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TECHNICAL REPORT FOR KARST MANAGEMENT SERVICES ON THE CUEVAS, CUEVAS EAST, GRANDVIEW HILLS, AND TSNL TRACTS OF THE BALCONES CANYONLANDS PRESERVE, TRAVIS COUNTY, TEXAS



A Zara scientist inside Encinal Cave following excavation on 11 March 2025.

Prepared for
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Abstract

Zara Environmental LLC assisted the Travis County Natural Resources Department with karst management activities during Fiscal Year 2025 (October 2024 – September 2025) at the Cuevas, Cuevas East, Grandview Hills, and Texas System of Natural Laboratories tracts of Balcones Canyonlands Preserve located in the Jollyville Plateau region of northwest Travis County, Texas. Karst management activities during this period primarily focused on evaluation, excavation, restoration, and incidental fauna surveys at eight select caves within the aforementioned tracts. Excavation, restoration, and fauna surveys were conducted at Amber Cave, Encinal Cave, Kretschmarr Cave, Root Cave, and Two Trunks Cave, while evaluations at Kretschmarr Double Pit, Kretschmarr Sink, and North Root Cave provided data to guide future objectives.

Continued excavation is recommended at Amber Cave and Encinal Cave, while mapping is the only current recommendation for Two Trunks Cave. Future excavation is recommended at Kretschmarr Sink and North Root Cave, with subsequent remapping of the Root Cave and North Root Cave complex to better document karst development and connectivity. Four additional caves including Cactus Pit, Kretschmarr Fluted Sink, Mold Hole, and Tight Pit, should be reevaluated in Fiscal Year 2026 to determine priorities relative to ongoing efforts at Amber Cave, Encinal Cave, Kretschmarr Sink, and North Root Cave.

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Introduction

This technical report has been prepared for the Travis County Natural Resources Department in support of karst management activities performed by Zara Environmental LLC (Zara) during Fiscal Year (FY) 2025 (October 2024 – September 2025) at the Cuevas, Cuevas East, Grandview Hills, and Texas System of Natural Laboratories (TSNL) tracts of the Balcones Canyonlands Preserve (BCP) located in the Jollyville Plateau region of northwest Travis County, Texas. Karst management activities (project work) during this reporting period primarily focused on evaluation, excavation, restoration, and incidental fauna surveys at select caves within the aforementioned BCP tracts. The primary purposes for excavation are to restore hydrological and ecological function, identify additional cave passages that may provide suitable habitat for karst invertebrates, and enhance safety and accessibility for fauna surveys in support of species management under the Balcones Canyonlands Conservation Plan (BCCP).

Twelve karst features were initially considered for project work during a surface reconnaissance site visit with Travis County personnel in the summer of 2024. These include Amber Cave, Cactus Pit, Encinal Cave, Kretschmarr Double Pit, Kretschmarr Cave, Kretschmarr Fluted Sink (also known as Tardus Hole), Kretschmarr Sink, Mold Hole, North Root Cave, Root Cave, Tight Pit, and Two Trunks Cave. Project work for FY 2025 was prioritized following field reconnaissance and desktop review of background data. Between March and August 2025, eight features received further evaluation to assess potential leads and plan excavation operations, and five of those features ultimately received excavation with incidental fauna surveys due to time and budget constraints in FY 2025. The five features are Amber Cave, Encinal Cave, Kretschmarr Cave, Root Cave, and Two Trunks Cave. Excavation activities and fauna observations at these five features are detailed herein.

Balcones Canyonlands Conservation Plan

The BCCP is a regional habitat conservation plan and incidental take permit issued by the USFWS to the City of Austin and Travis County in 1996 for the protection of two endangered bird species, six endangered karst invertebrate species, 25 karst Species of Concern (SOC) and two plant species (Regional Environmental Consultants [RECON] and USFWS 1996; BCP 2016).

Federally Listed Karst Invertebrates

Seven karst invertebrates restricted to caves in Travis and Williamson counties are federally listed as endangered under the Endangered Species Act (USFWS 1988, 1993). Five of the species, *Rhadine persephone, Tartarocreagris texana, Tayshaneta myopica, Texamaurops reddelli*, and *Texella reyesi*, have been found in caves on the BCP tracts included in FY 2025 project work. As such, authorization for project work in the occupied caves was coordinated under an active Recovery Project Proposal approved by the U.S. Fish and Wildlife Service (USFWS) on February 14, 2025 (Zara 2025).

Methods

Project work provided during this reporting period included feature evaluation for future excavation, feature excavation, restoration, and incidental biological surveys. All project work was completed under USFWS 10(a)(1)(A) permits ESPER0003024 (Zara) and ESPER1906200 (Ethan Perrine) by a team of scientists that included Kara Posso, Ethan Perrine, Liza Colucci, Michael Jones, Lucas Pustka, and Eleonore Le Corvaisier.

Excavation

Excavation was performed using manual hand tools, including pry bars, soil scrapers, scoops, sledgehammers, and mattocks, as well as power tools, including rotary hammer drills and bull pins to reduce rocks. Sandbags, two-gallon buckets, and sewn slings were used to transport fill to the surface where it was searched for fauna using a high contrast canvas before being carried at least five meters (m) down slope and dispersed. Broken rock was scattered with soil and covered with leaf litter to reduce visual impact. In vertical caves (pits), a high strength static kernmantle rope and progress capturing pulley were used to transport fill vertically. The volume of material, recorded in gallons (reported in liters [L]), was documented each day to quantify the cumulative result of excavation at each feature. Excavations occurred over twelve workdays on the following dates in March and August of 2025.

Restoration

After concluding excavation at each feature, brushes and chisels were used to reduce tool marks and shape fractured rock. A slurry of soil and water was applied to areas that were impacted by excavation to better match surrounding surfaces. Leaf litter, uncompacted soil, air dams (obstructions that alter air circulation), and habitat rocks were placed to restore the natural appearance, maintain the microclimate, and maintain nutrient flow (access by crickets, roots, and leaf litter).

Incidental Fauna Survey

An incidental fauna survey was conducted in each feature during excavation. Fauna observations were documented by day, and a cumulative list was recorded for each feature (Appendix A). The number of individuals for each taxa was not recorded during incidental surveys, except in cases where potentially listed species were observed, as the surveys were not conducted as systematic timed searches. In accordance with the Recovery Project Proposal submitted to USFWS (Zara 2025), listed species were collected when feasible at each feature to provide representative samples. Collection efforts were focused on listed species that had not previously been detected within a given feature.

Results

Of the twelve karst features considered for project work in FY 2025, excavations and incidental fauna surveys were conducted at five features between March and August 2025 (Amber Cave, Encinal Cave, Kretschmarr Cave, Root Cave, and Two Trunks Cave), while evaluations to gather information for future project work occurred at three additional features (Kretschmarr Double Pit, Kretschmarr Sink, and North Root Cave) (Table 1). No project work was performed at the remaining four caves (Cactus Pit, Kretschmarr Fluted Sink, Mold Hole, or Tight Pit) beyond initial evaluation due to budgetary constraints during the reporting period.

A summary of project work conducted in FY 2025 is provided in Table 1. Details regarding feature excavations can be found in the *Feature Excavation* section below. Fauna observations and collections at all features, including those that only received evaluations for future work, are provided as Appendix A. Select fauna photos are included in Appendix B.

All three federally listed species known from Amber Cave (*Rhadine persephone, Tartarocreagris texana, and Texamaurops reddelli*) were documented during project work on 27 June, 11 and 16 July, and 05 August 2025. Listed species collections at Amber Cave included one *Texamaurops reddelli* (Zara #15121) and one *Tartarocreagris texana* (Zara #15126). At Two Trunks Cave, *Texella reyesi*, which was not previously known to occupy the feature, was observed and collected (Zara #15111) on 15 May 2025. At North Root Cave, *Texella reyesi* and the federally proposed endangered tricolored bat (*Perimyotis subflavus*; USFWS 2022) were observed during evaluation on 11 March 2025. Excavation was deprioritized in North Root Cave due to the presence of the bat. No listed species were observed at Encinal Cave, Kretschmarr Cave, Kretschmarr Double Pit, Kretschmarr Sink, or Root Cave. Collection of federally listed species occurred at Amber Cave and Two Trunks Cave. These specimens are currently held at the Zara office while USFWS determines the appropriate repository. Red Imported Fire Ants (*Solenopsis invicta*; RIFA) were observed in significant quantities within Kretschmarr Cave and Amber Cave, potentially exacerbated by rainfall preceding project work.

Table 1. Summary of species, project work stats, and recommendations for the twelve features considered for project work during FY 2025.

