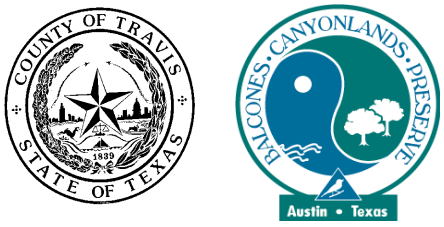
Balcones Canyonlands Preserve Karst Management
2006 Annual Report

Travis County
Department of Transportation and Natural Resources
Natural Resources and Environmental Quality Division
and
City of Austin BCP – Austin Water Utility (AWU)



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(TEXAS CAVE MANAGEMENT ASSOCIATION)

1.0 REGIONAL PERMIT

There are six species of endangered karst invertebrates (ES) and 25 karst species of concern (SOC) covered by the Balcones Canyonlands Conservation Plan (BCCP), a regional 10(a)1(b) permit issued by the U.S. Fish and Wildlife Service (USFWS) to the City of Austin (COA) and Travis County (TC) in May 1996. If these 25 species of concern become listed as endangered in the future, no additional mitigation will be necessary to protect them, provided that all karst protection requirements, outlined in the BCCP, are fully implemented. Many of the species of concern (SOC) may actually be as endangered or even more so, than the currently listed species. The SOC have no protection under the Endangered Species Act of 1973 as amended. Therefore, the 27 SOC caves lack the federal protections given to the 35 endangered species caves. About 27,000 acres have currently been acquired for the Balcones Canyonlands Preserve (BCP) and some of the BCCP karst features are protected within these preserve tracts.

The Regional Permit requires protection of 35 endangered species caves and 27 additional caves that support SOC, but are not currently listed by the USFWS, for a total of 62 karst features (60 caves, 1 mine and 1 karst spring).

The six species of endangered karst invertebrates in Travis County are:

Tooth Cave pseudoscorpion	*Tartarocreagris texana*	Kretschmarr Cave mold beetle	*Texamaurops reddelli*
Tooth Cave spider	*Neoleptoneta myopica*	Bee Creek Cave harvestman	*Texella reddelli*
Tooth Cave ground beetle	*Rhadine persephone*	Bone Cave harvestman	*Texella reyesi*

The 25 additional karst species of concern to be protected by the regional permit are:

FLATWORMS	*Sphalloplana mohri*	**PSEUDOSCORPIONS**	*Aphrastochthonius* N. S.
OSTRACODS	*Candona* sp. Nr. *Stagnalis*		*Tartarocreagris comanche*
SPIDERS	*Cicurina bandida* (#1)*		*Tartarocreagris reddelli*
	Cicurina cueva (#4)**		*Tartarocreagris intermedia (#2)*
	Cicurina ellioti (#5)		*Tartarocreagris* N. S. 3
	Cicurina reddelli (#3)	**HARVESTMEN**	*Texella spinoperca* (#2)
	Cicurina reyesi (#6)	**GROUND BEETLES**	*Rhadine s. subterranea*
	Cicurina travisae (#7)		*Rhadine s. mitchelli*
	Cicurina wartoni (#9)		*Rhadine austinica*
	Neoleptoneta concinna	**ISOPODS**	*Caecidotea reddelli*
	Neoleptoneta devia		*Trichoniscinae* N. S.
	Eidmannella reclus		*Miktoniscus* N. S.
MILLIPEDES	*Speodesmus* N. S.		

*Numbers #1-9 correspond to species listing in the Final EIS-HCP, Section 2-66.

2.0 CAVE MANAGEMENT SUMMARY

This annual report covers the fiscal year 10/01/05-9/30/06 and is referred to in this document as "2006". In 2006, the Balcones Canyonlands Conservation Plan (BCCP) partners continued efforts to determine and track cave status of the 62 karst features covered by the BCCP 10(a) permit. The permit holders continued efforts to acquire, protect, and monitor the karst species in the caves included in the Permit.

The 62 BCCP caves are currently managed as follows: twenty caves protected as part of the BCP on COA land plus 2 additional private caves (Cave X and Lamm caves) managed by the Austin Water Utility Dept.-BCP office; one protected on The Nature Conservancy (TNC) land; 9 protected on TC land (of these two have only the entrances protected) and one 10(a) private cave is informally protected by TC (Talus Springs Cave); three caves are protected on Texas Cave Management Association (TCMA) land; a total of seven caves are protected as part of private Section 10(a) or Section 7 agreements with USFWS; and one cave is protected by a private landowner (Bandit Cave). A total of 44 of the BCCP caves are "protected" in some way, with 18 "unprotected", one of which has been destroyed (Pennie's Cave). Some "protected" caves only have protected entrances, but are threatened by surrounding development or planned development. With the exception of the Four Points: Northeast Cluster, which is protected by a private 10(a) agreement and some of the caves in the Four Points Northwest Cluster, all the caves in clusters to be protected by the permit are threatened by potential development near the caves (Tables 1&2).

Table 1. Endangered Karst Invertebrate Locations in Travis County, Texas. This table was originally in the BCCP permit in 1996 and was revised in 2005 to show new species location information from James Reddell (2004, 2005) and HNTB (2005).

Cave Name	**Current Preserve Status**	**Karst Fauna Region**	**Tooth Cave Pseudoscorpion** *Tartarocreagris texana*	**ToothCave Spider** *Neoleptoneta myopica*	**Tooth Cave Ground Beetle** *Rhadine persephone*	**Kretschmarr Cave Mold Beetle** *Texamaurops reddelli*	**Bee Creek Cave Harvestman** *Texella reddelli*	**Bone Cave Harvestman** *Texella reyesi*
Amber Cave	BCP Jollyville/ TC	Jollyville Plateau	X 1996			X 1996		
Bandit Cave	Private	Rollingwood					P 1996	
Beard Ranch Cave	BCP Ivanhoe/COA	Jollyville Plateau						X 1996
Bee Creek Cave	Private	Rollingwood					X 1996	
Beer Bottle Cave	Not required to be protected under BCCP	McNeil/Round Rock						X 1996
Broken Arrow Cave	BCP Lime Cr. Prs./COA	Cedar Park			X 1996			
Cave Y	Barton Creek Grblt/COA	Rollingwood					P 1996 delete P (Reddell 2004)	
Cold Cave	Private	McNeil/Round Rock						X 1996
Cotterell Cave	BCP Spicewood Spgs. Pk./COA	Central Austin						X 1996
Disbelievers Cave	BCP Private 10(a)	Jollyville			X 1996			
Eluvial Cave	BCP Private 10(a)	Jollyville						X 1996
Fossil Cave	Schroeter Pk./COA	McNeil/Round Rock						X 1996
Fossil Garden Cave	Private	McNeil/Round Rock						X 1996
Gallifer Cave	BCP Jollyville/TC	Jollyville Plateau		P 1996	P 1996 X 2005			X 1996
Hole-in-the-Road	Private	McNeil/Round Rock						X 1996

Japygid Cave	BCP Private 10(a)	Jollyville			X 1996	P 1996 X 2005		
Jest John Cave	BCP Forest Ridge/COA	Jollyville Plateau					X 1996	
Jester Estates Cave	BCP Forest Ridge/COA	Jollyville Plateau					X 1996	
Jollyville Plateau Cv.	BCP Private 10(a)	Jollyville			X 1996			X 1996
Kretschmarr Cave	BCP Jollyville/TC	Jollyville Plateau			X 1996	X 1996		
Kretschmarr Dble. Pit	BCP Jollyville/TC	Jollyville Plateau	P 1996 X 2005		P 1996 X 2005		P 1996	
Lamm Cave	Private Section 7	Jollyville Plateau			X 1996			
Little Bee Cr. Cave	BCP Ullrich WTP/COA	Rollingwood					X 1996	
McDonald Cave	BCP Jollyville/TC	Jollyville Plateau						X 1996
McNeil Bat Cave	Private	McNeil/Round Rock						X 1996
Millipede Cave	Not Protected under BCCP	McNeil/Round Rock						X 1996
M.W.A. Cave	BCP Private 10(a)	Jollyville	P 1996 X 2005		X 1996	P 1996 X 2005		X 1996
New Comanche Tr. Cave	Private	Jollyville Plateau		X 1996				X 1996
No Rent Cave	Private	McNeil/Round Rock						X 1996
North Root Cave	BCP Jollyville/TC	Jollyville Plateau			X 1996			
Puzzle Pits Cave	Not required to be protected under BCCP	Jollyville			X 1996			
Rolling Rock Cave	BCP Lime Cr. Prs./COA, Sec.10(a)	Cedar Park			X 1996			

Root Cave	BCP Jollyville/TC	Jollyville Plateau			X 1996 Tentative 2005			X
Spider Cave	BCP Park West/COA	Jollyville Plateau					X Reddell 2004	P 1996 delete P 2004 (Reddell)
Stovepipe Cave	Private Sec. 7	Jollyville Plateau	P 1996 delete P 2005 (Reddell) *	P 1996	X 1996	X 1996		P 1996
Tardus Hole	BCP Jollyville/TC	Jollyville Plateau			X 1996			
Tooth Cave	BCP Jollyville/TC	Jollyville Plateau	X 1996	X 1996	X 1996	X 1996		X 1996
Weldon Cave	Private	McNeil/Round Rock						X 1996
West Rim Cave	Not Protected under BCCP	Central Austin						X 1996

Sources: BCCP Permit 1996, Elliott 1992, USFWS 1994, Reddell 2004 and 2005, HNTB 2005

X 1996 = confirmed occurrence based on collected specimen, the designation in the 1996 BCCP permit

P 1996 = probable occurrence based on observation but not confirmed with collected specimen, the designation in 1996 BCCP permit

X 2005 = was listed as confirmed in the HNTB summary of James Reddell's data, 2005 report for USFWS

Tentative 2005 = was listed as tentative in the HNTB summary of Reddell's data, 2005 report for USFWS

Delete P = this species is no long thought to occur in this cave (personal communication Reddell 2004 or 2005).

* Reddell (pers com 2005) reported that *Tartarocreagris texana* does NOT occur in Stovepipe Cave. The species there is *Tartarocreagris altimana,* known only from that cave.

3.0 OWNERSHIP AND PROTECTION STATUS

The following table lists the status of the 62 caves/karst features listed in the BCCP permit with information on ownership, species status, cave cluster.

Table 2: 2006 Ownership Status of the BCCP 62 caves/karst features (35 with ES and 27 caves with SOC).

Cave Name	ES or SOC	Current tract/owner. On BCP Land or private	Cave Cluster
Adobe Springs Cave	SOC	BCP Lehmann/TNC	
Airman's Cave	SOC	BCP Barton Creek/COA	
Amber Cave	ES	BCP Jollyville/TC	4 Points Cl (Parke)
Armadillo Ranch Sink	SOC	Private	
Arrow Cave	SOC	BCP Slaughter Cr. Pk./COA	
Bandit Cave	ES	Private	
Beard Ranch Cave (Featherman's Cave)	ES	BCP Ivanhoe/COA	
Bee Creek Cave	ES	Private	
Blowing Sink Cave	SOC	BCP COA	
Broken Arrow Cave	ES	BCP Lime Crk Pres/COA	
Buda Boulder Spg.	SOC	BCP Shoal Creek Grblt./COA	
Cave X	SOC	Private/COA Protection Agreement	
Cave Y	SOC	BCP Barton Creek Grblt/COA	
Ceiling Slot Cave	SOC	Private	
Cold Cave	ES	Private	Northwood Cl.
Cotterell Cave	ES	BCP Stillhouse Hollow Preserve./COA	
Disbelievers Cave	ES	BCP Private 10(a)	4 Points Cl. (Perot)
District Park Cave	SOC	BCP D.Nickols Pk./COA	
Eluvial Cave	ES	BCP Private 10(a)	4 Points Cl. (Perot)
Flint Ridge Cave	SOC	Prop 2/COA	

Fossil Cave	ES	BCP Schroeter Pk./COA	
Fossil Garden Cave	ES	Private	McNeil Cl.
Gallifer Cave	ES	BCP Jollyville/TC	4 Points Cl (Parke)
Get Down Cave	SOC	Private/COA Protection Agreement with TCMA	
Goat Cave	SOC	BCP Goat Cave Karst Preserve/COA	
Hole-in-the-Road	ES	Private	Northwood Cl.
Ireland's Cave	SOC	Private Circle C	
Jack's Joint	SOC	Private	
Japygid Cave	ES	BCP Private 10(a)	4 Points Cl. (Perot)
Jest John Cave	ES	BCP Forest Ridge/COA	
Jester Estates Cave	ES	BCP Forest Ridge/COA	
Jollyville Plateau Cv.	ES	BCP Private 10(a)	4 Points Cl. (Perot)
Kretschmarr Cave	ES	BCP Jollyville/TC	4 Points Cl. (Parke)
Kretschmarr Dble. Pit	ES	BCP Jollyville/TC	4 Points Cl. (Parke)
Lamm Cave	ES	BCP Private Section 7	
Little Bee Cr. Cave	ES	BCP Ullrich WTP/COA	
Lost Gold Cave	SOC	Private	
Lost Oasis Cave	SOC	Private TCMA	
M.W.A. Cave	ES	BCP Private 10(a)	4 Points Cl. (Perot)
Maple Run Cave	SOC	BCP Goat Cave Karst Preserve/COA	
McDonald Cave	ES	BCP Jollyville/TC	
McNeil Bat Cave	ES	Private	McNeil Cl.
Midnight Cave	SOC	BCP Slaughter Cr. Pk./COA	
Moss Pit	SOC	Private	
New Comanche Tr. Cave	ES	Private	
No Rent Cave	ES	Private	McNeil Cl.
North Root Cave	ES	BCP Jollyville/TC	4 Points Cl (Parke)
Pennie's Cave	SOC	Private-Destroyed	
Pickle Pit	SOC	BCP Private Sec. 7	
Pipeline Cave	SOC	Private	
Rolling Rock Cave	ES	BCP Lime Cr. Prs./COA	

Root Cave	ES	BCP Jollyville/TC	4 Points Cl (Parke)
Slaughter Creek Cave	SOC	BCP Slaughter Cr.Pk./COA	
Spanish Wells	SOC	Private	
Spider Cave	ES	BCP Park West/COA	
Stark's North Mine	SOC	Private	
Stovepipe Cave	ES	BCP Private Sec. 7	
Talus Springs Cave	SOC	Private/ 10(a) permit, TC checks entrance	
Tardus Hole	ES	BCP Jollyville/TC	4 Points Cl (Parke)
Tooth Cave	ES	BCP Jollyville/TC	4 Points Cl (Parke)
Weldon Cave	ES	Private	McNeil Cl.
Whirlpool Cave	SOC	Private TCMA	

The caves on Balcones Canyonlands Preserve (BCP) land generally have adequate buffer areas and are receiving adequate protection. However, some are too close to adjacent development. Additionally**,** some of these caves listed as "protected", under individual USFWS Section 10(a) or Section 7 permits, may not be managed to adequately protect them. Some of the caves designated in this report as generally "protected" do not have large enough buffer areas around them to meet the requirements listed in *the U.S. Fish and Wildlife Service Draft Recommendations for Karst Preserve Design, March, 2001* version*,* including many caves that were considered "protected" under USFWS individual 10a permits in years past. The latest USFWS preserve design recommendations direct that the protected area surrounding the cave must be 59-89 acres in size to capture the majority the plant and animal community elements in viable numbers needed to support the cave species.

Travis County owns two small cave tracts that are not large enough to adequately protect the footprint and drainage areas since only the entrances are "protected". The COA currently has two Private Landowner Agreements to protect BCP caves but managing these agreements with the private owners has been challenging.

The following table lists caves that are currently gated, fenced and/or open to the public, and also their protection and monitoring status.

