how to handle recording of electronic meetings and the limits in which they can be used.

PRESERVE REPORTS
Ezell's Preserve - There will be a workday on the last Sunday of January for cleanup and to see the cave. Contact Cradit for info. Development around the property has stalled.
Deep and Punkin Preserve - Sue Schindel presents the report. Tax status is still unknown. Expenditure-wise there has been various expenses but the $5 donation is covering most of this. David Calcote upgraded the electrical over New Year's donating $200 of materials. Discussion about fridges and stoves –several have been donated. There have been a variety of recent trips with scouts, grottos, mapping, and work trips. Jerry Atkinson continues to coordinate the Deep survey. Pete Linsley is coordinating the Punkin Survey. Upcoming cabin projects include flooring (vinyl), septic, and back porch expansion (money already budgeted for the floor and septic.) Discussion about property taxes – county has sent us a bill. The county is not cooperating. Discussion about cabin utilities. It is suggested that we should be careful about installing anything new in the cabin. A proposed budget was submitted. About $3000 is estimated for the back deck. Some operating expenses are proposed also. No more is being asked right now, though and the $1500 previously budgeted will be used for now.

Godwin Ranch Preserve - Beveridge reports that monitoring by Zara continues and that a brush clearing day was held in October. A local company will begin work on the new fence in the next week. $3000 was budgeted from last year for fencing but less was spent. Edit made to proposal for insurance to $600. $13,150 proposed for a 2007 budget. This money comes out of Godwin Ranch funds not general TCMA funds. Moved to pass as amended. Discussion ensues about labor hours tracking. Kennedy notes that NE Cave Conservancy created a web entry form for hours and travel to simplify it

Robber Baron Preserve - Palit notes that the property is looking great and that we got last $1000 of previous grant and will be soon be getting LIP grant money. The cave is open – big group going Feb 11th. Next workday to finish steps tentatively planned for then. Mitchell agrees to be preserve manager.

Rolling Oaks Preserve - Mitchell reports that not much has happened. There was a meeting with Fish & Wildlife about the property. Discussion about wanting to fence property and get a dumpster to cleanout sinkhole. Would prefer to get this money through a grant. Discussion about an environmental monitoring plan and the requirements of doing it. Russell and Beveridge suggest having a meeting to discuss plans for the cave and whether an Austin person can do this.

Whirlpool and Lost Oasis Preserves - The City of Austin has improved the property and fixed most of the problems they created. It is the most visited cave of TCMA if not in Texas. User donations are good. Plans include an informational kiosk and the need to fix the sign as it was vandalized. Budget request is $350 for sign – will have anti-graffiti coating applied - and $60 for cement and posts. For Lost Oasis, little visitation has occurred except monitoring. Budget request includes $300 for a kiosk, $350 for a sign, $300-500 for fence repairs, and $200 for misc. expenses. Move to pass WP budget (Ranzau/Schindel) – PASSED. Discussion about new budget procedures for next year. Move to pass LO budget (Aimee/Russell) - PASSED

MANAGEMENT REPORTS

O9 Well and Amazing Maze - Five visits were made to O9 Well to repair the well pipe and repaired the gate. A new gate was put on Amazing Maze that is bat-friendly. Geological mapping for a PhD thesis was also conducted elsewhere in the UT lands. More insurance info sent to UT. There are some concern about maintaining the contract due to the insurance.

Camp Bullis - Palit reports that the contract for next year already submitted so there is a good chance of more funding. Over the last year, Zara has been checking gates, monitoring bats, and getting rid of fireants. We are subcontractors of Pruit (environmental consultant from Austin). We make about $50k from this contract.

Western Oaks - The wet pond is still an issue. We want the city to fill in wet pond and make a retention pond. There is a question as to who has to pay for makeup water. Until resolved we can't get property. Planned to be a TCMA owned property but we will bill homeowners association for services.