Feature Name	Known Federally Listed Karst Species*	Project Work Days (FY 2025)	Total Person Hours	Material Removed (L)	Priority for Further Excavation	Comments
Amber Cave	***Rhadine persephone, Tartarocreagris texana, Texamaurops reddelli***	3/18, 6/27, 7/11, 7/16, 8/5	59.4	795	High	Continued excavation recommended
Encinal Cave	N/A	3/10, 3/11, 3/17, 3/18, 4/10	72.8	3513	Medium	Continued excavation recommended
Kretschmarr Cave	*Rhadine persephone, Texamaurops reddelli*	3/18, 3/27, 6/19, 6/27	59.0	1650	Low	N/A
Kretschmarr Double Pit	*Rhadine persephone*, *Tartarocreagris texana*, *Texamaurops reddelli*	8/5	1.7	0	N/A	Reevaluation for reprioritization recommended
Kretschmarr Sink	N/A	6/27	2.8	0	High	Excavation recommended
North Root Cave	*Rhadine persephone,* ***Texella reyesi***	3/10	1.5	0	High	Mapping recommended in Root Cave and North Root Cave Complex following excavation
Root Cave	*Rhadine persephone, Tayshaneta myopica, Texella reyesi*	3/10	4.5	95	Low	Mapping recommended in Root Cave and North Root Cave Complex following excavation
Two Trunks Cave	*Rhadine persephone,* ***Texella reyesi*** +	4/10 5/15	24.3	201	Low	Mapping recommended
Cactus Pit	N/A	N/A	0	0	N/A	Evaluation for reprioritization recommended
Kretschmarr Fluted Sink (Tardus Hole)	*Rhadine persephone, Texamaurops reddelli*	N/A	0	0	N/A	Evaluation for reprioritization recommended
Mold Hole	N/A	N/A	0	0	N/A	Evaluation for reprioritization recommended
Tight Pit	*Tayshaneta myopica*	N/A	0	0	N/A	Evaluation for reprioritization recommended

* Species in **bold** font were observed and/or collected during project work in FY 2025. New listed species observations and/or collections are indicated with +.

Feature Excavation

Amber Cave

Amber Cave is located on the eastern edge of the Grandview Hills Tract (Figure 1). The cave was recommended for excavation due to a lead with noticeable airflow and the potential to improve surveyor access (Figure 2). On 18 March and 27 June 2025, Zara evaluated the lead and on 11 July 2025, obstructions were removed from the climbdown between the second and third rooms to allow fill removal from the lower level. The entrance to the lead was widened to a 12-18 centimeters (cm) tall, 75 cm wide, soil-floored squeeze emitting noticeable airflow (Figure 3). On 16 July 2025, Zara further expanded the lead's entrance, providing access to a shoulder-width pit, approximately 1.8 m deep (Figure 4). Protrusions, snags, and loose rocks were excavated to reveal a kneeling room with a shallow drip pool in the floor. The airflow continued from the southwestern wall, comprised of breakdown and loose flakes of rock. On 5 August 2025, the wall was excavated to a horizontal distance of 1.0 m to reveal a drain where the wall met the floor (Figure 5). This drain is the current source of the airflow and will need to be enlarged to proceed further.

In total, 59.4 person-hours (hrs) were spent excavating 795 L of fill from Amber Cave over four days. When work was concluded, tool marks, disturbed soil, and fractured rock were obscured or removed. Cover objects (rocks and woody debris) and leaf litter were distributed to restore the prime habitat locations and entrance area. Excavation has not significantly increased the footprint of the feature; therefore, remapping the cave is not recommended at this time. Additional excavation is considered a high priority due to the presence of concentrated airflow. Incidental fauna surveys were conducted during evaluation and excavation, and a complete list of observations, including endangered *Rhadine persephone, Tartarocreagris texana, and Texamaurops reddelli*, is presented in Appendix A. Listed species collections at Amber Cave included one *Texamaurops reddelli* (Zara #15121) and one *Tartarocreagris texana* (Zara #15126)

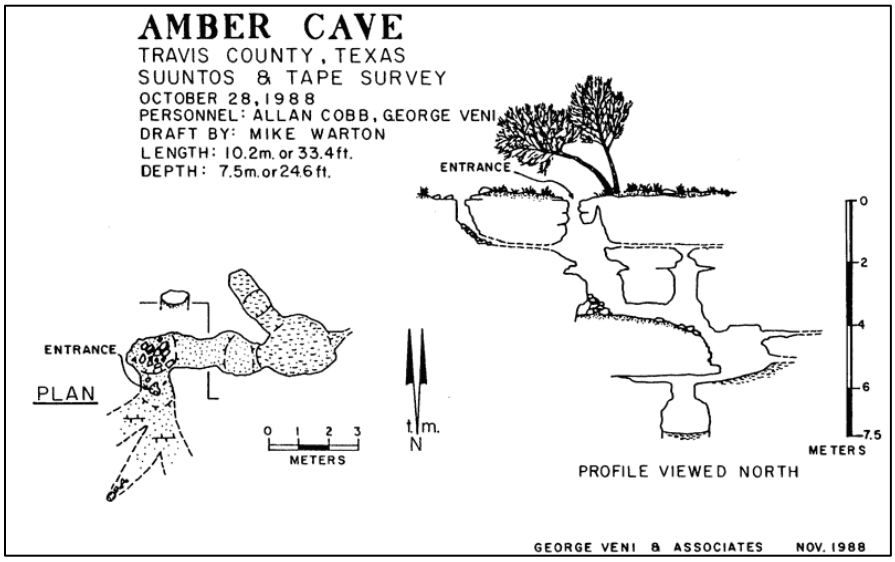


Figure 1. Map of Amber Cave.



Figure 2. View of the entrance to the Amber Cave lead prior to excavation.



Figure 3. View of the entrance to the Amber Cave lead after excavation.



Figure 4. View down the pit in Amber Cave post expansion of the lead.



Figure 5. View of the post excavation extent of the Amber Cave lead.

Encinal Cave

Encinal Cave is located in the east central area of the Cuevas Tract (Figure 6). The cave was recommended for excavation to remove unconsolidated debris obstructing access to the deepest extent of the cave and evaluate potential leads. Between 11-12 and 17-18 March, and on 10 April 2025, Zara excavated breakdown that sloughed off the pit walls, beginning at a depth of approximately 1.7 m (Figure 7) and concluded excavation at a depth of approximately 4.5 m (Figure 8). This recovered depth was near the mapped extent of the feature (Figure 6), though approximately 1000 L of fill remained to be excavated. Much of the unconsolidated fill on the walls of the pit was removed (Figure 9); however, what remains may continue to slough, requiring further excavation to retain access to the lowest extent of the feature.

In total, 72.8 person-hrs were spent excavating 3,513 L of material from Encinal Cave over five days. When work was concluded, tool marks, disturbed soil, and fractured rock were obscured or removed. Cover objects (rocks and woody debris) and leaf litter were distributed to restore the prime habitat locations and entrance area. Excavation took place within the mapped extent of this feature; therefore, no additional mapping is recommended at this time. Additional excavation is considered medium priority due to the necessity of removing unconsolidated fill material around the edges of the pit to reduce risk during entry for fauna surveys. The potential for additional passage leads cannot be fully evaluated until excavation of the obstruction in the entrance is complete. Incidental fauna surveys were conducted during evaluation and excavation, and a complete list of observations is presented in Appendix A. No listed species were observed during 2025 surveys, nor have listed species been previously documented in this feature.

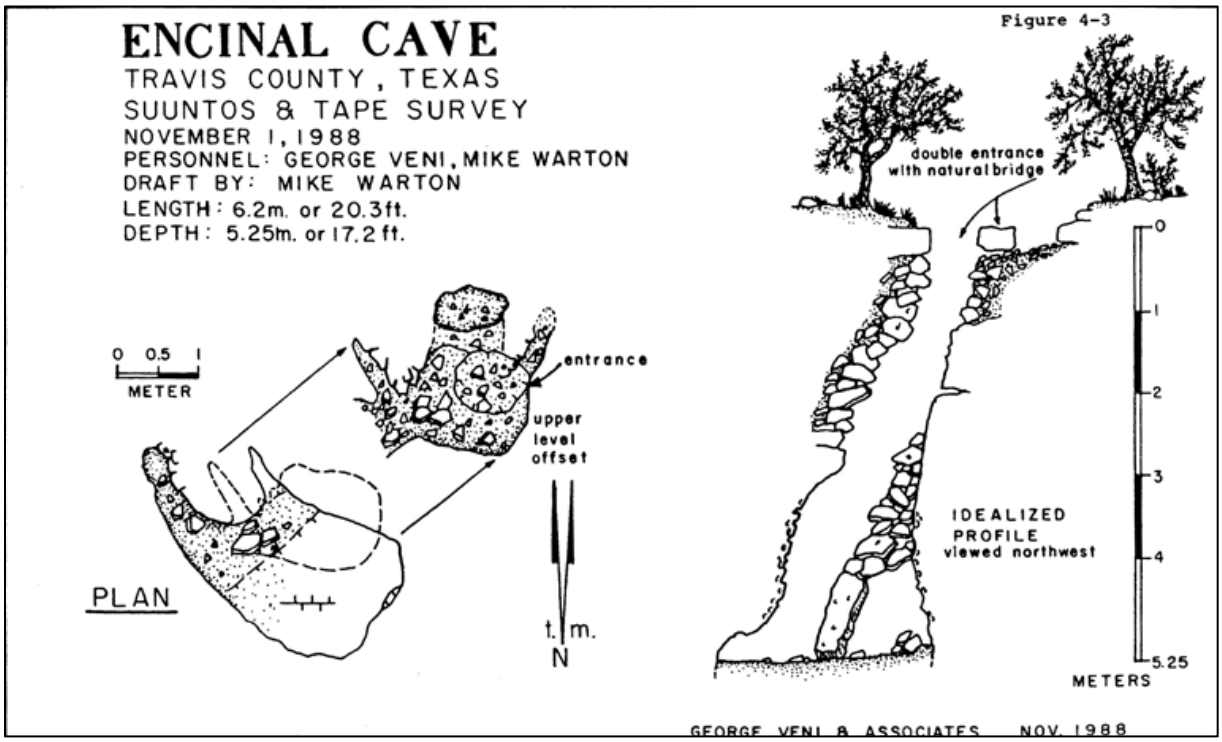


Figure 6. Map of Encinal Cave.