Table 3: 2006 Protection, monitoring and access status of the 62 BCP karst features

Cave Name	Gated/ Fenced	Protection Area Status /Adequate Preserve size	Species Monitoring Status	Public Access
Adobe Springs Cave		Protected on preserve		none
Airman's Cave		Protected on parkland	COA species and surface monitoring	open
Amber Cave	Gated, fenced	Protected on preserve (very close to road and sewer line)	TC bi-annual surface monitoring, cricket exit count, RIFA treatment	none
Armadillo Ranch Sink		Private - Unknown		none
Arrow Cave	Gated	Protected in parkland .(There are nearby homes imm south of the cave entrance).	COA annual species and surface monitoring	none
Bandit Cave	Gated	Protected by private ecologically concerned landowner		none
Beard Ranch Cave		Protected on preserve	COA annual species and quarterly surface monitoring	none
Bee Creek Cave		Private- Unknown		none
Blowing Sink Cave	Gated [1]	Protected on preserve	COA annual species and quarterly surface monitoring	none
Broken Arrow Cave	Fenced (ranch fence)	Protected on preserve	COA annual species and quarterly surface monitoring	none
Buda Boulder Spg.		Protected in parkland (close proximity to a hike and bike trail)	COA annual species monitoring	none
Cave X	Gated, fenced	Protected by landowner with 4.5 acre setback to protect cave footprint. Protected to some extent (not actively managed and the set back is inadequate).		None
Cave Y	Gated	Protected in parkland	COA annual species and quarterly surface monitoring	none
Ceiling Slot Cave		Private - Unknown		none
Cold Cave		Private - Unknown		none
Cotterell Cave	Fenced	Protected in parkland. (There are nearby homes imm east of the cave entrance)	COA species and surface monitoring	none
Disbelievers Cave		Protected by 10a permit, hired ACI Consulting		none
District Park Cave	Gated after th 1st room.	Protected in parkland	COA species and surface monitoring	1st room open, past the 1st room access by permit*
Eluvial Cave		Protected by 10a permit, hired ACI Consulting		none
Flint Ridge Cave	Gated	Protected in watershed protection Land (drainage basin may be negatively impacted by the construction of a new highway).	COA semi-annual species and quarterly surface monitoring	none
Fossil Cave		Protected in parkland	Exact location of cave is unknown	none
Fossil Garden Cave		Private - Unknown	COA/ USFWS conducted one faunal last fiscal year)	none
Gallifer Cave	Gated, fenced	Protected on preserve	TC bi-annual surface monitoring, cricket exit count, RIFA assessment, Fall end. Species monitoring	none
Get Down Cave	Gated	Protected with Protection Agreement Inadequate setback from development.	TCMA species and surface monitoring	none
Goat Cave	Fenced	Protected on preserve	COA semiannual faunal surveys, monthly surface monitoring	access by permit*

			monitoring	
Hole-in-the-Road		Private –Unknown. (very close to a major roadway)	COA/ USFWS conducted one faunal survey last fiscal year	none
Ireland's Cave	Fenced	Protected by landowner with 4.8 ac. Setback, watershed problems with golf course, setback inadequate	COA/ USFWS/ TCMA conducted one faunal survey last fiscal year	none
Jack's Joint		Private - Unknown		none
Japygid Cave		Protected by 10a permit, hired ACI Consulting		none
Jest John Cave		Protected on preserve	COA cricket exit count, bi-annual surface monitoring	none
Jester Estates Cave	Gated	Protected on preserve (3.2 acre preserve surrounded by homes).	COA annual species and quarterly surface monitoring	none
Jollyville Plateau Cv.	Gated [1]	Protected by 10a permit, hired ACI Consulting		none
Kretschmarr Cave	Gated, Fenced	Protected on preserve. Too close to roadway and in i powerline ROW. Potential development land too close east and west.	TC bi-annual surface monitoring, cricket exit count, RIFA assessment	none
Kretschmarr Dble. Pit	Fenced	Protected on preserve	TC bi-annual surface monitoring, cricket exit count, RIFA assessment	none
Lamm Cave	Gated on 12// be fenced in 2	COA negotiated setback (approximately 150')	Zara Environmental, COA, Travis County conducted one faunal survey year last fiscal year. Site will be monitored and treated for fire ants in the future	none
Little Bee Cr. Cave	Gated	Protected by COA WWW Dept	Annual faunal survey and semi-annual surface monitoring	none
Lost Gold Cave	Gated	Private - Unknown, new owner, may be development near cave entrance		none
Lost Oasis Cave	Gated and Fe	Protected by TCMA	TCMA species and surface monitoring	controlled access**
M.W.A. Cave		Protected by 10a permit, hired ACI Consulting		
Maple Run Cave	Gated	Protected on preserve	Annual faunal survey and monthly surface monitoring	access by permit*
McDonald Cave	Fenced	Protected on preserve	TC bi-annual surface monitoring, cricket exit count, RIFA assessment	none
McNeil Bat Cave		Private – Unknown (close proximity to high school)		none
Midnight Cave	Fenced	Protected on parkland (close proximity to soccer fields)	COA annual species and Quarterly surface monitoring	access by permit*
Moss Pit		Private - Unknown		none
New Comanche Tr. Cave		Private	TC is negotiating to acquire. Monitoring by consultants for Landowner .	none
No Rent Cave		Private - Unknown		none
North Root Cave		Protected on preserve but area too small. Potentially threatened with surrounding development.	TC bi-annual surface monitoring, cricket exit count, RIFA assessment	none
Pennie's Cave		Destroyed (cave filled in)		none
Pickle Pit	Gated	Private- Unknown		none
Pipeline Cave	Metal frame [1]	Private - Unknown		none
Rolling Rock Cave	Fenced (ranch fence)	Protected on preserve	COA annual species and quarterly surface monitoring	none
Root Cave		Protected on preserve but area too small. Potentially threatened with surrounding development.	TC bi-annual surface monitoring, cricket exit count, RIFA assessment	none
Slaughter Creek Cave	Gated	Protected on parkland. (There are nearby homes imm south of the cave entrance)	COA annual species and quarterly surface monitoring	none
Spanish Wells		Private- Unknown		none
Spider Cave	Fenced (ranch fence)	Protected on preserve	COA annual species and quarterly surface monitoring	none
Stark's North		Private Unknown, recently sold		none

Mine				
Stovepipe Cave		Protected by Sec. 7 fence cut, illegal access. Appears permit holder not protecting adequately.		None
Talus Springs Cave	Gated	Protected by Homeowners Association and TC, only has 50' setback from houses and is probably effected by uphill development.	TC bi-annual surface monitoring, RIFA assessment, annual species monitoring	none
Tardus Hole	Fenced	Protected on preserve	TC bi-annual surface monitoring, cricket exit count, RIFA assessment	none
Tooth Cave	Gated	Protected on preserve but area too small. Potentially threatened with surrounding development.	TC bi-annual surface monitoring, cricket exit count, RIFA assessment, fall end. Species monitoring	none
Weldon Cave		Private - Unknown		none
Whirlpool Cave	Gated	Protected by TCMA	TCMA species and surface monitoring	controlled access**

* Access by Permit - Permit may be issued by COA – Austin Water Utility or PARD staff.

** Controlled Access - Private cave owners control the access

[1] Needs gate repairs/improved gate

4.0 ACCESS AND EDUCATION

In the fiscal year 10/01/05-9/30/06, the total number of visitors in the City of Austin's BCCP caves for educational/recreational/rescue training that were issued access permits were: District Park Cave (TCMA 8 COA 27), Maple Run Cave (TCMA 34 & COA 24), Midnight Cave (TCMA 2), Whirlpool Cave (783), Goat Cave (TCMA 20 & COA 14) and Get Down Cave (TCMA 400 to entrance room only-See TCMA report further in this report). See Table 3 for access and gating status of all of the BCP caves.

The TCMA has embarked on a mission to further educate the general Austin area public regarding the importance and sensitivity of our karst and aquifer. To reach that goal, in 2006, nearly 1000 citizens had an opportunity to experience a cave visit and were educated about cave biology and the aquifer. Groups include scouts, numerous elementary schools, various public and private high schools, university students, and adults. It has been observed that education of the public has lead to an increased awareness, more conscientious, responsible behaviour and decision making regaarding lawn care practices, water usage, and interest about Austin's karst and water.

5.0 MANAGEMENT COORDINATION AND OVERSIGHT

The City of Austin, Travis County and TCMA have continued to work together to standardize karst monitoring and reporting procedures.

The Karst Sub-Committee of the Scientific Advisory Committee (that advises the BCP Coordinating Committee) continued to monitor BCP karst issues and to advise and make recommendations on BCP karst protection issues.

6.0 BIOLOGICAL MONITORING

The City of Austin's BCCP staff performed species surveys for Airman's cave, Another cave, Arrow cave, Blowing Sink, Broken Arrow cave, Cave X, Cotterell Cave, District Park cave, Flintridge cave, Goat cave, Jest John cave (cricket exit count), Jester Estates Cave, Little Bee Creek cave, Maple Run cave, Midnight Cave, Rolling Rock cave, Seibert Sink, Slaughter Creek cave, and Spider cave (note: Another and Seibert Sink are caves not listed on the BCCP permit, however, they do contain species of concern).

Travis County's BCCP staff, accompanied by permitted karst biologist Jean Krejca, conducted species surveys in two Travis county-owned BCP caves: Tooth cave and Gallifer cave. Both *Texella reyesi* and *Rhadine persephone* were observed in Gallifer cave, while *Texella reyesi* was observed in Tooth cave. A total of 31 *Texella reyesi* individuals and one *Rhadine persephone* individual were recorded in Gallifer Cave. Ten *Texella reyesi* individuals were observed in Tooth Cave.

Travis County did both surface monitoring and cricket exit counts at McDonald, Amber, Tooth, Root, North Root, Gallifer, Kretschmarr, Kretschmarr Double Pit, and Tardus Hole. Only one cricket count was conducted at each of these caves in FY06. Conclusions will be made once additional cricket surveys are completed for comparison. Cricket exit counts will be conducted bi-annually to ascertain trends to gauge overall health of the cave systems. Additionally, County staff did surface monitoring and conducted a faunal survey at Talus Springs, a privately-owned listed SOC cave. Suface monitoring was also conducted at Two Trunks Cave (not listed on the BCCP permit), as well as all other Travis County-owned karst features, including several sinks, caves and pits. One County biologist on staff has applied for a USFWS endangered karst survey permit and is currently waiting to receive that permit. In the interim, county biologists continued training with local permitted karst biologists to improve and expand skills in karst biological survey methodology and local species identification.

In addition to managing the karst features required in the BCCP permit, BCCP Partners are also voluntarily managing other karst features located on preserve land, such as Testudo Tube (COA) and several non-BCCP karst features. The report, "Summary of Information for

Assessing the Status of the Tooth Cave ground beetle (*Radine persephone*)" (HNTB, 2005), lists locations for this species that add new locations not listed in the 1996 BCCP permit. These new locations within the 62 karst features in the permit have been added to Table 1. Two Trunks Cave, located on Travis County BCP land, contains the Tooth Cave ground beetle but is not in this list of 62 karst features on the permit. Though not listed on the permit, this cave will be protected in the same manner as other BCP caves containing endangered species.

The City of Austin reissued a Scientific/Research permit to Rob Jackson, professor at Duke and Will Pockman, professor at the University of New Mexico continued their study on water uptake of certain species of trees located within Cotterell cave. This research was completed on 3/31/06, and all equipment was removed from site.
The City of Austin issued a Scientific/Research permit to Dr Jay Banner (UT at Austin). Dr Banner will be monitoring CO2 levels in area caves, attempting to determine why levels fluctuate during the year.
The City of Austin issued a Scientific/Research permit to Zara Environmental LLC. As part of a section 6 grant, Zara Environmental will be accessing several Austin area caves measuring foraging differences in rural and urban cave cricket populations using stable isotope analysis of cave invertebrates to determine diet.

Nico Hauwert with the COA-WPDRD continued his study on the surface catchment area of Flintridge cave. This study will help determine the potential negative impacts associated with the construction of proposed state Highway 45 South.

The Texas Cave Management Association (TCMA) performed species surveys in Whirlpool, Get Down, and Lost Oasis Caves (Attachment A). TCMA continued with the cave drip monitoring project at Flintridge Cave. The study area is beneath the proposed Outer Loop (SH45) and base line measurements will help evaluate the effect of the highway. TCMA continued to provide valuable volunteer support activities to the BCCP and Central Texas cave protection efforts. They assisted with monitoring of access to City of Austin sensitive caves, participated in negotiations with developers to manage caves under City of Austin cave management agreements, visited caves on private land to assess potential threats, and assisted both BCCP partners in assessment and protection of BCP caves. The BCCP partners greatly appreciate the dedication and hard work of this group. It has become evident to TCMA staff over the past 3 years of monitoring that caves located in urban areas have been experiencing significant negative changes due to the presence of raccoons. The urban caves such as Get Down, Live Oak, Lost Oasis, Electo Mag, Lakeline and others have become the

residence of the 'neighborhood' maurading raccoons. The raccoons use the caves during the daylight hours as their dens and at night emerge to feed at back porch pet food dishes, trash cans, etc. This increase in suburban neighborhoods is fairly recent and has caused a tremendous decrease in the numbers of typical cave invertebrates that have been historically observed. This raises the issue of the effect of too much scat and energy input in to the caves, which in turn attracts more aggressive invertebrates, who then move further into the cave into areas not usually inhabited by these more aggressive species, causing a dramatic decrease in the numbers of typical karst species normally observed. The long term affects of this change are unknown at this time. At Get Down Cave in particular, the decrease in typical cave critters has been so dramatic that TCMA has, with permission, filled in the previously mandated gate 'animal entrances' with concrete and rocks to exclude the raccoons. This has not been completely successful. There was partial success in 2005, but it was found that the raccoon juveniles were still inhabiting the cave. In 2006 additional efforts were put toward 'total' exclusion of raccoons and we hope for the best and a return to normal of the cave/karst invertebrates.

The visitations of raccoons to BCP caves have previously been encouraged because of the additional energy brought into the cave, considered important for the health of cave inhabitants, including the BCP protected species. While the droppings of one or two raccoons might provide useful energy inputs that benefit the protected species, the use of the cave by large numbers of raccoons has turned several caves into raccoon latrines, and the accumulation of large amounts of skat has overwhelmed the cave ecosystem.

The population of raccoons in urban areas has greatly expanded, due to the increased availability of food, and many of these animals are using caves as a convenient den. In Get Down Cave this increased usage resulted in fresh deposits of skat that over large areas were approximately two to three deposits per square meter. This means that an area 2 by 3 meters would have 12 to 18 piles of skat. Moving through the cave is difficult, and the air blowing from the entrance has a strong odor of feces. The ecology of the cave was totally changed. None of the species of concern, the more highly cave adapted animals, were present in the high skat areas. Large numbers of Rove beetles and isopods of the family Porcellionidae had replaced the more cave-adapted species.

Excessive accumulations of skat have been observed elsewhere along the urban fringe, where subdivisions border cave preserves. In Electo-Mag Cave in Williamson County James Reddell has reported large amounts of skat. Dunvegan Cave in Travis County, adjacent to a subdivision, is also developing high levels of raccoon use and skat. Cave managers need to be aware that too much raccoon use can be detrimental to the ecology of the more highly cave adapted animals. It is likely that if raccoon use in these high skat caves is not greatly

reduced, eventually the populations in the skat areas will be replaced by non-cave adapted population of cockroaches and other high-energy animals.

7.0 RECOMMENDATIONS

BCP urban caves should be monitored for presence of raccoons and if excessive raccoons are present, then measures should be taken to exclude them from access to the caves. These measures would include observation for scat, locating and blocking all raccoon accessible entrances, removal of the majority of the scat and remonitoring to see if indeed the exclusion has been successful.

8.0 KARST MANAGEMENT ACTIVITIES

The BCP Land Management Plan outlined planned activities concerning the 62 BCCP karst features. Table 4 below includes a summary of activities completed in 2006.

