Paleozoological baselines help to restore Indigenous socio-ecological systems: A case study from the Bear River Basin, UT.

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On April 20, 2024, Dr. Kasey Cole, presented preliminary results from her ongoing research at the Society for American Archaeology annual conference.

Talk Overview: The talk focused on the analysis of small mammal bones recovered from two paleontological caves situated in the Bear River Basin, Thundershower and Boomerang Caves, that date between 500 and 5,000 years ago. The bones recovered from these cave assemblages will provide insight into how mammalian communities have been impacted by long-term climatic and anthropogenic processes in the region.

In addition to studying past mammal communities in the area, Dr. Cole and collaborators collect historic and contemporary species occurrence data from game cameras, museum records, and current trapping efforts. In her talk, Dr. Cole discussed the species that occur in each of these paleo, historic, and modern datasets and showed that the species occurrence data represented in the paleo record does not over- or underrepresent species occurrence. These findings are critical, as they suggest these paleo records are a reliable source of data to understand changes in long-term mammalian ecosystem structure in the region.

Location of Boomerang and Thundershower Caves

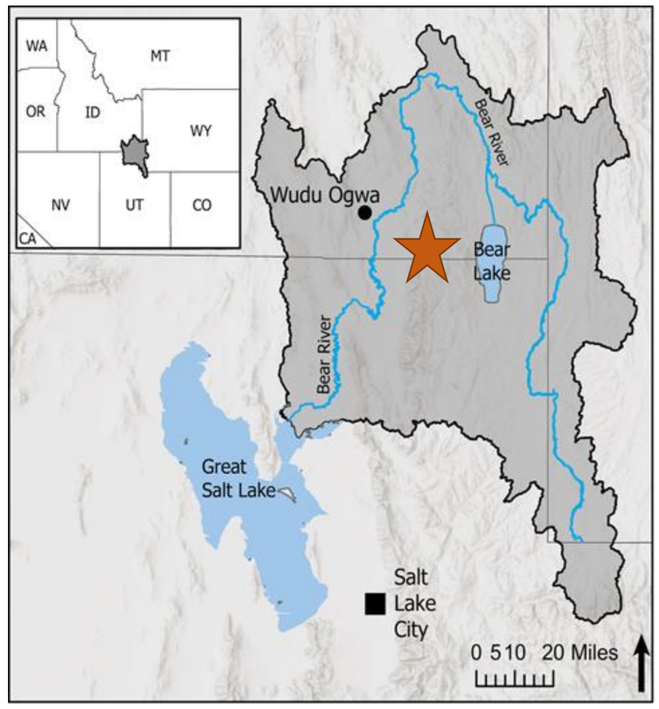
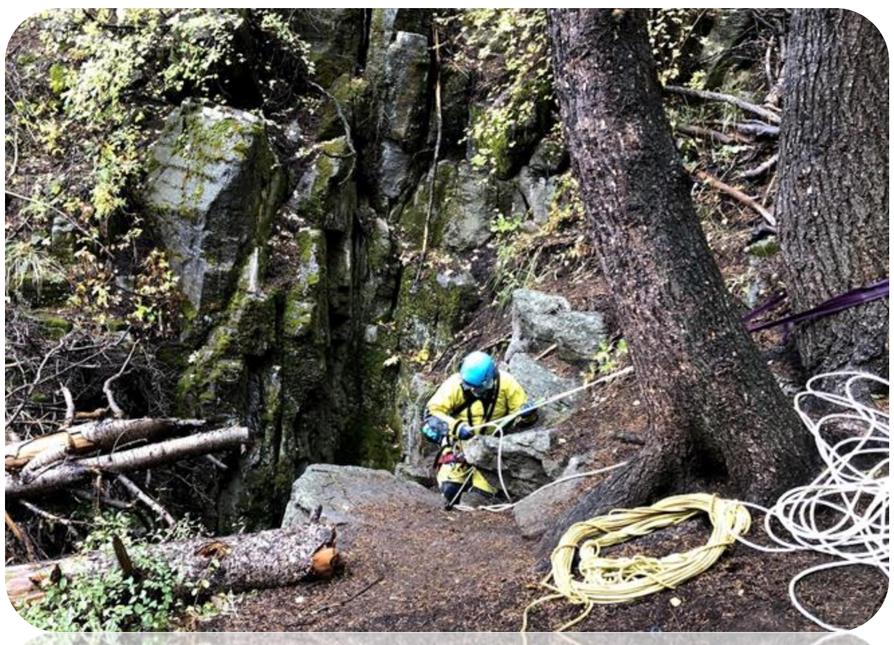


Figure 2 from NSF-funded project (Award Number 2308299). Map credit: Ishmael Medina.