Figure 7. View of the fill level in Encinal Cave prior to excavation.



Figure 8. View of fill level in Encinal Cave following excavation.



Figure 9. View of fill material being broken and removed from halfway down the entrance of Encinal Cave.

Kretschmarr Cave

Kretschmarr Cave is a vertical pit located in the central east area of the Cuevas tract (Figure 10). This feature was recommended for excavation due to the presence of two leads. On 27 March, 10 April, and 19 and 27 June 2025, Zara excavated fill material and rock from the two leads. The first of the two leads was a vertical boulder constriction at the base of the entrance pit (Figure 11) which was excavated by removing boulders until the floor revealed a narrow, bedrock drain, approximately 20 cm in diameter, obstructed by fill (Figure 12). This lead may continue but was deprioritized due to the need to reduce the angle of the boulder slope to continue safely and effectively. The second lead was a narrow, horizontal passage that extended along a north-northwest trend off the main pit, emitting subtle airflow (Figure 13). This lead was primarily soil and clay filled (Figure 14). Soil fill was excavated to a length of approximately 4 m before it terminated in a small rock-walled room, approximately 80 cm tall and 120 cm wide, that contained nesting material from a small animal (Figure 15). An aperture in the ceiling of this room trended back toward the main pit and may have been the source of the airflow.

In total, 59.0 person-hrs were spent excavating 1,650 L of fill from Kretschmarr Cave over four days. When work was concluded, tool marks, disturbed soil, and fractured rock were obscured or removed. Cover objects (rocks and woody debris) and leaf litter were distributed to restore the prime habitat locations and entrance area. Removable rocks were placed in constrictions at the base of the entrance pit as air dams to restrict airflow and encourage higher humidity in adjoining passages (Figure 16). Excavation did not exceed the mapped extent of the cave; therefore, additional mapping is not recommended at this time. Incidental fauna surveys were conducted during evaluation and excavation, and a complete list of observations is presented in Appendix A. No listed species were observed in this feature during 2025 surveys.

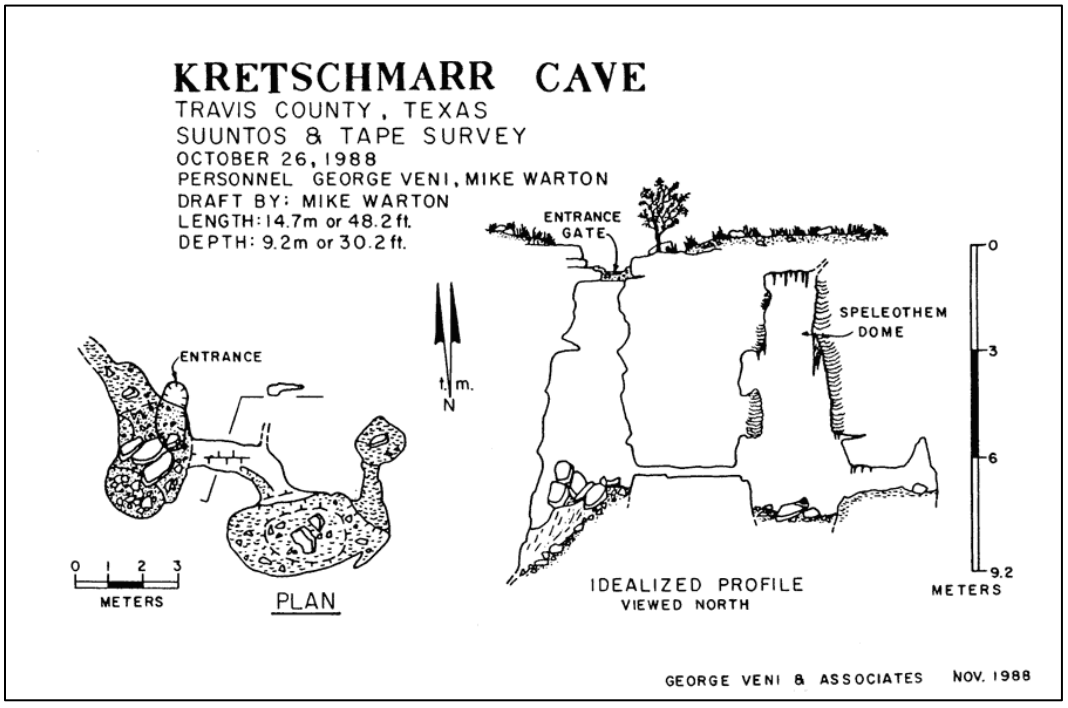


Figure 10. Map of Kretschmarr Cave.



Figure 11. View of the boulder slope lead in Kretschmarr Cave prior to excavation.



Figure 12. View of the boulder slope lead in Kretschmarr Cave following excavation.



Figure 13. View of the horizontal soil lead in in Kretschmarr Cave prior to excavation.



Figure 14. View of the horizontal soil lead in Kretschmarr Cave during excavation.



Figure 15. View of the horizontal soil lead termination in Kretschmarr Cave following excavation. Helmet for scale.



Figure 16. View of an air dam placed at the constriction to the second dome passage in Kretschmarr Cave.

Root Cave

Root Cave is located in the northeast corner of the Cuevas East Tract (Figure 17). This feature was recommended for excavation to improve ease of entry for county staff to conduct fauna surveys. On 11 March 2025, Zara excavated fill material and a 60 cm by 45 cm by 20 cm boulder (Figure 18) from the entrance area of Root Cave to allow easier access to the feature (Figure 19).

In total 4.5 person-hrs were spent excavating 95 L of material from Root Cave over one work day. Upon completion of excavation, tool marks and fractured rock were obscured, and incidental trash was removed from the feature. Cover objects (rocks and woody debris) and leaf litter were distributed to restore habitat around the entrance area. A removable rock was placed in the entrance aperture as an air dam to simulate the pre-excavation dimensions for consistency of air and nutrient flow. Because only superficial obstacles were removed and no passage continuations were discovered, updating the map is not recommended at this time. Further excavation is considered a low priority due to the absence of significant leads. Incidental fauna surveys were conducted during evaluation and excavation and a complete list of observations is presented in Appendix A. No listed species were observed in this feature during 2025 surveys.