Table 4: 2006 BCP Karst Management Activities

Adobe Springs Cave The Nature Conservancy The last cave faunal survey was conducted in 1999. The entrance to the cave continues to be undisturbed and is protected on the Lehmann Preserve tract.
Airman's Cave City of Austin 1. Completed annual cave faunal survey(See Attachment) 2. On July 2, AFD responded to a 911 rescue call to this cave. An individual reportedly was too tired to exit the cave so other party members exited and called 911, however, when the rescue team arrived the "tired individual" exited the cave without assistance. COA BCP staff members revisited the idea of gating the cave, however, after reviewing the events, it was determined that a cave gate is not warranted at this time. Local caving organizations have agreed to help monitor and "police" the cave, however, it is understood that if more events such as this occur in the future, then the City will be forced to gate the cave. 3. Other than the event stated above, BCP staff have noticed a slight increase in litter and graffiti. BCP staff contacted TCMA and the local UT grotto requesting help in monitoring this situation. 4. UT grotto members have volunteered to help the City install an informational sign inside the cave along with registries which will help monitor actual traffic inside the cave.
Amber Cave Travis County 1.Conducted cricket exit survey. 2. Did trash cleanup and did frequent surface inspections with no signs of vandalism to the cave entrance or in the cave. 3. Maintained fencing and signage to protect this area from unauthorized access and dumping.

4. Inspected and treated for RIFA.
Armadillo Ranch Sink Private
Arrow Cave City of Austin 1. Completed annual cave faunal survey. 2. Quarterly site inspections were conducted. City staff continue to deal with ongoing dumping problems from the adjacent neighborhood. Staff removed dumped trash from the entrance area of the cave and are seeking legal action against the individual responsible. 3. The site was also inspected for RIFA infestations. On all visits fire ant mounds were observed in close proximity of the cave entrance, however, ants did not appear to be entering the cave. 4. City of Austin BCP staff sought bids for the drafting of an interior map for Arrow cave and the nearby sinkholes. The contract was awarded and the map should be completed next fiscal year.
Bandit Cave Private
Beard Ranch Cave (Featherman's Cave), City of Austin 1. The cave was inspected quarterly. 2. No evidence of vandalism was noted. 3. No red imported fire ants were found. A healthy population of native fire ants was found in close proximity to the cave. 4. City of Austin BCP staff sought bids for the drafting of an interior map for Beard Ranch cave. The contract was awarded and the map should be completed next fiscal year.
Bee Creek Cave Private
Blowing Sink Cave City of Austin 1. This site was inspected 6 times and no signs of vandalism were found in the cave or to the cave entrance. 2. Fire ant mounds were present, (within 150' radius); activity was noted near the entrance but not inside the cave. 3. BCP staff and Andy Gluesenkamp collected a neotenic salamander and observed another on the same trip. The salamander was given to Paul Chippindale (UTA) for molecular analysis. 4. Zara Environmental along with local cave volunteers and the City of Austin initiated a stabilization project using reinforced concrete to stabilize passageways within the cave. 5. BCP staff conducted 3 cave faunal surveys (See attachments) 6. BCP staff measured water flow, CO2 air and water concentrations and collected water samples for analysis by WPDRD 7. COA BCP staff reviewed a infrastructure permit application by Texas Gas Service to run a new gas line along the northern portion of the existing "Kinder Morgan" line. COA BCP and WPDRD staff met with Texas Gas Service and worked out an agreement to minimize damage to the site and aquifer.
Broken Arrow Cave City of Austin

1. This cave was inspected quarterly with no sign of human visitation or vandalism. 2. A small amount of fire ant activity was found near the cave entrance but not activity was observed in the entrance. 3. BCP staff conducted one cave faunal survey (see attachment).
Buda Boulder Spring City of Austin 1. BCP staff visited the site twice and noted no real negative impacts to the spring. Old abandoned transient camps were found nearby. 2. WPDRD staff has taken water quality samples at this spring, most recently on 1/7/99. The chemistry looks fairly typical for an urban setting according to David Johns, (WSPD geologist).
Cave X Private 1. The City of Austin entered into a Private Landowner Agreement "Cave X, Management and Monitoring Plan, Covenants and Restrictions, (see attachment)", with the property owners (Regent's School) in Oct. 1999. The agreement sets aside a 4.5 acre area to protect the cave footprint. The USFWS was involved in the discussions on protection. 2. The cave entrance is gated and also has a fence for added protection. 3. There are still concerns about the implementation of Private Landowner Agreement that does not seem to be working yet. This site has had quite a lot of new development in close proximity of the cave. With the potential listing of *Cicurina cueva*, Regents expressed interest in a "Candidate Conservation Agreement". COA, Travis County, Regents, Horizon, and USFWS met regarding what measures would be needed to fulfill this. One suggestion was that Regents should start to implement the "Cave X Management and Monitoring Plan. 4. COA WPDRD and BCP staff met on site and were able to repair and open the Foster Ranch cave gate. WPDRD staff then led a field trip with students from the Regent's School to this cave and to the entrance of cave X. The purpose of this field trip was to educate the students on the importance of karst. 5. BCP staff conducted a cave faunal survey. (See attachment)
Cave Y City of Austin 1. 4 site visits were conducted to this cave with no signs of vandalism. 2. No red imported fire ant activity was observed at or near the cave entrance, however, there were fire ant mounds within a 150' radius of the cave.
Ceiling Slot Cave Private
Cold Cave Private
Cotterell Cave City of Austin 1. Bi-monthly site inspections were conducted, and found no RIFA at or near the cave. Staff did note that some one had cut the fence on two separate occasions. Staff responded by repairing the fence and . increased the frequency of patrols. 2. RIFA were treated with boiling water, most of the ants were located at the parking lot, approximately 300 feet from the cave. 3. Rob Jackson, professor at Duke and Will Pockman, professor at the University of New Mexico

completed their study on water uptake of certain species of trees. All research material was removed from site.
4. BCP staff conducted 2 cave faunal surveys(See attachments).
5. Due to increased access problems, BCP staff sought bids for the installation of a cave gate. The bid was awarded and the cave gate was completed to staff satisfaction.

Disbelievers Cave
Private 10a Permit: PRT-808694

District Park Cave
City of Austin
1. BCP staff conducted one cave faunal survey (See attachment).
2. Conducted site surveys quarterly. No red imported fire ants were noted in the cave.
3. Permitted access to this cave was allowed.
4. BCP staff removed trash from the un-gated portion of the cave.
5. Permitted UT grad student CO2 monitoring research project.
TCMA
1. 2005 a tree fell in and over the rock gabion enclosure around the cave, BCP and PARD staff were notified and no removal has taken place as of Jan. 2007. Local park trash and the fallen tree are the primary issues other than the gate/lock situation, see #2 below.
2. TCMA spent some months routinely working on the frozen lock and was able to get the cave back open. TCMA recommends regating the cave at the actual entrance to avoid the typical problem of flooding the current gate and lock, rendering the lock in-operable.

Eluvial Cave
Private 10a Permit: PRT-808694

Flint Ridge Cave
City of Austin
1. BCP staff conducted 6 site visits and noted no signs of illegal trespass and no fire ant activity inside the cave, however fire ant mounds were noted within a 150 foot radius of the cave entrance.
2. TCMA initiated a drip study to help determine % of recharge occurring overland.
3. BCP staff treated numerous RIFA mounds with boiling water.
4. BCP staff conducted one cave faunal survey (see attachment).
5. Nico Hauwert with the COA WPDRD continued his study on the surface catchment area of Flintridge cave. COA BCP staff contracted professional surveyors to delineate the Flint Ridge basin boundaries north of Flint Ridge cave.
6. COA WPDRD, BCP, and TCMA mapped the surface footprint of the cave via radio mapping to get an accurate assessment of the precise alignment of the cave in relation to the new SH 45 roadway. A three dimensional ground penetrating radar study is being conducted by UT Institute ogf Geophysics to determine whether water pools and cave extensions can be detected from the surface.
7. COA BCP staff met with LCRA regarding their proposal to route a new power line within the drainage area of Flintridge cave, staff urged LCRA to staff within TXDOT ROW.

Fossil Cave
City of Austin
1. The site was inspected quarterly and there was no new signs of vandalism

2. No red imported fire ant activity was observed at the suspected cave entrance, however, mounds were found within a 150' radius of the cave.
3. BCP staff monitored trail work to make sure no karst features were negatively impacted.
4. Invasive non-native vegetation was removed from the park.

Fossil Garden Cave
Private

Gallifer Cave
Travis County
1. Did surface inspections with no signs of vandalism to the cave entrance or in the cave.
2. Maintained fencing and signage to protect this area from unauthorized access and dumping.
3. Inspected for RIFA.
4. Conducted cricket exit survey.
5. Conducted cave faunal survey

Get Down Cave
TCMA
2006
1.The cave has been visited by TCMA monitoring staff numerous times in the past year to observe and mitigate (with concrete and rocks) for the influx of raccoons and the problems resulting from the influx. (See Section 6. O- Biological Monitoring)
2.The entrance room of the cave is visited by local citizens, one day per year, for the annual Cave Day Festival, held the last weekend of Oct. For the 2005 cave day, approximately 400 people visited the entrance room. Prior to cave day, TCMA staff removed in excess of a 5 gallon bucket of raccoon scat just from the entrance room.
3. The gate area was observed for further raccoon access and additional holes were 'plugged'.
4. TCMA as defacto managers/owners, monthly clean preserve, check for RIFA/treat w/boiling water, dump the 2 trash cans. The kiosk signage is updated and replaced with cooperation of the BEACD education department and printing support of the COA Watershed Protection Dept. Sandy Maldonado, graphics dept.
5. Support of preserve cleanups, with the help of various scout groups, and Magellon (Longhorn Pipeline) staff volunteers.
6. TCMA staff conducted one cave faunal survey.

Goat Cave Karst Preserve
City of Austin
1. Completed biannual faunal surveys
2. Surveyed for RIFA, however, due to time constraints, staff was unable to treat the area.
3. Conducted 12 site inspections, removed trash from preserve area.
4. Allowed permitted access to this cave. COA staff suspended AFD mock rescue scenarios due to violations of their access permit. Access will be restored if and when AFD staff attend a karst education class offered by TCMA.
5. Karst Education: Goat cave entrance area was used by George Veni's Karst/hydrology class.
6. No bats observed. There seems to be a consistent concern regarding the lack of bat populations in this and in other local Austin caves, such as Barker Bat and County Line Bat caves. These caves have historically had bat activity. Possible explanations for some historic bat colony locations is encroaching urbanization and changes in land usage.
TCMA

1. Dr. Tom Iliffe's biology class from A&M Galveston, vertical practice only. TCMA staff were on site to educate Dr. Iliffe's class regarding biological monitoring and careful caving to protect species.

Hole-in-the-Road Cave Private
Ireland's Cave Private 1. A new subdivision; Somerset Estates, is being constructed around the cave. 2. City of Austin Watershed Protection and Development Review Department obtained 4. 819 acres critical environmental feature setback surrounding the cave. About 99% of the cave's natural catchment area is preserved. The entire 4.819 acres setback will be fenced with a combination of 6-ft wood and wrought fencing. Currently the cave entrance is blocked with large rocks. 3. More info is needed on who will manage the cave; need to ask about possible landowner agreement with BCP.
Jack's Joint Cave Private
Japygid Cave Private 10a Permit: PRT-808694
Jest John Cave City of Austin 1. Conducted 2 site visits found and no signs of vandalism or human visitation. 2. No red imported fire ants were present at the cave entrance, however, there were mounds within a 150' radius of the cave entrance. 3. BCP staff conducted a cricket exit count (see attachment).
Jester Estates Cave City of Austin 1. BCP staff conducted 6 site visits and on several occasions removed new illegally dumped trash. 2. BCP staff continue to meet with neighbors regarding why these activities must end. BCP staff hand delivered an educational flier to all neighbors. The flier briefly states why this site is environmentally sensitive and lists ways neighbors can minimize their impacts to this site. 3. The site was treated for fire ants with boiling water. 4. City of Austin BCP staff sought bids for the drafting of an interior map for Jester Estates cave. The contract was awarded and the map should be completed next fiscal year. 5. BCP staff conducted one cave faunal survey (see attachment)
Jollyville Plateau Cave Private 10a Permit: PRT-808694
Kretschmarr Cave Travis County 1.Did surface inspections with no signs of vandalism to the cave entrance or in the cave. 2.Inspected for RIFA. 3.Conducted cricket exit survey.
Kretschmarr Double Pit Travis County 1. Did surface inspections with no signs of vandalism to the cave entrance or in the cave. 2. Inspected for RIFA.

3. Conducted cricket exit survey.
Lamm Cave Section 7 Permit 2-15-93-F-075 (see USFWS files) 1. The City of Austin negotiated protective measures for this cave including a Land Management Plan for this cave. The cave has a setback size of approximately 4.13 acres. The radius of the setback varies from a minimum of 123 feet south of the cave to a maximum of 340 feet north of the cave. 2. The cave was gated and the preserve area was fenced following COA WPDRD and BCP staff recommendations and design. Once the cave gate was completed, BCP staff reviewed work, requested additional measures and eventually signed off on the completed gate. 3. No application of fertilizers, pesticides or herbicides will be allowed in the CEF area. 4. Fire ants will be treated with boiling water twice per year following strict COA guidelines. 5. COA staff will continue to work with the property owner to make sure all aspects of the cave management agreement are carried out.
Little Bee Creek Cave City of Austin 1. BCP staff conducted 2 site visits. 2. BCP staff conducted a cave faunal survey. (See attachment)
Lost Gold Cave Private TCMA Contacted by HCC late 2006 regarding possible mitigation and purchase of cave, current owner negotiations may be possible in 2007
Lost Oasis Cave TCMA 1. TCMA staff conducted two cave faunal surveys. Regated in 2005, Zara Environmental has been monitoring the cave (See attachment A).
Maple Run Cave City of Austin 1. BCP staff conducted one cave faunal survey (See attachment). 2. Conducted 6 site visits, found no sign of unpermitted access, and on occasion, removed trash from the entrance. 3. Permitted UT grad student CO2 monitoring research project. 4. Permitted access to this cave is allowed. 5. Surveyed for RIFA, however, due to time constraints, staff was unable to treat the area.
McDonald Cave Travis County 1. Did surface inspections with no signs of vandalism to the cave entrance or in the cave. 2. Inspected for RIFA. 3. Conducted cricket exit survey

McNeil Bat Cave
Private
1.TCMA attempted to observe any bat flights from a remote location at the RR HS and did not sight any emergence from the cave locality.
2. Landowner relations are in need of improvement in order to gain any access to the cave or implement any types of protection measures.
3. No new activity of access attempts were made in 2005

M.W.A. Cave
Private 10a Permit: PRT-808694
(see FWS files for status)

Moss Pit Cave
Private

New Comanche Trail Cave
Private

No Rent Cave
Private

North Root Cave
Travis County
1. Did surface inspections with no signs of vandalism to the cave entrance or in the cave.
2. Inspected for RIFA.

Pennie's Cave
Private
1. The entrance is filled with rock, gravel and graded over and the cave may be lost. City Watershed Protection staff is aware of the issue and will require setbacks for its protection if/when development plans are submitted to the COA. The BCCP may still want to consider replacing this cave on the BCP list or begin work on a private landowner agreement to uncover /protect it.
2. TCMA reported that Scott Heirs, COA Watershed Protection obtained accurate GPS coordinates to the filled cave entrance and the owner has clearly expressed no interest in the cave ever being opened. It is the hope of TCMA that the BCCP will replace this covered cave with Grassy Cove or some other cave in need of BCCP protection (see TCMA report).
3. TCMA reported that Grassy Cove Cave, a cave which would benefit from protection through the BCP, is now owned by the Circle C Neighborhood Assoc. and the entrance to this cave is featured as the entrance photo in the City of Austin Watershed Protection's new poster titled "Austin Underground".

