Balcones Canyonlands Preserve Karst Management
2008 Annual Report



Surveying in McDonald Cave, Travis County. Photo by Paul Fushille

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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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 25 karst 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. Currently, 28,369 acres have been acquired for the Balcones Canyonlands Preserve (BCP) and most 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*	Kretschmar Cave mold beetle	*Texamaurops reddelli*
		Bee Creek Cave harvestman	*Texella reddelli*
Tooth Cave spider:	*Neoleptoneta myopica*	Bone Cave harvestman	*Texella reyesi*
Tooth Cave ground beetle	*Rhadine persephone*		

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 reclusa		*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 10/01/07-9/30/08 and is referred to in this document as "2008". In 2008, 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-one caves protected as part of the BCP on COA land plus one additional private cave (Lamm cave) managed by the Austin Water Utility Dept.-BCP office; one protected on The Nature Conservancy (TNC) land; nine protected on Travis County (TC) land and one 10(a) private cave 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". Pennie's Cave, previously reported as destroyed, has recently been re-opened due to the efforts of COA WPRDR staff. The cave now has setbacks to protect it from future development and WPDRD staff will continue to work with the property owner to restore the cave**.** The Lucas tract, located within the Cypress Creek macrosite, is pending to be acquired in 11/08 by TC and contains several important karst features, including New Comanche Trail cave. The GDF/Purcell Tract that surrounds Tooth and Root caves, part of the Four Points Cave Cluster, located within the Cypress Creek macrosite, is pending to be acquired in 12/08 by TC. These 2 cave entrances were already owned by TC but previously lacked adequate buffers around the caves. Note that additional buffers for the protection of Kretschmarr Cave and Root Cave were a mitigation requirement of the 10(a) permit issued to GDF/Purcell. The transfer of ownership of these buffers is pending to be transferred to TC in 2009. The acquisition of these BCCP-listed features will occur in FY09 and are not reflected in the numbers found in this report.

Please note that two previously confirmed locales for *Texamaurops reddelli* and one new locale for *Tartarocreagris texana* are now reflected in Table 1.

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 and 2008 to show new species location information from James Reddell (2004, 2005) , HNTB (2005) Chandler (2005, 2007) and Cokendolpher (2008).

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	BCP 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	BCP Schroeter Pk./COA	McNeil/Round Rock						X 1996

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*
Fossil Garden Cave	Private	McNeil/Round Rock						X 1996
Gallifer Cave	BCP Jollyville/TC	Jollyville Plateau		P 1996	P 1996 X 2005	X Chandler 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 Cokendolpher 2008***				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

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*
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	BCP Canyon Creek/ COA	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	X Chandler 2007**		
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.
** Don Chandler confirmed that Gallifer and Tardus Hole Caves are new sites for *Texamaurops reddelli*
*** Cokendolpher (confirmation via email January 30, 2008) Confirmed that Jester Estates Cave is a new site for *Tartarocreagris texana*

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. 2008 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	North-wood 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 Tabor Tract/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	

Cave Name	ES or SOC	Current tract/owner. On BCP Land or private	Cave Cluster
		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 Dbl. Pit	ES	BCP Jollyville/TC	4 Points Cl. (Parke)
Lamm Cave	ES	BCP Private Section 7/COA – AWU managed	
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	TC ownership pending	
No Rent Cave	ES	Private	McNeil Cl.
North Root Cave	ES	BCP Jollyville/TC	4 Points Cl (Parke)
Pennie's Cave	SOC	Private-reopened	
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 Canyon Creek/ COA	
Talus Springs Cave	SOC	Private/ 10(a) permit, TC checks entrance	

Cave Name	ES or SOC	Current tract/owner. On BCP Land or private	Cave Cluster
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	

Many caves on the Balcones Canyonlands Preserve (BCP) land have adequate buffer areas, as outlined in the *U.S. Fish and Wildlife Service Draft Recommendations for Karst Preserve Design, March, 2001*. However, some listed as "protected" under individual USFWS Section 10(a) or Section 7 permits do not, 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 should be 59-89 acres in size to capture the majority of plant and animal community elements in viable numbers needed to support the karst ecosystem.

The COA 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. 2008 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	Occasional surface and species montitoring by COA	none
Airman's Cave	Chain gate 1000 ft. inside 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, quarterly cricket exit counts, quarterly end. species monitoring	none
Armadillo Ranch Sink		Private - Unknown		none
Arrow Cave	Gated	Protected in parkland (There are Nearby homes immediately south of the cave entrance).	COA surface and species monitoring	none
Bandit Cave	Gated	Protected by private ecologically concerned landowner		none
Beard		Protected on preserve	COA quarterly surface	none

Cave Name	Gated/ Fenced	Protection Area Status /Adequate Preserve size	Species Monitoring Status	Public Access
Ranch Cave			monitoring	
Bee Creek Cave		Private- Unknown		none
Blowing Sink Cave	Gated	Protected on preserve	COA bi-monthly surface monitoring and annual species monitoring	none
Broken Arrow Cave	Tract is (fenced (8 ft.ranch fence)	Protected on preserve	COA quarterly surface and annual species monitoring	none
Buda Boulder Spg.		Protected in parkland (close proximity to a hike and bike trail)	COA annual surface 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).	Occasional species and surface monitoring by COA	1 day/ year COA guided access to first room to educate children
Cave Y	Gated	Protected in parkland	COA quarterly surface and annual species monitoring	none
Ceiling Slot Cave		Private - Unknown		none
Cold Cave		Private - Unknown		none
Cotterell Cave	Fenced and gated	Protected in parkland. (There are nearby homes immediately east of the cave entrance)	COA quarterly species and surface monitoring; quarterly cricket exit counts	none
Disbelievers Cave		Protected by 10a permit, hired ACI Consulting		none
District Park Cave	Gated after the 1st room.	Protected in parkland	COA quarterly species and surface monitoring; quarterly cricket exit counts	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 on Water Quality Protection Land (drainage basin will be negatively impacted by the construction of a new highway).	COA quarterly species and surface monitoring; quarterly cricket exit counts	none
Fossil Cave	Access to featureson site are protected by large rocks	Protected in parkland	Exact location of cave is unknown	None
Fossil Garden Cave		Private - Unknown		none
Gallifer Cave	Gated, fenced	Protected on preserve	TC bi-annual surface monitoring, quarterly cricket exit counts, RIFA assessment, Spring end. species monitoring	none
Get Down	Gated	Protected with Protection Agreement	TCMA species and surface	none

Cave Name	Gated/ Fenced	Protection Area Status /Adequate Preserve size	Species Monitoring Status	Public Access
Cave		Inadequate setback from development.	monitoring	
Goat Cave	Fenced	Protected on preserve	COA annual faunal survey, monthly surface monitoring	access by permit*
Hole-in-the-Road		Private –Unknown. (very close to a major roadway)		none
Ireland's Cave	Fenced	Protected by landowner with 4.8 ac. setback, watershed problems with golf course, setback inadequate		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. Close to pre-existing roadway and in powerline ROW.	TC bi-annual surface monitoring, quarterly cricket exit counts, RIFA assessment, Spring end. species monitoring	none
Kretschmarr Dble. Pit	Fenced	Protected on preserve	TC bi-annual surface monitoring, quarterly cricket exit counts, RIFA assessment, quarterly end. species monitoirng	none
Lamm Cave	Gated and fence	COA negotiated setback (approximately 150')	Occasional surface and species monitoring by COA	none
Little Bee Cr. Cave	Gated	Protected by COA AWU 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 Fenced	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	COA Annual faunal survey and Monthly surface monitoring	access by permit*
McDonald Cave		Protected on preserve	TC bi-annual surface monitoring, quarterly cricket exit counts, RIFA assessment, quarterly end. species monitoring	None
McNeil Bat Cave		Private – Unknown (close proximity to high school)		none

Cave Name	Gated/ Fenced	Protection Area Status /Adequate Preserve size	Species Monitoring Status	Public Access
Midnight Cave	Fenced	Protected on parkland (close proximity to soccer fields)	COA quarterly surface and annual species monitoring	access by permit*
Moss Pit		Private - Unknown		none
New Comanche Tr. Cave		Private	Pending TC acquisition. Faunal survey conducted, via Landowner permission, by TC staff.	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, quarterly cricket exit counts, RIFA assessment. Spring end. species monitoring	none
Pennie's Cave		Previously classified as destroyed (cave filled in) but has recently been reopened		none
Pickle Pit	Gated	Private- Unknown		none
Pipeline Cave	Metal frame [1]	Private - Unknown		none
Rolling Rock Cave	tract is fenced with a 8ft. game fence	Protected on preserve	COA quarterly surface and annual species monitoring	none
Root Cave		Small protected area around cave on preserve. TC acquisition pending in 12/08 of surrounding land plus 10a permit issued protecting buffers around caves.	TC bi-annual surface monitoring, quarterly cricket exit counts, RIFA assessment, spring end. species monitoring	none
Slaughter Creek Cave	Gated	Protected on parkland. (There are nearby homes immediately south of the cave entrance)	COA quarterly surface and annual species monitoring	none
Spanish Wells		Private- Unknown		none
Spider Cave	Fenced (ranch fence)	Protected on preserve	COA quarterly species and surface monitoring; quarterly cricket exit counts	none
Stark's North Mine		Private Unknown, recently sold		none
Stovepipe Cave	Fenced (ranch fence) preserve boundary	On COA preserve	COA bi-annual faunal and quarterly surface monitoring	none
Talus Springs Cave	Gated	Protected by Homeowners Association and TC, only has 50' setback from houses and is probably effected by uphill develop-ment.	TC Annual surface monitoring	none
Tardus Hole	Fenced	Protected on preserve	TC bi-annual surface monitoring, quarterly cricket exit counts, RIFA assessment, Spring end. species monitoring	none

Cave Name	Gated/ Fenced	Protection Area Status /Adequate Preserve size	Species Monitoring Status	Public Access
Tooth Cave	Gated	Protected on preserve but area too small. TC pending acquisiton of surrounding land in 12/08.	TC bi-annual surface monitoring, quarterly cricket exit counts, RIFA assessment, quarterly 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

******* Access by Permit- Permit may be issued by TCMA

4.0 ACCESS AND EDUCATION

COA

In the fiscal year 10/01/07-9/30/08, 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 (COA 14), Maple Run Cave (& COA 28), Goat Cave (COA 28) and Cave X (64).

Educational trips were made into Cave X by 64 students from the Reagents School onsite. The tours were instructed and guided by hydrogeologists and biologists of WPDRD, COA BCP staff, and USFW staff. The purpose of the trips were to increase the connection and ownership of the Reagents School community to the BCP permit cave on their school site and to introduce them to the sensitivity of karst inhabitants and groundwater entering the Edwards Aquifer. Most of the tours were limited to the entrance room, although about eight kids were escorted to a pit about 50 ft in the cave.

The City of Austin Watershed Protection & Development Review Department (WPDRD) conducts cave education through Earth Camp (a fifth grade water quality program), Clean Creek Camp (a summer parent/child water quality program) and Hydrofiles (a high school water quality program).

Hydrofiles reaches aquatic science and environmental science classes with a hands-on inquiry based investigation of Austin's water resources. Local field studies involve monitoring local creeks and caving into the Edwards Aquifer. Students learn about

hydrogeology and cave biology through cave tours. In 2008 two school groups were taken into Whirlpool Cave and one school group into Live Oak Cave for a total of 145 high school students. Sara Heilman coordinates the high school cave education and holds an MS in environmental science.

The City of Austin Watershed Protection & Development Review Department produces cave posters and a companion aquifer brochure which are distributed through other agencies and at public events.

Earth Camp involves a week long day camp available to Title I AISD schools where students learn in the field about watersheds, the Edwards Aquifer, caves, and cave biota through cave tours on the Wildflower Center and interactions with professional biologists and hydrogeologists. Earth Camp is coordinated by Susan Wall, a former classroom (certified) teacher with an MS in science education. In 2008, Earth Camp guided 1,200 students into caves (Wildflower, Village of Western Oaks Karst preserve, and Whirlpool Cave). Additionally, every fifth-grader in Austin Independent School District is offered aquifer education through an Earth School hands-on classroom presentation.

In summer 2008 Parent/Child Clean Creek Camp brought 56 students and parents into Whirlpool and Live Oak caves. Clean Creek Camp is a partnership between the City of Austin WPDRD and Keep Austin Beautiful. Activities focus on watersheds, the Edwards Aquifer and citizen actions that improve water quality. Clean Creek Camp is offered in summer to parents and their children ages 9-12.

TCMA

The Barton Springs/ Edwards Aquifer Conservation District and the TCMA held their annual "Austin Cave Festival" at the Village of Western Oaks Karst Preserve. The festival strives to educate visitors about the importance and sensitivity of the aquifer and its recharge features. It also gives visitors an opportunity to learn more about the unique biology of subterranean ecosystems, as well as the role caves, sinkholes and other karst features play in water quality. The City of Austin shared a BCP booth with Travis County at the annual "Cave Day Festival" held at the Village of Western Oaks Karst Preserve.

TRAVIS COUNTY

In addition to participating in the annual Western Oaks Karst Oaks Festival , Travis County gave a presentation on the BCP and it's endangered karst species at the 1st annual Texas Parks and Wildlife Department's "Wildlife Diversity Conference" held in Houston, TX. Travis County also participated in Travis Heights Elementary's "Young Scientist Day", with

a presentation on the biospeleology of central Texas. This event invites speakers from a variety of scientific disciplines to give presentations to students in the hopes of inspiring greater interest in the diverse fields of science.

See Table 3 for access and gating status of all of the BCCP caves.

5.0 MANAGEMENT COORDINATION AND OVERSIGHT

The USFWS, in collaboration with other State and local agencies, non-governmental organizations and consulting firms, formed the Karst Conservation Initiative (KCI). This group facilitates the communication and coordination amongst all stakeholders, including BCP partners, involved in karst conservation in Texas. Participants meet to discuss on a variety of karst-related subjects that have included management, education and the biospeleology of Texas caves.

The City of Austin and Travis County determined that there was a need to create a master database on BCP karst faunal monitoring and management with the ability to analyze data in order to assess current status and compliance of the BCCP permit and to identify future needs of the listed species.

The COA is developing a karst database that will house all faunal survey data from BCP listed caves. This database will focus on compliance and contribution to recovery and will be ready in FY09 for data entry by all BCP partners. The evaluation of the BCCP permit and HCP, concerning karst management, has been undertaken by a sub-group of the BCCP Completion Task Group with the objective of reviewing and assessing where the BCP partners "are" in terms of BCCP permit karst protection requirements. This database will provide much of the information needed for these analyses. Though the intent is for this database to be a "shared" information source for all the BCP partners, there are still confidentiality challenges on how to establish this.

6.0 BIOLOGICAL MONITORING

COA

The City of Austin's BCCP staff performed species surveys for Adobe Springs cave, Airman's cave, Arrow cave, Blowing Sink, Broken arrow cave, Cave Y, Cotterell cave (quarterly), District Park cave (quarterly), Flintridge cave (quarterly), Goat cave, Little Bee Creek cave, Maple Run cave, Midnight cave, Rock Slide cave, Rolling Rock cave, Seibert Sink, Slaughter Creek cave, Spider cave (quarterly), and Steiner Ranch cave (note: Rock

Slide, Seibert Sink, and Steiner Ranch caves are not listed on the BCCP permit, however, Rock Slide and Seibert Sink contains species of concern and Steiner Ranch cave may contain endangered species).

The City of Austin staff, with the help of volunteers, conducted quarterly cave cricket exit counts at: Cotterell, District Park, Flintridge, and Spider caves and an annual survey at Jest John cave.

Volunteers along with COA BCP staff also helped remove trash and excavate Hoskin's Hole (COA WQPL cave) with SOC.

During installation of a power pole near Steiner Ranch Blvd., Austin Energy "drilled" into a previously unknown cave. COA BCP surveyed the cave and collected a potential listed species (*Texella* sp.), which was deposited with Pierre Paquin for species verification. Due to fact that this cave is likely to harbor listed species, BCP staff recommended that Austin Energy consult with FWS prior to further action.

The City of Austin re-issued a Scientific/Research permit to Dr Jay Banner and 2 of his graduate students Brian Cowan and Michael Osborne (UT at Austin) regarding the temporal and spatial variations of carbon dioxide levels found in central Texas caves. Blowing Sink, Seibert Sink, Maple Run Cave, District Park cave, and Cave Y were the COA BCP caves monitored for this study. Preliminary results show that CO2 levels in the local area vary seasonally, with peak levels in late August to early October and lower concentrations in December through late March.

Sofia Angelo (M.S. Candidate Conservation Biology Affiliation & Department: Antioch University New England, Environmental Studies Dept.) conducted a Bat Conservation International (BCI) funded study of the roost site requirements of *Myotis velifer*. The study included measuring humidity, temperature, vegetation characteristics surrounding the cave entrance, proximity of the cave to permanent water sources and evidence of disturbance by comparing caves that are currently occupied by *M. velifer* and those that are not. This study will provide base line information that can aid in cave management as well as future studies identifying possible reasons for decline of *Myotis velifer*. COA BCP staff, as well as TCMA member Bill Russell, accompanied Sofia to Austin area caves including some COA BCP and WQPL caves.

Flint Ridge Flow Monitoring Update

Flint Ridge Cave is located on the Tabor COA-WQPL tract. State Highway 45 southwest is proposed to be constructed near Flint Ridge Cave, and its right-of-way edge is 150 feet from the entrance and the proposed highway crosses a portion of the cave. Monitoring will continue through construction and operation of the Highway so that impacts can be detected and management practices can be mitigated to better protect the rare species. The proposed Highway 45 also bisects the natural 64-acre catchment area to Flint Ridge Cave. The flow station was installed by City of Austin Watershed Protection and Development Review Department (WPDRD) to collect first available measurements of flow entering an upland cave from a large internal catchment area. The second purpose of the station is to document baseline water-quality and quantity entering a cave that contains SOC on the City of Austin and Travis County BCP permit.

The original flow station was installed in July 2003, utilizing unpreserved plywood boards, two aluminum 2-ft H flumes, and 1 weir utilizing a notch cut into the plywood wall. The materials were intentionally selected to be relatively inert to protect the quality of water entering the cave. Furthermore, the plywood walls served to accumulate some sediment that would otherwise enter the cave. Surface-water sampling was conducted in 2007 that compared water-quality above and below the flumes to detect the leaching of parameters such as aluminum.