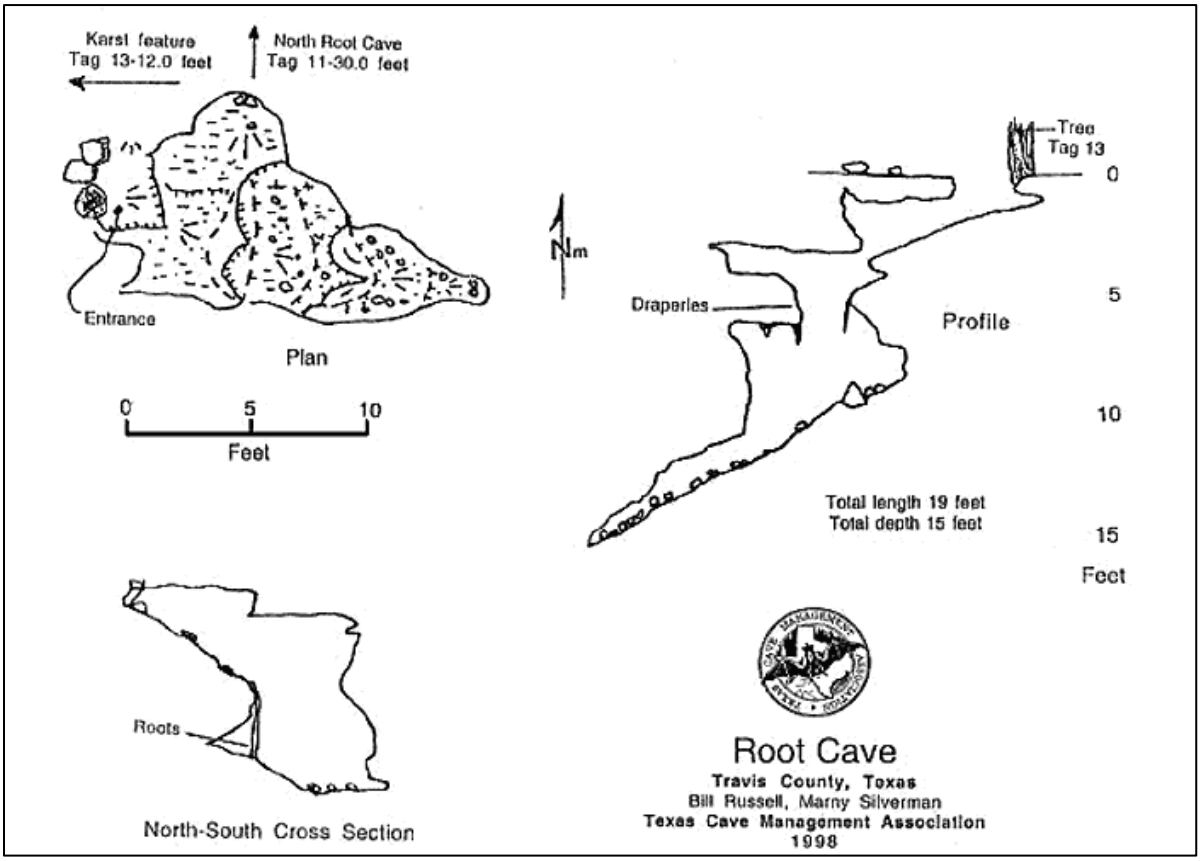


Figure 17. Map of Root Cave.



Figure 18. View of the passage in Root Cave prior to excavation.



Figure 19. View of the passage in Root Cave following excavation.

Two Trunks Cave

Two Trunks Cave is located within the southeast corner of the Cuevas tract. This feature was recommended for excavation to improve access and effectiveness of fauna surveys and evaluate the cave for potential leads to new passage. Reducing multiple bedrock protrusions (Figure 20) on the sides of the narrow entrance slope was determined to be the most effective method for increasing maneuverability. Between 10 April and 15 May 2025, Zara tapered down these protrusions (Figure 21), making access to the bottom of the slope room less constrictive and more easily passable. With additional space at the base of the slope, a floor level lead was excavated (Figure 23). Excavating that area revealed an approximately 2 m wide and 50 cm tall bedding plane room with good quality karst invertebrate habitat under the wall at the base of the cave (Figure 24).

In total 24.3 person-hrs were spent excavating 201 L of material from Two Trunks Cave over two work days. When work was concluded, tool marks, disturbed soil, and fractured rock were obscured or removed. Cover objects (rocks and woody debris) and leaf litter were distributed to restore the prime habitat locations and entrance area. Due to the lack of a map for this feature, cave mapping is recommended. Additional excavation is considered low priority due to the level of effort likely to be required to gain additional passage. Incidental fauna surveys were conducted during evaluation and excavation and a complete list of observations is presented in Appendix A. An individual *Texella reyesi*, which was not previously documented in Two Trunks Cave, was observed and collected on 15 May 2025.



Figure 20. View of a mid-level protrusion that restricted access to Two Trunks Cave following bedrock modification.



Figure 21. View of a mid-level protrusion following restoration in Two Trunks Cave.



Figure 22. View of the lead at the bottom of the slope in Two Trunks Cave following bedrock modification before restoration.



Figure 23. View of the lead at the bottom of the slope in Two Trunks Cave once access was possible.



Figure 24. View of the new room revealed by excavation in Two Trunks Cave.

Recommendations

Out of the five caves prioritized for feature excavation, continued excavation is recommended at Amber Cave and Encinal Cave. Although leads are present in Kretschmarr Cave, Root Cave, and Two Trunks Cave, the anticipated outcomes do not warrant prioritization over features with greater potential to provide access to additional surveyable habitat when considering the required level of effort. The only remaining recommendation for these features at this time is the mapping of Two Trunks Cave.

Based on evaluation of the three other features visited in FY 2025, future excavation is recommended at Kretschmarr Sink and North Root Cave due to their potential to provide access to additional surveyable habitat; however, further evaluation of Kretschmarr Double Pit is necessary before a recommendation can be made. Following evaluation and potential excavations at North Root Cave, the Root Cave and North Root Cave complex should be remapped to better depict karst development and connectivity in the area.

Additional recommendations for project work anticipated in FY 2026 include further evaluation of four caves (Cactus Pit, Kretschmarr Fluted Sink, Mold Hole, and Tight Pit) that were considered but not prioritized in FY 2025. Considering the ongoing objectives at Amber Cave, Encinal Cave, Kretschmarr Sink, and North Root Cave, the level of effort needed to accomplish project work at the four caves should be reassessed to help reprioritize objectives during the FY 2026 work period.

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Appendix A. Fauna Observations and Collections by Cave

Appendix A includes summary tables of all taxa observed during incidental fauna surveys at each feature visited during FY 2025. Also included as Appendix A is an attached excel file containing all FY 2025 incidental fauna surveys. This includes cave name, date surveyed, personnel, fauna (to the lowest identified taxonomic order), number of fauna observed, and information on collections, as applicable (number of individuals collected and accession numbers).

Amber Cave

Table A- 1. Incidental fauna observations at Amber Cave during FY 2025.

Common Name	Lowest Taxonomic Identification
Snails and slugs	Gastropoda
Troglophilic coil snail	*Helicodiscus* sp.
Pillbug isopods	Armadillidiidae
Texas Cave Scorpion	*Pseudouroctonus reddelli*
Spiders	Araneae
Spider	Araneoidea
Meshweaver spider	*Cicurina varians*
Cave meshweaver spider	*Cicurina* sp. (eyeless)
Scaffold web spider	*Eidmannella* sp.
Jumping Spider	Salticidae
Tangleweb Spider	*Cryptachaea* sp.
Microwhip scorpion	Palpigradi (undetermined)
Pseudoscorpions	Pseudoscorpiones
Tooth Cave pseudoscorpion	*Tartarocreagris texana* (Collected: Zara #15126)
Harvestman	*Leiobunum townsendi*
Typical Mite	Acariformes
Mesostigmatid mites	Mesostigmata
Armored mites	Oribatida
Erythraeid mite	*Leptus* sp.
Hard ticks	Ixodidae
Bark centipede	*Scolopendra* sp.
Soil centipedes	Geophilomorpha
Stone centipedes	Lithobiomorpha
House centipedes	Scutigeromorpha
Cave Millipede	*Cambala* sp.
Parajulid millipedes	Parajulidae
Hothouse millipede	*Oxidus gracilis*
Crested millipede	*Abacion* sp.
Cave millipede	*Speodesmus* sp.
Springtails	Collembola
Slender springtail	Entomobryomorpha
Springtail	*Pseudosinella* sp.
Bristletail Dipluran	Campodeidae
Cave cricket nymph	*Ceuthophilus* sp. (nymphs)
Cave cricket	*Ceuthophilus cunicularis*
Cave cricket	*Ceuthophilus secretus*
Fungus moth	Tineidae
Leafhoppers	Cicadellidae
Beetle larva	Coleoptera (larvae)
Slender ground beetle	*Rhadine s. mitchelli* (Collected: Zara #15129)
Kretschmarr Cave Mold Beetle	*Texamaurops reddelli* (Collected: Zara #15121)
Ground beetles	Zuphiinae (Collected: Zara #15128)

Common Name	Lowest Taxonomic Identification
Mosquito	Culicidae
Gnats and flies	Diptera
Ants	Formicidae
Ants, bees, and wasps	Hymenoptera
Moths and butterflies	Lepidoptera
Kissing bugs and assassin bugs	Reduviidae
Tooth Cave ground beetle	*Rhadine persephone*
Red imported fire ants	*Solenopsis invicta*
Rove beetles	Staphylinidae
Fungus gnats	Mycetophilidae
Cliff chirping frog	*Eleutherodactylus marnockii*

Encinal Cave

Table A- 2. Incidental fauna observations at Encinal Cave during FY 2025.

Common Name	**Lowest Taxonomic Identification**
Earthworms	Haplotaxida
Pillbug isopods	Armadillidiidae
Spiders	Araneae
Meshweaver spider	*Cicurina varians*
Cave meshweaver spider	*Cicurina* sp. (eyeless)
Microwhip scorpions	Palpigradi (undetermined)
Mesostigmatid mites	Mesostigmata
Stone centipedes	Lithobiomorpha
Cave millipede	*Cambala* sp.
Parajulid millipedes	Parajulidae
Pseudocentipedes	Symphyla
Slender springtails	Entomobryomorpha
Springtail	*Pseudosinella* sp.
Bristletail Diplurans	Campodeidae
Cave cricket	*Ceuthophilus cunicularis*
Leafhoppers	Cicadellidae
Rove beetles	Staphylinidae
Western slimy salamander	*Plethodon albagula*
Cliff chirping frog	*Eleutherodactylus marnockii*
Texas alligator lizard	*Gerrhonotus infernalis*

Kretschmarr Cave

Table A- 3. Incidental fauna observations at Kretschmarr Cave during FY 2025.