Photos indicate the entrance to Thundershower Cave and cavers collecting bone specimens. Today, these vertical cave systems require repelling to enter. Over time, they have acted as natural traps collecting small mammals that either die living in the cave systems or are dropped in by roosting birds of prey.

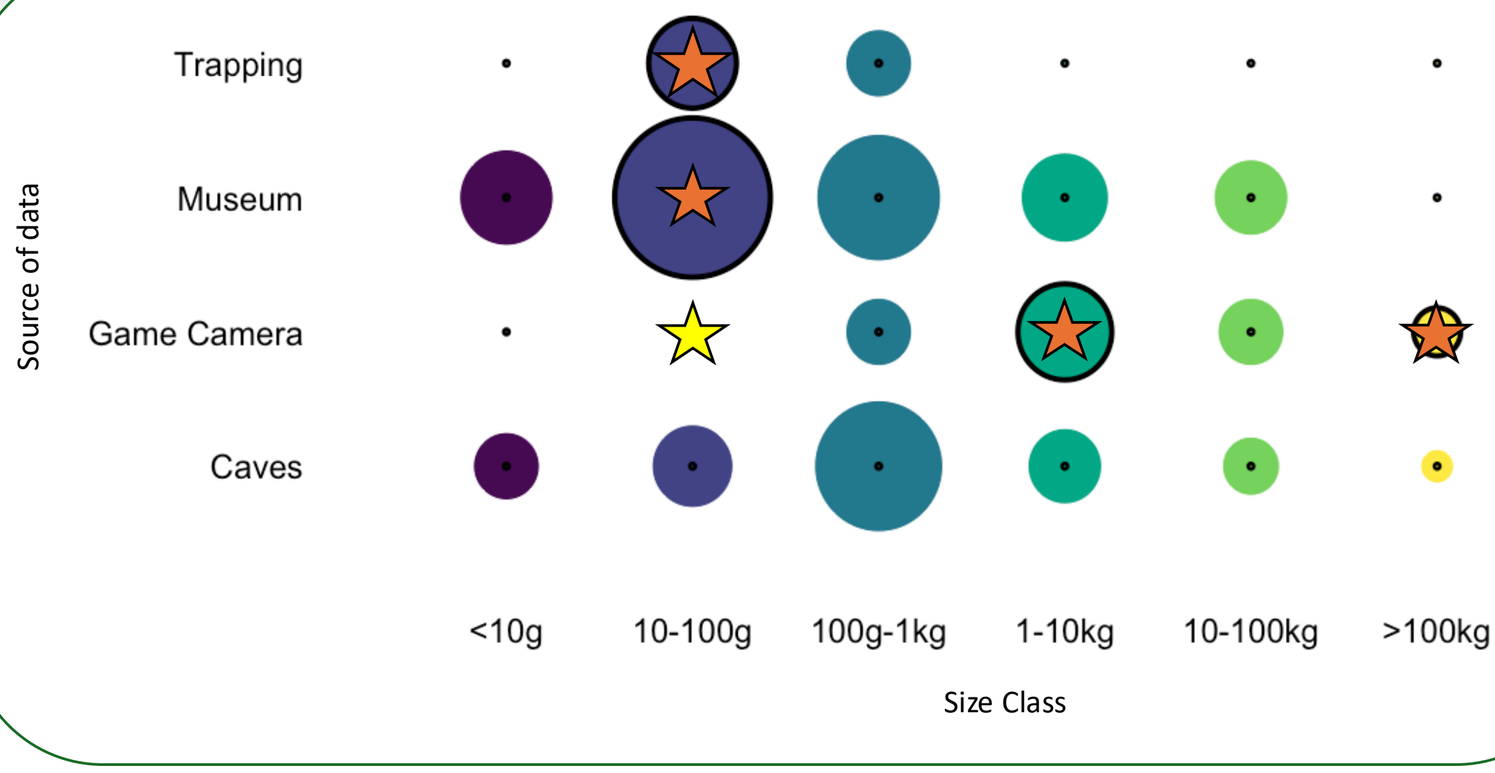


Figure overviews of the number of taxa per size category for each data type. Size class categories were determined by Kays R.W., Wilson D.E. (2009). Point size indicates the number of taxa per size category. Orange stars indicate an overrepresentation of taxa per size category, and the yellow star indicates an underrepresentation of taxa per size category.

Key Takeaway: Paleozoological taxa data obtained from cave assemblages does not over- or underrepresent species occurrence, indicating that paleozoological baselines are a reliable and accurate data source for understanding changes in past ecosystem structure.

Ongoing research is using this data to evaluate changes in species richness and diversity over time and to evaluate the impacts of settler-colonial invasion on species occurrence in the region.