Pickle Pit Cave
Section 7 Permit 2-15-93-F-075
(see USFWS files)

Pipeline Cave
Private
TCMA had a meeting with the Stratus Development Group and has been assured that the cave will be set aside and that the previously planned large commercial development on that tract will likely be scaled down to accommodate the cave.
2004-2005 no changes observed. There is a need to establish a sufficient setback for the cave with the Stratus group, TCMA will look into it 2006.

Rolling Rock Cave

City of Austin
1. This cave was inspected quarterly, and no sign of human visitation or vandalism was found.
2. Was inspected for red imported fire ants, none were present at or near the cave entrance, but did find several species of native ants. RIFA mounds were found within a 150' radius of the cave entrance.
3. Conducted one cave faunal survey (see attachment).

Root Cave
Travis County
1. Did frequent surface inspections with no signs of vandalism to the cave entrance or in the cave.
2. Inspected for RIFA.
3. Conducted cricket exit survey.

Slaughter Creek Cave
City of Austin
1.Quarterly site inspections were conducted.
2. The entrance was inspected to make sure that no human access had occurred.
3. The site was also inspected for RIFA infestations. On all visits fire ant mounds were found in close proximity of the cave entrance. On at least one occasion staff noticed RIFA entering the cave.
4. City of Austin BCP staff sought bids for the drafting of an interior map for Slaughter Creek cave. The contract was awarded and the map should be completed next fiscal year.
5. Completed annual cave faunal survey. (See Attachment)
6. Upgraded existing gate to better protect against illegal access.
7. Issued a Scientific/Research permit to Zara Environmental to determine the diet of cave cricket populations using stable isotope analysis of cave invertebrates to determine diet.

Spanish Wells Cave
Private (location unknown)

Spider Cave
City of Austin
1. 4 site visits were conducted, and no sign of human access, or vandalism was found.
2. Surveyed for red imported fire ants, no mounds were noted in close proximity of the cave.
3.Conducted one cave faunal survey (see attachment).
City of Austin BCP staff sought bids for the drafting of an interior map for Spider cave. The contract was awarded and the map should be completed next fiscal year.

Stark's North Mine
Private
1. TCMA reports that they visited the mine and it appears undisturbed. TCMA was contacted about sewer line construction in the vicinity, and the engineer of the project was advised of the sensitivity of this locality.
2. TCMA reports the tract of land where the cave is has been put on the market. It is unknown at this time if the land has sold and what the status of the cave will be after the new owner takes possession.
3. City of Austin accurately GPS the cave position. Trash was visible inside the cave passage.
4. The neighbor immediately downhill from the cave has contacted TCMA re; protection of the cave and the impending erosion issues. No action taken.

Stovepipe Cave

Section 7 Permit 2-15-93-F-075
(see USFWS files)
1. COA is currently in negotiation with owner to take over ownership of this cave and preserve.

Talus Springs Cave
Private
1.The USFWS 10a permit PRT 815447 mitigation requirement intended this cave to go to Travis County, however, the cave is located on private land just outside of the mitigation area. Travis County has continued requesting that the homeowners association donate the land to Travis County; Coordinated management with them.
2. Did surface inspections with no signs of vandalism to the cave entrance or in the cave.
3. Conducted cave faunal survey.

Tardus Hole Cave (Kretschmarr Fluted Sink)
Travis County
1. Did surface inspections with no signs of vandalism to the cave entrance or in the cave.
2. Conducted cricket exit survey.

Tooth Cave
Travis County
1.Did surface inspections with no signs of vandalism to the cave entrance or in the cave.
2. Inspected for RIFA.
3.Conducted cricket exit survey
4.Conducted cave faunal survey

Weldon Cave
Private

Whirlpool Cave
TCMA
1. Conducted a biological survey in December 2003.
2. Controlled and monitored public access.
3. Planning to relocate the survey areas in 2003. Education usage of the cave continues to be very regular and high as compared to the other Austin area caves.
The main groups utilizing the cave are The Austin Nature Center, The University of Texas, Texas State University, Texas A&M, and various outdoor groups from around central Texas. This cave has tremendous potential as an educational resource and receives in excess of 1000 visits annually and observations indicate that visitor impact to be minimal.
4.The TCMA partnered with the Austin Water Utility for implementation of the Austin Clean Water Program (ACWP). The Whirlpool Preserve site was used as a staging area for over 1 mile of sewer line leak prevention liner materials.
5.TCMA granted permission to the US Geological Survey for the installation of a groundwater monitoring well at the Whirlpool Preserve site.
2006
1. Worked with COA-Water Utility on the ACCP finish up. There were several items not finished which led to considerable trespassing by off road vehicles. The preserve has been somewhat secured to prevent unauthorized access and the area will be re-vegetated in the spring of 2007.
2. The cave is heavily utilized for karst and aquifer education by both the COA and the BSEACD. Additionally TCMA Austin educators have included opening up visits to Austin

citizens in order to further educate neighbors and the general public as to the importance and sensitivity of the Austin karst, its critters and the aquifer. As part of that education, individuals have joined TCMA on biological monitoring activities.

3. Preserve and cave cleanups are on-going as the area is typically used as a local dumpsite for construction trash and the Latta Branch of Williamson Creek, runs thru the preserve, which leaves lots of garbage and trash post rain events. Prior to buildout of the VWO neighborhood, it would take at least a 2 inch rain to cause the creek to run. Since that buildout, it now only takes approximately $1/10^{th}$ of an inch, this is due to the great increase of impervious cover. The water quality is unknown but thought to not be of sufficient quality to allow or encourage recharge to the cave.

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ATTACHMENT A:

Texas Cave Management Association (TCMA)
December 2006

Submitted by: Julie Jenkins and Bill Russell, TCMA

Whirlpool Cave, owned by Texas Cave Management Association, is utilized by a large number of visitors from Austin and the surrounding area. The cave's primarily use is for educational/recreational activities including, aquifer and karst education made available to the general population. Other uses include Austin Fire Department safety and fire rescue training, science monitoring for the TCMA and BCP and caver training by local Texas cave grottos. The cave is typically visited on a weekly basis by one or more organizations. In the fall new cavers receive training and experience in Whirlpool. Groups using the cave stay to the well-worn path and seldom if ever stray from the established route. Visits may take as little as an hour or last for several hours, depending on the educational needs, age and background of the group touring the cave. Whirlpool received 783 registered visitors in 2005-2006.

Julie Jenkins, TCMA staff, performed three biological surveys in 2005-2006. This year finalized activities with the City of Ausint's Clean Water Project contractors, which included installing over a mile of liner in the sewer lines that run south thru the preserve. For several months Insituform, the contractor, utilized the preserve as a staging ground for the new poly liner materials and TCMA provided initial property access to the contractor. As a result of this project, TCMA was able to work with the contractor and secure a gate under Mopac to help alleviate the vehicular trespassing that has ensued since the ACWP began more than a year and a half ago.
No info has been provided from USGS regarding monitoring of the well installed in 2005.

LOST OASIS CAVE

In spring 2005 the old gate was removed and a new entrance was gated. This provides better access for surveying. The old gate area has been thoroughly covered and secured. This reduced the airflow to pre-development conditions to prevent drying of the cave interior Historically, Lost Oasis, a small cave, has been monitored for its biology and has drawn little interest from local cavers. Thus, there has been no access except for during re-gating and monitoring trips.
There was still some evidence of raccoon scat in the cave. It appears that one or two small holes have opened to the surface allowing entry into the cave for small animals. We have put

rocks on top of both holes. Our observance is that where caves are very near residential development the occurrence of raccoons and increased scat has become a problem or at least an issue for the cave species.

Zara Environmental and the Illonois Natural History Survey have undertaken a study under a grant from Texas Parks and Wildlife Dept. (TPWD) to examine a selection of urban and rural caves from Austin through San Antonio, Texas (see synopsis below). Among these caves is Lost Oasis Cave. The purpose of the study is to assess stable isotope ratios of Carbon and Nitrogen in an attempt to identify possible differences in energy flow in urban (disturbed) and rural cave settings, with an emphasis on the role of cave crickets (*Ceuthophilus* spp.). Field work for this study has been completed, and laboratory analysis and write-up are underway. A final report will be submitted to TPWD in December, 2007, and shortly thereafter it should be available to interested parties.

Brief synopsis of research being carried out at Lost Oasis Cave by the Illinois Natural History Survey (Champaign, IL) and Zara Environtmental (Buda, TX).

By Steve Taylor (Illinois Natural History Survey) and Peter Sprouse (Zara Environmental, LLC)

Under a grant[1] from Texas Parks and Wildlife Dept. we are examining a selection of urban and rural caves from Austin through San Antonio, Texas. Among these caves is Lost Oasis Cave. The purpose of the study is to assess stable isotope ratios of Carbon and Nitrogen in an attempt to identify possible differences in energy flow in urban (disturbed) and rural cave settings, with an emphasis on the role of cave crickets (*Ceuthophilus* spp.). In addition to obtaining small samples of invertebrates (from the caves) and nearby vegetation (above ground) for isotopic analysis on a quarterly basis for one year, we have also conducted a census of the invertebrates (timed visual search) at each cave during each quarter for one year. Field work for this study has been completed, and laboratory analysis and write-up are underway. A final report will be submitted to TPWD in December, 2007, and shortly thereafter it should be available to interested parties.

GET DOWN CAVE

The annual Western Oaks Cave Day date event was held on the last weekend in October. There were more visitations this year than previously (numbers exceeded 100 visitors to the entrance room of the cave). USFWS has been consulted re: access one day per year, entrance room only; the response is that this is not an endangered species cave, yet protection of the

[1] Taylor, Steven J., Jean K. Krejca, and Keith C. Hackley (Co-Principal Investigators). 2005. Examining possible foraging differences in urban and rural cave cricket populations: Preliminary study of carbon and nitrogen isotope ratios (d13C, d15N) as indicators of trophic level. Agency: Texas Parks and Wildlife Department. Three years, ends December 1, 2007.

SOC's is of importance. As the access does not in any way affect the SOC who dwell deep in the dark zone some 30 feet down and nearly 100 feet in the cave, this one day annual event access will continue and monitoring efforts will be included to determine if adverse affect to the SOC's is observed.

Outstanding issues of the year regarding the karst preserve are still ownership of the preserve and ownership/responsibility for the wet pond. These remain unresolved at the time of this report and presented somewhat of a stumbling block to the preserve management, as no funds were available. Although a management plan has been drafted, it has yet to be approved.

One survey was performed this year. Most remarkably, it should be noted that during our surveys we discovered an overabundance of raccoon scat, and obligate cave species had apparently been displaced by less adapted and more aggressive species, like rove beetles. It has been noted that there are distinct issues with the number of raccoons in the cave, which is demonstrated by both the increase in scat and number of decaying raccoon carcasses found.
We believe that the increased numbers in raccoons is due to the intense urbanization of the area which greatly increases the availability of food (dog food outside etc.). The animal access was blocked at various times during the year, yet the raccoons managed to locate additional methods of entry. Finally in October of 2005 a more robust blockage was put in place. The cave will be surveyed numerous times in 2006 to study the effectiveness of the raccoon anti-access measures. Frequently raccoon access has been regarded as necessary to maintain the energy for the cave environment however lately there have been several instances in which the abundance of raccoon scat has over powered the cave ecosystem resulting in the displacement of cave adapted animals by less adapted species.

CITY OF AUSTIN: GOAT CAVE KARST PRESERVE, DICK NICHOLS PARK AND THE SLAUGHTER CREEK METROPOLITAN PARK

The TCMA does not "officially" manage any of the city owned caves, we do provide valuable volunteer support activities on behalf of the city, such as in particular monitoring local access to city owned caves and support of cave and karst related activities.

TCMA administered access permits for the following city owned caves in 2005-2006:
Maple Run Cave: 2006- (34), 2005-(110) – up from last year
Goat Cave: 2006- (20), 2005-(63)_down from 2004

Midnight Cave: 2006- 2 trips, 1 with Nico Hauwer, COA and Bill Russell, TCMA to collect water samples, 1 unsuccessful trip due to air quality. 2005 (2) trips to check status of air, no actual trips took place 2004-2005 due to insufficient air for recreational use. Historically the air is of good quality as long as Slaughter Creek is running. When the creek quits running air quality diminishes. All gathered data from the monitoring site has been sent to Nico Hauwert with the City of Austin Watershed Protection and Development Review Dept.

District Park: 2006-7, up from last year, training trip only District Park Cave: This cave received one visitation in 2004-2005. This visit was a training class for the Austin Nature and Science Center counselors, training provided by Julie Jenkins, TCMA.. The gate/lock access problems still exist. It is recommended that the current gate be removed and relocated to just inside the cave entrance at an area where the passage is narrow and accessibility limited. It is thought that this would eliminate the most serious access problems that of having to dig out the gate after heavy rain events and the problems of lock maintenance.

Goat Cave: 2006, 20 students worked on vertical practice, TCMA was on hand to educated regarding biological monitoring areas and need for care when visiting the cave and avoid damaging species.
2005-In September or Oct., Dr. Tom Iliffe's group from Texas A&M Galveston biology class visited Goat Cave. It was raining that day and thus visitation was limited to entrance rebelay training was the only activity.

Maple Run: 2006-34 visits, Tone Garet, local caver visited most frequently and has been observing drip areas as a possibility of increasing the number of caves that are being monitored for drip activity.
2005-Saw a small increase of visits with no adverse affects apparent, likely due to bad weather that prevented access to Goat Cave, bumping a group over to Maple Run.

ATTACHMENT B:
KARST FAUNAL REPORTS

CITY OF AUSTIN FAUNAL SURVEYS:

Name: Mark Sanders, Kathleen O'Connor, and John Chenoweth Agency: COA and Travis County
Date: 10/13/05 No. of pages: 3

Location: Airman's cave GPS coordinates (NAD 1983)_____ Section No. 1

Time Started: 10:53am Time ended: 11:15am Scientific permit # TE798920-0

Surface area observations: (gate condition, fire ants, vandalism)

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☒ Vandalism If so, ☒ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: 66 F Outside: 70.5 @ 10:30am Humidity Inside: 90% Outside: 79%
Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: (freeze, over 100 F, draught, flood) recent draught

Organic matter encountered in survey area: _____

Surface area moisture conditions: (dry, dripping, pools); relatively dry

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Cicurina varians	7		
**Cicurina sp* (blind)	1	Under rock	
Eidmannella sp	8		
Scorpion: *Pseudourcronotus reddelli*	1		
* *Speodesmus sp*.	1	Under rock	
Springtails: *Collembola*	6		
Ceuthophilus sp. B	1		
Ceuthophilus nymphs	11		
mosquitoes			
Fungus gnats	12		
Plethodon albagula	1		
Rana berlandieri	1		

(*) signifies species of concern

See back for additional Field Notes and Comments? ☐ Section map attached? ☐

☐ Photographs taken? How many? _____ If so, attach to this report.

We encountered more trash than usual including: batteries, pee bottle, cigarette butts, beer cans and other assorted trash all of which was removed. It appears that traffic has increased to a point that's causing compaction of the soil in too much of the cave. It was also interesting to note that we did not see any bats (eastern pipistrelles) which probably is due to human disturbance.
I am planning to install a sign in the first room explaining the importance of reducing impacts to the cave. I'm also enlisting the help of the local cave clubs to help protect this cave, however, if this sort of activity continues to increase then the City will be forced to gate the cave.