Common Name	Lowest Taxonomic Identification
Snails and slugs	Gastropoda
Troglophilic coil snail	*Helicodiscus* sp.
Pillbug isopods	Armadillidiidae
Texas cave scorpion	*Pseudouroctonus reddelli*
Meshweaver spider	Araneae
Cave meshweaver spider	Araneoidea
Meshweaver spider	*Cicurina* sp. (eyeless)
Cave meshweaver spider	*Cicurina varians*
Wolf spiders	Lycosidae
Scaffold web spider	*Eidmannella* sp.
Tangleweb Spider	*Cryptachaea* sp.
Harvestman	*Leiobunum townsendi*
Mesostigmatid mites	Mesostigmata
Armored mites	Oribatida
Cave millipede	*Cambala* sp.
Cave millipede	*Speodesmus* sp.
Pauropods	Pauropoda
Slender springtails	Entomobryomorpha
Slender springtail	Pseudosinella sp.
Bristletail Diplurans	Campodeidae
Cave crickets	*Ceuthophilus* spp. (nymphs)
Cave cricket	*Ceuthophilus cunicularis*
Cave cricket	*Ceuthophilus secretus*
Moths and butterflies	Lepidoptera
Fungus moths	Tineidae
Leafhoppers	Cicadellidae
Red imported fire ant	*Solenopsis invicta*
Beetles	Coleoptera
Ground beetle	*Rhadine* sp. (eye condition unconfirmed)
Rove beetles	Staphylinidae
Gnats and flies	Diptera
Fungus gnats	Mycetophilidae (adult)
Mosquitoes	Culicidae
Cliff chirping frog	*Eleutherodactylus marnockii*
Gulf Coast toad	*Incilius nebulifer*

Kretschmarr Double Pit

Table A- 4. Incidental fauna observations at Kretschmarr Double Pit during FY 2025.

Common Name	Lowest Taxonomic Identification
Pillbug isopods	Armadillidiidae
Spiders	Araneae
Spider	Araneoidea
Cave meshweaver spider	*Cicurina* sp. (eyeless)
Tangleweb Spider	*Cryptachaea* sp.
Troglophilic harvestman	*Texella grubbsi*
Armored mites	Oribatida
Cave millipede	*Cambala* sp.
Slender springtails	Entomobryomorpha
Slender springtail	*Pseudosinella* sp.
Cave cricket	*Ceuthophilus cunicularis*
Cave cricket	*Ceuthophilus secretus*
Cave crickets	*Ceuthophilus* spp. (nymphs)
Red imported fire ants	*Solenopsis invicta*
Ground beetles	Trechinae (Collected: Zara #15127)
Rove beetles	Staphylinidae
Cliff chirping frog	*Eleutherodactylus marnockii*

Kretschmarr Sink

Table A- 5. Incidental fauna observations at Kretschmarr Sink during FY 2025.

Common Name	Lowest Taxonomic Identification
Snails and slugs	Gastropoda
Troglophilic coil snail	*Helicodiscus* sp.
Pillbug isopods	Armadillidiidae
Texas cave scorpion	*Pseudouroctonus reddelli*
Spiders	Araneae
Spiders	Araneoidea
Cave meshweaver spider	*Cicurina* sp. (eyeless)
Meshweaver spider	*Cicurina varians*
Wolf spiders	Lycosidae
Scaffold web spider	*Eidmannella* sp.
Tangleweb Spider	*Cryptachaea* sp.
Harvestman	*Leiobunum townsendi*
Mesostigmatid mites	Mesostigmata
Armored mites	Oribatida
Cave millipede	*Cambala* sp.
Cave millipede	*Speodesmus* sp.
Pauropods	Pauropoda
Slender springtails	Entomobryomorpha
Slender springtail	*Pseudosinella* sp.
Bristletail Diplurans	Campodeidae
Cave cricket	*Ceuthophilus cunicularis*
Cave cricket	*Ceuthophilus secretus*
Cave crickets	*Ceuthophilus* spp. (nymphs)
Moths and butterflies	Lepidoptera

North Root Cave

Table A- 6. Incidental fauna observations at North Root Cave during FY 2025.

Common Name	Lowest Taxonomic Identification
Earthworms	Haplotaxida
Pillbug isopods	Armadillidiidae
Meshweaver spider	Cicurina varians
Mites	Acariformes
Stone centipedes	Lithobiomorpha
Parajulid millipedes	Parajulidae
Slender springtail	Pseudosinella sp.
Parajulid millipedes	Ceuthophilus spp. (nymphs)
Roaches	Blattodea

Root Cave

Table A- 7. Incidental fauna observations at Root Cave during FY 2025.

Common Name	Lowest Taxonomic Identification
Earthworms	Haplotaxida
Troglophilic coil snail	*Helicodiscus* sp.
Pillbug isopods	Armadillidiidae
Meshweaver spider	*Cicurina varians*
Mites	Acariformes
Stone centipedes	Lithobiomorpha
Parajulid millipedes	Parajulidae
Slender springtail	*Pseudosinella* sp.
Roaches	Blattodea
Cave cricket	*Ceuthophilus* sp. (nymphs)
Western slimy salamander	*Plethodon albagula*
Tricolored bat	*Perimyotis subflavus*

Two Trunks Cave

Table A- 8. Incidental fauna observations at Two Trunks Cave during FY 2025.

Common Name	Lowest Taxonomic Identification
Troglophilic coil snail	Helicodiscus sp.
Pillbug isopods	Armadillidiidae
Spiders	Araneoidea
Cave meshweaver spider	*Cicurina* sp. (eyeless)
Meshweaver spider	*Cicurina varians*
Bone Cave harvestman	*Texella reyesi* (Collected: Zara #15111)
Harvestman	*Leiobunum townsendi*
Mites	Mesostigmata
Hard ticks	Ixodidae
Parajulid millipedes	Parajulidae
Cave millipede	*Cambala* sp.
Planthoppers	Fulgoromorpha
Cave cricket	*Ceuthophilus* sp. *(nymphs)*
Cave cricket	*Ceuthophilus secretus*
Cave cricket	Entomobryomorpha
Elongate springtail	*Pseudosinella* sp.
Bristletail Diplurans	Campodeidae
Ants	Formicidae
Moths and butterflies	Lepidoptera
Beetles	Coleoptera
Glowworm beetles	Phengodidae (larva)
Rove beetles	Staphylinidae
Gnats and flies	Diptera
Fungus gnats	Mycetophilidae (larvae)
Western Slimy Salamander	*Plethodon albagula*
Cliff chirping frog	*Eleutherodactylus marnockii*
Broad-banded copperhead	*Agkistrodon laticinctus*

Fauna Collections

Table A- 9. Summary of fauna collections between March and August of 2025.

Cave	Taxonomic Identification	Specimen Code	Date
Amber Cave	*Tartarocreagris texana*	Zara #15126	16 July 2025
Amber Cave	*Rhadine s. mitchelli*	Zara #15129	5 August 2025
Amber Cave	*Texamaurops reddelli*	Zara #15121	11 July 2025
Amber Cave	Zuphiinae	Zara #15128	5 August 2025
Kretschmarr Sink	Trechinae	Zara #15127	27 June 2025
Two Trunks Cave	*Texella reyesi*	Zara #15111	18 March 2025