A second paired sinkhole (HQ Flat Sink on the J17 COA-WQPL tract) with an 49 acre catchment basin was equipped with a flow station in 2002. A climate tower has monitored evapotranspiration, soil moisture, rainfall, and other parameters within the HQ Flat sinkhole/ drainage basin. A report of the initial findings was completed in 2006 (Hauwert, N.M., Litvak, M.E., and Sharp, J.M., 2005, Characterization and water balance of internal drainage sinkholes: in Beck, B. ed., Geotechnical Special Publication No. 144, Sinkholes and the Engineering and Environmental Impacts of Karst, Proceedings of the Ninth Multidisciplinary Conference, p. 188-200.) An update report is being prepared as part of a Ph.D dissertation by Nico Hauwert through UT Geological Sciences.

In June and July 2008, the flow station measuring flow to Flint Ridge Cave was improved by City of Austin WPDRD. Because unpreserved boards were used in the initial weir wall, the boards began rotting in places six years later. Also the measured flows were much higher than originally anticipated, requiring higher walls and an aluminum flume to replace the undersized weir. Concrete boards were installed as an outer rim beyond the existing unpreserved boards. Also, it is not known whether roadway runoff will be diverted to the cave, such that the flow may increase beyond that measured during baseline conditions. Other improvements were made to improve the operation, including permanent autosamplers for each of three contributing drainages and sinkhole bowl they enter. The flow data is now

received directly by WPDRD by modem. The station is now overseen by a team of WPDRD hydrologists under Roger Glick.

In 2007 tracing studies were conducted on the Tabor Tract near Flint Ridge cave. Soil tracers (KBr, Fe, and ammonium carbonate) were poured on the surface several hundred feet from Barker Ranch #1 Cave and were recovered in cave drips about 18 feet below the ground surface. Futhermore, the surface water quality and cave drip quality were sampled over several storms and compared to study how naturally occurring materials are attenuated as they enter the soil and infiltrate towards cave drips and the water table. This soil tracing study is the scope of a M.S. thesis being conducted by Brian Cowan of UT Geological Sciences and WPDRD. A report is being prepared as a MS thesis.

Water-quality and flow of drips in Flint Ridge Cave were also conducted as part of this study. The Flint Ridge Drip Pit flow monitor was initiated by TCMA and monitored from May 2004 to Feb 2006. UT Geological Sciences (Brian Cowan) reactivated the station in Sept 2006 and maintained it until July 2007 when it was abandoned due to the difficulty in accessing and maintaining the station with frequent passage flooding.

Aquifer-wide tracing was conducted by the City of Austin Watershed Protection and Development Review Department (WPDRD) and Barton Springs/Edwards Aquifer Conservation District (BS/EACD) on the Tabor Tract although not within Flint Ridge Cave. Four tracers were injected in 3 caves and Bear Creek, within 2,000 feet and 2 miles from Flint Ridge cave. All four tracers traveled at least 10-14 miles to arrive at Barton Springs in less than three days. Monitoring was conducted in drips within Flint Ridge and did not detect the dye injected in Bear Creek. Bear Creek that runs west and south of the cave and its elevation is higher than the drips in the Drip Pit of Flint Ridge Cave. A report of this tracing is expected in Spring 2009.

UT Institute of Geophysics (UTIG) conducted a variety of geophysical surveys over Flint Ridge Cave in 2007 and 2008, under Jack Holt. A UT class continued the surveys in the Fall of 2008 under Dr. John Sharp, Jr of UT Geological Sciences and Jack Holt of UTIG.

Travis County

Faunal surveys

Travis County's BCCP staff conducted spring 2008 faunal surveys in all nine Travis county-owned BCP caves with federally listed species: Amber cave, Gallifer cave, Kretschmarr cave, Kretschmarr Double Pit cave, McDonald cave, North Root cave, Root cave, Tardus Hole cave, and Tooth cave. Quarterly monitoring continued on the following four pre-

selected caves: Amber cave, McDonald cave, Kretschmarr Double Pit cave and Tooth cave. Faunal surveys in these four caves, with permitted Travis County biologists (USFWS permit #TE819451-1), were conducted in late Fall 2007, and Winter, Spring, and Fall of 2008.
Summer 2008 quarterly surveys on pre-selected caves noted higher abundance values, particularly in Tooth cave, than previous survey data from spring 2008 and winter 2007. Also of interest was the noted decrease in *Texella reyesi* individuals recorded from the Fall 2008 survey compared to Fall 2007. Thirteen individuals were recorded in Fall 2007, compared to 36 in Fall 2008. Species richness values were relatively equal across all seasons, with the exception of Fall 2008. Fall 2008 surveys in both Amber and Tooth caves revealed a large number of *Plethodon glutinosus* sub-adults within both caves.

Table 4 summarizes listed species found by cave and by year (Travis County-owned caves only). See attached document for results from all TC BCP-listed cave faunal surveys.

Red-imported fireants (*Solenopsis invicta*) (RIFA) were encountered in some of the caves during surveys. These included Amber cave, McDonald cave and Tooth cave. Of special note was Tooth cave during TC's survey in August 2008. RIFA numbers were higher than ever recorded by county from 2005 – 2008, with approximately 800 individuals counted. No RIFA individuals were recorded on the 2008 Fall survey, three months later. Species richness values at Tooth Cave went from 32 in summer 2008 to 21 in the fall. This decrease may be attributed to various factors, including RIFA, and is disussed further in the Recommendations section.

Table 4. Listed Endangered Species karst invertebrates found in Travis County managed caves by year.

Cave Name	2005	2007	*2008*
Amber Cave	No listed species observed	No listed species observed	*T.reddelli* *T. texana*
Gallifer Cave	*N. myopica* *T. reyesi* **T. reddelli* *R. persephone*	*N. myopica* *T. reyesi* *T. reddelli* *R. persephone*	*N. myopica* *T. reyesi* *T. reddelli* *R. persephone*
Kretschmarr Cave	No listed species observed	*T. reddelli*	No listed species observed
Kretschmarr Dbl. Pit	No survey done	*T. texana* *T. reyesi*	No listed species observed
McDonald Cave	*T. reyesi*	*T. reyesi*	*T. reyesi*
North Root Cave	No survey done	*Neoleptoneta. sp.* - to be determined	No listed species observed
Root Cave	No survey done	No listed species observed	No listed species observed
Tardus Hole Cave	No survey done	**T. reddelli*	No listed species observed
Tooth Cave	*T. reyesi* *T. reddelli*	*N. myopica* *T. reyesi* *T. reddelli* *R.. persephone*	*N. myopica* *T. reyesi* *R. persephone*

**new record (not previously observed in this location and not listed in BCCP HCP and Permit)*

Cave Cricket Counts

In 2007/2008, Travis County conducted seasonal cave cricket exit counts at McDonald, Amber, Tooth, Root, North Root, Gallifer, Kretschmarr, Kretschmarr Double Pit, and Two Trunks caves.

TCMA
No information available

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 Two Trunks Cave (TC).

7.0 RECOMMENDATIONS

Access into the 18 privately owned BCP-listed caves in order to assess current faunal assmeblages should be pursued by managing partners. When feasible, acquisition of one or more of these caves should be a priority.

Additionally, there may be a need to substitute some of these privately owned caves listed on the BCCP permit for non-listed caves that may be more appropriate and are known to have listed species. The 25 karst species, listed as SOC, is also in need of review. Several caves listed under the permit as containing SOC may be in error. The most current taxonomic information for the karst species should also be incorportated in this list.

Research needs, as indentified by the "Endangered Karst Invertebrates Recovery Plan", should be re-examined. Studies examining the relationship between RIFA and other cave inhabitants, should be conducted. A one-day workshop highlighting the latest research in RIFA control and most effective management techniques will be held in April 2009.

Seasonal species richness and abundance should also be analyzed in order to determine trends in populations within the listed caves. Analyses of all faunal and cricket data to date would also be beneficial.

8.0 KARST MANAGEMENT ACTIVITIES

The BCP Land Management Plan outlined planned activities concerning the 62 BCCP karst features. Table 5 below includes a summary of activities completed in FY 2008.

Table 5. 2008 BCCP Karst Management Activities.
Adobe Springs Cave The Nature Conservancy On 3/26/08 City of Austin BCP staff along with volunteer Andy Gluesenkamp conducted a biological survey (See Attachment) of the cave. Aquatic amphipods were collected and deposited with Randy Gibson (FWS), this is a new site for the stygobitic *Stygobromus bifurcatus*. New more accurate GPS coordinates were taken for this cave to update the City and TSS files.
Airman's Cave City of Austin 1. Completed annual cave faunal survey(See Attachment) 2. In October 2007 several novice spelunkers entered the cave and at at some point were unable to find their way out. This was a major media event throughtout the country due to the fact that the Austin Fire Department's inability to locate these "lost" individuals. Finally local caver Mike Sisson entered the cave, quickly located the lost party and escorted them out. Unfortunately due to the incredible amount of media attention this received, traffic has greatly increased to a point that the City as well as TCMA and local cavers decided that some action may be needed to curtail this sudden increase in activity by untrained individuals. 3. COA BCP staff worked with Austin Parks and Recreation, and TCMA on putting together new signs for the cave. The first sign will be installed in the first room and is a "caving ettiguette" sign basically stating common sense rules to minimize damage to the cave and themselves. The second sign will be installed past the "newly" installed chain gate notifying visitors that access to this part of the cave requires a permit issued by TCMA. 4. TCMA installed a new chain gate at crucifixion rock (~1000' inside the cave), unfortunately soon after someone was able to breach the new gate. TCMA will attempt to gate this site one more time with a stronger chain plus install a new sign stating that access is possible through permit. If the chain is cut again the City of Austin may install a traditional "stronger" gate much closer to the entrance.
Amber Cave Travis County 1. Conducted quarterly cricket exit surveys. 2. Maintained fencing and signage to protect this area from unauthorized access and dumping. 3. Conducted quarterly cave faunal surveys (see Attachment).
Armadillo Ranch Sink Private
Arrow Cave City of Austin 1. Completed annual cave faunal survey(See Attachment) 2. Quarterly site inspections were conducted. City staff continue to deal with ongoing dumping problems from the adjacent neighborhood. BCP staff took GPS coordinates, photos and presented a report to Austin Parks and Recreation officials on the need to take action against these offenders. 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.
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.
Bee Creek Cave Private 1. Access for an inspection and species survey was requested in Nov 2008 by WPDRD and denied by property owner. 2. Bee Creek Cave, initially thought to be located at 1802 Lakeshore Drive, was confirmed to be located at 201 Lago Vista. The owner's son, Cole Schindler, confirmed that a cave was on the property. Request to enter the

Table 5. 2008 BCCP Karst Management Activities.
cave was denied by owner. There isn't a gate near the front of the cave and the cave is open all the way to the back room, according to one of the residents of the apartments. There is a trail that leads down to the cave and it is apparent that people are utilizing it.
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. The site was treated twice for fire ants with boiling water. 3. Local cave volunteers and the City of Austin continued to work on the stabilization project using reinforced concrete to stabilize passageways within the cave. 4. COA BCP staff on site inspection reported Texas Gas Service's construction of a new gas line along the northern portion of the existing "Kinder Morgan" line was in violation of their permit. Texas Gas Service was operating outside of their easement and had damaged several protected live oaks. COA BCP and Pard staff meet with Texas Gas Service representatives and worked out a mitigation plan. 5. COA BCP staff deployed more salamander bait traps. 6. Researchers conducted an isotope study at this cave to help determine differences between rural and urban cave cricket foraging distances around selected caves. 7. Permitted UT grad student to conduct CO2 monitoring research project.
Broken Arrow Cave City of Austin 1. This cave was inspected quarterly with no sign of human visitation or vandalism. 2. Completed annual cave faunal survey(See Attachment) 3. Site was treated for fire ants with boiling water. 4. BCP staff discovered that TCC had accidentally listed the precise location of Broken Arrow and Testudo Tube caves on a map that they made available to the public. COA BCP staff contacted TCC and requested that they remove the 2 cave locations from their maps, TCC also agreed to no longer hand out any of the "old" maps showing those locations.
Buda Boulder Spring City of Austin 1. BCP staff visited the site twice and noted no new negative impacts to the spring.
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. The key to the cave gate lock was missing, thus COA staff cut the lock off which was then replaced with a new lock provided by Regents School. COA staff then noticed that the gate hinge was broken and notified Regents School. Regents Scool hired Zara Environmental to make the necessary repairs to the gate. 4. Educational trips were made into Cave X by 64 students from the Reagents School onsite. The tours were instructed and guided by hydrogeologists and biologists of WPDRD, COA BCCP staff, and USFW staff. Tours were limited to the entrance room, although about 8 kids were escorted to a pit about 50 ft in the cave. 5. Cave X was monitored by Sofia Angelo, a grad student working on behalf of BCI, attempting to determine why *Myotis velifer* utilizes some caves and not others. 6. Regents staff conduct periodic surface inspections of the cave including gate and lock maintenance.
Cave Y City of Austin 1. BCP staff visited this cave 6 times and noticed no signs of vandalism to the cave or cave gate, however staff did discover a very large transient camp in close proximity to the cave (within the footprint of the cave). Human fecal matter was observed within the sink drainage basin. BCP staff contacted Park Police and were able to remove the camp from this site. 2. Completed annual cave faunal survey(See Attachment).

Table 5. 2008 BCCP Karst Management Activities.
3. Site was treated for fire ants with boiling water. 4. Permitted UT grad student to conduct CO2 monitoring research project.
Ceiling Slot Cave Private
Cold Cave Private Sylvia Pope (WPDRD) arranged a site visit for City and FWS staff on May 15, 2008 as part of mini-field trip to look at the current status of some of the "private" BCP caves. While on the site we also investigated Ingina and Northwoods caves and at each feature we removed soil and debris from gates, oiled locks and hinges, we were able to open the gate to Cold cave and once opened, we replaced the old lock to ensure future access. It was apparent, with the exception of gating, that no management activies occured on the "Cold Cave Preserve". The Preston Oaks Homeowners Association owns the land and members were unaware that an endangered species cave, as well as two other caves, existed within the "preserve". Participants noted fire ant mounds in close proximity to Cold Cave; participants also noted illegal trash and brush dumping within the preserve area.
Cotterell Cave City of Austin 1. Quarterly site inspections were conducted, and found no RIFA at or near the cave. Staff did note that someone had cut the fence on several occasions. Staff responded by repairing the fence and increasing the frequency of patrols. Also, the cave was gated the previous year for additional protection. 2. RIFA were treated with boiling water; most of the ants were located in the parking lot, approximately 300 feet from the cave. 3. BCP staff conducted 3 cave faunal surveys and 2 cricket exit counts (See attachments).
Disbelievers Cave Private 10a Permit: PRT-808694
District Park Cave City of Austin 1.BCP staff conducted four cave faunal surveys (See attachments). 2. BCP staff and volunteers conducted 4 cave cricket exit counts (see attachments) 3. Conducted site surveys quarterly, other than trash at the entrance no new major problems noted.. 4. Permitted access to this cave was allowed. 5. BCP staff removed trash from the un-gated portion of the cave. 6. Permitted UT grad student CO2 monitoring research project. (See Appendices for reference to this study) 7. BCP staff treated RIFA mounds with boiling water.
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. 2. TCMA initiated a study to help examine the recharge source for drips that may play an important function for cave ecosystem. In Sept 2006, UT Geological Sciences (Brian Cowan) installed new drip monitoring equipment and continued to maintain the monitoring with /WPDRD/TCMA support until July 2007. Brian installed a drip monitoring station for the Balcony Room in 2007. Three research trips were made in 2008 for this study. 3. BCP staff treated numerous RIFA mounds with boiling water (highest density of RIFA mounds on COA property). Flint Ridge Cave (continued) 4. BCP staff conducted four cave faunal surveys (see attachments). Staff noted RIFA just inside the cave etrance. 5. BCP staff and volunteers conducted 4 cave cricket exit counts (see attachments). 6. Nico Hauwert with the COA WPDRD continued his study on the surface catchment area of Flint Ridge cave. COA BCP staff contracted professional surveyors to delineate the Flint Ridge basin boundaries north of Flint Ridge cave. In 2008, the flow station was upgraded as described in the appendices. 7. COA BCP staff continued to meet with LCRA regarding their proposal to route a new power line within the drainage area of Flintridge cave, staff urged LCRA to locate it within TXDOT ROW.
Fossil Cave

Table 5. 2008 BCCP Karst Management Activities.
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. Invasive non-native vegetation was removed from the park. 4. BCP staff investigated the potential for the installation of a new kiosk regarding the importance of karst.
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 quarterly cricket exit surveys 5. Conducted spring cave faunal survey (see Attachment).
Get Down Cave TCMA
Goat Cave Karst Preserve City of Austin 1. Completed annual faunal survey (see attachment) 2. COA BCP staff treated RIFA annually with boiling water. 3. With the help of volunteer stewards, conducted bi-weekly site inspections, removed trash from preserve area and reported on anything out of the ordinary. 4. Allowed permitted access to this cave. 5. COA BCP replaced vandalized lock to gate. 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. 7. This site was monitored by Sofia Angelo, a grad student working on behalf of BCI, attempting to determine why *Myotis velifer* utilize some caves and not others.
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. Conducted cave cricket exit count (see attachment).
Jester Estates Cave

Table 5. 2008 BCCP Karst Management Activities.
City of Austin 1. BCP staff conducted 6 site visits and on fewoccasions removed new illegally dumped brush and investigated the reported theft of rock stolen from the preserve. 2. BCP staff continue to meet with neighbors regarding why these activities must end. 3. The site was treated for fire ants with boiling water.
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 quarterly cricket exit surveys. 4. Conducted spring cave faunal survey (see Attachment).
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 quarterly cricket exit surveys. 4. Conducted quarterly faunal surveys (see Attachment).
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. 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
Lost Oasis Cave TCMA
Maple Run Cave City of Austin 1. BCP staff conducted one cave faunal survey (See attachment). Maple Run Cave (continued) 2. BCP staff accompanied Joel Ledford and Pierre Paquin for a preliminary assessment of potential new research on Leptonetidae spiders. 3. With the help of volunteer stewards, conducted bi-weekly site inspections, removed trash from preserve area and reported on anything out of the ordinary. 4. Permitted UT grad student CO2 monitoring research project. (See Appendices for reference to this study) 5. Permitted access to this cave is allowed. 6. Site was treated twice for RIFA with boiling water.
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.