OLD BUSINESS

Board Retreat - Palit will meet with Steve Bonner from NPS to facilitate a Board retreat. Hope to have it happen this spring. Discussion about a site – Kickapoo, CBSP, place near Austin, and Blue Hole – latter two may be low cost.

ICS - TCMA will do a conservation fieldtrip on Wednesday. Not sure where yet.

La Cantera - They have been more flexible on land lately, but they will not give us money. These are management plans mandated by Fish and Wildlife. Madla's and Hills & Dales are two of these. The requirements to manage these are steep.

Publications - New brochures available with new logo. All issues of the old TCMA Activities Newsletters now online. Cobb will take over brochure printing. Passages will come out at Spring Convention - looking for articles.

NEW BUSINESS

Officer Elections - Note about clarifying in by-laws when officer elections occur. First of year or first after TCR.

Officers nominees:

President: Linda Palit
VP: Bill Russell
Secretary: Joe Mitchell
Treasurer: Michelle Bryant

Move to approve nominees (Ranzau/Kennedy) - APPROVED by acclimation

Discussion about whether our officer and board members should be the same or separate or if the current mix is ok.

Insurance, Membership, and Education Committee - Jorden and Ranzau on Insurance Committee – need to figure it out, so it doesn't go up so much. Mitchell, Ron Ralph, Beveridge, and Bryant. Jenkins will chair education committee with Cobb.

TCMA Accomplishments Letter - Cobb is preparing and will send it out for Board input.

Misc. Business

- Discussion about sending thank you/tax letters – Palit is doing it for monthly donations – check on what Ron Ralph will do.
- Someone contacted Palit about making a movie in a cave – discussion among Board.
- Discussion about bees in Punkin Cave.

Amazing Maze Cave Resurvey Project

By Peter Sprouse

Photo by Alexander Klimchouk

Bev Shade sketching in the East Maze.

Activities have resumed in Amazing Maze Cave, Pecos County, after some 10 years of the cave being closed. The gate was welded shut in the 1990's after vandals damaged it, then visits were on hold pending negotiation of a new management agreement with University of Texas Lands. In January 2007 TCMA cavers began a resurvey of the cave. UT Lands geologists Tim Hunt and Jim Buice stopped by to visit the site at the beginning of the weekend, then cavers from UT Grotto and Permian Basin Speleological Society began mapping from the entrance. A series of permanent survey stations was established down a main route through the West Maze and on into the East Maze via the one connection passage, Phantom Pass. Seventeen cavers formed six survey teams evenly divided between the two mazes. This first effort was a success, with 871 meters mapped.

A month later another trip was scheduled to coincide with a visit from visiting Ukranian cave geologist Alexander Klimchouk. In addition to Alexander, eleven other cavers from around Texas participated. Four teams entered the cave Saturday, again split evenly between the two mazes. Sunday there were a few less people caving, but still three survey teams piled up the meters, and by the end of the trip the resurvey length was 1798 meters, with a depth of 18 meters. This ended the work in this cave for the time being, as it closed down for spring lambing season. Survey trips are expected to resume in January 2008.

The TCMA would like to acknowledge the following organizations and individuals who provided special support for the Devil's Sinkhole LIDAR project:

Texas Parks and Wildlife Department - Austin, Texas
The Devils Sinkhole Society - Rock Springs, Texas
George Veni and Associates - Carlsbad, New Mexico
National Cave and Karst Research Institute - Carlsbad, New Mexico
Bat Conservation International - Austin, TX
Pigeon Mountain Industries - Lafayette, George
The National Speleological Society - Huntsville, Alabama
Dan Holman Photography - Lubbock, Texas
Kevin McGowan Photography - Houston, Texas
Mr. Jerry Atkinson - Houston, Texas
Mr. Don Arburn - Beeville, Texas
Mr. Will Howie - Water Valley, Mississippi
Mr. William Stephens - Wichita Falls, Texas