Preserve Name	Feature Name	Survey Date	Personnel	Survey Type	Zone	Start Time	Search Effort (h:mm)	Temperature (°C)	Humidity (%)	CO2 (ppm)	Taxa	Number Observed	Habitat Found	Number Collected	Zara Accession Number	Comments
Cuevas Tract	Encinal Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	12:30	3:00				Staphylinidae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	12:30	3:00				Lithobiomorpha					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	12:30	3:00				Armadillidiidae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	12:30	3:00				Cicurina varians					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	12:30	3:00				Plethodon albagula					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	12:30	3:00				Pseudosinella sp.					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	12:30	3:00				Araneae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	12:30	3:00				Paraljulidae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	12:30	3:00				Haplotaxida					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	12:30	3:00				Campodeidae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	12:30	3:00				Eleutherodactylus marnockii					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	12:30	3:00				Entomobryomorpha					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas East Tract	North Root Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	10:30	1:10				Texella reyesi	1	Wall			Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas East Tract	North Root Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	10:30	1:10				Pectinoptilo sublinosa	1	Ceiling			Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas East Tract	North Root Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	10:30	1:10				Plethodon albagula					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas East Tract	North Root Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	10:30	1:10				Paraljulidae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas East Tract	North Root Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	10:30	1:10				Armadillidiidae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas East Tract	North Root Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	10:30	1:10				Acariformes					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas East Tract	North Root Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	10:30	1:10				Helicodiscus sp.					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas East Tract	North Root Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	10:30	1:10				Haplotaxida					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas East Tract	North Root Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	10:30	1:10				Oribatida					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas East Tract	North Root Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	10:30	1:10				Hemiptera					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas East Tract	North Root Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	10:30	1:10				Trichoniscidae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas East Tract	Root Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	9:30	1:00				Lithobiomorpha					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas East Tract	Root Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	9:30	1:00				Paraljulidae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas East Tract	Root Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	9:30	1:00				Pseudosinella sp.					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas East Tract	Root Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	9:30	1:00				Cicurina varians					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas East Tract	Root Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	9:30	1:00				Armadillidiidae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas East Tract	Root Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	9:30	1:00				Haplotaxida					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas East Tract	Root Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	9:30	1:00				Acariformes					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas East Tract	Root Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	9:30	1:00				Cavethophilus spp. (nymphs)					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas East Tract	Root Cave	3/10/2025	Ethernine, KPosso, LPusilka	Incidental Survey	Unspecified	9:30	1:00				Blattodea					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	3/1/2025	EtaCorvaisier, Ethernine, LPusilka	Incidental Survey	Unspecified	8:45	3:45				Palpigradi (undetermined)					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	3/1/2025	EtaCorvaisier, Ethernine, LPusilka	Incidental Survey	Unspecified	8:45	3:45				Campodeidae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	3/1/2025	EtaCorvaisier, Ethernine, LPusilka	Incidental Survey	Unspecified	8:45	3:45				Cicurina sp. (eyeless)					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	3/1/2025	EtaCorvaisier, Ethernine, LPusilka	Incidental Survey	Unspecified	8:45	3:45				Symphyla					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	3/1/2025	EtaCorvaisier, Ethernine, LPusilka	Incidental Survey	Unspecified	8:45	3:45				Cavethophilus cunicularis					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	3/1/2025	EtaCorvaisier, Ethernine, LPusilka	Incidental Survey	Unspecified	8:45	3:45				Eleutherodactylus marnockii					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	3/1/2025	EtaCorvaisier, Ethernine, LPusilka	Incidental Survey	Unspecified	8:45	3:45				Diarthrotrilus infernalis	1	wall			Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	3/17/2025	Ethernine, LPusilka, Mtnnes	Incidental Survey	Unspecified	9:00	6:50				Cicadellidae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	3/17/2025	Ethernine, LPusilka, Mtnnes	Incidental Survey	Unspecified	9:00	6:50				Pseudosinella sp.					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	3/17/2025	Ethernine, LPusilka, Mtnnes	Incidental Survey	Unspecified	9:00	6:50				Cicurina sp. (eyeless)					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	3/18/2025	Ethernine	Incidental Survey	Unspecified	16:35	0:40				Cicadellidae					Recon for feature excavation with incidental biologic survey. List of fauna observed during recon but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	3/18/2025	Ethernine	Incidental Survey	Unspecified	16:35	0:40				Cambala sp.					Recon for feature excavation with incidental biologic survey. List of fauna observed during recon but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	3/18/2025	Ethernine	Incidental Survey	Unspecified	16:35	0:40				Pseudosinella sp.					Recon for feature excavation with incidental biologic survey. List of fauna observed during recon but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	3/18/2025	Ethernine	Incidental Survey	Unspecified	16:35	0:40				Mesostigmata					Recon for feature excavation with incidental biologic survey. List of fauna observed during recon but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	3/18/2025	Ethernine	Incidental Survey	Unspecified	16:35	0:40				Oribatida					Recon for feature excavation with incidental biologic survey. List of fauna observed during recon but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	3/18/2025	Ethernine	Incidental Survey	Unspecified	16:35	0:40				Paraljulidae					Recon for feature excavation with incidental biologic survey. List of fauna observed during recon but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	3/18/2025	Ethernine	Incidental Survey	Unspecified	16:35	0:40				Isodidae					Recon for feature excavation with incidental biologic survey. List of fauna observed during recon but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	3/18/2025	Ethernine, LColuccI	Incidental Survey	Unspecified	8:50	7:25				Cicurina varians					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	3/18/2025	Ethernine, LColuccI	Incidental Survey	Unspecified	8:50	7:25				Plethodon albagula					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Kretschmarr Cave	3/18/2025	Ethernine, LColuccI	Incidental Survey	Unspecified	9:00	2:30				Cambala sp.					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed). Day 4.
Cuevas Tract	Kretschmarr Cave	3/18/2025	Ethernine, LColuccI	Incidental Survey	Unspecified	9:00	2:30				Colesoptera					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed). Day 4.
Cuevas Tract	Kretschmarr Cave	3/18/2025	Ethernine, LColuccI	Incidental Survey	Unspecified	9:00	2:30				Diptera					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed). Day 4.
Cuevas Tract	Kretschmarr Cave	3/18/2025	Ethernine, LColuccI	Incidental Survey	Unspecified	9:00	2:30				Lepidoptera					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed). Day 4.
Cuevas Tract	Kretschmarr Cave	3/18/2025	Ethernine, LColuccI	Incidental Survey	Unspecified	9:00	2:30				Rhadine sp. (eye condition unconfirmed)					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed). Day 4.
Cuevas Tract	Kretschmarr Cave	3/18/2025	Ethernine, LColuccI	Incidental Survey	Unspecified	9:00	2:30				Cicadellidae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed). Day 4.
