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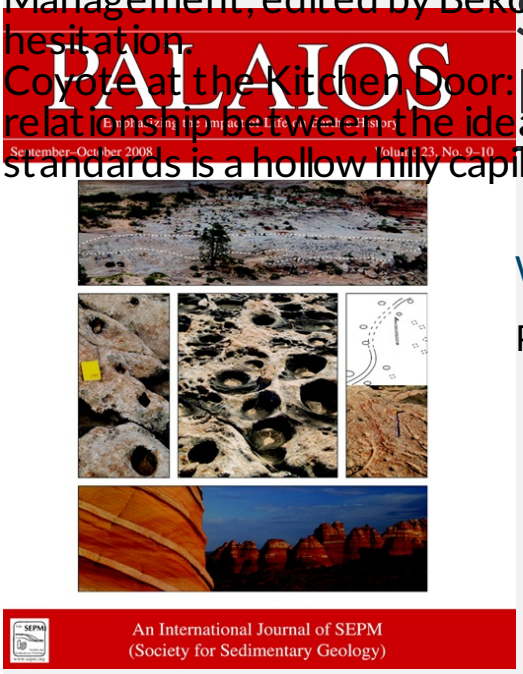

A Wet Interdune Dinosaur Trampled Surface in the Jurassic Navajo Sandstone, Coyote Buttes, Arizona: Rare Preservation of Multiple Track Types and Tail Traces

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Abstract

A distinctive, disturbed surface with numerous soft-sediment impressions occurs within a wet interdune interval of Jurassic Navajo Sandstone at the Coyote Buttes along the Arizona-Utah border. These high-density impressions are interpreted as footprints that comprise a dinosaur trampled surface. This surface displays an unusual combination of multiple overlapping track types and sizes, distinct to modified footprint features that include claws and toes and rare tail traces. The trampled surface covers ~3000 m^2 with an average density of ~12 impressions/m^2 in its main extent. Although modern water collection and biofilms typical of weathering potholes or pits are superimposed on this surface, the primary origin of the impression features are trace fossil structures formed prior to lithification. Four criteria distinguish the impressions as vertebrate in origin: (1) large—up to several tens of centimeters—repeating identifiable foot morphologies; (2) impression floors surrounded by soft-sediment marginal ridges; (3) impressions that are rarely flat and are typically oriented at an angle into the sediment (media) and indicate a clear direction of travel; and (4) multiple *in situ* ichnofossils on a moist interdune surface that resulted in soft-sediment deformation. At least three ichnogenera—cf. *Eubrontes*, cf. *Anchisauripus*, cf. *Grallator*— and the tracks attributed to a sauropodomorph appear as regular to asymmetric penetrations into the media with digitate features, commonly accompanied by soft-sediment marginal ridges of displaced sand preserved in the sandstone. The trampled surface provides paleoecologic and paleoclimatologic proxies that suggest a pluvial climate shift likely induced groundwater saturation of an eolian interdune that attracted dinosaurs to the area. The trampled surface provides valuable data for refining ecologic and climatic sensitivities recorded in Early Jurassic eolian deposits.

GeoRef Subject
Diapsida Archosauria Arizona Chordata dinosaurs Grallator Eubrontes paleoclimatology Mesozoic Navajo Sandstone Theropoda ichnofossils tracks Jurassic Reptilia Saurischia Sauropodomorpha United States Vertebrata Tetrapoda Lower Jurassic

Index Terms/Descriptors

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Reptilia Saurischia Sauropodomorpha terrestrial environment

Tetrapoda Theropoda tracks United States Vertebrata

Anchisauripus Coyote Buttes

Latitude & Longitude

N37°00'00" - N37°00'00", W112°00'00" - W112°00'00"

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