Name: Mark Sanders, Kathleen O'Connor, and John Chenoweth Agency: COA and Travis County
Date: 10/13/05 No. of pages: 3

Location: Airman's cave GPS coordinates (NAD 1983)_____ Section No. 2

Time Started: 11:50am Time ended: 12:12pm Scientific permit # TE798920-0

Surface area observations: (gate condition, fire ants, vandalism)

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☒ Vandalism If so, ☒ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: 67 F Outside:_____ Humidity Inside: 95% Outside: _____
Humidity was measured with a Psychrodyne analog psychrometer.
Weather conditions during the past week: (freeze, over 100 F, draught, flood) recent dry period
Organic matter encountered in survey area: recent raccoon scat in one area
Surface area moisture conditions: (dry, dripping, pools) dry

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Snails: *Gastropoda*			
Isopods: *Oniscoidea*			
Scorpions: *Pseudouroctonus reddelli*	1		
Spiders: wall web			
Cicurina varians	2		
**Cicurina sp* (blind).	17	Under rocks	
Eidmannella sp	7		
* *Texella spinoperca*			1 was observed in-between sections 1 and 2
Cambala speobia			
* *Speodesmus sp*.	1	Under rock	
* *Rhadine austinica*	2	Floor and wall	3 were observed in-between sections 1 & 2
Rove beetles: *Orus rubens*			
Texoreddellia texensis	1		
Springtails: *Collembola*	~60		
Crickets*: Ceuthophilus secretus*			
Ceuthophilus sp. B			
Ceuthophilus cunicularis			
Ceuthophilus nymphs	2		
Blow flies: *Calliphora* accident			
Fungus gnats	12		
Plethodon albagula			2 were observed in-between sections 1 & 2

(*) signifies species of concern

See back for additional Field Notes and Comments? ☐ Section map attached? ☒

☐ **Photographs taken? How many? _____ If so, attach to this report**

Name: Mark Sanders, Kathleen O'Connor, and John Chenoweth
Agency: COA and Travis County
Date: 10/13/05 No. of pages: 3

Location: Airman's cave GPS coordinates (NAD 1983)_____ Section No. 3

Time Started: 1pm Time ended: 1:16pm Scientific permit # TE798920-0

Surface area observations: (gate condition, fire ants, vandalism)_____

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: 67 F Outside:_____ Humidity Inside: 99% Outside: _____
Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: (freeze, over 100 F, draught, flood)_____

Organic matter encountered in survey area: _____

Surface area moisture conditions: (dry, dripping, pools) dry

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Snails: *Gastropoda*			
Scorpions: *Pseudouroctonus reddelli*			
Spiders: wall web			
Cicurina sp. (blind)	2	Under rocks	Observed 6 in the nearby aggie art gallery
Eidmannella sp			
Surface wolf spider			
* *Texella spinoperca*			
Cambala speobia			
* *Speodesmus sp.*		Under trash	Observed 3 in the nearby aggie art gallery
* *Rhadine austinica*		On floor	Observed 2 in-between sections 1 and 2
Rove beetles: *Orus rubens*			
Texoreddellia texensis			Observed 1 in-between sections 2 and 3
Springtails: *Collembola*	1		
Crickets*: Ceuthophilus secretus*			
Ceuthophilus sp. B			
Ceuthophilus cunicularis			
Ceuthophilus nymphs			
Blow flies: *Calliphora* accident			
Fungus gnats	2		
Plethodon albagula			

(*) signifies species of concern

See back for additional Field Notes and Comments? ☐ Section map attached? ☒

☐ Photographs taken? How many? _____ If so, attach to this report.

At the nearby aggie art gallery we encountered more trash than usual which we removed and there was evidence of increased traffic (compacted soil) in section 3.

Name: M Sanders, John Chenoweth	Agency: COA
Date: 11/03/05	No. of pages: 1

Location: Another Cave GPS Datum _____
Section surveyed: Entire cave

Time Started: 10:15am Time ended: 11:05am Scientific permit # _TE798920-0_

Surface area observations: _(gate condition, fire ants, vandalism)_
Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: 67 F Outside: 68 F @ 10:10am Humidity Inside: 90.1% Outside: 67.5%
Humidity was measured with a Psychrodyne analog psychrometer.
Weather conditions during the past week: (freeze, over 100 F, draught, flood) very dry, drought conditions.
Organic matter encountered in survey area: wood and leaf litter, old raccoon and cricket scat
Surface area moisture conditions: (dry, dripping, pools); dry.

CAVE CRICKET EXIT COUNT

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Gastropoda	1		
Collembola (springtails)	~50		
Cicurina sp (blind)	?	Under rocks	Some may have been but were too small to ID
Cicurina varians	~30		Some were too small to note if they were blind or not
Spider: (surface/ accidental)	1		
Pseudourcronotus redelli	2		
Scorpion (surface/ accidental)	5		
Surface isopods (accidental)	14		
Cambala speobia	7		
Ceuthophilus sp. B	3		
Ceuthophilus secretus	2		
Ceuthophilus nymphs	92		
Ceuthophilus cunicularis			
Diptera: fungus gnats	8		2 of the 8 were larvae
Hymenoptera: *Pheidole sp*	1		Several were observed near the entrance
Lepidoptera: moths	3		May be cave adapted??
Syrrhophus marnocki	1		
Plethodon albagula	1		

(*) signifies species of concern
See back for additional Field Notes and Comments? ☐ Section map attached? ☐
☐ Photographs taken? How many? _____ If so, attach to this report.
Cave was recently gated.

Name: M Sanders, John Chenoweth	Agency: COA
Date: 11/02/05	No. of pages: 1

Location: Arrow Cave Section surveyed: Entire cave

Time Started: 1:08pm Time ended: 2:20pm Scientific permit # TE798920-0

Surface area observations: (gate condition, fire ants, vandalism) a lot of trash was recently dumped near the entrance

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☒ Vandalism If so, ☒ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: 68 F Outside: 72 F @ 12:53pm Humidity Inside: 92% Outside: 52%
Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: (freeze, over 100 F, draught, flood) recent drought

Organic matter encountered in survey area: Leaf litter, wood debris, fungus, raccoon and cricket scat

Surface area moisture conditions: (dry, dripping, pools) dry.

CAVE CRICKET EXIT COUNT

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Collembola (springtails)	~450		
Cicurina sp (blind)	3	Under rocks	
Cicurina varians	18		
Eidmannella or Gaucelmus	14		
Spider: wall web	1		
Surface spiders: (accidental)	15		
Terrestrial isopod	58		
Speodesmus sp	3	Under rocks near scat	
Cambala speobia	5		
Surface centipede (accidental)	1		
**Rhadine austinica*	1	On floor	
Staphylinidae: rove beetle	1		
Carabid beetle (accidental)	1		
Ceuthophilus sp. B	10		
Ceuthophilus nymphs	~160		
Diptera: fungus gnats	~ 100		2 were larvae in webs
Lepidoptera: moth	2		Possibly cave adapted

(*) signifies species of concern

See back for additional Field Notes and Comments? ☐ Section map attached? ☐

☐ Photographs taken? How many? _____ If so, attach to this report.

We removed the trash (lots of plastic planting pots and other assorted trash). Also a large amount of brush and yard clippings are being dumped into 2 nearby sinks. We removed all of the trash (minus the brush) and got the address of the individual responsible. I will contact the site manager and follow up with a letter requesting that the guilty party cease dumping materials and must remove what he has dumped.

Name: Mark Sanders	Agency: COA,
Date: 12/29/05	No. of pages: 1

Location: Blowing Sink cave Section No. cursory survey of everything but the "Dark Side of the Moon Passage"
Time Started: 10:45 am Time ended: 4 pm Scientific permit # TE798920-0

Surface area observations: (gate condition, fire ants, vandalism) no problems noted .

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: 71 F @ Eileen's river passage Outside: 60.5 F @ 10:35am
Humidity Inside: 97.6% Outside: 49.8%
Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: (freeze, over 100 F, drought, flood) drought conditions

Organic matter encountered in survey area: leaf litter, wood debris, and mold/ fungus

Surface area moisture conditions: (dry, dripping, pools) lower portion of cave was damp.

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
**Cicurina sp.*(blind)	1	On wall	
Snails: Gastropoda	3		
Amphipods: **Stygobromus russelli*	~80	In pools upstream of Eileen's river	
Surface Centipede: Chilopoda	1		
Cambala speobia	3		
** Speodesmus sp*.	24	On wall, floor	Most were found on wall and gravel bed beside Eileen's river
Springtails: Collembola	34		
Ceuthophilus sp. B	10		
Ceuthophilus nymphs	92		
Texoreddellia texensis	1		

(*) signifies species of concern

This trip consisted of 4 people though I was the only person looking for cave fauna.
I did not do a thorough survey, rarely did I look under rocks. The primary goal of this trip was to set 2 bait traps in Eileen's river, check any existing traps for life and look for salamanders in the stream passageway. I set 2 bait traps in Eileen's river, found one empty bait trap in lower Eileen's and did not observe any life in the stream.
I also took temperature and humidity reading at the bottom of Liverpool Pit. Air temp: 67 F, humidity: 99.5%.

Name: Mark Sanders, Andy Gluesenkamp	Agency: COA,
Date: 5/02/06	No. of pages: 1

Location: Blowing Sink cave Section No. cursory survey of everything but the "Dark Side of the Moon Passage"
Time Started: 9:45 am Time ended: 2:45 pm Scientific permit # TE798920-0

Surface area observations: (gate condition, fire ants, vandalism) no problems noted .

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: 70.5 Outside: 80 F @ 10:44am
Humidity Inside: 100% Outside: 79.7%
Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: (freeze, over 100 F, drought, flood) area is still below average rainfall

Organic matter encountered in survey area: leaf litter, wood debris, and mold/ fungus

Surface area moisture conditions: (dry, dripping, pools) lower portion of cave was damp.

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
**Cicurina sp.*(blind)	3	On floor	One was collected by Andy Gluesenkamp
Amphipods: **Stygobromus russelli*	23	In pools upstream of Eileen's river	
Cambala speobia	1		
** Speodesmus sp*.	18	On wall, floor	15 were found on wall and gravel bed beside Eileen's river
Springtails: Collembola	8		
Ceuthophilus cunicluaris	1		
Ceuthophilus nymphs	11		
Texoreddellia texensis	4		One collected by Andy Gluesenkamp
Staphylinidae	1		
** Eurycea sp*	2		One adult was collected from a bait trap to be given to Paul Chippendale for molecular test

(*) signifies species of concern

The primary purpose of this visit was to check and rebait bait traps placed in Eileen's River. After several years of searching we actually captured an adult neotenic salamander and observed a small juvenile in lower Eileen's river. The salamander was given to Paul Chippendale (UTA) for molecular test. It is believed that this may be a new yet undescribed species of salamander. Oddly enough, the salamander exhibited traits associated with surface spring dwelling salamanders.

Name: Mark Sanders, Andy Gluesenkamp	Agency: COA,
Date: 9/01/06	No. of pages: 1

Location: Blowing Sink cave Section No. cursory survey of everything but the "Dark Side of the Moon Passage"
Time Started: 9:45 am Time ended: 2:45 pm Scientific permit # TE798920-0

Surface area observations: (gate condition, fire ants, vandalism) no problems noted .
Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light
Temperature Inside: NA Outside: 81.5 F @ 9:30am
Humidity Inside: NA Outside: 63.8%
Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: (freeze, over 100 F, drought, flood) drought conditions, temps above 100 F
Organic matter encountered in survey area: leaf litter, wood debris, and mold/ fungus
Surface area moisture conditions: (dry, dripping, pools) lower portion of cave was damp.

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
**Cicurina sp.*(blind)	2	On floor	Observed in lower portion of cave
Aquatic isopod	2	Eileen's river	Very large individuals
Amphipods: **Stygobromus russelli*	21	In pools upstream of Eileen's river	
"hot house" millipede	1		
** Speodesmus sp*.	4	On wall, floor	Most were found on wall and gravel bed beside stream
Springtails: Collembola	8		
Ceuthophilus cunicluaris	1		
Ceuthophilus nymphs	28		
Texoreddellia texensis	2		
Rhadine austinica	1	Cave floor	Near Eileens river
Plethodon albagula	2		

(*) signifies species of concern

The primary purpose of this visit was to take water samples for WPDRD, look for neotenic salamanders, measure water flow, and CO2 levels in both the air and water.
CO2 air level at Eileen's river was 2.44% at noon, CO2 in the water was 73 parts/ million, flow at Eileen's waterfall hole was 23.077 gallons / minute.
We met WPDRD staff hydrogeologist Nico Hauwert on the surface and gave him the water samples we collected.
Nico took samples from the nearby well and will compare the water chemistry with the cave samples to see how closely the 2 match up.
We also inspected the stabilization project and made note of the exact # of materials on site to let volunteers know what materials are still needed to complete the project.
Unfortunately the psychrometer malfunctioned thus preventing us from taking temp and humidity readings in the cave.

Name: Mark Sanders, John Chenoweth	Agency: COA
Date: 10/27/05	No. of pages: 1

Location: Lime Creek preserve , broken arrow cave GPS coordinates (NAD 1983) ____
Section No. entire cave

Time Started: 12:08pm Time ended: 12:50pm Scientific permit # TE798920-0

Surface area observations: (gate condition, fire ants, vandalism)

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: 71 F Outside: 71 F @ noon Humidity Inside: 95.3% Outside: 53.1%
Humidity was measured with a Psychrodyne analog psychrometer.
Weather conditions during the past week: (freeze, over 100 F, draught, flood) recent drought
Organic matter encountered in survey area: clay, leaf litter, woody debris
Surface area moisture conditions: (dry, dripping, pools);upper area dry, lower room was damp with a pool of water at the lowest level.

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Snails: Gastropoda	1		
Earthworms: Haplotaxida	11		
Scorpions: *Vaejovis reddelli*			
**Cicurina sp.*	4	Under rocks	
Wall web spider	14		Collected for one for ID by Pierre Paquin
Surface centipede	1		
* *Speodesmus sp*.	5	Under rocks and on wall	
Cambala speobia	30		
Rove beetles			
Mold beetle			
Cockroach: Blattodea	3		
Springtails: Collembola	60		
Crickets*: Ceuthophilus secretus*	9		
Ceuthophilus sp. B			
Ceuthophilus cunicularis			
Ceuthophilus nymphs	~150		
Aquatic amphipods	~60		
Aquatic isopods	~10		
Solenopsis invicta			
Fungus gnats			
Mud dauber wasp: Sphecidae	1		A little aggressive

(*) signifies species of concern
(☼) signifies endangered species

See back for additional Field Notes and Comments? ☐ Section map attached? ☐
☐ Photographs taken? How many? _____ If so, attach to this report.

Name: Mark Sanders	Agency: COA
Date: 4/11/06	No. of pages: 1

Location: Cave X
Section surveyed: entrance to the bottom of the second vertical drop

Time Started: 10:30am Time ended: 11:30am Scientific permit # _____

Surface area observations: (gate condition, fire ants, vandalism)

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☒ Vandalism If so, ☒ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: 70 F Outside: 71.8 F @ 11:45am Humidity Inside: 98.5% Outside: 71%

Weather conditions during the past week: (freeze, over 100 F, draught, flood)

Organic matter encountered in survey area: leaf littler, decaying wood, fungus, fresh raccoon scat

Surface area moisture conditions: (dry, dripping, pools) damp

CAVE CRICKET EXIT COUNT

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
**Cicurina sp (blind)*	5	Under rocks	
Cicurina varians	7		
Spider: surface wall web	2		
Wolf spider	4		
Pseudouroctonus reddelli	12		
Staphylinidae (rove beetle)	1		
Ceuthophilus nymphs	28		
Ceuthophilus B	2		
Ceuthophilus cunicularis	1		
Lepidoptera: moth	1		
Diptera: fungus gnats	3		
Collembola	21		
** Speodesmus sp*	7		
** Stygobromus russelli*	12		
** Caecidotea reddelli*	5		
Plethodon albagula	3		
Rana berlandieri	1		

(*) signifies species of concern

See back for additional Field Notes and Comments? ☐ Section map attached? ☐

☐ Photographs taken? How many? _____ If so, attach to this report.