Cuevas Tract	Kretschmarr Cave	3/18/2025	Ethernine, LColuccI	Incidental Survey	Unspecified	9:00	2:30				Cavethophilus secretus					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed). Day 4.
Cuevas Tract	Kretschmarr Cave	3/18/2025	Ethernine, LColuccI	Incidental Survey	Unspecified	9:00	2:30				Leiobunum townsendi					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed). Day 4.
Cuevas Tract	Two Trunks Cave	3/18/2025	Ethernine, LColuccI	Incidental Survey	Unspecified	16:00	0:15				Texella reyesi	1	Under Rock	1	15111	While assessing pending excavation, we observed, photo-documented and collected a Texella reyesi, one of the endangered species that was not previously known from the cave.
Cuevas Tract	Kretschmarr Cave	3/27/2025	EtaCorvaisier, Ethernine, Mtnnes	Incidental Survey	Unspecified	9:20	6:10				Leiobunum townsendi					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed). Day 5.
Cuevas Tract	Kretschmarr Cave	3/27/2025	EtaCorvaisier, Ethernine, Mtnnes	Incidental Survey	Unspecified	9:20	6:10				Cambala sp.					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed). Day 5.
Cuevas Tract	Kretschmarr Cave	3/27/2025	EtaCorvaisier, Ethernine, Mtnnes	Incidental Survey	Unspecified	9:20	6:10				Araneae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed). Day 5.
Cuevas Tract	Kretschmarr Cave	3/27/2025	EtaCorvaisier, Ethernine, Mtnnes	Incidental Survey	Unspecified	9:20	6:10				Culicidae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed). Day 5.
Cuevas Tract	Kretschmarr Cave	3/27/2025	EtaCorvaisier, Ethernine, Mtnnes	Incidental Survey	Unspecified	9:20	6:10				Cavethophilus cunicularis					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed). Day 5.
Cuevas Tract	Kretschmarr Cave	3/27/2025	EtaCorvaisier, Ethernine, Mtnnes	Incidental Survey	Unspecified	9:20	6:10				Cavethophilus secretus					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed). Day 5.
Cuevas Tract	Kretschmarr Cave	3/27/2025	EtaCorvaisier, Ethernine, Mtnnes	Incidental Survey	Unspecified	9:20	6:10				Cavethophilus spp. (nymphs)					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed). Day 5.
Cuevas Tract	Kretschmarr Cave	3/27/2025	EtaCorvaisier, Ethernine, Mtnnes	Incidental Survey	Unspecified	9:20	6:10				Armadillidiidae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed). Day 5.
Cuevas Tract	Kretschmarr Cave	3/27/2025	EtaCorvaisier, Ethernine, Mtnnes	Incidental Survey	Unspecified	9:20	6:10				Colesoptera					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed). Day 5.
Cuevas Tract	Kretschmarr Cave	3/27/2025	EtaCorvaisier, Ethernine, Mtnnes	Incidental Survey	Unspecified	9:20	6:10				Mycetosphilidae (adult)					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed). Day 5.
Cuevas Tract	Kretschmarr Cave	3/27/2025	EtaCorvaisier, Ethernine, Mtnnes	Incidental Survey	Unspecified	9:20	6:10				Campodeidae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed). Day 5.
Cuevas Tract	Kretschmarr Cave	3/27/2025	EtaCorvaisier, Ethernine, Mtnnes	Incidental Survey	Unspecified	9:20	6:10				Liposcelae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed). Day 5.
Cuevas Tract	Kretschmarr Cave	3/27/2025	EtaCorvaisier, Ethernine, Mtnnes	Incidental Survey	Unspecified	9:20	6:10				Mesostigmata					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed). Day 5.
Cuevas Tract	Kretschmarr Cave	3/27/2025	EtaCorvaisier, Ethernine, Mtnnes	Incidental Survey	Unspecified	9:20	6:10				Stylus nebulifer					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed). Day 5.
Cuevas Tract	Kretschmarr Cave	3/27/2025	EtaCorvaisier, Ethernine, Mtnnes	Incidental Survey	Unspecified	9:20	6:10				Eleutherodactylus marnockii					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed). Day 5.
Cuevas Tract	Kretschmarr Cave	3/27/2025	EtaCorvaisier, Ethernine, Mtnnes	Incidental Survey	Unspecified	9:20	6:10				Entomobryomorpha					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed). Day 5.
Cuevas Tract	Encinal Cave	4/10/2025	EtaCorvaisier, Ethernine, KPosso	Incidental Survey	Unspecified	14:00	0:40				Cicurina sp. (eyeless)					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	4/10/2025	EtaCorvaisier, Ethernine, KPosso	Incidental Survey	Unspecified	14:00	0:40				Cicurina varians					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	4/10/2025	EtaCorvaisier, Ethernine, KPosso	Incidental Survey	Unspecified	14:00	0:40				Mesostigmata					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	4/10/2025	EtaCorvaisier, Ethernine, KPosso	Incidental Survey	Unspecified	14:00	0:40				Campodeidae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	4/10/2025	EtaCorvaisier, Ethernine, KPosso	Incidental Survey	Unspecified	14:00	0:40				Cambala sp.					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Encinal Cave	4/10/2025	EtaCorvaisier, Ethernine, KPosso	Incidental Survey	Unspecified	14:00	0:40				Pseudosinella sp.					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	4/10/2025	EtaCorvaisier, Ethernine, KPosso	Incidental Survey	Unspecified	14:50	0:55				Mesostigmata					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	4/10/2025	EtaCorvaisier, Ethernine, KPosso	Incidental Survey	Unspecified	14:50	0:55				Pseudosinella sp.					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	4/10/2025	EtaCorvaisier, Ethernine, KPosso	Incidental Survey	Unspecified	14:50	0:55				Cambala sp.					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	4/10/2025	EtaCorvaisier, Ethernine, KPosso	Incidental Survey	Unspecified	14:50	0:55				Campodeidae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	4/10/2025	EtaCorvaisier, Ethernine, KPosso	Incidental Survey	Unspecified	14:50	0:55				Leiobunum townsendi					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	4/10/2025	EtaCorvaisier, Ethernine, KPosso	Incidental Survey	Unspecified	14:50	0:55				Araneoidea					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	4/10/2025	EtaCorvaisier, Ethernine, KPosso	Incidental Survey	Unspecified	14:50	0:55				Paraljulidae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	4/10/2025	EtaCorvaisier, Ethernine, KPosso	Incidental Survey	Unspecified	14:50	0:55				Formicidae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	4/10/2025	EtaCorvaisier, Ethernine, KPosso	Incidental Survey	Unspecified	14:50	0:55				Cicurina sp. (eyeless)					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	5/15/2025	Ethernine, KPosso, LColuccI	Incidental Survey	Unspecified	9:00	6:45				Paraljulidae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	5/15/2025	Ethernine, KPosso, LColuccI	Incidental Survey	Unspecified	9:00	6:45				Cicurina varians					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	5/15/2025	Ethernine, KPosso, LColuccI	Incidental Survey	Unspecified	9:00	6:45				Staphylinidae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	5/15/2025	Ethernine, KPosso, LColuccI	Incidental Survey	Unspecified	9:00	6:45				Lepidoptera					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	5/15/2025	Ethernine, KPosso, LColuccI	Incidental Survey	Unspecified	9:00	6:45				Colesoptera					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	5/15/2025	Ethernine, KPosso, LColuccI	Incidental Survey	Unspecified	9:00	6:45				Eleutherodactylus marnockii					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	5/15/2025	Ethernine, KPosso, LColuccI	Incidental Survey	Unspecified	9:00	6:45				Cavethophilus secretus					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	5/15/2025	Ethernine, KPosso, LColuccI	Incidental Survey	Unspecified	9:00	6:45				Cambala sp.					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	5/15/2025	Ethernine, KPosso, LColuccI	Incidental Survey	Unspecified	9:00	6:45				Plethodon albagula					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	5/15/2025	Ethernine, KPosso, LColuccI	Incidental Survey	Unspecified	9:00	6:45				Mesostigmata (larvae)					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	5/15/2025	Ethernine, KPosso, LColuccI	Incidental Survey	Unspecified	9:00	6:45				Isodidae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	5/15/2025	Ethernine, KPosso, LColuccI	Incidental Survey	Unspecified	9:00	6:45				Diptera					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	5/15/2025	Ethernine, KPosso, LColuccI	Incidental Survey	Unspecified	9:00	6:45				Formicidae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	5/15/2025	Ethernine, KPosso, LColuccI	Incidental Survey	Unspecified	9:00	6:45				Agelistrodon contortrix latissimus					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	5/15/2025	Ethernine, KPosso, LColuccI	Incidental Survey	Unspecified	9:00	6:45				Pseudosinella sp.					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	5/15/2025	Ethernine, KPosso, LColuccI	Incidental Survey	Unspecified	9:00	6:45				Cicurina sp. (eyeless)					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	5/15/2025	Ethernine, KPosso, LColuccI	Incidental Survey	Unspecified	9:00	6:45				Armadillidiidae					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	5/15/2025	Ethernine, KPosso, LColuccI	Incidental Survey	Unspecified	9:00	6:45				Leiobunum townsendi					Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Cuevas Tract	Two Trunks Cave	5/15/2025	Ethernine, KPosso, LColuccI	Incidental Survey	Unspecified	9:00	6:45				Entomobryomorpha					Feature excavation with incidental biologic survey

