The Early Cretaceous Dinosaur Tracksite at Clayton Lake: Sedimentological Observations on the Main Track Level

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At Clayton Lake in Union County, northeastern New Mexico, an extensive dinosaur tracksite is exposed in the dam spillway. Tracks are present at four stratigraphic levels across the contact of the Lower Cretaceous (upper Albian) Mesa Rica and Pajarito formations. The main track level is on the top sandstone bedding surface of the Mesa Rica Formation. Previous studies have counted 260 to as many as 500 dinosaur tracks at this level that are mostly of ornithopods (Caririchnium), but that also include two kinds of theropod tracks (Magnoavipes, cf. Irenesauripus) and a single quadrupedal trackway of an ankylosaur? (Deltapodus). The associated invertebrate ichnoassemblage is shallow burrows assigned to Arenicolites, Planolites, Taenidium and Thalassinoides, representative of the Scoyenia ichnofacies. The paleoenvironment of the tracksite is broadly interpreted as a sandflat at or very near the shoreline of the Western Interior seaway.

Salient features of the main track-bearing layer include the following:

1) All the dinosaurs tracks are undertracks with some tracks registered in the mudrock above the sandstone track level. There is sandstone infilling of some of the tracks 2) The eastern portion of the tracksite is more deeply impressed demonstrating varying sediment viscosity across the site. 3) The burrows of the invertebrate ichnoassemblage cross cut the tracks. Thus the traces were made after the track makers. No dinosaur tracks were noted that obliterated invertebrate burrows. Normally these invertebrate traces do not form subaerially, suggesting that the tracks were made in a subaqueous environment with shallow water above sand. A subaqueous environment would explain the generally poor preservation of the dinosaur tracks. 4) Low sandstone mounds are found in the southern/southeastern part of the tracksite. With one exception, footprints appear to go around the mounds. We believe that these mounds are of hydraulic origin, but a possible biogenic origin is also being evaluated. These enigmatic mounds of unclear origin need more study.

References