Table 5. 2008 BCCP Karst Management Activities.
3. Conducted quarterly cricket exit surveys. 4. Conducted quarterly cave faunal surveys (See Attachment).
Midnight Cave City of Austin 1. Quarterly site inspections were conducted. 2. BCP staff conducted one cave faunal survey. (See Attachment) 3. Treated site for RIFA with boiling water.
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 TC ownership pending
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. 3.Conducted quarterly cricket exit surveys 4.Conducted Spring cave faunal survey (See attachment)
Pennie's Cave Private 1 The entrance has been GPS located and dug-out to a depth of about five feet in 2008. 2. A new development plan is seeking approval for the site containing the cave. 3.The site plan calls for the cave entrance to be gated and boulders place at the round the cave at the edge of a 300-ft buffer. 4.Additional excavation is need to completely uncover the entrance and open the passage into cave, WPDRD is working with the land owner to protect the cave and re-establish the cave habitat.
Pickle Pit Cave Section 7 Permit 2-15-93-F-075 (see USFWS files)
Pipeline Cave Private 1. A 2004 agreement between COA and Stratus set aside a fenced buffer around Pipeline cave that varies from 100 feet to the east and up to 300 feet west of the cave and an additional setback of 300 feet to the north and west; 150 ft to east and south for the adjacent feature known as Confusion Sink. 2. BCP staff met on site with Parks and Rec staff and SWCA consultants and had multiple email correspondence with these parties regarding a proposed new water line and trail that would be built in close proximity to the cave. Due to the potential for damage to this cave BCP and WPDRD staff recommended an alternative route that was accepted by the applicant.
Rolling Rock Cave City of Austin 1. This cave was inspected quarterly, and no sign of human visitation or vandalism was found.

Table 5. 2008 BCCP Karst Management Activities.
2. This site was treated for RIFA with boiling water. 3. Conducted one cave faunal survey. (See attachment)
Root Cave Travis County 1. Did surface inspection with no signs of vandalism to the cave entrance or in the cave. 2. Inspected for RIFA. 3. Conducted quarterly cricket exit surveys. 4. Conducted Spring cave faunal survey (see Attachment).
Slaughter Creek Cave City of Austin 1. Quarterly site inspections were conducted. City staff continue to deal with ongoing dumping problems from the adjacent neighborhood. BCP staff took GPS coordinates, photos and presented a report to Austin Parks and Recreation officials on the need to take action against these offenders. 2. Conducted one cave faunal survey. (See Attachment) 3. The entrance was inspected to make sure that no human access had occurred. 4. 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. 5. BCP staff met on site with Parks and Rec staff and SWCA consultants and had multiple email correspondence with these parties regarding a proposed new water line and trail that would be built in close proximity to the cave. Due to the potential for damage to this cave BCP and WPDRD staff recommended an alternative route that was accepted by the applicant.
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. RIFA was treated with boiling water twice. 3.Conducted four cave faunal surveys (see attachments). 4. BCP staff with the help of volunteers conducted 4 cave cricket exit counts. (see attachments).
Stark's North Mine Private
Stovepipe Cave City of Austin 1. COA BCP staff conducted 6 site inspections, no damage noted near the cave, however staff noticed numerous "old dumps" located within the preserve area. Staff removed most of the trash from the site. 2. BCP staff repaired perimeter fence. 3. Treated site for RIFA with boiling water.
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. Talus Springs Cave (continued) 2. Surface inspections with no sign of vandalism to the cave entrance or in the cave.
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 quarterly cricket exit surveys. 3.Conducted spring faunal survey.
Tooth Cave Travis County 1. Did surface inspections with no signs of vandalism to the cave entrance or in the cave. 2. BCP staff accompanied Joel Ledford and Pierre Paquin for a preliminary assessment of potential new research on Leptonetidae spiders.

Table 5. 2008 BCCP Karst Management Activities.
3. Inspected for RIFA. 4.Conducted quarterly cricket exit surveys 4.Conducted quarterly cave faunal surveys
Whirlpool Cave TCMA

9.0 REFERENCES

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TRAVIS COUNTY AND CITY OF AUSTIN CAVE FAUNAL AND CRICKET EXIT COUNTS SURVEY DATA

FY08

Name: K. O'Connor, M. Sanders	Agency: Travis County
Date: 5-Nov-07	No. of pages: 2

Location: Amber Cave GPS coordinates (NAD 1983) _____ # of Zones: 3
Time Started: (see below) Time ended: (see below) scientific permit # TE819451-1
Surface area observations: Raccoon scat was observed on cave gate

Survey area: ☐ *Solenopsis invicta* if so, ☐ heavy infestation ☒ moderate ☐ light
☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: 22.2 C Outside: 21.2 C Humidity Inside: 100% Outside: 81%

Weather conditions during the past week: no precipitation; avg. temp for Nov 1-4 was 20 C
Organic matter encountered in survey area: raccoon scat on cave gate
Surface area moisture conditions: Dry

FAUNAL SURVEY- Zone 1 and 2

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Zone 1 (1014 AM- 1033 AM)			
Cicurina varians	2		
***Eidmannella reclusa*	3		
Araneae: Undetermined species	1		Collected
Speodesmus sp.	1		
Cambala speobia	4		
Surface millipedes: *Oxidus gracilis*	7		
Surface millipede: Scolopendridae	1		
Springtails: Collembola	~100		
Rove beetles: Staphylinidae	2		
Crickets*: Ceuthophilus secretus*	22		
Bufo valliceps	1		
Plethodon albagula	10		All juveniles
Solenopsis invicta	8		
Zone 2 (1036 AM- 1047 AM)		Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Araneae: Undetermined species	3		1 individual collected
Cicurina varians	1		
***Cicurina sp.*	29		
Cambala speobia	15		
Springtails: Collembola	310		
Class Symphyla	2		1 individual collected
Rove Beetle: Staphylinidae	4		
Surface Millipedes: *Oxidus gracilis*	4		
Ceuthophilus secretus	24		
Ceuthophilus cunicularis	2		
Ceuthophilus juveniles	12		

Amber Cave Faunal Survey Con't- Zone 3

Time Started: 1020 AM Time ended: 1036 AM scientific permit # TE819451-1

Temperature Inside: 22.2 C Outside: 21.2 C Humidity Inside: 100% Outside: 81%

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Snails: *Helicodiscus eigenmanni*	3		
Cicurina varians	1		
***Cicurina travisae*	5		
Earthworms: *Haplotaxida*	1		
Cambala speobia	5		
Dipluran: species undetermined	1		
Springtails: Collembola	45		
Ceuthophilus secretus	11		
Ceuthophilus cunicularis	1		
Ceuthophilus juveniles	7		
Ceuthophilus nymphs	2		

Name: K. O'Connor	Agency: Travis County
Date: 11-Mar-08	No. of pages: 2

Location: _Amber Cave__ # of Zones: _3__

Time Started: (see below) Time ended: (see below) scientific permit # TE819451-1

Survey area: ☐ *Solenopsis invicta* if so, ☐ heavy infestation ☒ moderate ☐ light
☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: (see below) Outside: 10.0 Humidity Inside: (see below) Outside: 87 %
Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: _avg. temp- 17.7 C; 2.86"of rain on 10-Mar-08__
Organic matter encountered in survey area: _N/A

FAUNAL SURVEY- Zone 1 and 2

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Zone 1: Temp- 16.6 C RH%- 100% Start: 1134 AM End: 1142 AM			
Earthworms: *Haplotaxidea*	1		
Hothouse millipedes: *Oxidus gracilis*	6		
Class Symphyla	2		
Springtails: Collembola	~50		
Crickets*: Ceuthophilus secretus*	5		
Ceuthophilus secretus subadults	101		
Ceuthophilus nymphs	5		
Eleutherodactylus marnockii	2		
Plethedon albagula	1		
Zone 2: Temp- 16.6 C RH%- 100% Start: 1134 AM End: 1142 AM	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Snails: *Helicodiscus eigenmanni*	8		
Cicurina varians	3		
***Cicurina sp.*	8		
***Cicurina travisae*	2		
Coleoptera undetermined	1		collected
Cambala speobia	10		
Hothouse millipedes: *Oxidus gracilis*	2		
Springtails: Collembola	15		
Crickets*: Ceuthophilus secretus*	6		
Ceuthophilus secretus sub-adults	21		

Ceuthophilus cunicularis	1		
Ceuthophilus nymphs	12		
Fungus gnat larvae: Mycetophilidae	1		
Plethedon albagula	1		sub-adult
Zone 3: Temp- 16.6 C RH%- 100% Start: 1134 AM End: 1142 AM	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Snails: *Helicodiscus eigenmanni*	4		
***Cicurina sp.**	3		
***Cicurina travisae**	2		
Spider: Araneae undetermined	1		collected
Cambala speobia	8		
Hothouse millipedes: *Oxidus gracilis*	2		
Springtails: Collembola	5		
Crickets*: Ceuthophilus secretus*	26		
Ceuthophilus secretus subadults	32		
Ceuthophilus nymphs	2		
Eleutherodactylus marnockii	1		

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

Name: K. O'Connor, R. Barlow	Agency: Travis County
Date: 22-May-08	No. of pages: 2

Location: Amber Cave___ # of Zones: 3

Time Started: (see below) Time ended: (see below) scientific permit # TE819451-1
Survey area: ☐ *Solenopsis invicta* if so, ☐ heavy infestation ☒ moderate ☐ light
☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: (see below) Outside: 30 C Humidity Inside: (see below) Outside: 47%
Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: Avg. temp- 23.8 C; no precipitation
Organic matter encountered in survey area: N/A

FAUNAL SURVEY-Zones 1 and 2

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Zone 1: Temp- 22.2 C RH%- 95% Start: 0225 PM End: 0235 PM			
Leiobunum townsendii	70		
Achaearanea porteri	3		
Oxidus gracilis	1		
Springtails: Collembola	150		
Crickets*: Ceuthophilus secretus*	28		
Ant: Hymenoptera undetermined	1		
Eleutherodactylus marnockii	1		
Peromyscus sp.	1		
Zone 2: Temp- 20.5 C RH%- 100% Start: 0215 PM End: 0235 PM	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Snails: *Helicodiscus eigenmanni*	8		
***Cicurina sp.*	10		
Cambala speobia	37		
Oxidus gracilis	3		
Class Symphyla	1		
Springtails: Collembola	~580		
Rove Beetles: Staphylinidae	3		
Crickets*: Ceuthophilus secretus*	62		
Ceuthophilus secretus subadults	14		
Ceuthophilus cunicularis	1		
Ceuthophilus nymphs	34		
Eleutherodactylus marnockii	1		
Peromyscus sp.	1		

Zone 3: Temp- 21.6 C RH%- 100% Start: 0140 PM End: 0210 PM	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Snails: *Helicodiscus eigenmanni*	3		
***Cicurina sp.**	2		
***Cicurina travisae**	2		
Spider: Araneae undetermined	1		Collected
Cambala speobia	4		
Oxidus gracilis	2		
Springtails: Collembola	67		
Crickets*: Ceuthophilus secretus*	20		
Ceuthophilus secretus subadults	12		
Ceuthophilus nymphs	19		

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

Name: K. O'Connor, M. Sanders	Agency: Travis County
Date: 4-Sept-08	No. of pages: 2

Location: Amber Cave # of Zones: 3

Time Started: (see below) Time ended: (see below) scientific permit # TE819451-1
Survey area: ☐ *Solenopsis invicta* if so, ☐ heavy infestation ☐ moderate ☐ light
☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: (see below) Outside: 24.2 C Humidity Inside: (see below) Outside: 66 %

Humidity was measured with a Psychrodyne analog psychrometer.
Weather conditions during the past week: Avg. temp- 30 C; no precipitation
Organic matter encountered in survey area: N/A

FAUNAL SURVEY-Zones 1 and 2

Zone 1: Temp- 22.7 RH%- 87% Start: 1052 AM End: 1115 AM	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Snails: Gastropoda undetermined	1		
Helicodiscus eigenmanni	20		
Harvestmen: *Leiobunum townsendii*	~200		
Earthworms: Haplotaxida	1		
Achaearanea porteri	8		
***Cicurina sp.*	2		
***Cicurina varians*	7		
**Eidmannella sp.*	2		Blind individuals
** Neoleptoneta sp.*	2		
Cambala speobia	1		
Surface millipede: *Oxidus gracilis*	2		
Class Symphyla	1		
Springtails: Collembola	80		
RIFA-*Solenopsis invicta*	7		
Ceuthophilus secretus (adults)	15		
Ceuthophilus nymphs	1		
Zone 2: Temp- 23.3 RH%- 100% Start: 1008 AM End: 1045 AM	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Helicodiscus eigenmanni	11		
Earthworms: Haplotaxida	2		
Surface spider: Araneae undetermined.	1		collected
Achaearanea porteri	1		
***Cicurina varians*	4		
***Cicurina travisae*	6		
**Eidmannella sp.*	1		
** Neoleptoneta sp.*	2		
✡ *Tartarocreagris texana*	5	Under rocks	Collected 1 ind.; need species confirmation
Cambala speobia	36		
Surface millipede: *Oxidus gracilis*	1		

Surface millipede: Diplopoda undetermined	2		
Planaria	2		
Rove beetles: Staphylinidae	12		
Coleoptera undetermined	6	All same species	Collected 1 individual
Class Symphyla	12		
Japygidae	1		
Springtails: Collembola	>1000		
RIFA-*Solenopsis invicta*	2		
Ceuthophilus secretus (adults)	75		
Ceuthophilus nymphs	3		
Mosquitos: Culcidae undetermined	2		
Cokcroach: Blattaria	2		
Zone 3: Temp- 23.3 RH%- 100 % Start: 1012 AM End: 1046 AM	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Helicodiscus eigenmanni	31		
Pseudouroctanus reddelli	3		
***Cicurina sp.*	1		
***Cicurina travisae*	3		
**Speodesmus bicornourus*	4		
Cambala speobia	169		
Surface millipede: Chilipoda undetermined	1		
Surface millipede: *Oxidus gracilis*	1		
Nematoda undetermined	1		
Class Symphyla	1		
Springtails: Collembola	>1000		
Solenopsis invicta	1		
Rove beetles: Staphylinidae	3		
Coleoptera undetermined	1		Same species as one collected in Zone 2
Ceuthophilus secretus (adults)	TMTC		
Ceuthophilus nymphs	2		
Moth: Hymenoptera undetermined	1		

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

Name: K. O'Connor, P. Fushille	Agency: Travis County
Date: 8-Nov-07	No. of pages: 2

Location: Tooth Cave GPS coordinates (NAD 1983) _____ # of Zones: 3

Time Started: (see below) Time ended: (see below) scientific permit # TE819451-1
Survey area: ☐ *Solenopsis invicta* if so, ☐ heavy infestation ☒ moderate ☐ light

Temperature Inside: (see below) Outside: 18.3 Humidity Inside: (see below) Outside: 66%
Humidity was measured with a Psychrodyne analog psychrometer.
Weather conditions during the past week: No precipitation; avg. temp. 21 C
Organic matter encountered in survey area: N/A Surface area moisture conditions: dry

FAUNAL SURVEY-Zone 1 and 2

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Zone 1: Temp- 22.2 C RH%-100% Start: 0200 PM/End: 0212 PM			
Helicodiscus eigenmanni	3		
***Cicurina sp.**	4		
Cambala speobia	1		
Springtails: Collembola	60		
Dipluran: Japygidae	1		
Gnats: Diptera undetermined	5		
Mosquitoes: Culcidae undetermined	35		
Eleutherodactylus marnockii	3		
Plethodon albagula	16		15 juveniles; 1 adult
Zone 2: Temp- 22.2 C RH%-100% Start: 0216 PM/End: 0314 PM	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Snails: *Helicodiscus eigenmanni*	10		
Scorpions*: Pseudouroctanus reddelli*	2		
Cicurina varians	2		
***Cicurina sp.**	17		
***Cicurina travisae**	4		
✡ *Texella reyesi*	8	Under rocks	
✡ *Neoleptoneta myopica*	1		
Cambala speobia	6		
Surface millipede: Chilipoda undetermined	1		
House millipede: Scutigeridae	1		
Springtails: Collembola	~185		
Fungus gnat larvae: Mycetophilidae	4		
Gnat: Diptera undetermined	23		
leutherodactylus marnockii	2		juveniles
Plethodon albagula	23		7adults; 16 juveniles

Zone 3: Temp- 16.9 C/ RH%- 99% Start: 1022 AM End: 1047 AM	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Snails: *Helicodiscus eigenmanni*	25		
Earthworms: *Haplotaxida*	1		
Scorpions*: Pseudouroctanus reddelli*	2		1 adult; 1 juvenile
Cicurina varians	1		
***Cicurina sp.*	8		
***Cicurina travisae*	5		
✡ *Texella reyesi*	5	Under rocks	
Cambala speobia	13		
Siphonophora sp.	1		Collected
Class Symphyla	1		
Springtails: Collembola	~300		
Rove Beetles: Staphylinidae	1		
Moth: Hymenoptera undetermined	2		
Plethodon albagula	17		2 adults; 15 juveniles

*****Cricket data on cricket count data sheet for Tooth Cave on 8-Nov-07

Name: K. O'Connor, P. Fushille	Agency: Travis County
Date: 27-Feb-08	No. of pages: 2

Location: Tooth Cave ___ # of Zones: 3

Time Started: (see below) Time ended: (see below) scientific permit # TE819451-1

Survey area: ☐ *Solenopsis invicta* if so, ☐ heavy infestation ☒ moderate ☐ light
☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: (see below) Outside: 6.1 C Humidity Inside: (see below) Outside: 25%
Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: No precipitation with avg. temp ~20.5 C
Organic matter encountered in survey area: N/A

