

Analysis Of Triassic Archosauriform Trackways: Difference In Stride/Foot Ratio Between Dinosauromorphs And Other Archosauriforms

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ABSTRACT

Fossilized trackways have rarely been analyzed quantitatively to examine major trends and patterns in evolution despite their potential utility, especially in understanding locomotory evolution. In the present study, trackways of Triassic archosauriforms were analyzed. The analyses showed foot and stride lengths of archosauriforms increased from the Early to Middle Triassic, especially those of dinosauromorphs, which tripled. Dinosauromorphs were much smaller in foot length and stride length compared to other archosauriforms during the Early Triassic. They reached similar stride length compared with other archosauriforms during the Middle Triassic and similar foot length in the Late Triassic. Stride/foot ratio is significantly higher in dinosauromorphs compared to other archosauriforms throughout the Triassic. This relatively long stride length of dinosauromorphs is attributed to either faster speed or higher relative hip height that was probably caused by their digitigrade foot posture. Analyses of trackway data sets, especially in combination with precise trackmaker assignment and age determination, would bring us more thorough knowledge about locomotory evolution of tetrapods that complements body fossil evidence.