Name: Mark Sanders, John Chenoweth	Agency: COA
Date: 12/22/05	No. of pages: 1

Location: Cotterell cave GPS coordinates (NAD 1983) _____ Section No. entire cave

Time Started: 1:20pm Time ended: 2:42 pm Scientific permit # TE798920-0_____

Surface area observations: (gate condition, fire ants, vandalism) On the previous week I noticed that someone had cut the perimeter fence.

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☒ Vandalism If so, ☐ trash ☐ speleothems ☒ fence ☐ graffiti

Temperature Inside: 64.25 F Outside: 61 F @ 1:10 pm Humidity Inside: 96.1% Outside: 54.7%
Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: (freeze, over 100 F, drought, flood) drought conditions

Organic matter encountered in survey area: rotting wood/leaf litter, damp soil._____

Surface area moisture conditions: (dry, dripping, pools) Primarily dry with a few damp areas

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Gastropoda: snail	3		
Pseudouroctonus reddelli	8		
**Cicurina sp.*	31	Under rocks	Most individuals were too small to determine if they were blind, so we lumped them together
☼ *Texella reyesi*	5	Under rocks	
**Speodesmus sp*	2		
Cambala speobia	1		
Ceuthophilus Sp B	17		
Ceuthophilus nymphs	~125		Cricket count has dramatically increased
Collembola	52		
Diptera: mosquitoes	1		
Syrrhophus marnocki	1		
Plethodon albagula	15		We believe we under counted these

(*) signifies species of concern
(☼) signifies endangered species

On 12/16/05 I noticed that the perimeter fence was cut and that someone illegally entered the fenced area, however, with the exception of the vandalism to the fence, we did not find any other signs of vandalism. I repaired the fence on 12/16/05.
We removed a fair amount of old trash inside the cave including one old battery.
We also removed several Japanese ligustrum plants found inside the fenced area.
On one good note, the cricket count was up dramatically from previous surveys.

Name: Mark Sanders	Agency: COA
Date: 3/31/06	No. of pages: 1

Location: Cotterell cave GPS coordinates (NAD 1983) _____ Section No. entire cave

Time Started: 11:25am Time ended: 12:28 pm Scientific permit # TE798920-0_____

Surface area observations: (gate condition, fire ants, vandalism) A lot of activity (researchers were removing all of their equipment).

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☐ Vandalism If so, ☐ trash ☐ speleothems ☐ fence ☐ graffiti

Temperature Inside: 69 F Outside: 73 F @ 11:06am Humidity Inside: 96.1% Outside: 86.4%
Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: (freeze, over 100 F, drought, flood) drought Conditions.

Organic matter encountered in survey area: rotting wood/leaf litter, damp soil.
Surface area moisture conditions: (dry, dripping, pools); Primarily dry with a few damp areas

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Gastropoda: snail	3		
Pseudouroctonus reddelli	8		
**Cicurina sp.*	31	Under rocks	Most individuals were too small to determine if they were blind, so we lumped them together
☼ *Texella reyesi*	5	Under rocks	
**Speodesmus sp*	2		
Cambala speobia	1		
Ceuthophilus Sp B	17		
Ceuthophilus nymphs	~125		Cricket count has dramatically increased
Collembola	52		
Diptera: mosquitoes	1		
Syrrhophus marnocki	1		
Plethodon albagula	15		We believe we under counted these

(*) signifies species of concern
(☼) signifies endangered species

On 12/16/05 I noticed that the perimeter fence was cut and that someone illegally entered the fenced area, however, with the exception of the vandalism to the fence, we did not find any other signs of vandalism. I repaired the fence on 12/16/05.
We removed a fair amount of old trash inside the cave including one old battery.
We also removed several Japanese ligustrum plants found inside the fenced area.
On one good note, the cricket count was up dramatically from previous surveys.

Name: Mark Sanders and John Chenoweth	Agency: COA
Date: 10/26/05	No. of pages: 2

Location: District Park Cave GPS coordinates (NAD 1983)____ Section No. 1 (aquifer room)

Time Started: 10:50am Time ended: 11:20am Scientific permit # _TE798920-0_

Surface area observations: _(gate condition, fire ants, vandalism)_____.___

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐graffiti

Temperature Inside: 70 F Outside: 63 F @ 10:30am Humidity Inside: 99% Outside: _62%_

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: (freeze, over 100 F, draught, flood)_recent drought

Organic matter encountered in survey area: _ old raccoon scat, leaves and woody debris_____.____

Surface area moisture conditions: (dry, dripping, pools)

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Snails: Gastropoda			
Earthworms: Haplotaxida			
Isopods: Oniscoidea			
Scorpions: *Pseudourcronotus reddelli*			
Spiders: wall web	1		
Surface spider	1		
Cicurina varians	7		One was observed eating a silverfish
**Cicurina cueva*	6	Under rocks	
* *Speodesmus sp*.			
Cambala speobia	13		
Rove beetle: Staphylinidae	2		
Texoreddellia texensis	3		One was being eaten by a *Cicurina*
Springtails: *Collembola*	18		
Crickets*: Ceuthophilus secretus*			
Ceuthophilus sp. B			
Ceuthophilus cunicularis			
Ceuthophilus nymphs	19		
Fungus gnats	~75		

(*) signifies species of concern

See back for additional Field Notes and Comments? ☐ Section map attached? ☐

Name: Mark Sanders and John Chenoweth	Agency: COA
Date: 10/26/05	No. of pages: 2

Location: District Park Cave GPS coordinates (NAD 1983)____ Section No. 2 (aggie level)

Time Started: 11:35am Time ended: 12:05pm Scientific permit # TE798920-0

Surface area observations: (gate condition, fire ants, vandalism) .

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: 68.5F Outside:_____ Humidity Inside: 98% Outside: _____

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: (freeze, over 100 F, draught, flood) recent drought .

Organic matter encountered in survey area: small amount of raccoon scat .

Surface area moisture conditions: (dry, dripping, pools); damp.

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Snails: Gastropoda			
Earthworms: Haplotaxida			
Isopods: Oniscoidea			
Scorpions: *Pseudourcronotus reddelli*			
Spiders: wall web			
**Cicurina sp.*	8	Under rocks	All were too small to determine if they were blind
**Texella mulaiki*	1		Under rock
Cambala speobia	2		We accidentally stepped on a third individual
* *Rhadine austinica*			
Texoreddellia texensis	1		
Springtails: *Collembola*	2		
Crickets*: Ceuthophilus secretus*			
Ceuthophilus sp. B			
Ceuthophilus cunicularis			
Ceuthophilus nymphs	3		
Fungus gnats	3		

(*) signifies species of concern

See back for additional Field Notes and Comments? ☐ Section map attached? ☐

Name: Mark Sanders	**Agency: COA**
Date: 4/04/06	**No. of pages: 1**

Location: Flintridge cave Section No. cursory survey of the entire cave

Time Started: 9:30am Time ended: 2:16 pm Scientific permit # TE798920-0

Surface area observations: (gate condition, fire ants, vandalism) no problems noted

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: 70 F Outside: NA Humidity Inside: 99% (at dome room) Outside: NA
Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: (freeze, over 100 F, draught, flood) drought conditions

Organic matter encountered in survey area: leaf litter, rotting wood and fungus growing off of the wood

Surface area moisture conditions: (dry, dripping, pools); varies greatly

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
**Cicurina cueva*	8	Under rocks	
**Texella mulaiki*	3	Under rocks	
* *Speodesmus sp*.	22	On walls	
Cambala speobia	11		
* *Rhadine austinica*	3	On wall	
Staphylinidae: *Belonuchus sp*	6		
Texoreddellia texensis	11		
Collembola: *Pseudosinella sp*	31		
Aquatic Amphipods	6		
Ceuthophilus nymphs	7		
Pseudouroctonus reddelli	1		

(*) signifies species of concern

See back for additional Field Notes and Comments? ☐ Section map attached? ☐

☐ Photographs taken? How many? _____ If so, attach to this report.

During this visit I also helped WPDRD and TCMA with their radio mapping project. The goal of this work is to accurately map the cave footprint of the cave to the surface to show how the construction of a new highway will impact the cave.

Name: Mark Sanders, John Chenoweth	Agency: COA
Date: 10/26/05	No. of pages: 2

Location: Goat cave GPS coordinates (NAD 1983)_____ Section No. 1 (landing zone)

Time Started: 2:23pm Time ended: 2:48pm Scientific permit # TE798920-0

Surface area observations: (gate condition, fire ants, vandalism) new trash near entrance left by UT Grotto, visited cave the previous week

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☒ Vandalism If so, ☒ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: 69 F Outside: 71.5 @ 1:55pm Humidity Inside: 90.4% Outside: 40.6%

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: (freeze, over 100 F, draught, flood) recent drought _____

Organic matter encountered in survey area: small amount of: dirt, leaf litter, wood debris _____

Surface area moisture conditions: (dry, dripping, pools); damp

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Snails: Gastropoda	2		
Earthworms: Haplotaxida	6		
Isopods: Oniscoidea	1		
Scorpions: *Vaejovis reddelli*			
**Cicurina sp.*	2	Under rocks	Too small to determine if they were blind
Eidmannella sp	1		
** Texella mulaiki*			
Rove beetle: Staphylinidae	4		
Collembola	3		
Ceuthophilus sp. B			
Ceuthophilus cunicularis			
Ceuthophilus nymphs	2		
Fungus gnats: Diptera	4		
Mosquitoes: Diptera	3		
Plethodon albagula	3		
Earth snake: *Virginia striatula*	2		Took photos, one may have been injured
Bufo nebulifer	1		
NM toad: *Gastrophryne olivacea*	1		Small juvenile in poor health

(*) signifies species of concern

See back for additional Field Notes and Comments? ☐ Section map attached? ☐

☐ Photographs taken? How many? _____ If so, attach to this report.

Name: Mark Sanders, John Chenoweth	Agency: COA
Date: 10/26/05	No. of pages: 2

Location: Goat cave GPS coordinates (NAD 1983)_____ Section No. 2 (alcove)

Time Started: 3pm Time ended: 3:15pm Scientific permit # TE798920-0

Surface area observations: (gate condition, fire ants, vandalism)_____

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☒ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti ☒ flag removal

Temperature Inside: 68 F Outside:_____ Humidity Inside: 98.5% Outside: _____

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: (freeze, over 100 F, draught, flood) recent drought_____

Organic matter encountered in survey area: small amount of compacted clay_____
Surface area moisture conditions: (dry, dripping, pools); damp

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Isopods: Oniscoidea			
Scorpions: *Vaejovis reddelli*			
Spiders: wall web			
**Cicurina sp.*	2		Too small to determine if they were blind
Neoleptoneta sp.			
* *Texella mulaiki*	2	In crevice	They were mating, never seen before!
Millipedes: Diplopoda accident			
Cambala speobia			
Speodesmus sp.			
Rove beetle			
Collembola	1		
Ceuthophilus sp. B			
Ceuthophilus cunicularis			
Ceuthophilus nymphs	6		

(*) signifies species of concern

See back for additional Field Notes and Comments? ☐ Section map attached? ☐
☐ Photographs taken? How many? _____ If so, attach to this report.

The UT grotto visited this cave the week before for their "beginners day training". We allow access to qualified individuals and organizations with special conditions. It appears that they violated a major provision (removing flagging) which allowed for illegal access into the alcove area. This group is currently no longer allowed access until further notice.

Name: Mark Sanders, John Chenoweth	Agency: COA
Date: 5/22/06	No. of pages: 2

Location: Goat cave GPS coordinates (NAD 1983)_____ Section No. 1 (landing zone)

Time Started: 1:58pm Time ended: 2:19pm Scientific permit # TE798920-0

Surface area observations: (gate condition, fire ants, vandalism)

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☐ Vandalism If so, ☒ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: 23.5 C Outside: NA Humidity Inside: 96.9% Outside: NA

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: (freeze, over 100 F, draught, flood) _____

Organic matter encountered in survey area: small amount of: dirt, leaf litter, wood debris _____

Surface area moisture conditions: (dry, dripping, pools); damp

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Snails: Gastropoda	3		
Earthworms: Haplotaxida	12		
Isopods: Oniscoidea	3		
Pseudouroctonus reddelli	3		
Rove beetle: Staphylinidae	5		
Collembola	12		
Ceuthophilus sp. B			
Ceuthophilus cunicularis			
Ceuthophilus nymphs	1		
Fungus gnats: Diptera	1		
Mosquitoes: Diptera	10		
Plethodon albagula	9		
Earwig (Dermaptera)	1		
Bufo nebulifer	2		

(*) signifies species of concern

See back for additional Field Notes and Comments? ☐ Section map attached? ☐

☐ Photographs taken? How many? _____ If so, attach to this report.

We removed old trash that was exposed after heavy rains eroded away a portion of the landing zone.

Name: Mark Sanders, John Chenoweth	Agency: COA
Date: 5/22/06	No. of pages: 2

Location: Goat cave GPS coordinates (NAD 1983)_____ Section No. 2 (alcove)

Time Started: 2:33pm Time ended: 2:59pm Scientific permit # TE798920-0

Surface area observations: (gate condition, fire ants, vandalism)

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☐ Vandalism If so, ☒ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: 24 C Outside: NA Humidity Inside: 96.9% Outside: NA

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: (freeze, over 100 F, draught, flood) _____

Organic matter encountered in survey area: small amount of clay/ dirt _____

Surface area moisture conditions: (dry, dripping, pools); damp

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Snails: Gastropoda			
Earthworms: Haplotaxida			
Isopods: Oniscoidea			
Cicurina sp (blind)	4		
Rove beetle: Staphylinidae			
Collembola	15		
Ceuthophilus sp. B			
Ceuthophilus cunicularis			
Ceuthophilus nymphs	20		
Fungus gnats: Diptera	7		
Mosquitoes: Diptera			
Plethodon albagula			
Earwig (Dermaptera)			
Bufo nebulifer			

(*) signifies species of concern

See back for additional Field Notes and Comments? ☐ Section map attached? ☐

☐ Photographs taken? How many? _____ If so, attach to this report.

Name: Mark Sanders and Jeremy Walther	Agency: COA
Date: 12/01/05	No. of pages: 1

Location: Jest John Cave Section surveyed: Cave Cricket exit count

Time Started: 6:09 pm Time ended: 8:09pm Scientific permit # TE798920-0

Surface area observations: (gate condition, fire ants, vandalism) Everything looked good

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☒ light

☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: Outside: NA Humidity Inside: _____ Outside: NA
Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: (freeze, over 100 F, draught, flood) Drought conditions, light freeze within the last week

Organic matter encountered in survey area: leaf litter, small wood debris

Surface area moisture conditions: (dry, dripping, pools); dry

CAVE CRICKET EXIT COUNT

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Surface spiders	1		
Ceuthophilus sp. B	2		
Ceuthophilus nymphs	314		
Surface millipede	2		

(*) signifies species of concern

See back for additional Field Notes and Comments? ☐ Section map attached? ☐

☐ Photographs taken? How many? _____ If so, attach to this report.

By the time we arrived at the entrance to the cave it was already dark (approximately 10 minutes), so it's possible we missed the exit of cave fauna, but not likely.
Initially the temperature was fairly mild (50's), and for the first hour we had a fairly steady exit of very small nymphs, however, the temperature dropped to the lower 40's ?? (best guess because I forgot to bring the psychrometer) in the second hour and the exit count dropped significantly. It's my guess that there was a distinct cut off where most crickets would not exit at a certain temperature.

Name: Mark Sanders	Agency: COA	Date: 3/14/06	No. of pages: 1

Location: Jester Estates Cave GPS coordinates (NAD 1983) __ Section No. entire cave

Time Started: 1:30pm__ Time ended: 3:15 pm Scientific permit # TE798920-0_____

Surface area observations: (gate condition, fire ants, vandalism) No problems observed.

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: 69 F Outside: 70.3 F @ 1:25pm Humidity Inside: 100% Outside: 30%

Humidity was measured with a Psychrodyne analog psychrometer, Barometric pressure was measured with a watch mounted barometer (Time model Helix).