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Zone 1: Temp- 16.9 C/ RH%- 99% Start: 1022 AM End: 1047 AM			
Snails: *Helicodiscus eigenmanni*	3		
Cicurina varians	3		
***Cicurina travisae*	2		
**Eidmanella reclusa*	1		
✡ *Texella reyesi*	1		
✡ *Neoleptoneta myopica*	2		
Springtails: Collembola	15		
Crickets*: Ceuthophilus secretus*	1		
Ceuthophilus secretus subadults	22		
Zone 2: Temp- 18 C RH%- 99% Start: 1045 AM End: 1210 PM	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Snails: *Helicodiscus eigenmanni*	16		
Scorpions: *Pseudouroctanus reddelli*	3		
***Cicurina sp.*	21		
**Eidmannella reclusa*	5		
✡ *Texella reyesi*	9	Under rocks	
✡ *Neoleptoneta myopica*	8	Under rocks	
✡*Rhadine persephone*	1		
** Speodesmus sp*.	4		
Cambala speobia	6		
Centipede: Scutigeridae	1		
Class Symphyla	1		
Springtails: Collembola	30		

Rove Beetles: Staphylinidae	3		
Crickets*: Ceuthophilus secretus*	25		
Ceuthophilus secretus subadults	28		
Ceuthophilus nymphs	33		
Fungus gnat larvae: Mycetophilidae	1		
Centipede: Chilipoda undetermined	2		
Eleutherodactylus marnockii	1		
Zone 3: Temp- 18 C RH%- 99% Start: 1050 AM End: 1207 PM	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Snails: *Helicodiscus eigenmanni*	22		
Earthworms: Haplotaxidea	1		
Scorpions: *Pseudouroctanus reddelli*	2		
Centipedes: Chilopoda undetermined	1		
Cicurina varians	5		
***Cicurina sp.**	20		
***Cicurina travisae**	10		
✡ *Texella reyesi*	9	Under rocks	
✡ *Neoleptoneta myopica*	5	Under rocks	
Cambala speobia	10		
Speodesmus sp.	2		
Class Symphyla	1		
Springtails: Collembola	~50		
Rove Beetles: Staphylinidae	1		
Beetle: Coleoptera undetermined	1		
Crickets*: Ceuthophilus secretus*	18		
Ceuthophilus secretus subadults	62		
Ceuthophilus cunicularis	1		
Ceuthophilus cunicularis subadults	2		
Ceuthophilus nymphs	22		
Fungus gnat larvae: Mycetophilidae	3		
Plethedon albagula	1		

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

Name: K. O'Connor, P. Fushille	Agency: Travis County
Date: 3-Jun-08	No. of pages: 2

Location: Tooth Cave___ # of Zones: 3

Time Started: (see below) Time ended: (see below) scientific permit # TE819451-1

Survey area: ☐ *Solenopsis invicta* if so, ☐ heavy infestation ☒ moderate ☐ light
☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: (see below) Outside: 25.3 C Humidity Inside: (see below) Outside: 75%
Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: Avg. temp- 30 C; no precipitation

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Zone 1: Temp- 20 C RH%- 100% Start: 0852 AM End: 0907 AM (KO, RB)			
Snails: *Helicodiscus eigenmanni*	7		
Scorpions: *Pseudouroctanus reddelli*	2		
Cicurina varians	1		
Silverfish: *Texoreddellia texensis*	1		
Rove Beetles: Staphylinidae	1		
Crickets*: Ceuthophilus secretus*	5		
Ceuthophilus secretus subadults	25		
Ceuthophilus nymphs	2		
Eleutherodactylus marnockii	1		
Bufo valliceps	1		
Zone 2: Temp- 19.4 C RH%- 100% Start: 0855 AM End: 1030 AM (PF)	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Snails: *Helicodiscus eigenmanni*	26		
Scorpions: *Pseudouroctanus reddelli*	3		
***Cicurina sp.*	25		
**Eidmannella reclusa*	1		
✡ *Texella reyesi*	15	Under rocks	3 found under same rock; 2 found under another rock
✡ *Neoleptoneta myopica*	1	Under a rock	
*** Speodesmus bicornourus*	1		
Class Symphyla	1		
Springtails: Collembola	>350		
Rove Beetles: Staphylinidae	2		
Beetle: Coleoptera undetermined	1		

Crickets*: Ceuthophilus secretus*	170		
Ceuthophilus secretus subadults	50		
Ceuthophilus cunicularis	12		
Ceuthophilus nymphs	105		
Fungus gnat larvae: Mycetophilidae	3		
Moth: Lepidoptera undetermined	1		
Gnat: Diptera undetermined	9		
Plethedon albagula	10		
Eleutherodactylus marnockii	11		
Bufo valliceps	1		
Arthropoda undetermined	15		1 individual collected
Zone 3: Temp- 20 C RH%- 100% Start: 0930 AM End: 1030 AM (KO, RB)	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Snails: *Helicodiscus eigenmanni*	21		
Earthworm: Haplotaxidea	1		
Scorpions: *Pseudouroctanus reddelli*	5		
Achaearanea porteri	1		
Cicurina varians	2		
***Cicurina sp.*	12		
***Cicurina travisae*	4		
✡ *Texella reyesi*	12		Under rocks
✡ *Neoleptoneta myopica*	8		Under rocks
Surface beetle: Coleoptera undetermined	1		
Class Symphyla	1		
Cambala speobia	2		
Speodesmus bicornourus	3		
Springtails: Collembola	~300		
Crickets*: Ceuthophilus secretus*	271		
Ceuthophilus secretus subadults	89		
Ceuthophilus cunicularis	2		
Ceuthophilus cunicularis subadults	7		
Ceuthophilus nymphs	44		
Gnat: Diptera undetermined	2		
Moth: Lepidoptera undetermined	1		
Eleutherodactylus marnockii	4		
Plethedon albagula	5		

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

Name: K. O'Connor, P. Fushille, R. Barlow	Agency: Travis County
Date: 11-Sept-08	No. of pages: 2

Location: Tooth Cave # of Zones: 3

Time Started: (see below) Time ended: (see below) scientific permit # TE819451-1

Survey area: ☐ *Solenopsis invicta* if so, ☐ heavy infestation ☐ moderate ☐ light
☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: (see below) Outside: 26.6 C Humidity Inside: (see below) Outside: 67 %

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: Avg. temp-28.8 C; no precipitation
Organic matter encountered in survey area: N/A

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Zone 1: Temp- 25.5 C RH%- 91 % Start: 0852 AM End: 0920 AM			
Helicodiscus eigenmanni	5		
Surface spider: Araneae undetermined.	1		
Achaearanea porteri	12		
***Cicurina sp.*	5		
***Cicurina varians*	2		
**Eidmannella reclusa*	1		
Surface millipede: Chilipoda undetermined	1		
Surface centipede: Diplopoda undetermined	1		
Springtails: Collembola	20		
RIFA-*Solenopsis invicta*	38		
C. cunicularis (sub-adults)	1		
Ceuthophilus nymphs	26		
Eleutherodactylus marnockii	2		
Hemidactylus turcicus	1		
Zone 2: Temp- 22.7 C RH%- 100% Start: 0900 AM End: 1017 PM	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Helicodiscus eigenmanni	2		
Pseudouroctanus reddelli	8		
***Cicurina sp.*	9		
***Cicurina varians*	1		
***Cicurina travisae*	10		

✡ *Neoleptoneta myopica*	12		
✡ *Texella reyesi*	14		
Cambala speobia	13		
Scutigeridae	1		
Rove beetles: Staphylinidae	2		
Springtails: Collembola	~350		
RIFA-*Solenopsis invicta*	360		
Ceuthophilus cunicularis (adults)	2		
C. cunicularis (sub-adults)	14		
Ceuthophilus secretus (adults)	284		
C. secretus (sub-adults)	16		
Ceuthophilus nymphs	34		
Gnat: Diptera undetermined	2		
Moth: Hymenoptera undetermined	3		
Mosquitos: Culcidae undetermined	1		
Eleutherodactylus marnockii	1		
Zone 3: Temp- 22.7 C **RH%- 100%** **Start: 0920 AM** **End: 1023 AM**	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Helicodiscus eigenmanni	13		
Armadillidiidae	1		
Pseudouroctanus reddelli	2		
Achaearanea porteri	1		
***Cicurina sp.*	31		
***Cicurina varians*	1		
***Cicurina travisae*	3		
✡ *Texella reyesi*	19		
✡ *Texamaurops reddelli*	1		
**Speodesmus bicornourus*	2		
Cambala speobia	9		
Surface millipede: Chilipoda undetermined	1		
Beetle: Coleoptera undetermined	1		
Springtails: Collembola	>500		
Texoreddellia thysanuran	1		
Solenopsis invicta	~400		
Ceuthophilus cunicularis (adults)	3		
C. cunicularis (sub-adults)	3		
Ceuthophilus secretus (adults)	48		
C. secretus (sub-adults)	6		
Ceuthophilus nymphs	68		
Gnat: Diptera undetermined	3		
Moth: Hymenoptera undetermined	5		
Eleutherodactylus marnockii	3		
Plethedon albagula	1		
Bufo nebifuler	1		

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

Name: Kathleen O'Connor, Paul Fushille	Agency: Travis County
Date: 29-Oct-07	No. of pages: 2

Location: McDonald Cave GPS coordinates (NAD 1983) _____ # of Zones: 4

Time Started: (see below) Time ended: (see below) scientific permit # TE81945-1

Temperature Inside: 21.6 C Outside: 18.2 Humidity Inside: 90% Outside: 52%
Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: 1.07" on 22-Oct-07; Total precipitation for month was 1.13"
Organic matter encountered in survey area: N/A

FAUNAL SURVEY- Zones 1 and 2

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Zone 1: (1023 -1040 AM)			
Helicodiscus eigenmanni	1		
Cicurina varians	9		
***Cicurina sp.*	3		
Spider: Araneae undetermined	2		collected
Springtails: Collembola	2		
Ceuthophilus nymphs	1		
Gnat: Diptera undetermined	6		
Isopoda undetermined	2		
Zone 2: (1040 AM- 1115 PM)	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Achaearanea porteri	4		
Neoleptoneta devia	1		
Cicurina varians	9		
***Cicurina travisae*	5		
***Cicurina sp.*	12		
***Eidmanella reclusa*	1		
Spider: Araneae undetermined	1		collected
Cambala speobia	6		
Springtails: Collembola	40		
Ceuthophilus cunicularis	2		
C. secretus	7		
Ceuthophilus nymphs	10		
Gnat: Diptera undetermined	6		
Rove beetle: Staphylinidae	1		
Ant: Formicidae undetermined	1		collected
Solenopsis invicta	36		

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

McDonald Cave Faunal Survey Con't-Zones 3 and 4

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Zone 3: (1116 -1137 AM)			
Pseudouroctanus reddelli	1		
***Cicurina sp.*	12		
***Cicurina travisae*	1		
***Neoleptoneta devia*	1		
***Eidmanella reclusa*	1		
Rove beetles: Staphylinidae	1		
Speodesmus bicornourus	8		
☼ *Texella reyesi*	1		
C. cunicularis	2		
Gnat: Diptera undetermined	6		
Plethodon albagula	6		
Solenopsis invicta	3		
Zone 4: (1141 AM - 1210 PM)	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
Cicurina travisae	1		
***Cicurina sp.*	11		
***Eidmanella reclusa*	3		
***Neoleptoneta devia*	3		
Speodesmus bicornourus	5		
Cambala speobia	1		
C. cunicularis	3		
Ceuthophilus nymphs	4		
Gnat: Diptera undetermined	2		
Plethodon albagula	4		

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

Name: K. O'Connor, P. Fushille	Agency: Travis County
Date: 19-Feb-08	No. of Pages: 2

Location: McDonald Cave GPS coordinates (NAD 1983) _____ # of Zones: 4

Time Started: (see below) Time ended: (see below) scientific permit # TE819451-1

Survey area: ☐ *Solenopsis invicta* if so, ☐ heavy infestation ☐ moderate ☒ light
☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: (see below) Outside: 18.3 Humidity Inside: (see below) Outside: 37%
Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: 1 "rain; avg. temp- 12.7 C
Organic matter encountered in survey area: N/A
:

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Zone 1: Temp- 15 C/ Rh%- 83% Start: 1050 AM End: 1103 AM			
Ticks: *Ixodes*	1		
Gnats: Diptera undertermined	2		
Ceuthophilus juvenile	1		
Mosquitos: Culicidae undetermined	1		
Ceuthophilus cunicularis	1		
Staphylinidae	1		
Zone 2: Temp- 16.6 C/ Rh%- 94% Start: 1110AM End: 1153 AM	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
Gnats: Diptera undetermined	11		
Helicodiscus eigenmanni	2		
Scorpions: *Pseudouroctanus reddelli*	1		
Centipede: Chilopoda undertermined	1		
Cambala speobia	3		
Springtails: Collembola	10		
***Cicurina sp.*	1		
***Eidmanella reclusa*	3		
***Neoleptoneta devia*	12		
Crickets*: Ceuthophilus* secretus- subadults	1		
Ceuthophilus cunicularis- subadults	5		
Ceuthophilus nymphs	9		
Zone 3: Temp- 16.6 C/ Rh%- 94% Start: 1213 PM End: 0105 PM	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
Gnats: Diptera undetermined	4		
Cambala speobia	3		

Springtails: Collembola	30		
Speodesmus bicornourus	10		
***Cicurina sp.**	11		
***Eidmanella reclusa**	3		
✡ *Neoleptoneta devia*	5		
✡ *Texella reyesi*	2		
***Tartarocreagris sp.**	1		
Ceuthophilus secretus	3		
Ceuthophilus cunicularis- subadults	1		
Ceuthophilus nymphs	3		
Zone 4: Temp- 18.3 C/ Rh%- 95% Start: 1213 PM End: 1255 PM	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
Gnats: Diptera undetermined	1		
Helicodiscus eigenmanni	1		
Springtails: Collembola	15		
Speodesmus bicornourus	5		
Cicurina varians	2		
***Cicurina travisae.**	15		
***Eidmanella reclusa**	3		
***Tartarocreagris sp.**	1		
*** Neoleptoneta devia**	1		
Ceuthophilus cunicularis	1		

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

Name: K. O'Connor, M. Oliver, R. Barlow	Agency: Travis County
Date: 5-Jun-08	No. of pages: 2

Location: McDonald Cave_ # of Zones: 4

Time Started: (see below) Time ended: (see below) scientific permit # TE819451-1

Survey area: ☐ *Solenopsis invicta* if so, ☐ heavy infestation ☐ moderate ☒ light
☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: (see below) Outside: 26.1 C Humidity Inside: (see below) Outside: 71 %

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: Avg. temp-30 C; no precipitation
Organic matter encountered in survey area: N/A

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Zone 1: Temp- 20.5 C RH%- 97% Start: 0918 AM End: 0947 AM			
Harvestmen: *Leiobunum townsendii*	100		
Surface spider: Araneae undetermined.	1		
Achaearanea porteri	10		
Cambala speobia	2		
RIFA-*Solenopsis invicta*	1		
Ceuthophilus secretus (adults)	5		
C. secretus (sub-adults)	1		
Ceuthophilus nymphs	1		
Gnat: Diptera undetermined	1		
Eleutherodactylus marnockii	3		
Zone 2: Temp- RH%- Start: 00923 AM End: 0957 AM	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
Helicodiscus eigenmanni	1		
***Cicurina sp.*	2		
***Cicurina varians*	1		
***Cicurina travisae*	7		
*** Neoleptoneta devia*	4		
Cambala speobia	2		
Springtails: Collembola	15		
Ceuthophilus cunicularis (adults)	4		
C. cunicularis (sub-adults)	5		
Ceuthophilus secretus (adults)	181		
C. secretus (sub-adults)	4		

Ceuthophilus nymphs	14		
Gnat: Diptera undetermined	2		
Zone 3: Temp- 19.1 C RH%- 99% Start: 1008 AM End: 1100 AM	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
spider: Araneae undetermined.	2		collected
***Cicurina sp.*	7		
***Cicurina travisae*	1		
* *Neoleptoneta devia*	4		
**Tartarocreagris reddelli*	1		
**Speodesmus bicornourus*	4		
Springtails: Collembola	5		
Texoreddellia texensis	1		
Ceuthophilus nymphs	2		
Zone 4: Temp- RH%- Start: 1012 AM End: 1052 AM	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
Helicodiscus eigenmanni	2		
Pseudouroctanus reddelli	1		
***Cicurina sp.*	3		
***Cicurina travisae*	10		
* *Neoleptoneta devia*	7		
✡ *Texella reyesi*	2	Under a rock	
**Speodesmus bicornourus*	4		
Cambala speobia	1		
Eleutherodactylus marnockii	2		
Plethedon albagula	2		

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

Name: K. O'Connor, P. Fushille, R. Barlow	Agency: Travis County
Date: 28-Aug-08	No. of pages: 2

Location: McDonald Cave # of Zones: 4

Time Started: (see below) Time ended: (see below) scientific permit # TE819451-1

Survey area: ☐ *Solenopsis invicta* if so, ☐ heavy infestation ☐ moderate ☐ light
☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: (see below) Outside: 32.9 C Humidity Inside: (see below) Outside: 47%

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: Avg. temp-28.3 C; 0.78" rainfall
Organic matter encountered in survey area: N/A

FAUNAL SURVEY

Species	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
Zone 1: Temp- RH%- Start: 0230 PM End: 0240 PM			
Surface spider: Araneae undetermined.	3		
***Cicurina varians*	3		
Springtails: Collembola	12		
RIFA-*Solenopsis invicta*	>200		Carrying beetle larvae
Ceuthophilus secretus (adults)	1		
Gnat: Diptera undetermined	2		
Moth: Hymenoptera undetermined	1		
Zone 2: Temp- RH%- Start: 0245 PM End: 0325 PM	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
***Cicurina sp.*	18		
***Cicurina varians*	3		
**Speodesmus bicornourus*	1		
Cambala speobia	5		
Springtails: Collembola	30		
RIFA-*Solenopsis invicta*	TMTC		1 observed carrying rice-sized larvae
Ceuthophilus secretus (adults)	5		
C. secretus (sub-adults)	7		
Ceuthophilus nymphs	18		
Gnat: Diptera undetermined	3		
Moth: Hymenoptera undetermined	1		