Grandview Hills Tract	Amber Cave	7/11/2025	ElaCorvaisier, ETherrine, MJones	Incidental Survey	Unspecified	8:45	5:40	24.00	100.00	12000	Gastropoda						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/11/2025	ElaCorvaisier, ETherrine, MJones	Incidental Survey	Unspecified	8:45	5:40	24.00	100.00	12000	Cisurina sp. (webless)						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/11/2025	ElaCorvaisier, ETherrine, MJones	Incidental Survey	Unspecified	8:45	5:40	24.00	100.00	12000	Pseudosinella sp.						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/11/2025	ElaCorvaisier, ETherrine, MJones	Incidental Survey	Unspecified	8:45	5:40	24.00	100.00	12000	Leiobunum townsendi						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/11/2025	ElaCorvaisier, ETherrine, MJones	Incidental Survey	Unspecified	8:45	5:40	24.00	100.00	12000	Speodesmus sp.						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/11/2025	ElaCorvaisier, ETherrine, MJones	Incidental Survey	Unspecified	8:45	5:40	24.00	100.00	12000	Cambala sp.						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/11/2025	ElaCorvaisier, ETherrine, MJones	Incidental Survey	Unspecified	8:45	5:40	24.00	100.00	12000	Ceuthophilus cunicularis						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/11/2025	ElaCorvaisier, ETherrine, MJones	Incidental Survey	Unspecified	8:45	5:40	24.00	100.00	12000	Staphylinidae						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/11/2025	ElaCorvaisier, ETherrine, MJones	Incidental Survey	Unspecified	8:45	5:40	24.00	100.00	12000	Ceuthophilus spp. (nymphs)						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/16/2025	ETherrine, LColuccI	Incidental Survey	Unspecified	8:35	7:10	23.00	70.00	11000	Tantanozeagris texana	1	Wall	1	15126		Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/16/2025	ETherrine, LColuccI	Incidental Survey	Unspecified	8:35	7:10	23.00	70.00	11000	Araneoidea						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/16/2025	ETherrine, LColuccI	Incidental Survey	Unspecified	8:35	7:10	23.00	70.00	11000	Staphylinidae						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/16/2025	ETherrine, LColuccI	Incidental Survey	Unspecified	8:35	7:10	23.00	70.00	11000	Culicidae						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/16/2025	ETherrine, LColuccI	Incidental Survey	Unspecified	8:35	7:10	23.00	70.00	11000	Formicidae						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/16/2025	ETherrine, LColuccI	Incidental Survey	Unspecified	8:35	7:10	23.00	70.00	11000	Reduviidae						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/16/2025	ETherrine, LColuccI	Incidental Survey	Unspecified	8:35	7:10	23.00	70.00	11000	Scolopendra sp.						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/16/2025	ETherrine, LColuccI	Incidental Survey	Unspecified	8:35	7:10	23.00	70.00	11000	Nelicodiscus sp.						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/16/2025	ETherrine, LColuccI	Incidental Survey	Unspecified	8:35	7:10	23.00	70.00	11000	Rhadine pamaphone	1	Wall				Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/16/2025	ETherrine, LColuccI	Incidental Survey	Unspecified	8:35	7:10	23.00	70.00	11000	Pseudosinella sp.						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/16/2025	ETherrine, LColuccI	Incidental Survey	Unspecified	8:35	7:10	23.00	70.00	11000	Diadius gracilis						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/16/2025	ETherrine, LColuccI	Incidental Survey	Unspecified	8:35	7:10	23.00	70.00	11000	Eleutherodactylus marnockii						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/16/2025	ETherrine, LColuccI	Incidental Survey	Unspecified	8:35	7:10	23.00	70.00	11000	Leiobunum townsendi						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/16/2025	ETherrine, LColuccI	Incidental Survey	Unspecified	8:35	7:10	23.00	70.00	11000	Ceuthophilus secretus						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/16/2025	ETherrine, LColuccI	Incidental Survey	Unspecified	8:35	7:10	23.00	70.00	11000	Eidmanniella sp.						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/16/2025	ETherrine, LColuccI	Incidental Survey	Unspecified	8:35	7:10	23.00	70.00	11000	Ceuthophilus cunicularis						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/16/2025	ETherrine, LColuccI	Incidental Survey	Unspecified	8:35	7:10	23.00	70.00	11000	Pabrierakli (underterminved)						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/16/2025	ETherrine, LColuccI	Incidental Survey	Unspecified	8:35	7:10	23.00	70.00	11000	Cambala sp.						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/16/2025	ETherrine, LColuccI	Incidental Survey	Unspecified	8:35	7:10	23.00	70.00	11000	Speodesmus sp.						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/16/2025	ETherrine, LColuccI	Incidental Survey	Unspecified	8:35	7:10	23.00	70.00	11000	Pseudosinella sp.						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/16/2025	ETherrine, LColuccI	Incidental Survey	Unspecified	8:35	7:10	23.00	70.00	11000	Cisurina sp. (webless)						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/16/2025	ETherrine, LColuccI	Incidental Survey	Unspecified	8:35	7:10	23.00	70.00	11000	Leptotyphlini						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	7/16/2025	ETherrine, LColuccI	Incidental Survey	Unspecified	8:35	7:10	23.00	70.00	11000	Ceuthophilus spp. (nymphs)						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Cisurina varians						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Nelicodiscus sp.						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Cisurina sp. (webless)						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Rhadine s. mitchelli	1	Wall	1	15129		Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Collembola						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Pseudosinella sp.						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Ceuthophilus cunicularis						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Ceuthophilus secretus						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Salticidae						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Camptodetidae						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Diadius gracilis						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Texamaurops reddelli	5	Under Rock				Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Staphylinidae						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Tineidae						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Mycetophilidae (adult)						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Mycetophilidae (larvae)						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Culicidae						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Ceuthophilus sco. (nymphs)						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Leiobunum townsendi						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Araneae						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Araneoidea (Eidmanniella/Asyneta?)						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Cryptachaea sp.						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Pseudoscorpiones						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Pabgiragdi (underterminved)						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Pseudouroctonus reddelli						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Cambala sp.						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Eidmanniella sp.						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Abacion sp.						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Mesostigmata						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Scutigeromorpha						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Geophilomorpha						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Lithobiomorpha						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Speodesmus sp.						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Armadillidiidae						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Zaphinae			1	15128		Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
Grandview Hills Tract	Amber Cave	8/5/2025	ETherrine, KPosso, LPushka	Incidental Survey	Unspecified	9:00	5:00	83.00	76.00		Eleutherodactylus marnockii						Feature excavation with incidental biologic survey. List of fauna observed during excavation in cave and from spoils are included but counts are only provided for listed species (if observed).
TSNL Tract	Kretschmarr Double Pit	8/5/2025	ETherrine	Incidental Survey	Unspecified	14:40	1:40				Araneae						Recon for feature excavation with incidental biologic survey. List of fauna observed during recon included but counts are only provided for listed species (if observed).
TSNL Tract	Kretschmarr Double Pit	8/5/2025	ETherrine	Incidental Survey	Unspecified	14:40	1:40				Pseudosinella sp.						Recon for feature excavation with incidental biologic survey. List of fauna observed during recon included but counts are only provided for listed species (if observed).
TSNL Tract	Kretschmarr Double Pit	8/5/2025	ETherrine	Incidental Survey	Unspecified	14:40	1:40				Trechinae			1	15127		Recon for feature excavation with incidental biologic survey. List of fauna observed during recon included but counts are only provided for listed species (if observed).
TSNL Tract	Kretschmarr Double Pit	8/5/2025	ETherrine	Incidental Survey	Unspecified	14:40	1:40				Solenopsis invicta						Recon for feature excavation with incidental biologic survey. List of fauna observed during recon included but counts are only provided for listed species (if observed).
TSNL Tract	Kretschmarr Double Pit	8/5/2025	ETherrine	Incidental Survey	Unspecified	14:40	1:40				Ceuthophilus spp. (nymphs)						Recon for feature excavation with incidental biologic survey. List of fauna observed during recon included but counts are only provided for listed species (if observed).
TSNL Tract	Kretschmarr Double Pit	8/5/2025	ETherrine	Incidental Survey	Unspecified	14:40	1:40				Ceuthophilus secretus						Recon for feature excavation with incidental biologic survey. List of fauna observed during recon included but counts are only provided for listed species (if observed).
TSNL Tract	Kretschmarr Double Pit	8/5/2025	ETherrine	Incidental Survey	Unspecified	14:40	1:40				Ceuthophilus cunicularis						Recon for feature excavation with incidental biologic survey. List of fauna observed during recon included but counts are only provided for listed species (if observed).
TSNL Tract	Kretschmarr Double Pit	8/5/2025	ETherrine	Incidental Survey	Unspecified	14:40	1:40				Staphylinidae						Recon for feature excavation with incidental biologic survey. List of fauna observed during recon included but counts are only provided for listed species (if observed).
TSNL Tract	Kretschmarr Double Pit	8/5/2025	ETherrine	Incidental Survey	Unspecified	14:40	1:40				Entomobryomorpha						Recon for feature excavation with incidental biologic survey. List of fauna observed during recon included but counts are only provided for listed species (if observed).
TSNL Tract	Kretschmarr Double Pit	8/5/2025	ETherrine	Incidental Survey	Unspecified	14:40	1:40				Cambala sp.						Recon for feature excavation with incidental biologic survey. List of fauna observed during recon included but counts are only provided for listed species (if observed).
TSNL Tract	Kretschmarr Double Pit	8/5/2025	ETherrine	Incidental Survey	Unspecified	14:40	1:40				Diribatida						Recon for feature excavation with incidental biologic survey. List of fauna observed during recon included but counts are only provided for listed species (if observed).
TSNL Tract	Kretschmarr Double Pit	8/5/2025	ETherrine	Incidental Survey	Unspecified	14:40	1:40				Tewella grubbsi						Recon for feature excavation with incidental biologic survey. List of fauna observed during recon included but counts are only provided for listed species (if observed).
TSNL Tract	Kretschmarr Double Pit	8/5/2025	ETherrine	Incidental Survey	Unspecified	14:40	1:40				Cryptachaea sp.						Recon for feature excavation with incidental biologic survey. List of fauna observed during recon included but counts are only provided for listed species (if observed).
TSNL Tract	Kretschmarr Double Pit	8/5/2025	ETherrine	Incidental Survey	Unspecified	14:40	1:40				Araneoidea						Recon for feature excavation with incidental biologic survey. List of fauna observed during recon included but counts are only provided for listed species (if observed).
TSNL Tract	Kretschmarr Double Pit	8/5/2025	ETherrine	Incidental Survey	Unspecified	14:40	1:40				Armadillidiidae						Recon for feature excavation with incidental biologic survey. List of fauna observed during recon included but counts are only provided for listed species (if observed).
TSNL Tract	Kretschmarr Double Pit	8/5/2025	ETherrine	Incidental Survey	Unspecified	14:40	1:40				Eleutherodactylus marnockii						Recon for feature excavation with incidental biologic survey. List of fauna observed during recon included but counts are only provided for listed species (if observed).
TSNL Tract	Kretschmarr Double Pit	8/5/2025	ETherrine	Incidental Survey	Unspecified	14:40	1:40				Cisurina sp. (webless)						Recon for feature excavation with incidental biologic survey. List of fauna observed during recon included but counts are only provided for listed species (if observed).

Appendix B. Selected Photos



Figure B- 1. A Texas alligator lizard observed in Encinal Cave.



Figure B- 2. An eyeless *Cicurina* sp. *(likely Cicurina travisae)* observed in Encinal Cave.



Figure B- 3. A Bone Cave harvestman observed in Two Trunks Cave.



Figure B- 4. A Tooth Cave pseudoscorpion observed in Amber Cave.



Figure B- 5. A Kretschmarr Cave mold beetle observed in Amber Cave.



Figure B- 6. A microwhip scorpion observed in Amber Cave.