Weather conditions during the past week: (freeze, over 100 F, draught, flood) Drought conditions and above average temperatures with a 1/3" rain 2 nights before.

Organic matter encountered in survey area: old wood debris, primarily damp clay.

Surface area moisture conditions: (dry, dripping, pools) This cave takes significant recharge, most of the floor was very damp, muddy clay.

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Gastropoda: snail	1		
**Cicurina sp.*	7	Under rocks	
☼ *Neoleptoneta sp*	4	Under rocks & in webs in crevices	Collected 2 for species ID
Surface scorpion	1		
* *Speodesmus sp*.	1	Under rock	
Cambala speobia	2		
Springtails: Collembola	8		
Ceuthophilus sp. B	2		
Ceuthophilus nymphs	12		
Diptera: mosquito	1		

(*) signifies species of concern
(☼) signifies endangered species

See back for additional Field Notes and Comments? ☐ Section map attached? ☐

☐ Photographs taken? How many? _____ If so, attach to this report.

While I conducted the faunal survey John Chenoweth removed old construction trash, most of which probably was dumped inside the cave prior to being gated.

The cave floor was extremely wet, covered with clay which I believe migrated into the cave from the adjacent subdivision. I will look into the possibility of having this clay sampled for contaminants.

The passageway is extremely tight, very difficult to negotiate. There were a lot of loose rocks along the vertical sinkhole entrance. I relocated most of these loose rocks to the bottom of the pit for safety reasons.

John flagged fire ant mounds within the preserve area, later I will return and treat with boiling water.

Name: Mark Sanders and John Chenoweth Agency: COA-AWU
Date: 5/08/06 No. of pages: 1

Location: Little Bee Creek cave Section No. entire cave

Time Started: 1:20pm Time ended: 2:05pm Scientific permit # TE798920-0

Surface area observations: (gate condition, fire ants, vandalism) recently gated

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☒ Vandalism If so, ☒ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: 71 F Outside: 75 F @ 1:14pm Humidity Inside: 95.3% Outside: 86.8%
Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: (freeze, over 100 F, draught, flood)

Organic matter encountered in survey area: small amount of wood debris

Surface area moisture conditions: (dry, dripping, pools)dry

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Spider: surface	5		
Spiders: *Cicurina sp	1	Under rock	Collected for USFWS DNA study.
Wall web	5		
** *Texella reddelli*			
Leiobunum townsendii	22		
Speodesmus sp	1		Collected for James Reddell
Cambala speobia	32	Floor and under rocks	One collected for James Reddell
* *Speodesmus sp*.			
* *Rhadine austinica*			
Reduviidae: Assassin bug	2		
Texoreddellia texensis			
Springtails: Collembola	11		
Crickets*: Ceuthophilus secretus*	8		
Diptera: (fungus gnat)	6		
Diptera: (mosquitoes)	41		
Ceuthophilus nymphs	23		
Soft Bodied ticks: *Ornithodors turicata*	2		Known to carry "relapsing fever" virus

(*) signifies species of concern
(**) endangered species

See back for additional Field Notes and Comments? ☐ Section map attached? ☐

☐ Photographs taken? How many? _____ If so, attach to this report.

Name: Mark Sanders and John Chenoweth	Agency: COA
Date: 11/3/05	No. of pages: 1

Location: Maple Run cave Section No. Survey station 1

Time Started: 3:02pm Time ended: 3:11pm Scientific permit # TE798920-0

Surface area observations: (gate condition, fire ants, vandalism) large amount of newly exposed "old ranch trash" which we removed

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: 72 F Outside: 77 F @ 2:35pm Humidity Inside: 93% Outside: 52.9%
Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: (freeze, over 100 F, draught, flood) drought conditions

Organic matter encountered in survey area: nothing

Surface area moisture conditions: (dry, dripping, pools) mostly damp

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Scorpions: *Vaejovis reddelli*	1		
**Cicurina sp*	3	Under rocks	
Ceuthophilus nymphs	43		
*Diplura: Japygid		On cave floor	2 adults were observed in-between sections 1 and 2
Plethodon alabagula			1 was observed just outside of survey area

(*) signifies species of concern, or rare species

See back for additional Field Notes and Comments? ☐ Section map attached? ☐

☐ Photographs taken? How many? _____ If so, attach to this report.

Name: Mark Sanders and John Chenoweth	Agency: COA
Date: 11/3/05	No. of pages: 1

Location: Maple Run cave Section No. Survey station 2

Time Started: 3:38pm Time ended: 3:57pm Scientific permit # TE798920-0

Surface area observations: (gate condition, fire ants, vandalism)

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: 71.5 F Outside: Humidity Inside: 100% Outside:
Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: (freeze, over 100 F, draught, flood) drought conditions

Organic matter encountered in survey area: nothing

Surface area moisture conditions: (dry, dripping, pools) damp

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
**Cicurina sp*	1	Under rock	
**Anapistula sp* (tiny web spiders)	1	On wall	
**Texella mulaiki*	1	Under rock	
**Speodesmus sp*		On cave floor	2 were observed just outside of survey area
Cambala speobia			1 was observed just outside of survey area

(*) signifies species of concern or very rare

See back for additional Field Notes and Comments? ☐ Section map attached? ☐

☐ Photographs taken? How many? If so, attach to this report.

Name: Mark Sanders and John Chenoweth	Agency: COA
Date: 11/09/05	No. of pages: 1

Location: Midnight cave GPS coordinates (NAD 1983)_____ Section No. upper room

Time Started: 2:35pm Time ended: 3:10pm Scientific permit # _TE798920-0_

Surface area observations: _(gate condition, fire ants, vandalism) _nothing out of the ordinary

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ other

Temperature Inside: 71 F Outside: 81 F @ 1:06pm Humidity Inside: 97.6% Outside: 66.9%

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: (freeze, over 100 F, draught, flood)_ drought conditions

Organic matter encountered in survey area: _ cricket guano

Surface area moisture conditions: (dry, dripping, pools)_ floor was damp.

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Gastropoda: snails	22		
Isopods **Trichoniscidae sp*	35	Under rocks	
Springtails: Collembola	~300		
Eidmannella sp	1		1 was collected for species ID
mites	2		Very tiny
Cicurina varians	?		
**Cicurina sp.(blind)*	17 ?	Under rocks	We did not look close enough to determine if all were blind
Cambala speobia	30		
**Speodesmus sp.*	29	Primarily on wall	
Millipede: (accidental)	1		
Centipede: (accidental)	1		
** Rhadine austinica*	1	Under rock	
Ceuthophilus sp. B	30		
Ceuthophilus nymphs	~300		~2000 were observed outside of survey area
Texoreddellia texensis	14		
Plethodon albagula	1		

(*) signifies species of concern

See back for additional Field Notes and Comments? ☐ Section map attached? ☐

☐ Photographs taken? How many? _____ If so, attach to this report.

Name: Mark Sanders and John Chenoweth	Agency: COA
Date: 11/09/05	No. of pages: 1

Location: Midnight cave Section No. lower room (drop zone)

Time Started: 1:25pm Time ended: 1:53pm Scientific permit # TE798920-0

Surface area observations: (gate condition, fire ants, vandalism) removed trash, most of which was old

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☒ Vandalism If so, ☒ trash ☐ speleothems ☐ gate ☐ other

Temperature Inside: 68 F Outside: Humidity Inside: 95.1% Outside:

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: (freeze, over 100 F, draught, flood) drought conditions

Organic matter encountered in survey area: leaf litter, woody debris, fungus

Surface area moisture conditions: (dry, dripping, pools) very damp, most of floor is inundated.

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Earthworm (Haplotaxida)	11		
Springtails: Collembola	~200		
Eidmannella sp	4		1 was collected for species ID
Cicurina varians	4		
Cockroach (accidental)	2		
Staphylinidae: rove beetle	2		
Carabid beetle (surface)	1		
Ceuthophilus nymphs	~75		
Diptera: fungus gnat	30		
Bufo nebulifer	1		Observed another dead adult
Syrrhophus marnocki	1		
Plethodon albagula	10		

(*) signifies species of concern

See back for additional Field Notes and Comments? ☐ Section map attached? ☐

☐ Photographs taken? How many? If so, attach to this report.

The majority of the floor was covered in water (deep pool in some places). We did noticed 2 bait traps which were placed in the pool by Zara Environmental to check for the presence of aquatic life (nothing was observed inside the traps, nor was any life observed in the pool).

Name: M Sanders, J Chenoweth	Agency: COA
Date: 10/27/05	No. of pages: 1

Location: Lime Creek preserve , rolling rock cave Section No. entire cave (with the exception of the lower room

Time Started: 2:30pm Time ended: 3:06pm Scientific permit # TE798920-0

Surface area observations: (gate condition, fire ants, vandalism)

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: 69 F Outside: 75 F @ 2:24pm Humidity Inside: 95.1% Outside: 45%

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: (freeze, over 100 F, draught, flood) area experiencing a drought

Organic matter encountered in survey area: sediment, leaf litter, wood debris, fungus, raccoon scat

Surface area moisture conditions: (dry, dripping, pools) Damp.

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Snails: Gastropoda	4		
Earthworms: Haplotaxida			
Scorpions: *Vaejovis reddelli*			
**Cicurina sp.*	4	Under rocks	
Wall web spider			
Eidmannella			
Leiobunum townsendii			
* *Speodesmus sp*.	2		
Cambala speobia	4		
Rove beetles	2		
Dipluran ??	1		Collected for ID by James Reddell
Carpenter ant: *Campanotus sp*	1		
Springtails: Collembola	~75		
Crickets*: Ceuthophilus secretus*	2		
Ceuthophilus sp. B			
Ceuthophilus cunicularis			
Ceuthophilus nymphs	65		
Fungus gnats			
Mosquitoes: Diptera	~100		
Plethodon albagula	11		
Rana berlandieri	1		

(*) signifies species of concern
(☼) signifies endangered species

See back for additional Field Notes and Comments? ☐ Section map attached? ☐

☐ Photographs taken? How many? _____ If so, attach to this report.

Name: Mark Sanders and John Chenoweth	Agency: COA
Date: 11/09/05	No. of pages: 1

Location: Seibert Sink (Barton Creek Wilderness Park Section No. entire cave

Time Started: 10:58am Time ended: 11:42am Scientific permit # TE798920-0

Surface area observations: (gate condition, fire ants, vandalism) We removed a lot of old "recently exposed" ranch trash from the cave and entrance area

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: 71.5º F Outside: 78º F @ 10:52am Humidity Inside: 95.3% Outside: 77.1%
Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: (freeze, over 100 F, draught, flood) above average Rainfall.

Organic matter encountered in survey area: leaf litter, wood debris, and fungus

Surface area moisture conditions: (dry, dripping, pools); damp.

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Gastropoda: snail	1		
Pseudouroctonus reddelli	3		
Surface scorpion (accidental)	1		
Cicurina varians	3		
**Cicurina sp."*blind"	2?	Under rocks	Not 100% certain if these were blind due to the fact that they were small juveniles
Eidmanella sp	1		
* *Texella sp*	5	Under rocks	
Staphylinidae: rove beetle	2		
Hymenoptera: mud dauber (accid	1		
Diptera: fungus gnat	4		
Springtails: *Collembola*	12		
Ceuthophilus nymphs	38		
Ceuthophilus cunicularis	1		
Plethodon albagula	15		we accidentally killed one juvenile by stepping on it
Syrrhophus marnocki	3		

(*) signifies species of concern

See back for additional Field Notes and Comments? ☐ Section map attached? ☐

☐ Photographs taken? How many? _____ If so, attach to this report.

Name: M.Sanders, John Chenoweth	Agency: COA
Date: 11/03/05	No. of pages: 1

Location: Slaughter Creek Cave GPS Datum NAD 27 UTM Zone: 14 East: 0608639 North: 3340778

Section surveyed: Upper 2/3rds of cave

Time Started: 11:42am Time ended: 12:40pm Scientific permit # _TE798920-0_
Surface area observations: _(gate condition, fire ants, vandalism) Nothing out of the ordinary _
Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light
☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti
Temperature Inside: 68 F Outside: 71 F @ 11:36am Humidity Inside: 97.5% Outside: 56.8%
Humidity was measured with a Psychrodyne analog psychrometer.
Weather conditions during the past week: (freeze, over 100 F, draught, flood) drought conditions
Organic matter encountered in survey area: _old raccoon scat, cricket scat, fungus _____
Surface area moisture conditions: (dry, dripping, pools)_mostly dry but a few damp areas.____

CAVE CRICKET EXIT COUNT

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Collembola (springtails)	8		
**Cicurina sp blind)*	5	Under rocks	
Cicurina varians	20		
Wall web spider	1		
**Texella mulaiki*	1	Under rock	
Pseudouroctonus reddelli	8		
Scorpion: accidental (surface)	6		
surface isopod (sowbug)	3		
moth	2		
Fungus gnat larvae	8		4 were in their larval stage.
**Speodesmus sp*	8	On floor, under rocks	
Ceuthophilus secretus	5		
Ceuthophilus sp B	2		
Ceuthophilus nymphs	60		
Plethodon albagula	21		
Syrrhophus marnocki	1		

(*) signifies species of concern

See back for additional Field Notes and Comments? ☐ Section map attached? ☐
☐ Photographs taken? How many? _____ If so, attach to this report.
The cave gate was modified the previous month by the contractor to prevent possible future trespass.

Name: Mark Sanders Agency: COA Date: 3/14/06 No. of pages: 1

Location: Spider cave GPS coordinates (NAD 1983) _____ Section No. entire cave

Time Started: 11:35am Time ended: 12:30 pm Scientific permit # TE798920-0

Surface area observations: (gate condition, fire ants, vandalism) No problems observed.

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: 64.8 F Outside: 65.5 F @ 11:29am Humidity Inside: 94.8%
Outside: 33.5%
Humidity was measured with a Psychrodyne analog psychrometer. Barometric pressure was measured with a watch mounted barometer (Time model Helix).

Weather conditions during the past week: (freeze, over 100 F, draught, flood) Drought conditions and above average temperatures with a 1/3" rain 2 nights before.

Organic matter encountered in survey area: rotting wood/leaf litter, soil.

Surface area moisture conditions: (dry, dripping, pools) Primarily dry, slightly damp soil in the lowest area and at the entrance drop.

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Earthworms: *Haplotaxida*	1		
**Cicurina sp.*	14	Under rocks	
Wall web	1		
Eidmannella sp	1		
Scorpions: *Pseudouroctonus reda*	1		
☼ *Texella reyesi*	1	Under rock in deepest area/ damp soil	
* *Speodesmus sp*.	2	On wall	
Cambala speobia	6		
Surface millipede	3		
Surface centipede	1		
Staphylinidae: Rove beetle	2		
Dung beetle	1		Near the entrance
Springtails: Collembola	~500		
Ceuthophilus sp. B	2		
Ceuthophilus nymphs	~22		
Fungus gnats	4		
Lepidoptera: cave moth	5		
Diptera: mosquito	1		

Plethodon albagula	2		Small juveniles

(*) signifies species of concern
(☼) signifies endangered species

See back for additional Field Notes and Comments? ☐ Section map attached? ☐

☐ Photographs taken? How many? _____ If so, attach to this report.

TRAVIS COUNTY FAUNAL SURVEYS:

Name: Jean Krejca, Kathleen O'Connor, Paul Fushille Agency: Travis County
Date: 18-Oct-05 No. of pages: 1

Location: **Gallifer Cave** GPS coordinates (NAD 1983): E 3077655 N 10120992

Time Started: 0900 Time ended: 1131 Scientific permit # TE028652-0

Surface area observations: No problems observed.

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: Outside: Humidity Inside: Outside:
Psychrometer not functional.

Weather conditions during the past week:
Organic matter encountered in survey area: heavy leaf litter.
Surface area moisture conditions: Relatively dry.