Zone 3: Temp- RH%- Start: 0245 PM End: 0 324 PM	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
Surface spider: Lycosidae	1		
***Cicurina sp.**	12		
***Cicurina travisae**	4		
**Eidmannella reclusa*	12		
✡ *Neoleptoneta devia*	5	Under a rock	
**Speodesmus bicornourus*	7		
Cambala speobia	4		
Ceuthophilus cunicularis (adults)	2		
Ceuthophilus secretus (adults)	65		
Ceuthophilus nymphs	10		
Gnat: Diptera undetermined	1		
Zone 4: Temp- RH%- Start: 0213 PM End: 0 239 PM	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
Helicodiscus eigenmanni	1		
***Cicurina sp.**	2		
***Cicurina travisae**	1		
**Eidmannella reclusa*	11		
✡ *Tartarocreagris reddelli*	1	Under rock	
✡ *Texella reyesi*	2	Under rocks	
**Speodesmus bicornourus*	3		
Springtails: Collembola	5		
Ceuthophilus cunicularis (adults)	1		
C. cunicularis (sub-adults)	2		
Ceuthophilus secretus (adults)	419		
C. secretus (sub-adults)	1		
Ceuthophilus nymphs	4		
Eleutherodactylus marnockii	1		
Plethedon albagula	1		

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

Name: K. O'Connor, P. Fushille	Agency: Travis County
Date: 6-Nov-07	No. of pages: 2

Location: Kretschmarr Double Pit ___ GPS coordinates (NAD 1983) ___ # of Zones: 3

Time Started: (see below) Time ended: (see below) scientific permit # TE819451-1
Survey area: ☐ *Solenopsis invicta* if so, ☐ heavy infestation ☒ moderate ☐ light
☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: 18.3 Outside: 15.5 C Humidity Inside: 95% Outside: 39%
Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: no precipitation; avg. temp for Nov 1-4 was 20 C
Organic matter encountered in survey area: N/A
Surface area moisture conditions: Dry

FAUNAL SURVEY- Zone 1 and 2

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Zone 1 (1030 AM-1049 AM)			
Snails: *Helicodiscus eigenmanni*	4		
Surface beetle: Carabidae undetermined	1		
Achaearanea porteri	1		
Cicurina varians	7		
***Cicurina sp.**	3		
Springtails: Collembola	12		
Ceuthophilus sp.	3		
Ceuthophilus juveniles	2		
Ceuthophilus nymphs	3		
Mosquitoes: Culcidae undetermined	29		
Gnat: Diptera undetermined	3		
Plethodon albagula	1		juvenile
Zone 2 (1030 AM-1049 AM)	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
Snails: *Helicodiscus eigenmanni*	1		
***Cicurina sp.** (blind)	1		*Cicurina travisae?*
Cambala speobia	1		
Springtails: Collembola	21		
✡ *Texella reyesi*	2	Under rocks	Both immature individuals
Crickets*: Ceuthophilus secretus*	5		
Ceuthophilus juveniles	4		
Ceuthophilus nymphs	7		
Fungus gnat larvae: Mycetophilidae	1		
Eleutherodactylus marnockii	1		

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

Kretschmarr Double Pit Faunal Survey Con't- Zone 3

Temperature Inside: 18.9 Outside: 15.5 C Humidity Inside: 95% Outside: 39%
Humidity was measured with a Psychrodyne analog psychrometer.

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
*****_Eidmannella reclusa_	1		
Unid. dipluran	1		Unable to collect
Surface beetle: Carabidae	1		exoskeleton
Cambala speobia	1		
Springtails: Collembola	50		
Eleutherodactylus marnockii	1		
Plethodon albagula	8		1 adult, 7 juveniles

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

Name: K. O'Connor, P. Fushille	Agency: Travis County
Date: 27-Feb-08	No. of pages: 1

Location: Kretschmarr Double Pit # of Zones: 3

Time Started: (see below) Time ended: (see below) scientific permit # TE819451-1

Survey area: ☐ *Solenopsis invicta* if so, ☐ heavy infestation ☒ moderate ☐ light
☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: (see below) Outside: 8.3 C Humidity Inside: (see below) Outside: 59%
Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: Avg. Temp ~20.5 C; no precipitation
Organic matter encountered in survey area: N/A

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Zone 1: Temp- 11.6 RH%- 69% Start: 0954 AM End: 1000 AM			
Snails: *Helicodiscus eigenmanni*	2		
Zone 2: Temp- 11.6 RH%- 69% Start: 0936 AM End: 0952 AM	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
Snails: *Helicodiscus eigenmanni*	2		
Achaearanea porteri	1		
Springtails: Collembola	12		
Ceuthophilus cunicularis	1		
Gnat*:* Diptera undetermined	2		
Zone 3: Temp- 11.6 RH%- 69% Start: 0935 AM End: 0955 AM	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
Cambala speobia	1		
Springtails: Collembola	5		
Ceuthophilus cunicularis	1		
Ceuthophilus cunicularis subadults	2		
Gnat: Diptera undetermined	3		
Eleutherodactylus marnockii	1		
Plethedon albagula	1		

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

Name: K. O'Connor, R. Barlow	Agency: Travis County
Date: 29-May-08	No. of pages: 2

Location: _Kretschmarr Double Pit__ # of Zones: 3

Time Started: (see below) Time ended: (see below) scientific permit # TE819451-1

Survey area: ☐ *Solenopsis invicta* if so, ☐ heavy infestation ☒ moderate ☐ light
☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: (see below) Outside: 24.4 Humidity Inside: (see below) Outside: 80 %
Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: Avg. temp- 29.4 C; 0.02" rainfall on 27-May-08
Organic matter encountered in survey area: N/A

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Zone 1: Temp- 18.8 RH%- 95% Start: 0905 AM End: 0920 AM			
Snails: *Helicodiscus eigenmanni*	1		
Gastropoda undetermined	1		
Spider: Araneae undetermined	2		1 collected
Silverfish: *Texoreddellia texensis*	1		
Springtails: Collembola	~231		
Crickets*: Ceuthophilus secretus*	7		
Ceuthophilus secretus subadults	1		
Gnat: Diptera undetermined	1		
Eleutherodactylus marnockii	3		
Zone 2: Temp- 18.8 RH%- 95% Start: 0905 AM End: 0925 AM			
Snails: *Helicodiscus eigenmanni*	1		
Centruroides vittatus	1		
Achaearanea porteri	1		
Spider: Araneae undetermined	3		
***Cicurina sp.*	2		
* Blind *Cicurina sp.*	1		
**Eidmanella sp.*	1		
Cambala speobia	1		
Crickets*: Ceuthophilus secretus*	26		
Ceuthophilus secretus subadults	11		
Ceuthophilus cunicularis subadults	4		
Ceuthophilus nymphs	7		
Moth: Lepidoptera undetermined	1		
Gnat: Diptera undetermined	3		

Kretschmarr Double Pit Cave Faunal Survey Con't- Zone 3

Zone 3: Temp- 18.3 RH%- 100% Start: 0942 AM End: 0959 AM	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
***Cicurina sp.**	2		
Cambala speobia	1		
Springtails: Collembola	45		
Crickets*: Ceuthophilus secretus*	3		
Ceuthophilus secretus subadults	1		
Ceuthophilus cunicularis	1		
Ceuthophilus cunicularis subadults	2		
Gnat: Diptera undetermined	3		
Plethedon albagula	2		
Rodent carcass	1		

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

Name: K. O'Connor, R. Barlow	Agency: Travis County
Date: 27-Aug-08	No. of pages: 2

Location: Kretschmarr Double Pit # of Zones: 3

Time Started: (see below) Time ended: (see below) scientific permit # TE819451-1

Survey area: ☐ *Solenopsis invicta* if so, ☐ heavy infestation ☐ moderate ☐ light
☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: Outside: **Psychrodyne malfunction** Humidity Inside: Outside:

Weather conditions during the past week: Avg. temp- 28.3 C; 0.65" rainfall
Organic matter encountered in survey area: N/A

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Zone 1: Temp- (see above) **RH%- Start: End:**			
Snails: Gastropoda undetermined	1		
Achaearanea porteri	5		
***Cicurina sp.*	2		
**Eidmannella reclusa*	1		
**Speodesmus bicornourus*	1		
Cambala speobia	35		
Springtails: Collembola	145		
Texoreddellia thysanurans	4		
C. secretus (sub-adults)	3		
Eleutherodactylus marnockii	1		
Zone 2: Temp- RH%- Start: 0159 PM End: 0223 PM	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
Achaearanea porteri	5		
**Eidmannella reclusa*	2		
Cambala speobia	7		
Springtails: Collembola	80		
Texoreddellia thysanurans	3		
Ceuthophilus secretus (adults)	16		
C. secretus (sub-adults)	3		
Ceuthophilus nymphs	8		
Zone 3: Temp- RH%- Start: 0142 PM End: 0211 PM	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
Helicodiscus eigenmanni	11		
* Blind *Cicurina*	1		*Travisae?*

**Speodesmus bicornourus*	1		
Cambala speobia	46		
Springtails: Collembola	38		
Ceuthophilus cunicularis (adults)	3		
C. cunicularis (sub-adults)	6		
Ceuthophilus secretus (adults)	6		
Ceuthophilus nymphs	6		
Eleutherodactylus marnockii	2		

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

Name: K. O'Connor, P. Fushille	Agency: Travis County
Date: 5-Jun-08	No. of pages: 3

Location: Gallifer Cave # of Zones: 5

Time Started: (see below) Time ended: (see below) scientific permit # TE819451-1

Survey area: ☐ *Solenopsis invicta* if so, ☐ heavy infestation ☐ moderate ☐ light
☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: (see below) Outside: 26.1 C Humidity Inside: (see below) Outside: 77%

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: Avg. temp-30 C; no precipitation
Organic matter encountered in survey area: N/A

FAUNAL SURVEY

Species	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
Zone 1: Temp- 30 RH%- 90% Start: 0139 PM End: 0147 PM			
Harvestmen: *Leiobunum townsendii*	~200		
Gnat: Diptera undetermined	2		
Craneflies: Tipulidae	2		
Zone 2: Temp- 22.5 RH%- 100% Start: 0145 PM End: 0228 PM			
Pillbugs: Armadillidiiadae	5		
Earthworms: Haplotaxida	2		
Pseudouroctanus reddelli	1		
***Cicurina sp.*	10		
✡ *Texella reyesi*	2	Under rocks	
**Speodesmus bicornourus*	3		
Cambala speobia	3		
Surface millipede: Diplopoda undetermined	1		
Rove beetles: Staphylinidae	2		
Springtails: Collembola	>500		
Texoreddellia thysanurans	1		
Ceuthophilus secretus (adults)	6		
Ceuthophilus nymphs	6		
Gnat: Diptera undetermined	2		
Mosquitos: Culcidae undetermined	1		
Eleutherodactylus marnockii	1		
Plethedon albagula	1		

Zone 3: Temp- 20.5 C RH%- 95 % Start: 0145 PM End: 0245 PM	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
Helicodiscus eigenmanni	1		
Pseudouroctanus reddelli	1		
***Cicurina sp.*	47		
***Cicurina varians*	1		
* blind *Cicurina*	3		Elliotti?
**Eidmanella reclusa*	7		
✡ *Neoleptoneta myopica*	15	Under rocks	
✡ *Texella reyesi*	4	Under rocks	
**Speodesmus bicornourus*	1		
Cambala speobia	17		
Isopoda undetermined	14		
Rove beetles: Staphylinidae	1		
Fungus gnat larvae: Mycetophilidae	1		
Springtails: Collembola	>500		
Ceuthophilus secretus (adults)	TMTC		
C. secretus (sub-adults)	TMTC		
Gnat: Diptera undetermined	2		
Moth: Hymenoptera undetermined	2		
Eleutherodactylus marnockii	1		
Zone 4: Temp- 20.5 RH%- 95% Start: End:	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
Helicodiscus eigenmanni	18		
Pseudouroctanus reddelli	3		
***Cicurina sp.*	35		
***Cicurina varians*	4		
* Blind *Cicurina*	5		Elliotti?
**Eidmannella reclusa*	1		
✡ *Texella reyesi*	12	Under rocks	
✡ *Rhadine persephone*	1	Under rock	
Cambala speobia	8		
Rove beetles: Staphylinidae	1		
Springtails: Collembola	150		
Ceuthophilus secretus (adults)	TMTC		
C. secretus (sub-adults)	TMTC		
Gnat: Diptera undetermined	40		
Moth: Hymenoptera undetermined	2		
Eleutherodactylus marnockii	1		
Zone 5: Temp- 20 RH%- 97% Start: End:	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
Helicodiscus eigenmanni	4		
***Cicurina sp.*	29		
* Blind *Cicurina*	6		Elliotti?
**Eidmannella reclusa*	5		
✡ *Neoleptoneta myopica*	8	Under rocks	1 collected
✡ *Texella reyesi*	12	Under rocks	
✡ *Texamaurops reddelli*	1	Under rocks	

✡ *Rhadine persephone*	5		
Cambala speobia	12		
Isopoda undetermined	1		
Rove beetles: Staphylinidae	1		
Springtails: Collembola	>500		
Gnat: Diptera undetermined	18		
Moth: Hymenoptera undetermined	3		
Eleutherodactylus marnockii	2		
Plethedon albagula	1		
Raccoon scat	1		

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

Name: K. O'Connor, M. Sanders	Agency: Travis County
Date: 28-May-08	No. of pages: 2

Location: Kretschmarr Cave
Time Started: (see below) Time ended: (see below) scientific permit # TE819451-1

Survey area: ☐ *Solenopsis invicta* if so, ☐ heavy infestation ☒ moderate ☐ light
☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: (see below) Outside: 36.1 C Humidity Inside: (see below) Outside: 32%
Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: Avg. temp-28.3 C; 0.02" rainfall on 27-May-08
Organic matter encountered in survey area: N/A

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Zone 1: Temp- 20.5 C RH%- 100% Start: 0329 PM End: 0353 PM			
Snails: *Helicodiscus eigenmanni*	3		
Achaearanea porteri	3		
***Cicurina sp.**	3		
***Cicurina travisae**	5		
**Eidmannella reclusa*	1		
*** Speodesmus bicornourus**	3		
Cambala speobia	1		
Springtails: Collembola	20		
Beetle: Coleoptera undetermined	1		Collected
Crickets*: Ceuthophilus secretus*	35		
Ceuthophilus secretus subadults	15		
Ceuthophilus nymphs	6		
Moth: Lepidoptera undetermined	1		
Bufo valliceps	1		
Plethodon albagula	1		
Eleutherodactylus marnockii	1		
Zone 2: Temp- 20.5 C RH%- 100% Start: 0338 PM End: 0405 PM	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
Snails: *Helicodiscus eigenmanni*	7		
Achaearanea porteri	2		
Cicurina varians	2		
***Cicurina travisae**	2		
**Eidmannella reclusa*	1		
Springtails: Collembola	~50		
Pselaphid: *Tachys* sp.	1		
Ceuthophilus cunicularis	1		
Ceuthophilus cunicularis subadults	1		

Ceuthophilus nymphs	2		
Zone 3: Temp- 20.5 C RH%- 100% Start: 0408 PM End: 0450 PM	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
Snails: *Helicodiscus eigenmanni*	5		
***Cicurina sp.**	3		
***Cicurina travisae**	9		1 collected
**Eidmannella reclusa*	2		1 collected
*** Speodesmus sp*.	2		
Cambala speobia	7		
Springtails: Collembola	~150		
Crickets*: Ceuthophilus secretus*	34		
Ceuthophilus secretus subadults	10		
Ceuthophilus cunicularis	3		
Ceuthophilus cunicularis subadults	2		
Ceuthophilus nymphs	8		
Plethedon albagula	1		

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

Name: K. O'Connor, P. Fushille, R. Barlow	Agency: Travis County
Date: 3-Jun-08	No. of pages: 2

Location: North Root Cave # of Zones: 3

Time Started: (see below) Time ended: (see below) scientific permit # TE819451-1

Survey area: ☐ *Solenopsis invicta* if so, ☐ heavy infestation ☒ moderate ☐ light
☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: (see below) Outside: 32 Humidity Inside: (see below) Outside: 41%

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: Avg. temp- 30 C; no precipitation
Organic matter encountered in survey area: N/A

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Zone 1: Temp- 20 C RH%- 100% Start: 1135 AM End: 1205 PM			
Helicodiscus eigenmanni	3		
Harvestmen: *Leiobunum townsendii*	100+		
***Cicurina sp.**	1		
Rove beetles: Staphylinidae	2		
Surface beetle: Coleoptera undetermined	2		
RIFA- *Solenopsis invicta*	4		
Ceuthophilus secretus (adults)	12		
C. secretus (sub-adults)	5		
Ceuthophilus nymphs	6		
Crane flies: Tipulidae undetermined	10		
Moth: Hymenoptera undetermined	2		
Plethedon albagula	2		
Zone 2: Temp- 20 C RH%- 100% Start: 1205 PM End: 1218 PM	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
Snails: Gastropoda undetermined	1		
Helicodiscus eigenmanni	1		
Harvestmen: *Leiobunum townsendii*	50		
Surface spider: Araneae undetermined.	3		
***Cicurina sp.**	1		
Cambala speobia	3		
Rove beetles: Staphylinidae	2		
Springtails: Collembola	>500		

Japygid diplurans	2		
Ceuthophilus secretus (adults)	8		
C. secretus (sub-adults)	1		
Ceuthophilus nymphs	3		
Gnat: Diptera undetermined	8		
Eleutherodactylus marnockii	1		
Zone 3: Temp- 20 C RH%- 100% Start: 1218 PM End: 1240 PM	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
Harvestmen: *Leiobunum townsendii*	10		
Cambala speobia	7		
Springtails: Collembola	~300		
C. cunicularis (sub-adults)	2		
Ceuthophilus secretus (adults)	45		
Ceuthophilus nymphs	1		

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

Name: K. O'Connor	Agency: Travis County
Date: 3-Jun-08	No. of pages: 1

Location: Root Cave # of Zones: 2

Time Started: (see below) Time ended: (see below) scientific permit # TE819451-1

Survey area: ☐ *Solenopsis invicta* if so, ☐ heavy infestation ☒ moderate ☐ light
☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: (see below) Outside: 32.7 C Humidity Inside: (see below) Outside: 50 %

