

EASTERN WYOMING HARVESTER ANT MOUNDS REVEAL RICH VERTEBRATE MICROFOSSIL ASSEMBLAGE

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ABSTRACT

Recently a microfossil assemblage in an eastern Wyoming deposit of the uppermost Cretaceous (Maastrichtian) Lance Formation was discovered via a North American harvester ant (*Pogonomyrmex occidentalis*) mound that yielded a dense concentration of vertebrate microfossils. We set out to discover just how fossiliferous this deposit was, so we collected and screened a 3,050 gram sample of sediment and picked out all fossil material present. Of this sediment, 225.4 grams of fossil material were collected, and 7.4 grams of this fossil material consisted solely of teeth. Ant mounds from this area have yielded fossils from three genera of crocodiles, a species of hybodont shark, a species of skate, at least one species of fish, over three different species of mammals, two ornithischian dinosaur genera, and at least three genera of theropod dinosaurs. Of particular interest is the large abundance of teeth from the small theropod dinosaur *Troodon formosus*. Sediment collected from one ant hill yielded 327 individual teeth. This is an unusual and high concentration of teeth from *Troodon*. The density of vertebrate microfossils found in this ant mound gave us valuable insight to the presence of a fossiliferous microfossil bonebed nearby. It should be noted that other ant hills in the vicinity had decreasing concentrations of fossil material the farther away they were from this central ant mound. This allowed us to pinpoint the approximate location of the bonebed simply by sampling ant mounds in the area. As we theorized, surrounding the hill this central mound was nested on was an outcrop of a fossiliferous microfossil bonebed. We have concluded that ant mounds from the North American harvester ant can provide valuable data about nearby deposits. Additionally, ant mounds have proven to be a valuable and effective tool for paleontologists to pinpoint fossil exposures and gather data about an area of interest.

Conclusion

We can conclude that sampling mounds created by *P. occidentalis* has proven to be a valuable method for assessment of the faunal composition of a given area for paleontologists. Additionally, the presence of such a high concentration of *Troodon* teeth on the ant mounds in the area we observed suggests that many of these teeth are associated, and that there could be more *Troodon* material nearby.



Figure 1: (Left) A developed *P. occidentalis* mound near the fossiliferous microfossil assemblage.



Figure 2: (Left) The discovery of a *T. Formosus* tooth on the surface of the sampled mound.

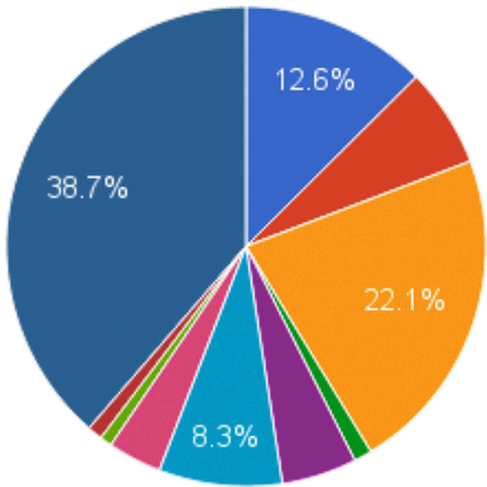


Figure 3: (Above) Pie chart showing species identified and percentages of teeth collected from a 3,050g sample.

- *Borealosuchus sternbergii*
- *Champsosaurus sp*
- *Brachychampsa sp*
- *Lonchidion sp*
- *Myledaphus bipartitus*
- *Lepisosteus sp*
- Mammalians
- *Edmontosaurus annectens*
- *Triceratops horridus*
- *Troodon formosus*



Figure 4: (Above) 190 *T. formosus* teeth collected from the sampled mound.



Figure 5: (Above) A selection of fossils collected from the sampled mound.