The 2015 Ancient Southwest Texas Project excavations were the first to document paleofeces (coprolites) in Eagle Cave. During the original site excavations in the 1950s and 1960s, no coprolites were reported (even though substantial amounts of paleofeces were likely encountered). Therefore, while not completely unexpected, we were pleasantly surprised when we uncovered the first coprolites.

Extreme care was taken as we excavated these fragile organic remains. Rocket bulb air puffers were used (even though substantial amounts of paleofeces were likely encountered). Therefore, while not completely hand to avoid crushing. Temperature extremes were avoided and bags were vented if moisture condensed was towards the dripline, whereas the worst was towards

Preservation conditions of all archaeological material varied across the site. Ironically, the best observed preservation was towards the dripline, whereas the worst was towards the backwall of the shelter. This was true for all non-carbonized organic remains, not just paleofeces. However, even within the well-preserved areas of the site there is differential preservation between individual specimens.

We are still exploring why preservation changes across the site, but some factors affecting preservation became clear when a small sample of coprolites were analyzed in the lab at Texas A&M. Of these, many were fragmentary and exhibited insect bore-holes and vacuoles, suggesting gaseous release before desiccation. Upon microscopic analysis, due to the poor condition of some coprolites the pollen was poorly preserved, and degraded, folded, and torn grains prevented the completion of a standard analysis.

Distribution of Paleofeces
Over 120 coprolites were point-provenienced during the 2015 field season. The majority of these specimens were excavated from the front of the rockshelter and approximately a meter below the surface. At Eagle Cave the coprolites are mainly found in areas of discarded fire-cracked rock and plant remains (not leaf bases and other fiber). Sometimes they are found within compacted and dry-cracked sediment, which we sampled and hypothesize may be evidence of urine-soaking.

Field Lab Observations
Botanists and faunal experts can identify large plant and animal remains within coprolites. Thorough analysis requires rehydrating the coprolite and separating it into constituent parts. Sometimes, however, macrofossils are visible on the surface. In the field lab, Emily McCuistion observed several plant and animal remains while photographing specimens. Observable in the photos to the right are a rather large bone fragment from a jackrabbit-sized creature, as well as numerous seeds, including mesquite and prickly pear.

Laboratory Analysis
Ten samples were sent to Texas A&M University for a preliminary study of Eagle Cave paleofeces conducted by Chase Beck. These specimens varied greatly in size, completeness, and preservation. When conducting the analysis of the ten specimens, some contained no coprolitic material, some contained mixed coprolitic and non-coprolitic material and some seemed to be multiple broken piece of coprolites which could not be re-assembled into a whole.

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Five specimens were selected for further analysis. These were hydrated and sieved, and then the material was separated. While the coprolites had some evidence of bone fragments, there was no hair. The majority of material in the coprolites was botanial in nature. Seeds, pollen, calcium oxalate crystals, druse crystals, plant fibers, and phytoliths were all observed. Sotol was the most common pollen grain observed, but other taxa were also present. The presence of calcium oxalate and druse crystals has been linked in the past to the consumption of prickly pear cactus pads. Some of the phytoliths observed are associated with various grass species (Poaceae). The stylus phytoliths are likely (Dactyliosperma ciliatum = D. davisii) or agave (Agave spp.). The seeds observed are tentatively identified as sumac (Rhus spp., likely Rhus viridis).

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