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: Avg. temp- 30 C; no precipitation
Organic matter encountered in survey area: N/A

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Zone 1: Temp- 21.6 C RH%- 90% Start: 1147 AM End: 1151 AM	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
Harvestmen: *Leiobunum townsendii*	55		
Surface spider: Araneae undetermined.	1		
Achaearanea porteri	1		
Springtails: Collembola	>500		
Zone 2: Temp- 20 C RH%- 100% Start: 1126 AM End: 1145 AM	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
Snails: *Helicodiscus eigenmanni*	2		
Harvestmen: *Leiobunum townsendii*	8		
Spider: Araneae undetermined	1		collected
***Cicurina sp.**	1		
Cambala speobia	3		
Springtails: Collembola	>500		
Crickets*: Ceuthophilus secretus*	4		
Ceuthophilus secretus subadults	6		
Ceuthophilus cunicularis	2		
Ceuthophilus nymphs	1		
Plethedon albagula	1		
Eleutherodactylus marnockii	2		

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Name: K. O'Connor, R. Barlow	Agency: Travis County
Date: 3-Jun-08	No. of pages: 1

Location: Tardus Hole # of Zones: 2

Time Started: (see below) Time ended: (see below) scientific permit # TE819451-1

Survey area: ☐ *Solenopsis invicta* if so, ☐ heavy infestation ☐ moderate ☐ light
☐ Vandalism If so, ☐ trash ☐ speleothems ☐ gate ☐ graffiti

Temperature Inside: (see below) Outside: 36.6 Humidity Inside: (see below) Outside: 43%

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: Avg. temp-30 C; no precipitation
Organic matter encountered in survey area: N/A

FAUNAL SURVEY

Species	No. seen	Microhabitat for troglobites	Comments (if specimen was collected state where it was sent to)
Zone 1: Temp- 20 C RH%- 95% Start: 0315 PM End: 0341 PM			
Araneae undetermined	1		
Wolf Spider- Lycosidae.	1		
Achaearanea porteri	1		
***Cicurina sp.**	4		
Cambala speobia	10		
Springtails: Collembola	25		
Texoreddellia thysanurans	3		
Texoreddellia texensis	1		
Eleutherodactylus marnockii	2		
Plethedon albagula	1		
Zone 2: Temp- 20 C RH%- 95% Start: 0315 PM End: 0335 PM	**No. seen**	**Microhabitat for troglobites**	**Comments (if specimen was collected state where it was sent to)**
Helicodiscus eigenmanni	3		
Springtails: Collembola	45		
Ceuthophilus secretus (adults)	100		
Mosquitos: Culcidae undetermined	2		
Eleutherodactylus marnockii	2		
Plethedon albagula	1		

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

Name: M Sanders, A Gluesenkamp Agency: COA
Date: 3/26/08

Location: Adobe Springs cave
scientific permit # TE798920-0

Surface Temperature (Celsius) 30.1 RH 59.1 % reading taken at: 1424

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: drought conditions, nearby springs are drying up, but the cave is still very wet

FAUNAL SURVEY

Species		Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1330/1415	
Observations (zones)	Entire cave	
Observer	MS/ AG	Staff noted what appeared to be "bat stains" on the ceiling though none were actually observed
Temp/ RH	19.4/ 90.1	
Vandalism noted		
Gastropoda		
Helicodiscus eigenmanni	12	
Haplotaxida	12	
Pseudouroctanus reddelli		
Ixodida (tick)		
Acari (mites)		
Araneae		
Lycosidae	1	
Cicurina varians	4	
Cicurina (undetermined if blind)		
Passalidae	1	Large black beetle
Pselaphinae (mold beetle)	1	
***Rhadine austinica*		
Staphylinidae		
Speodesmus sp		
Cambala speobia		
Chilopoda (surface)		
Scutigera sp		
Mycetophilidae (fungus gnats)		
Collembola	7	
Stygobromus russelli	Several observed	3 collected, deposited with Randy Gibson (FWS)
Stygobromus bifurcatus	Few observed	1 collected, deposited with Randy Gibson (FWS)
Ceuthophilus sp B	4	
Ceuthophilus (subadults)	8	
Ceuthophilus (nymphs)	10	
Culcidae (mosquitoes)		
Gastrophryne olivacea	1	
Rana berlandieri	1	

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

Name: M Sanders, K Nesvacil, J Chenoweth Agency: COA
Date: 6/23/08

Location: Airman's cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 26.9 RH 77.9 % reading taken at: 0935

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: N/A

FAUNAL SURVEY

Species				Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	0955/1010	1044/1056	1145/1152	
Observations (zones)	1	2	3	
Observer	all	all	all	
Temp/ RH	19.8/ 94	20/ 95.6	20.4/ 99.3	
Vandalism noted	Graffiti/ trash	trash		More trash was noted, especially in the aggie art gallery, staff removed all trash.
Araneae (surface)	1			
Achaearanea porteri				
Agyneta llanoensis				
Cicurina varians	3			
Cicurina (undetermined if blind)	3	5		
Cicurina (blind)				
***Cicurina bandida*		8		Under rocks
Eidmannella				
Eidmannella pallida	8			4 were carrying egg sacs
Eidmannella rostrata		1		
✡ *Neoleptoneta myopica*				
Leiobunum townsendii				At "key hole" ~ 100 observed
**Texella spinoperca*		1		Under rock
Texella (nymph)				
✡ *Texamaurops reddelli*				
Pselaphinae (mold beetle)	1			Collected and deposited at TMM, James Reddell
**Rhadine austinica*		2		Under rocks
Cambala speobia	1			
Mycetophilidae (fungus gnats)	5			
Collembola	10	3		
Ceuthophilus cunicularis	2	2		Observed one crushed just past the "key hole"
Ceuthophilus sp B	3	3		
Ceuthophilus secretus	11			
Ceuthophilus (subadults)	11		1	
Ceuthophilus (nymphs)	14	5	2	
Lepidoptera	1			
Culcidae (mosquitoes)	1			
Plethedon albagula	1			

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

Name: M Sanders, J Chenoweth Agency: COA
Date: 1/29/08

Location: Arrow cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 20 RH 63.2 % reading taken at: 1336

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: light drizzle day before

FAUNAL SURVEY

Species				Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1344/1400	1419/1435	1419/1435	
Observations (zones)	1	2 southwest	3 northeast	
Observer	MS/ JC	JC	MS	
Temp/ RH	18.3/ 83.3	18.9/ 100	1839/ 100	
Vandalism noted				
Gastropoda				
Helicodiscus eigenmanni	4			
Haplotaxida				
Pseudouroctanus reddelli				
Ixodida (tick)	1			
Cybaeus sp	25			
Cicurina varians			2	
Cicurina (undetermined if blind)		3	2	
Cicurina (blind)				
***Cicurina bandida*			2	
Eidmannella	6			
** Texella mulaiki*				
Pselaphinae (mold beetle)				
**Rhadine austinica*		1		
Staphylinidae	4			
Reduviidae (assassin bug)				
Blattaria (cockroach)	2			
Speodesmus sp		2		
Cambala speobia	2	4	1	
Chilopoda (surface)				
Diplopoda (surface)	1			
Mycetophilidae (fungus gnats)	10	20	10	
Oniscidea (woodlice)	~50		1	
Armadillidiidae (pill bug)	1			
Collembola	~200	~150	25	
Ceuthophilus cunicularis				
Ceuthophilus sp B	3			
Ceuthophilus secretus				
Ceuthophilus (subadults)		10		
Ceuthophilus (nymphs)	60	12	6	
Procyon lotor				Lots of fresh scat in zone 1

Name: M Sanders, Andy Gluesenkamp Agency: COA
Date: 6/20/08

Location: Blowing sink

scientific permit # TE798920-0

Surface Temperature (Celsius) N/A RH N/A reading taken at: N/A

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: hot, dry

FAUNAL SURVEY

Species			Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	0945/1030	1030/1545	
Observations (zones)	Upper level	Lower level	This was a very cursory survey, primary mission was to look for salamanders and to scout what's needed to complete the "stabilization" project
Observer	MS/ AG	MS/ AG	
Temp/ RH	N/A	20/ 91	Taken at the bottom of "Kirschberg Hall"
Vandalism noted			
Gastropoda			
Helicodiscus eigenmanni		2	
Haplotaxida			
Pseudouroctanus reddelli			
Achaearanea porteri		1	
Cicurina varians			
Cicurina (undetermined if blind)			
***Cicurina bandida*		7	
Eidmannella		1	
* *Texella mulaiki*			
Pselaphinae (mold beetle)			
**Rhadine austinica*		6	All on floor in the "Eileen's River" area
Staphylinidae		6	
Reduviidae (assassin bug)			
Diplopoda (surface)			
Speodesmus sp		12	
Cambala speobia		1	
Chilopoda (surface)			
Mycetophilidae (fungus gnats)			
Collembola		12	
Stygobromus russelli		~40	Collected 10, deposited with Randy Gibson (FWS)
Ceuthophilus cunicularis	4	8	
Ceuthophilus sp B	2		
Ceuthophilus secretus	20		
Ceuthophilus (subadults)			
Ceuthophilus (nymphs)			
Lepidoptera		1	
Plethedon albagula		1	
Eurycea sp	10		Collected 5 (3 to Paul Chippendale) and (2 to captive breeding.

Name: M Sanders, K Nesvacil, J Chenoweth Agency: COA
Date: 1/31/08

Location: Broken Arrow cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 13.7 RH 63.8 % reading taken at: 1149

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: cool front arrived at the time of entry, very windy

FAUNAL SURVEY

Species		Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1200/1234	
Observations (zones)	Entire cave	Cave is much drier than usual, (the pool was dry), also CO2 levels were quite high, difficult to breathe.
Observer	MS, JC, KN	
Temp/ RH	18.3/ 95.9	
Vandalism noted		
Gastropoda		
Helicodiscus eigenmanni	6	
Haplotaxida	13	
Cicurina varians		
Cicurina (undetermined if blind)	1	
Cicurina (blind)	16	
Neoleptoneta sp	3	
Texella (nymph)		
✡ *Texamaurops reddelli*		
✡ *Rhadine persephone*	1	Staff photographed it
**Rhadine subterranean*		
Tachys ferrugineus		
Staphylinidae		
Curculionoidea (weevil)		
Speodesmus bicornourus		
***Speodesmus* N. S.**		
Cambala speobia	57	
Mycetophilidae (fungus gnats)	1	
Collembola	30	
Ceuthophilus sp B	83	
Ceuthophilus (sub-adults)	48	
Ceuthophilus (nymphs)	34	
Diptera undetermined		
Lepidoptera		
Culcidae (mosquitoes)	2	
Cicadellidae (leafhopper)		
Eleutherodactylus marnockii	1	
Plethedon albagula	2	Small juveniles
Bufo nebifuler		

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

Name: M Sanders, J Chenoweth, B Reiner Agency: COA
Date: 2/5/08

Location: Cave Y

scientific permit # TE798920-0

Surface Temperature (Celsius) 18.3 RH 87.2 % reading taken at: 1324

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: N/A

FAUNAL SURVEY

Species			Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1349/1440	1349/ 1421	
Observations (zones)	Upper level	Lower level	
Observer	MS/ BR	JC	
Temp/ RH	18.3/ 92.6	18.3/ 92.6	
Vandalism noted			
Gastropoda			
Helicodiscus eigenmanni		1	
Haplotaxida			
Pseudouroctanus reddelli			
Anapistula sp			
Cicurina varians	15	1	
Cicurina (undetermined if blind)	10		
***Cicurina bandida*	3		
Eidmannella			
Neoleptoneta sp			
* *Texella grubbsi*	5	2	
Pselaphinae (mold beetle)			
**Rhadine austinica*			
Reduviidae (assassin bug)	2		
Staphylinidae	1		
Diplopoda (surface)			
Speodesmus sp			
Cambala speobia			
Scutigera sp			
Mycetophilidae (fungus gnats)	2	4	
Collembola	~100	~200	
Ceuthophilus cunicularis			
Ceuthophilus sp B	3	9	
Ceuthophilus secretus			
Ceuthophilus (subadults)	5	~60	
Ceuthophilus (nymphs)	10	~30	
Lepidoptera	1		
Culcidae (mosquitoes)			
Siphonaptera (flea)			
Plethedon albagula		2	Small juveniles
Procyon lotor			

Name: M Sanders, K Nesvacil Agency: COA
Date: 12/11/07

Location: Cotterell cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 22 RH 95.3 % reading taken at: 1655

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: N/A

FAUNAL SURVEY

Species				Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1700/1730	1730/1815	1820/1847	
Observations (zones)	1 entry	2	3	
Observer	MS/KN	MS/ KN	MS/KN	
Temp/ RH	19.5/ 97	19.5/ 97	19.5/ 97	
Vandalism noted	Old trash			Staff removed all trash encountered
Gastropoda	3			
Haplotaxida	1			
Helicodiscus eigenmanni				
Pseudouroctanus reddelli	3		1	
✡ *Tartarocreagris texana*				
Tartarocreagris sp			1	Collected and deposited at TMM/ J Reddell
Cicurina varians		3	4	
Cicurina (undetermined if blind)				
Cicurina (blind)				
***Cicurina elliotti*			10	
✡ *Texella reyesi*	1		1	
Speodesmus bicornourus	1	1		
****Speodesmus* N. S.**				
Cambala speobia			1	
Collembola		4	~40	
Texoreddellia texensis				
Diplura (Campodeidae)				
Solenopsis invicta				
Ceuthophilus cunicularis				
Ceuthophilus secretus			17	
Ceuthophilus (sub-adults)		5		
Ceuthophilus (nymphs)	3	4	3	
Diptera undetermined				
Lepidoptera				
Culcidae (mosquitoes)				
Cicadellidae (leafhopper)				
Eleutherodactylus marnockii	2			
Plethedon albagula	33		2	17 were small juveniles
Bufo nebifuler				
Virginia striatula	1			

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

Name: M Sanders, K Nesvacil Agency: COA
Date: 3/19/08

Location: Cotterell cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 18.6 RH 62.9 % reading taken at: 1630

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: heavy rain the day before

FAUNAL SURVEY

Species				Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1643/1707	1710/1800	1712/1817	
Observations (zones)	1 entry	2 (east)	3 (west)	
Observer	MS/ KN	KN	MS/KN	KN started at 1802, ended at 1817
Temp/ RH				
Vandalism noted				
Gastropoda	8			
Pseudouroctanus reddelli			2	
✡ *Tartarocreagris texana*				
Tartarocreagris sp			2	Under rocks
Cicurina varians	3	2	10	
Cicurina (undetermined if blind)			10	
Cicurina (blind)				
**Cicurina elliotti*		5	32	
✡ *Texella reyesi*	1		3	Under rocks
Speodesmus bicornourus			3	
**Speodesmus* N. S.				
Cambala speobia	1			
Scutigera sp				
Chilipoda (surface)				
Geophilomorpha	1 (collected)		1	Collected, deposited at TMM/ James Reddell
Symphyla				
Mycetophilidae (fungus gnats)	12		4 (1 larvae	
Collembola	3		20	
Solenopsis invicta				
Ceuthophilus cunicularis			2	
Ceuthophilus secretus		1		
Ceuthophilus (sub-adults)		2	8	
Ceuthophilus (nymphs)	4	10	12	
Diptera undetermined				
Lepidoptera				
Culcidae (mosquitoes)				
Cicadellidae (leafhopper)				
Eleutherodactylus marnockii				
Plethedon albagula	8			4 juveniles
Bufo nebifuler				
Virginia striatula				

Name: M Sanders, K Nesvacil Agency: COA
Date: 6/16/08

Location: Cotterell cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 35 RH 52.8 % reading taken at: 1428

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: hot and dry

FAUNAL SURVEY

Species				Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1447/1525	1530/1635	1530/1641	
Observations (zones)	1 entry	2 (east)	3 (west)	
Observer	MS/ KN	KN	MS/ KN	KN started at 1636, ended at 1641
Temp/ RH	19.7/ 92.5	18.9/ 96	18.9/ 96	
Vandalism noted				
Gastropoda	10		2	
Helicodiscus eigenmanni	1			
Pseudouroctanus reddelli	5		1	
✡ *Tartarocreagris texana*				
Tartarocreagris sp			1	Collected and deposited at TMM/ J Reddell
Cicurina varians	1			
Cicurina (undetermined if blind)	4		10	
***Cicurina elliotti*	4	4	25	
Eidmannella	2			
✡ *Neoleptoneta myopica*				
Leiobunum townsendii				
✡ *Texella reyesi*	8		7	All under rocks
Speodesmus bicornourus			3	
Cambala speobia			8	
Geophilomorpha			1	Collected and deposited at TMM/ J Reddell
Symphyla	1			Collected and deposited at TMM/ J Reddell
Mycetophilidae (fungus gnats)	9		4	
Collembola	25		10	
Texoreddellia texensis				
Diplura (Campodeidae)				
Armadillidiidae (pill bug)	12			
Solenopsis invicta				
Ceuthophilus cunicularis			5	
Ceuthophilus secretus		3	4	
Ceuthophilus sp B			3	
Ceuthophilus (sub-adults)	6	4	~100	
Ceuthophilus (nymphs)	2	16	~ 200	
Lepidoptera			1	
Eleutherodactylus marnockii	2			
Plethedon albagula	6		1	1 juvenile
Anolis carolinensis	1 (dead)			

Name: M Sanders, K Nesvacil, L O'Donnell Agency: COA
Date: 9/16/08

Location: Cotterell cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 27.5 RH 42 % reading taken at: 1345