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Snails: *Helicodiscus*	23		
Scorpions: *Pseudouroctonus reddelli*	12		
**Cicurina sp.*	26		
**Cicurina varians*	12		
Eidmannella sp.	5		
☼ *Texella reyesi*	31		23 found in Zone 2; found on underside of rocks on soil
* *Speodesmus sp*.	4		
Cambala speobia	15		
Lithobiomorpha	1		
Scutigeridae	1		
☼*Rhadine persephone*	1		
Triatoma	2		
Springtails: Collembola	~1850		
Campodeid dipuran	1		
Surface isopod: Armadillidiidae	8		
Triconiscid isopod: *Brackenridgia*	5		
Crickets*: Ceuthophilus secretus*	22		
C. secretus sub-adults	27		
C. secretus nymphs	7		
Ceuthophilus cunicularis	9		
C. cunicularis sub-adults	10		
C. cunicularis nymphs	37		
Moth	4		

Mosquito	1		
Tick	1		
Gnat	1		
Syrrhophus marnockii	1		
Plethodon albagula	2		

(*) signifies species of concern
(☼) signifies endangered species

Name: Jean Krejca, Kathleen O'Connor, Paul Fushille Agency: Travis County
Date: 18-Oct-05 No. of pages: 1

Location: **Tooth Cave** GPS coordinates (NAD 1983): E3078261 N10120451
Section No. 1-3

Time Started: 0213 pm Time ended: 0335 pm
Scientific permit # TE028652-0

Surface area observations: No surface problems observed.

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☐ moderate ☐ light

☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside:_____Outside:_____Humidity Inside: _____ Outside: _____
Humidity was measured with a Psychrodyne analog psychrometer- **Not working**

Weather conditions during the past week: _____
Organic matter encountered in survey area: Lots of leaf litter present.
Surface area moisture conditions: Relatively dry.

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Snails: *Helicodiscus*	7		
Earthworms: *Haplotaxida*			
Scorpions: *Centruroides*	1		
*Pseudoscorpions: *Pseudouroctonus reddelli*	3		
**Cicurina sp.*	14		
Cicurina varians	5		
Eidmannella sp.	2		
Small spiders	2		
☼ *Texella reyesi*	10		All found in Zone 2
Surface beetle: Carabidae	2		
Rove beetle: Staphylinidae	4		
Springtails: Collembola	~1100		
Campodeid diplurans	1		
Solenopsis invicta	14		
* *Speodesmus sp*.	2		
Cambala speobia	13		
Centipedes: scutigeridae	4		
-Lithobiomorph	1		
Mycetophilidae (web worms)	1		
Isopods: Armadillidium	6		
Moth	1		
Crickets*: Ceuthophilus secretus*	74		
-Cethophilus cunicularis	0		
-Ceuthophilus sub-adults	23		11*secretus,* 12 *cunicularis*
-Ceuthophilus nymphs	12		

Flies:	6		
Other: Harvester ants	~54		At cave gate/entrance & Zone 1
Plethodon	12		
Procyon lotor			Scat in Zone 3

(*) signifies species of concern
(☼) signifies endangered species

See back for additional Field Notes and Comments? ☐ Section map attached? ☐

☐ Photographs taken? How many? _____ If so, attach to this report.

Name: Kathleen O'Connor, Paul Fushille	Agency: Travis County
Date: 3-Aug-06	No. of pages: 1

Location: **Talus Springs Cave** GPS coordinates (NAD 1983) E 3076436 N 10126030

Time Started: 1045 AM Time ended: 1200 PM
Surface area observations: Trash , debris was light to moderate surrounding the cave entrance; cleared what we could.

Survey area: ☐ *Solenopsis invicta* If so, ☐ heavy infestation ☒ moderate ☐ light

☐ Vandalism ☒ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: Outside: 28.8° C Humidity Inside:
Outside:
Weather conditions during the past week: sunny with temp. in low to mid 90's
Organic matter encountered in survey area: Two raccoon skulls, 1 oppossum skull

Surface area moisture conditions: Entrance very wet with small pools-cave became dryer as you travel farther back; lots of aquatic invertebrates present in pools; slight spring riffle present.

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Snails: *Helicodiscus*	1		
Leiobunum townsendii	>500		
Crickets*: Ceuthophilus sp.*	4		
Wolf Spiders: *Lycosidae*	~5		
Cockroaches	2		
Surface millipede	1		
**Cicurina varians*	3		
Eidmannella sp.			
Staphylinidae (?) some sort of beetle sp.	2		
Isopods: Armadillidiidae	10-15		
Unidentified aquatic flatworm	1		
Unidentified aquatic larvae	1		
Procyon lotor	2		2 skulls
Didelphis virginiana	1		Skull and carcass
Syrrhophus marnockii	2		Heard chirping

See back for additional Field Notes and Comments? ☐ Section map attached? ☐

☐ Photographs taken? How many? _____ If so, attach to this report.

TEXAS CAVE MANAGEMENT ASSOCIATION FAUNAL SURVEYS:

Surveyor(s): __Bill Russell, Colin Peden, Guin McDavid_____ Date: July 26, 2006
SurfaceTemperature: _100F__SurfaceHumidity:Low Weather Conditions: bright sun
Cave: _**GET DOWN CAVE** Survey Section: _B. South end of Canon del Blanco Vista
Time Stated: _3:05 p.m._____ Time Ended: _3:15pm_____
Solenopsis invicta (fire ant) Infestation: NO__x_ YES___ Heavy Moderate Light
Vandalism: NO _x__ YES___ Gate Broken Speleothems Grafitti
Cave Temperature: 70°F (C)Cave Humidity: Normal Air Flow: In x Out

FAUNAL SURVEY

SPECIES	COUNT	OBSERVATIONS
Spiders: Circurina blind	12	
non-Cicurina blind on floor	2	
Harvestman: L. townsendii		
*Texella mulaiki		
Millipedes: Cambala speobia	10	
*Speodesmus sp. "small"	20	
*Speodesmus sp. "large"		
Cave Crickets: Ceuthophilus sp. B		
Ceuthophilus secretus		
Ceuthophilus cunicularis		
Ceuthophilus nymphs	many	on floor in areas B & C
Springtails: Collembola sp	numerous	on scat
Silverfish: Texoreddellia tex.	1	
Beetles: Coleoptera sp		
Rove beetles		
*Rhadine austinica	0	
Flies: Diptera		
Scorpion: Pseudouroctonus reddelli		
Snails: Gastropoda		
Salamander: Plethodon albagula		
Cliff Chirping Frog: Syrrhophus marnockii		
Rattlesnakes: Crotalus atrox		
Isopods: (Porcellionidae-terristerial)	8	On scat, in canyon area

- Comments: In October 2005 all obvious raccoon access points were blocked with rocks and cement, but raccoons were still finding a way into the cave, though not in such large numbers. Guin McDavid realized that some raccoons could squeeze through the small lock access hole. The hole was sealed with duct tape and we returned later to find the tape pushed aside covered with hair. Also, there were stains on the ceiling above the gate indicating raccoons could slide over the top bars on the gate. These openings are small, apparently too small for the larger animals to enter the cave, and the amount of skat in the cave has been considerably reduced. We plan to block all access points soon.

- Raccoons have not recently visited the interior end of Faunal Area B, around a corner from the rest of the area. This area was relatively free of skat and was where all the cave-adapted fauna was found except the skat loving isopods and collembola. We only spent 5 minutes surveying the extreme end of the area as we felt it was completely surveyed, and this time is roughly the same time per unit of area as was spent on surveying in Faunal Area B in past surveys. It is encouraging that the cave adapted animals returned relatively quickly to an area only a few meters form considerable amounts of skat. No Rhadine were seen, it is likely that they reproduce more slowly and will take longer to reestablish themselves once favorable conditions are restored. Despite the drought, Faunal Area B appears damp, and there are active drips and areas of wet flowstone in the Formation Gallery a few meters further into the cave. During the day the air blows strongly out of the cave

and this air passes through the Formation Gallery before it crosses Faunal Area B, thus the humidity is likely close to 100% in Faunal Area B.

Raccoon Statement

The visitations of raccoons to BCP caves has been encouraged because they brought energy into the cave that was thought to be an important for the health of the cave animals, including the BCP protected species. Unfortunately, while the droppings of one or two raccoons might provide useful energy inputs that benefit the protected species, the use of the cave by large numbers of raccoons has turned several caves into raccoon latrines, and the accumulation of large amounts of skat has overwhelmed the cave ecosystem.

The population of raccoons in urban areas has greatly expanded, due to the increased availability of food, and many of these animals are using caves as a convenient den. In Get Down Cave this increased usage resulted in fresh deposits of skat that over large areas were approximately two to three deposits per square meter. This means that an area 2 by 3 meters would have 12 to 18 piles of skat. Moving through the cave is difficult, and the air blowing from the entrance has a strong odor of feces. The ecology of the cave was totally changed. None of the species of concern, the more highly cave adapted animals, were present in the high skat areas. Large numbers of Rove beetles and isopods of the family Porcellionidae had replaced the more cave-adapted species.

Excessive accumulations of skat have been observed elsewhere along the urban fringe, where subdivisions border cave preserves. In Electo-Mag Cave in Williamson County James Reddell has reported large amounts of skat. Dunvegan Cave in Travis County, adjacent to a subdivision, is also developing high levels of raccoon use and skat. Cave managers need to be aware that too much raccoon use can be detrimental to the ecology of the more highly cave adapted animals. It is likely that if raccoon use in these high skat caves is not greatly reduced, eventually the populations in the skat areas will be replaced by non-cave adapted population of cockroaches and other high-energy animals.

TEXAS CAVE MANAGEMENT ASSOCIATION

Surveyor(s): __B. Russell, J. Jenkins____Date: _____Feb 24, 2006_____
Surface Temperature:_mid 60's_ Surface Humidity:80%_Weather Conditions:__mostly cloudy
Cave: ____**LOST OASIS**_____ Survey Section:___entire cave_
Time Stated: __1:30 p.m_____ Time Ended:___2:15 pm_____
Solenopsis invicta (fire ant) Infestation: NO__x__ YES___ Heavy
Moderate Light
Vandalism: NO_x___ YES___ Gate Broken Speleothems Grafitti
Cave Temperature: _____°F (C) Cave Humidity: _____°F (C)
Air Flow: In Out

FAUNAL SURVEY

SPECIES	COUNT	OBSERVATIONS
Amphipods: Stygobromus sp.		
Isopods: Trichoniscidae		
Spiders: Circurina	3	
Wall Web		
Harvestman: L. townsendii		
*Texella mulaiki		
Millipedes: Cambala speobia		
*Speodesmus sp. "small"		
*Speodesmus sp. "large"		
Oxidus gracillis (hothouse millepede)		
Cave Crickets: Ceuthophilus sp. B		
Ceuthophilus secretus	25	
Ceuthophilus cunicularis	2	
Ceuthophilus nymphs	12	
Springtails: Collembola sp		
Silverfish: Texoreddellia tex.		
Beetles: Coleoptera sp		
*Rhadine austinica		
Flies: Diptera	1?	
Scorpion: Pseudouroctonus. reddelli	3	
Snails: Gastropoda		
Salamander: Plethodon albagula		
Cliff Chirping Frog: Syrrhophus marnocki		
Rattlesnakes: Crotalus atrox		

TEXAS CAVE MANAGEMENT ASSOCIATION

Surveyor(s): __B. Russell, J. Jenkins____Date: _____Aug 12,2006_____
Surface Temperature:_100+F_ Surface Humidity: lo Weather Conditions:_sunny, HOT, drought
Cave: ____**LOST OASIS**_____ Survey Section:___entire cave_
Time Stated: __3:30 p.m_____ Time Ended:___4:15 pm_____
Solenopsis invicta (fire ant) Infestation: NO__x__ YES___ Heavy
Moderate Light
Vandalism: NO_x___ YES___ Gate Broken Speleothems Grafitti
Cave Temperature: _____°F (C) Cave Humidity: _____°F (C)
Air Flow: In Out

FAUNAL SURVEY

SPECIES	COUNT	OBSERVATIONS
Amphipods: Stygobromus sp.		
Isopods: Trichoniscidae		
Spiders: Circurina		
Wall Web		
Harvestman: L. townsendii		
*Texella mulaiki		
Millipedes: Cambala speobia		
*Speodesmus sp. "small"		
*Speodesmus sp. "large"		
Oxidus gracillis (hothouse millepede)		
Cave Crickets: Ceuthophilus sp. B		
Ceuthophilus secretus	2	
Ceuthophilus cunicularis	2	
Ceuthophilus nymphs		
Springtails: Collembola sp		
Silverfish: Texoreddellia tex.		
Beetles: Coleoptera sp		
*Rhadine austinica		
Flies: Diptera	3	
Scorpion: P. reddelli		
Snails: Gastropoda		
Salamander: Plethodon albagula		
Cliff Chirping Frog: Syrrhophus marnockii		
Rattlesnakes: Crotalus atrox		

- Drought has affected this cave, which is very shallow and near the surface. Species were extremely few the cave extremely dry.
- Zara Environmental and the Illonois Natural History Survey have undertaken a study under a grant from Texas Parks and Wildlife Dept. to examine a selection of urban and rural caves from Austin through San Antonio, Texas. Among these caves is Lost Oasis Cave. The purpose of the study is to assess stable isotope ratios of Carbon and Nitrogen in an attempt to identify possible differences in energy flow in urban (disturbed) and rural cave settings, with an emphasis on the role of cave crickets (*Ceuthophilus* spp.). Field work for this study has been completed, and laboratory analysis and write-up are underway. A final report will be submitted to TPWD in December, 2007, and shortly thereafter it should be available to interested parties.

TEXAS CAVE MANAGEMENT ASSOCIATION

Surveyor(s): __Julie Jenkins_____ Date: April 14, 2006, May, July, Sept.
SurfaceTemperature: _85F-100F__SurfaceHumidity:Low-Mod Weather Conditions: partly cloudy-sunny
Cave: _**WHIRLPOOL CAVE** Survey Section: _A. Second Room from Ent./B. edge of TC Room
Time Started: _various times in the p.m. Time Ended:_ various times in the p.m__
Solenopsis invicta (fire ant) Infestation: NO__x_ YES___ Heavy Moderate Light
Vandalism: NO _x__ YES___ Gate Broken Speleothems Grafitti
Cave Temperature: 70°F (C)Cave Humidity: Normal Air Flow: In x Out

FAUNAL SURVEY

SPECIES	COUNT	OBSERVATIONS
Spiders: Circurina blind	1-3	
non-Cicurina blind on floor		
Harvestman: L. townsendii	2	
*Texella mulaiki		
Millipedes: Cambala speobia		
*Speodesmus sp. "small"		
*Speodesmus sp. "large"		
Cave Crickets: Ceuthophilus sp. B	3	
Ceuthophilus secretus		
Ceuthophilus cunicularis		
Ceuthophilus nymphs		
Springtails: Collembola sp		
Silverfish: Texoreddellia tex.	1	
Beetles: Coleoptera sp		
Rove beetles		
*Rhadine austinica	0-1	
Flies: Diptera		
Scorpion: V. reddelli	1	
Snails: Gastropoda		
Salamander: Plethodon albagula	5 adults	Numerous nymphs-Apr
Cliff Chirping Frog: Syrrhophus marnocki		
Rattlesnakes: Crotakus atrox		
Isopods: Trichoniscidae		

It appears that the drought that has hit Texas, with its lack of moisture is affecting the normal cave species. Numbers are down to next to no sightings. The air is dry, there are very few drips anywhere.
After a brief rain in the early summer, the Plethodon numbers soared, from 0 observed to 5 adults and hundreds of nymphs. They were not observed again for the remaining of the year.

2006 was a significant drought year, flow at Barton Springs was down to Critical Drought Levels. Biological observations on the 50+ visits to WP produced almost no biological observations. Very few species were seen throughout the year.