

Swimming and related traces of a Late Triassic freshwater community from the lower Elliot Formation, South Africa

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Abstract:

Here, we report, for the first time, on traces related to swimming and other sub-aqueous activity by a freshwater pond community in the Upper Triassic lower Elliot Formation (Stormberg Group, Karoo Basin, South Africa). The palaeosurface preserves several generations of ichnites forming a seemingly chaotic ichnofossil assemblage. The ichnites, together with abiotic traces (e.g., tool marks), are preserved on the upper bedding plane of a fine-grained sandstone. This is in turn overlain by a khaki, laterally continuous, ~1-m-thick, laminated, pedogenically-unaltered mudstone unit. Several sinuous trails on the palaeosurface can be assigned to *Undichna* ANDERSON 1976. A didactyl track of *Grallator*-like affinity is associated with a single sickle-shaped digit-drag mark as well as disorderly striations that are 3–8 cm long and show variable morphology (e.g., narrowly incised, V-shaped, straight to slightly sinuous grooves). Additionally, unique yet indistinct, <2 cm-long, partially preserved ichnites with three (or possibly four) slender digit impressions and associated, shallowly incised, curving trail-like striation are also preserved. Together these trace fossils provide evidence for animals currently unrecorded in the osteological record of the lower Elliot Formation. Based on cross-cutting relationships, the timeline of events within this shallow, freshwater pond suggests an initial fully aqueous period, when the first generation of tracemakers (likely small fish such as *Semionotus*) produced swimming traces. This was followed by a semi-aqueous period, when invertebrates burrowed and tetrapods waded and walked along the shoreline. The unfossiliferous, laminated pond sediments represent the final phase and suggest uninterrupted silting up of the pond.

Keywords: *Undichna*, lower Elliot Formation, fish, Upper Triassic, swim traces

References

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