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: hot and dry

FAUNAL SURVEY

Species				Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1408/1430	1434/1545	1408/1529	
Observations (zones)	1 entry	2 (east)	3 (west)	
Observer	MS/ KN	KN/MS/ LO	LO/ MS	MS and LO started zone 2 at 1534, ended at 1545, MS started zone 3 at 1434, ended at 1529
Temp/ RH				
Vandalism noted				
Gastropoda	3			
Helicodiscus eigenmanni	2	3		
Haplotaxida				
Pseudouroctanus reddelli			2	
Agyneta llanoensis	3			
Cicurina varians				
Cicurina (undetermined if blind)			16	
Cicurina (blind)				
***Cicurina elliotti*	11	10	14	
✡ *Texella reyesi*	3	7	12	
Speodesmus bicornourus		10	32	
Chilipoda (surface)			1	
Mycetophilidae (fungus gnats)	1			
Collembola			8	
Texoreddellia texensis				
Diplura (Campodeidae)				
Armadillidiidae (pill bug)			1	
Solenopsis invicta				
Ceuthophilus cunicularis				
Ceuthophilus secretus		3	17	
Ceuthophilus sp B		8	3	
Ceuthophilus (sub-adults)	1	1	75	
Ceuthophilus (nymphs)	1		48	
Diptera undetermined				
Lepidoptera				
Culcidae (mosquitoes)				
Cicadellidae (leafhopper)				
Eleutherodactylus marnockii				
Plethedon albagula				
Bufo nebifuler				

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

Name: M Sanders, J Chenoweth Agency: COA
Date: 12/13/07

Location: District park cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 13.8 RH 82.9 % reading taken at: 1424

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: N/A

FAUNAL SURVEY

Species			Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1440/ 1525	1538/ 1607	
Observations (zones)	Aquifer room	Aggie level	
Observer	MS/ JC	MS/ JC	
Temp/ RH	19.5/ 97	21/ 91	
Vandalism noted			Removed small amount of trash prior to 1st zone
Araneae (surface)			
Ixodida (tick)	1 (nymph)		
Achaearanea porteri			
Agyneta llanoensis			
Cicurina varians	10	3	
Cicurina (undetermined if blind)	8		
Cicurina (blind)			
***Cicurina bandida**	5	5	
Eidmannella			
Leiobunum townsendii			
✡ *Texella reddelli*			
**Texella spinoperca*			
Texella (nymph)			
✡ *Texamaurops reddelli*			
Pselaphinae (mold beetle)			
***Rhadine austinica*			
***Speodesmus sp*		2	
Cambala speobia	16		
Mycetophilidae (fungus gnats)	5	2 (larvae)	
Collembola	2		
Ceuthophilus cunicularis	3	1	
Ceuthophilus sp B	5		
Ceuthophilus secretus			
Ceuthophilus (subadults)	18		
Ceuthophilus (nymphs)	23	2	
Lepidoptera			
Culcidae (mosquitoes)			
Siphonaptera (flea)	1		
Plethedon albagula			1 juvenile just outside of "aquifer room" survey

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

Name: M Sanders, K O'Connor Agency: COA & Travis County
Date: 3/15/08

Location: District park cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 21.4 RH 64.4 % reading taken at: 1132

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: N/A

FAUNAL SURVEY

Species			Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1155/	1227/	
Observations (zones)	Aquifer room	Aggie level	
Observer	MS/ KO	MS/ KO	While MS and KO surveyed 2 individuals watched
Temp/ RH	17.6/ 96	18.6/ 97.3	
Vandalism noted			Removed small amount of trash prior to 1st zone
Araneae (surface)			
Ixodida (tick)			
Achaearanea porteri			
Agyneta llanoensis			
Cicurina varians			
Cicurina (undetermined if blind)			
Cicurina (blind)			
***Cicurina bandida*			
Eidmannella			
Eidmannella pallida			
Eidmannella rostrata			
Leiobunum townsendii			
✡ *Texella reddelli*			
**Texella spinoperca*			
Texella (nymph)			
✡ *Texamaurops reddelli*			
Pselaphinae (mold beetle)			
**Rhadine austinica*			
***Speodesmus sp*			
Cambala speobia			
Mycetophilidae (fungus gnats)			
Collembola			
Ceuthophilus cunicularis			
Ceuthophilus sp B			
Ceuthophilus secretus			
Ceuthophilus (subadults)			
Ceuthophilus (nymphs)			
Lepidoptera			
Culcidae (mosquitoes)			
Siphonaptera (flea)			
Plethedon albagula			

Name: M Sanders, K Nesvacil Agency: COA
Date: 6/17/08

Location: District park cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 31.7 RH 65.7 % reading taken at: 1005

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: hot and dry

FAUNAL SURVEY

Species			Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1040/ 1110	1130/ 1157	
Observations (zones)	Aquifer room	Aggie level	
Observer	MS/ KN	MS/ KN	
Temp/ RH	20.3/ 94.3	20/ 95	CO2 levels: Aquifer room 0.88%, Aggie L (1.97%)
Vandalism noted			Removed small amount of trash prior to 1st zone
Araneae (surface)			
Ixodida (tick)			
Achaearanea porteri			
Agyneta llanoensis			
Cicurina varians	1		
Cicurina (undetermined if blind)	6		
Cicurina (blind)			
***Cicurina bandida*	2	7	
Eidmannella			
Eidmannella pallida			
Eidmannella rostrata			
Neoleptoneta sp		1	Observed by KN, collected and given to Pierre Paquin for ID
Leiobunum townsendii			
* *Texella mulaiki*		2	
**Texella spinoperca*			
**Rhadine austinica*			
Reduviidae (assassin bug)	1		
***Speodesmus sp*		2	
Cambala speobia	21		
Mycetophilidae (fungus gnats)	4	3 (2 larvae)	
Collembola	24		
Ceuthophilus cunicularis		1	
Ceuthophilus sp B	2		
Ceuthophilus secretus	161		
Ceuthophilus (subadults)	23		
Ceuthophilus (nymphs)	31	2	
Lepidoptera			
Culcidae (mosquitoes)			
Siphonaptera (flea)	6	4	
Plethedon albagula			
Procyon lotor			3 just outside of survey area, were afraid of us

Name: M Sanders, J Chenoweth, L O'Donnell Agency: COA
Date: 9/19/08

Location: District park cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 23.3 RH 76.2 % reading taken at: 0945

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: hot and dry

FAUNAL SURVEY

Species			Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1000/ 1018	1130/ 1157	
Observations (zones)	Aquifer room	Aggie level	
Observer	MS/ JC/LO	MS/ JC/LO	
Temp/ RH	22.7/ 91.4	21.1/ 93.4	CO2 levels: Aquifer room 1512ppm, Aggie L (1.48%)
Vandalism noted			Removed small amount of trash prior to 1st zone
Araneae (surface)			
Ixodida (tick)			
Achaearanea porteri			
Agyneta llanoensis			
Cicurina varians	2	3	
Cicurina (undetermined if blind)	6		
Cicurina (blind)			
***Cicurina bandida*	9	3	
Eidmannella			
Eidmannella pallida			
Eidmannella rostrata			
Neoleptoneta sp			
Leiobunum townsendii			
* *Texella mulaiki*		2	
**Texella spinoperca*			
Texella (nymph)			
✡ *Texamaurops reddelli*			
Pselaphinae (mold beetle)			
**Rhadine austinica*			
Reduviidae (assassin bug)	1		
***Speodesmus sp*	8	1	
Cambala speobia	3	3	
Scutigera sp	1		
Mycetophilidae (fungus gnats)			
Collembola	28		
Ceuthophilus cunicularis			
Ceuthophilus sp B			
Ceuthophilus secretus	8		
Ceuthophilus (subadults)	6		
Ceuthophilus (nymphs)	18		

Name: M Sanders, J Chenoweth Agency: COA
Date: 12/17/07

Location: Flintridge cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 17.7 RH 83.5 % reading taken at: 1041

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: N/A

FAUNAL SURVEY

Species				Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1052/1117	1142/1210	1245/1305	
Observations (zones)	formation pit (1)	Breakdown room (2)	D-day dome room (3)	
Observer	MS/ JC	MS/ JC	MS/ JC	
Temp/ RH	18.3/ 96.6	20.6/ 99	21.1/ 98.3	
Vandalism noted				
Gastropoda				
Helicodiscus eigenmanni	2			
Haplotaxida	2		1	
Pseudouroctanus reddelli				
Cicurina varians				
Cicurina (undetermined if blind)	1	5	4	
***Cicurina bandida*				
Neoleptoneta sp				
*** Texella mulaiki*				
Pselaphinae (mold beetle)				
****Rhadine austinica*				
Staphylinidae	8	5	32	
Texoreddellia texensis				(1) observed between zones 1 and 2, (1) observed between zones 2 and 3
Reduviidae (assassin bug)				
Speodesmus sp		8	67	
Cambala speobia	1	2		
Chilopoda (surface)				
Scutigera sp				
Mycetophilidae (fungus gnats)	6	3	2	
Collembola	12	26	31	
Stygobromus russelli				(30) observed in the “culvert crawl”
Ceuthophilus cunicularis				
Ceuthophilus sp B				
Ceuthophilus secretus	2			
Ceuthophilus (subadults)	1			
Ceuthophilus (nymphs)	1			
Lepidoptera				
Plethedon albagula	1			
Rana berlandieri				(1) observed between zones 2 and 3

Name: M Sanders, L O'Donnell, K Nesvacil Agency: COA
Date: 3/28/08

Location: Flintridge cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 20 RH 84.7 % reading taken at: 1000

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: N/A

FAUNAL SURVEY

Species				Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1018/1100	1120/1200	1243/1300	
Observations (zones)	formation pit (1)	Breakdown room (2)	D-day dome room (3)	
Observer	MS/ LO/KN	MS/ LO/KN	MS/LO/KN	
Temp/ RH	18.4/ 95.2	20/ 99.3	21.1/ 97.5	
Vandalism noted				
Gastropoda				
Helicodiscus eigenmanni	2			
Haplotaxida				
Pseudouroctanus reddelli	1			
Cicurina varians				
Cicurina (undetermined if blind)		3	7	
***Cicurina bandida*		6		
* *Texella mulaiki*				
Coleoptera		1		
Pselaphinae (mold beetle)		1		Collected and deposited at TMM/ J Reddell
**Rhadine austinica*				
Staphylinidae	7	14	10	
Texoreddellia texensis				
Reduviidae (assassin bug)				
Speodesmus sp		6	25	
Cambala speobia				
Chilopoda (surface)				
Scutigera sp				
Mycetophilidae (fungus gnats)	7	7	3	(1) was in larval stage
Collembola	14		64	
Stygobromus russelli				(25) observed in "culvert crawl"
Ceuthophilus cunicularis				
Ceuthophilus sp B	2			
Ceuthophilus secretus	1			
Ceuthophilus (subadults)	6	4		
Ceuthophilus (nymphs)	20	3		
Lepidoptera				
Plethedon albagula				
Rana berlandieri				(1) observed at beginning of culvert crawl

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

Name: M Sanders, J Chenoweth Agency: COA
Date: 6/17/08

Location: Flintridge cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 31.6 RH 68 % reading taken at: 1407

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: hot and dry, extended drought

FAUNAL SURVEY

Species				Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1418/1441	1452/1522	1550/1614	
Observations (zones)	formation pit (1)	Breakdown room (2)	D-day dome room (3)	CO 2 levels: zone 1 (4252ppm), zone 2 (4927ppm)
Observer	MS/ JC	MS/ JC	MS/ JC	
Temp/ RH	21.9/ 89	21.4/ 94.4	21.7/ 96.7	
Vandalism noted				
Gastropoda				
Helicodiscus eigenmanni				
Haplotaxida				
Pseudouroctanus reddelli				
Cicurina varians			1	
Cicurina (undetermined if blind)	5	12		
***Cicurina bandida*			3	
* *Texella mulaiki*				
Pselaphinae (mold beetle)				
**Rhadine austinica*				
Staphylinidae	1	5	4	
Texoreddellia texensis				
Reduviidae (assassin bug)				
Speodesmus sp		2	19	
Cambala speobia			3	
Mycetophilidae (fungus gnats)	2	2		
Culicidae (mosquitoes)	1			
Collembola	30	25	~30	
Stygobromus russelli				Several observed in culvert crawl
Ceuthophilus cunicularis				
Ceuthophilus sp B				
Ceuthophilus secretus	34			
Ceuthophilus (subadults)	8	3		
Ceuthophilus (nymphs)	21	9		
Lepidoptera				
Plethedon albagula	3			
Rana berlandieri				(1) observed at the beginning of culvert crawl
Gastrophryne olivacea	1			
Peromyscus sp	2			

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

Name: M Sanders, J Chenoweth, L O'Donnell Agency: COA
Date: 9/19/08

Location: Flintridge cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 24.7 RH 70.7 % reading taken at: 1150

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: hot and dry, extended drought

FAUNAL SURVEY

Species				Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1156/1213	1230/1250	1315/1325	
Observations (zones)	formation pit (1)	Breakdown room (2)	D-day dome room (3)	CO 2 levels: zone 1 (2619ppm), zone 2 (5584ppm)
Observer	MS/ JC/LO	MS/ JC/LO	MS/ JC/LO	
Temp/ RH	21.1/ 93.4	21.1/ 96.7	21.6/ 96.7	
Vandalism noted				
Gastropoda				
Helicodiscus eigenmanni				
Haplotaxida				
Pseudouroctanus reddelli				
Acari (mite)	1			
Cicurina varians	2			
Cicurina (undetermined if blind)		2	3	
***Cicurina bandida*	3	9		
Neoleptoneta sp				
*** Texella mulaiki*				
Coleoptera				
Pselaphinae (mold beetle)				
**Rhadine austinica*				
Staphylinidae	5	5	6	
Texoreddellia texensis				
Reduviidae (assassin bug)				
Speodesmus sp		23	9	
Cambala speobia				
Mycetophilidae (fungus gnats)	4	1		(2) were in larval stage in zone 1
Culicidae (mosquitoes)				
Collembola	31	49	38	
Stygobromus russelli				
Ceuthophilus cunicularis				
Ceuthophilus sp B				
Ceuthophilus secretus	1	1		
Ceuthophilus (subadults)	12	6	5	
Ceuthophilus (nymphs)	3	4	4	
Plethedon albagula				
Rana berlandieri				

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

Name: M Sanders, J Chenoweth Agency: COA
Date: 1/24/08

Location: Goat cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 7.2 RH 78.4 % reading taken at: 1142

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: light drizzle the day before

FAUNAL SURVEY

Species			Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1155/ 1220	1230/ 1248	
Observations (zones)	Drop zone	alcove	
Observer	MS/ JC	MS/ JC	
Temp/ RH	13.3/ 100	16.5/ 95.8	
Vandalism noted			
Gastropoda	1		
Helicodiscus eigenmanni	5		
Haplotaxida	15		
Araneae (surface)	1		
Ixodida (tick)			
Achaearanea porteri			1 just outside of "drop zone" survey area
Agyneta llanoensis			
Cicurina varians	7		
Cicurina (undetermined if blind)			
Cicurina (blind)			
***Cicurina bandida*		2	
Eidmannella			
*** Texella mulaiki*			
Pselaphinae (mold beetle)			
**Rhadine austinica*			
Reduviidae (assassin bug)			
Staphylinidae	1		
***Speodesmus* N S		1	
Cambala speobia		1	
Scutigera sp			
Mycetophilidae (fungus gnats)	3	1	
Collembola			
Ceuthophilus cunicularis			
Ceuthophilus sp B			
Ceuthophilus secretus		7	
Ceuthophilus (subadults)		10	
Ceuthophilus (nymphs)	2	4	
Lepidoptera			
Siphonaptera (flea)			
Plethedon albagula	20		15 with broken (healing) tails
Virginia striatula	1 (dead)		

Name: M Sanders, J Chenoweth Agency: COA
Date: 5/15/08

Location: Little Bee Creek cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 24 RH N/A reading taken at: 1500

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: N/A

FAUNAL SURVEY

Species			Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1507/1534	1503/1531	
Observations (zones)	Entrance room	Zone 2	
Observer	JC	MS	
Temp/ RH	N/A	21.25/NA	
Vandalism noted			
Gastropoda			
Pseudouroctanus reddelli	1		
Ixodida (tick)	2		One was a soft bodied tick (known to carry "relapsing fever")
Acari (mites)			
Araneae (surface)	2		
Lycosidae			
Achaearanea porteri		1	
Cicurina varians			
Cicurina (undetermined if blind)			
***Cicurina bandida*			
Eidmannella			
Leiobunum townsendii	55	21	
** Texella reddelli*			
**Rhadine austinica*			
Staphylinidae			
Diplopoda (surface)		1	
Speodesmus sp		1	
Cambala speobia		35	
Chilopoda (surface)			
Scutigera sp			
Mycetophilidae (fungus gnats)	12	4	
Collembola		4	
Ceuthophilus cunicularis		1	
Ceuthophilus secretus		25	
Ceuthophilus (subadults)			
Ceuthophilus (nymphs)		15	
Lepidopotera (moths)	2		
Culcidae (mosquitoes)	5		
Diptera (house fly)		1	
Plethedon albagula			
Eleutherodactylus marnockii	1	1	

Name: M Sanders, J Chenoweth Agency: COA
Date: 1/24/08

Location: Maple Run cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 7.36 RH 80.2 % reading taken at: 1404

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: light drizzle the day before

FAUNAL SURVEY

Species			Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1446/ 1440	1506/ 1525	
Observations (zones)	Zone 1	Zone 2	
Observer	MS/ JC	MS/ JC	
Temp/ RH	19.1/ 100	21/ 99	
Vandalism noted			
Gastropoda			
Helicodiscus eigenmanni			
Haplotaxida			
Ixodida (tick)			
Araneae (surface)			
Achaearanea porteri			
Anapistula sp		3	
Cicurina varians			
Cicurina (undetermined if blind)			
Cicurina (blind)			
***Cicurina bandida*	2		
Eidmannella			
Neoleptoneta sp			
* *Texella mulaiki*			
Pselaphinae (mold beetle)			
**Rhadine austinica*			
Reduviidae (assassin bug)			
Staphylinidae			
Speodesmus sp	6	1	
Cambala speobia	2		
Chilopoda (surface)	1		
Scutigera sp			
Mycetophilidae (fungus gnats)	1		
Collembola	2		
Ceuthophilus cunicularis			
Ceuthophilus sp B			
Ceuthophilus secretus	1		
Ceuthophilus (subadults)	7		
Ceuthophilus (nymphs)	1		
Lepidoptera			
Culcidae (mosquitoes)			

Name: M Sanders, J Chenoweth Agency: COA
Date: 1/29/08

Location: Midnight cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 18.8 RH 56 % reading taken at: 1607

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: N/A

FAUNAL SURVEY

Species			Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1625/ 1635	1700/ 1716	
Observations (zones)	Lower level	Upper level	Lower level "dry area", upper level "dome room"
Observer	MS/ JC	MS/ JC	
Temp/ RH	16.4/ 93.5	18.47/ 99.1	
Vandalism noted			
Gastropoda			
Helicodiscus eigenmanni			
Araneae (surface)			
Cicurina varians		11	
Cicurina (undetermined if blind)		7	
Cicurina (blind)			
***Cicurina bandida*		10	
Eidmannella			
*** Texella mulaiki*			
Pselaphinae (mold beetle)			
***Rhadine austinica*		2	
Staphylinidae			
Texoreddellia texensis		1	
Reduviidae (assassin bug)			
Diplopoda (surface)			
Speodesmus sp		2	
Cambala speobia		28	
Chilopoda (surface)			
Geophilomorpha		1	Collected and deposited at TMM/ J Reddell
Scutigera sp			
Mycetophilidae (fungus gnats)	1		
Collembola		~60	
Ceuthophilus cunicularis			
Ceuthophilus sp B	12	~50	
Ceuthophilus secretus			
Ceuthophilus (subadults)	11	~100	
Ceuthophilus (nymphs)	9	~100	
Lepidoptera			
Culcidae (mosquitoes)			
Plethedon albagula			
Rana berlandieri	3		

Name: M Sanders, Cyndee Watson, Tim Schumann, Bill Russell
Agency: COA, FWS, TCMA
Date: 3/13/08

Location: Rock slide cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 14.7 RH 93 % reading taken at: 0840

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: N/A

Purpose of visit: Make an assessment on the biological importance of this cave and to see if any restoration efforts would be warranted to protect rare species. We discussed restoration efforts which would involve modifying the entrance to the cave by replacing the existing barricade of treated railroad ties with an non-toxic alternative. As far as I know no action was taken.

FAUNAL SURVEY

Species		Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	0840/ 0945	Survey was more cursory in nature
Observations (zones)	1st room of cave	
Observers	MS/ CW/ TS/ BW	
Temp/ RH	16.5/ 94.5	
Vandalism noted		
Gastropoda		
Pseudouroctanus reddelli	2	
Ixodida (tick)		
Araneae		
Agyneta llanoensis	2	One collected for Pierre Paquin for ID
Cicurina varians	6	
Cicurina (undetermined if blind)		
***Cicurina bandida*	1	
Eidmannella		
Neoleptoneta sp	1	One collected, deposited with Pierre Paquin
**Rhadine austinica*		
Staphylinidae		
Blattaria (cockroach)		
Speodesmus sp		
Cambala speobia	1	
Chilopoda (surface)		
Scutigera sp		
Mycetophilidae (fungus gnats)		
Collembola	Large # observed	Did not attempt to count
Ceuthophilus cunicularis	1	
Ceuthophilus (subadults)		
Ceuthophilus (nymphs)	3	
Lepidoptera	3	
Plethedon albagula		
Proycon lotor		Lots of fresh scat inside cave

Name: M Sanders, K Nesvacil, J Chenoweth Agency: COA
Date: 1/31/08

Location: Rolling Rock cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 13.4 RH 62.4 % reading taken at: 1352

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: cool front arrived at the time of entry, very windy

FAUNAL SURVEY

Species		Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1400/1430	
Observations (zones)	Entire cave	
Observer	MS, JC, KN	
Temp/ RH	16/ 94.1	
Vandalism noted		
Gastropoda		
Helicodiscus eigenmanni		
Haplotaxida	3	
Cicurina varians		
Cicurina (undetermined if blind)	3	
Cicurina (blind)		
Neoleptoneta sp	1	
Texella (nymph)		
✡ *Texamaurops reddelli*		
✡ *Rhadine persephone*		
**Rhadine subterranean*		
Tachys ferrugineus		
Staphylinidae	6	
Curculionoidea (weevil)		
Speodesmus bicornourus		
**Speodesmus* N. S.		
Cambala speobia		
Mycetophilidae (fungus gnats)	2	
Collembola	25	
Ceuthophilus sp B	11	
Ceuthophilus (sub-adults)	11	
Ceuthophilus (nymphs)	10	
Diptera undetermined		
Lepidoptera		
Culcidae (mosquitoes)		
Cicadellidae (leafhopper)		
Eleutherodactylus marnockii	2	
Plethedon albagula		
Rana berlandieri	1	

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

Name: M Sanders, B Reiner Agency: COA
Date: 2/5/08

Location: Seibert Sink

scientific permit # TE798920-0

Surface Temperature (Celsius) 24.7 RH 80.4 % reading taken at: 1025

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: N/A

FAUNAL SURVEY

Species		Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1040/ 1130	
Observations (zones)	Entire cave	
Observer	MS/ BR	
Temp/ RH	20.5/ 91	
Vandalism noted		Staff removed old trash
Gastropoda	3	
Pseudouroctanus reddelli	3	
Ixodida (tick)		
Acari (mites)		
Araneae	1	Collected and deposited with Pierre Paquin, ID
Lycosidae	2	
Cicurina varians	1	
Cicurina (undetermined if blind)	8	
***Cicurina bandida*		
Eidmannella	1	
Neoleptoneta sp		
** Texella spinoperca*	1	Collected and deposited with TMM, J Reddell
Coleoptera	1	tiny
Carabid (surface)	1	Large black beetle
Pselaphinae (mold beetle)		
**Rhadine austinica*		
Staphylinidae	2	
Blattaria (cockroach)	1	
Speodesmus sp		
Cambala speobia	1	
Scutigera sp		
Mycetophilidae (fungus gnats)	5	3 of which were larvae
Collembola	~100	
Ceuthophilus secretus	2	
Ceuthophilus (subadults)	4	
Ceuthophilus (nymphs)	4	
Culcidae (mosquitoes)		
Apoidea (mud dauber)	1	Was attracted to my light
Siphonaptera (flea)		
Plethedon albagula	5	Small juveniles
Heterodon platirhinos	1 (dead)	

Name: M Sanders, J Chenoweth Agency: COA
Date: 1/29/08

Location: Slaughter creek cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 20.5 RH 78.4 % reading taken at: 1108

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: light drizzle day before

FAUNAL SURVEY

Species			Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1120/ 1202	1212/ 1327	
Observations (zones)	Upper level	Zone 2	Cave is drier than usual
Observer	MS/ JC	MS/ JC	
Temp/ RH	19/ 95.8	18.47/ 99.1	
Vandalism noted			
Gastropoda			
Helicodiscus eigenmanni	30	4	
Haplotaxida			
Pseudouroctanus reddelli	3	2	
Ixodida (tick)			
Acari (mites)	1		
Cicurina varians	6	6	
Cicurina (undetermined if blind)	9		
Cicurina (blind)			
***Cicurina bandida*	4	4	
Eidmannella	1		
Neoleptoneta sp			
* *Texella mulaiki*		1	
Pselaphinae (mold beetle)	1		Collected and deposited at TMM/ J Reddell
**Rhadine austinica*			
Reduviidae (assassin bug)			
Diplopoda (surface)	2		
Speodesmus sp	5	20	
Cambala speobia	21	6	
Chilopoda (surface)			
Scutigera sp			
Mycetophilidae (fungus gnats)	~35	5	5 observed were larvae
Collembola	~150	6	
Ceuthophilus cunicularis		2	
Ceuthophilus sp B	32	1	
Ceuthophilus secretus			
Ceuthophilus (subadults)	32	5	
Ceuthophilus (nymphs)	16	4	
Lepidoptera	6	1	1 surface, the others are troglophilic?
Plethedon albagula			
Procyon lotor			Lots of fresh raccoon scat in zone 1

Name: M Sanders, K Nesvacil Agency: COA
Date: 12/11/07

Location: Spider cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 23.3 RH 91% reading taken at: 1434

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: N/A

FAUNAL SURVEY

Species				Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1550/1600	1500/1550	1500/1532	
Observations (zones)	1	2	3	Zone one is the entrance/ twilight area of cave
Observer	KN	KN/ MS	MS	Zone 2 MS started at 1540, ended at 1550
Temp/ RH	21.2/ 97.1	21.2/ 97.1	21.2/ 97.1	
Vandalism noted				
Pseudouroctanus reddelli		1	1	
✡ *Tartarocreagris texana*				
Tartarocreagris sp		1		(KN observation) collected and deposited at TMM (James Reddell), found under a rock
Acari (mite)			1	
Agyneta llanoensis			1	Collected for ID by Pierre Paquin
Cicurina varians		31	3	
Cicurina (undetermined if blind)		15		
Cicurina (blind)			7	
Eidmannella		2		
✡ *Texella reddelli*		1	2	All found under rocks
Texella (nymph)			1	Under a rock
Staphylinidae	1			
Speodesmus bicornourus		2	1	
**Speodesmus* N. S.				
Cambala speobia		1		
Scutigera sp		1		
Chilipoda (surface)	2			
Symphyla				
Mycetophilidae (fungus gnats)				
Collembola	~100	23	15	
Solenopsis invicta				
Ceuthophilus secretus (adults)		1	6	
C. secretus (sub-adults)			8	
Ceuthophilus (nymphs)	2	11	5	
Diptera undetermined				
Lepidoptera		2		
Culcidae (mosquitoes)				
Cicadellidae (leafhopper)	1	1		
Eleutherodactylus marnockii				
Plethedon albagula	3			juveniles

Name: M Sanders, K Nesvacil Agency: COA
Date: 3/19/08

Location: Spider cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 18.6 RH 60.6 % reading taken at: 1430

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: N/A

FAUNAL SURVEY

Species				Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1437/1445	1447/1520	1440/1507	
Observations (zones)	1	2	3	Zone one is the entrance/ twilight area of cave
Observer	KN	KN/ MS	MS	Zone 2 MS started at 1508, ended at 1520
Temp/ RH	18.2/ 95.9	18.2/ 95.9	18.2/ 95.9	
Vandalism noted				
Gastropoda				
Helicodiscus eigenmanni			1	
Haplotaxida	1			
Cicurina varians	1	13		
Cicurina (undetermined if blind)		11		
Cicurina (blind)		10	17	
✡ *Texella reddelli*			1	
Texella (nymph)				
✡ *Texamaurops reddelli*				
✡ *Rhadine persephone*			1	
**Rhadine subterranean*				
Tachys ferrugineus				
Staphylinidae				
Curculionoidea (weevil)			1	Collected and deposited at TMM/ J Reddell
Speodesmus bicornourus			1	
***Speodesmus* N. S.**				
Cambala speobia			1	
Mycetophilidae (fungus gnats)	2	4	1	
Collembola	~100	~45	2	
Ceuthophilus sp B		6	1	
Ceuthophilus (sub-adults)		7	2	
Ceuthophilus (nymphs)		15	8	
Diptera undetermined				
Lepidoptera		1		
Culcidae (mosquitoes)				
Cicadellidae (leafhopper)				
Eleutherodactylus marnockii	1			
Plethedon albagula	2			Small juveniles
Bufo nebifuler				

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

Name: M Sanders, K Nesvacil Agency: COA
Date: 6/16/08

Location: Spider cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 31.7 RH 61.5 % reading taken at: 1215

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: hot, dry, drought conditions, we measured CO 2 levels, surface reading was 337 ppm, zone 3 was 1.77% (very high)

FAUNAL SURVEY

Species				Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1235/1253	1253/1324	1235/1308	
Observations (zones)	1	2	3	Zone one is the entrance/ twilight area of cave
Observer	KN	KN/ MS	MS	MS started zone 2 @ 1314, ended at 1324
Temp/ RH	21.4/ 93.4	21.4/ 93.4	21.4/ 93.4	
Vandalism noted				
Cicurina varians		1	2	
Cicurina (undetermined if blind)	2		7	
Cicurina (blind)	2	1	7	
Eidmannella				
✡ *Neoleptoneta myopica*				
Leiobunum townsendii	~2000		~100	Large # in entrance, as we entered many retreated deeper into the cave, none exited
✡ *Texella reyesi*				
✡ *Texella reddelli*		2	5	Under rocks
✡ *Texamaurops reddelli*				
✡ *Rhadine persephone*			1	
Tachys ferrugineus				
Staphylinidae	12			
Curculionoidea (weevil)				
Speodesmus bicornourus		1	2	
***Speodesmus* N. S.**				
Cambala speobia	1	6	14	
Mycetophilidae (fungus gnats)		3	6	
Collembola	~200		~200	
Texoreddellia texensis				
Solenopsis invicta				
Crematogaster sp	1			
Ceuthophilus cunicularis			1	
Ceuthophilus secretus	5	7		
Ceuthophilus sp B				
Ceuthophilus (sub-adults)		7	8	
Ceuthophilus (nymphs)		4	2	
Diptera undetermined				
Lepidoptera		1		
Eleutherodactylus marnockii	1			

Name: M Sanders, K Nesvacil Agency: COA
Date: 9/16/08

Location: Spider cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 22.7 RH 58.3 % reading taken at: 1125

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: hot, dry, drought conditions

FAUNAL SURVEY

Species				Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	1134/1150	1154/1224	1134/1206	
Observations (zones)	1	2	3	Zone one is the entrance/ twilight area of cave
Observer	KN	KN/ MS	MS	MS started zone 2 @ 1209, ended at 1224
Temp/ RH	23.2/ 95.7	23.2/ 95.7	23.2/ 95.7	
Vandalism noted				
Pseudouroctanus reddelli			1	
Araneae (surface)	1			
Achaearanea porteri				
Agyneta llanoensis				
Cicurina varians	1			
Cicurina (undetermined if blind)		16	3	
Cicurina (blind)		10	6	Under rocks
Eidmannella			1	
✡ *Neoleptoneta myopica*				
Leiobunum townsendii	~2000			
✡ *Texella reyesi*				
✡ *Texella reddelli*	2	2	2	All under rocks
Texella (nymph)				
Coleoptera (surface)	2 (larvae)			
✡ *Texamaurops reddelli*				
✡ *Rhadine persephone*			2	1 under rock, 1 on floor
Staphylinidae	4	2		
Curculionoidea (weevil)				
Speodesmus bicornourus		2	1	
**Speodesmus* N. S.				
Cambala speobia	12	4		
Mycetophilidae (fungus gnats)			3	
Collembola	~100	~150	28	
Solenopsis invicta				
Ceuthophilus cunicularis			2	
Ceuthophilus secretus	9			
Ceuthophilus sp B		3		
Ceuthophilus (sub-adults)		4	4	
Ceuthophilus (nymphs)	2	6	4	
Lepidoptera		1		
Culcidae (mosquitoes)	1			

Name: M Sanders Agency: COA
Date: 4/8/08

Location: Steiner Ranch cave

scientific permit # TE798920-0

Surface Temperature (Celsius) 22.7 RH 86.4 % reading taken at: 0920

Humidity was measured with a Psychrodyne analog psychrometer.

Weather conditions during the past week: N/A

Purpose of Visit: This cave had recently been "discovered" by Austin Energy (AE) (by drilling a hole for a new power pole) and AE contacted the COA BCP staff to investigate the cave to see assess it's potential for listed species and how to proceed. BCP staff collected one listed species and notified AE that they must consult with FWS.

FAUNAL SURVEY

Species		Comments (if specimen was collected state where it was sent to)
Start/stop time, each zone	0830/ 0915	
Observations (zones)	Entire cave	The cave consisted of one large linear shaped room, no natural entrances with the exception of a few tree roots, all species encountered were located near the tree roots.
Observer	MS	
Temp/ RH	18/ 97.6	
Vandalism noted		
Gastropoda		
Helicodiscus eigenmanni		
Haplotaxida		
Cicurina varians		
Cicurina (undetermined if blind)		
Cicurina (blind)	4	
Eidmannella (blind)	2	Both collected, deposited with Pierre Paquin, (MS photographed one)
✡*Texella* sp	1	Likely listed species, deposited with Pierre Paquin
✡ *Texamaurops reddelli*		
✡ *Rhadine persephone*		
**Rhadine subterranean*		
Tachys ferrugineus		
Staphylinidae		
Curculionoidea (weevil)		
Speodesmus sp	3	One collected, deposited with Pierre Paquin
***Speodesmus* N. S.		
Ceuthophilus (nymphs)		
Diptera undetermined		
Lepidoptera		
Culcidae (mosquitoes)		
Cicadellidae (leafhopper)		
Eleutherodactylus marnockii		
Plethedon albagula		
Bufo nebifuler		

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

CRICKET COUNT DATA

CITY OF AUSTIN:

Cricket Count Summaries	Dec 2007				March 2008				June 2008				Sept 2008			
	N:	J:	A:	TI:	N:	J:	A:	TI:	N:	J:	A:	TI:	N:	J:	A:	TI:
Cotterell Cave	251	76	1	328	1446	76	0	1522	544	58	2	604	428	126	35	589
District Park Cave	426	197	20	643	1022	304	186	1512	247	198	313	758	74	188	702	964
Flintridge Cave	0	0	0	0	180	104	14	298	320	221	78	619	148	102	42	292
Spider Cave	58	13	3	74	83	98	67	248	73	46	102	221	8	24	145	177
Jest John Cave													59	311	856	1226

**N=nymphs; J= juveniles; A= adults; TI= Total # of individuals*

TRAVIS COUNTY:

Cricket Count Summaries	Dec 2007				March 2008				June 2008				Sept 2008			
	N:	J:	A:	TI:	N:	J:	A:	TI:	N:	J:	A:	TI:	N:	J:	A:	TI:
Amber Cave	51	56	136	243	6	4	0	10	108	45	24	177	308	614	586	1508
Gallifer Cave	11	11	26	48	141	152	6	158	26	54	160	240	26	76	531	633
Kretschmarr Cave	1	1	19	21	22	9	0	31	21	216	72	309	52	113	130	295
Kretsch. Double Pit Cave	2	1	2	5	6	12	0	18	30	23	20	73	1	38	103	142
McDonald Cave	0	0	0	0	0	0	0	0	0	4	14	18	0	4	181	185
Root Cave	5	8														
North Root Cave	16	9	7	32	6	24	0	30	3	8	9	20	0	6	10	16
Tardus Hole Cave	0	1	0	1	15	11	0	26	3	5	5	13	45	75	237	357
Tooth Cave	35	14	94	143	8	3	0	11	82	68	115	265	2	27	270	299

**N=nymphs; J= juveniles; A= adults; TI= Total # of individuals*