Late Cretaceous insect trace fossils from the Capacete Formation, Sanfranciscana Basin, Brazil

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Abstract:

The Late Cretaceous Capacete Formation of the intracratonic Sanfranciscana Basin, Brazil, consists of epiclastic sediments with an important eolian contribution. This unit is currently interpreted as deposited by distal alluvial fans grading to braided rivers in an arid- to semiarid climate within the central part of western Gondwana. Locally, recently described expositions with great lateral continuity show architectural elements representative of deposition in meandering rivers, such as overbank fines (FF) associated with crevasse splay (CS) deposits from floodplain settings, lateral accretion bars (LA) and channels (CH). We quantified the degree of bioturbation of the meandering fluvial deposits (bioturbation degree = BD) on a scale from 0 to 6, based on a visual scale. The fluvial bars preclude ichnofossils while climbing sandstones (CS) have sparse occurrences (BD 1-2) of meniscated vertical trace fossils with 8 to 11 mm in diameter identified as *Taenidium*. Vertical simple excavations with diameter varying from 9 to 13 mm identified as *Skolithos* occur associated with *Taenidium* in sandstone facies (CS), as well as rhizoliths. Sparse subspherical excavations (BD 1) with thick walls were identified in mudstone facies from the floodplain setting, with a diameter of 62 mm and with an internal chamber measuring 27 mm in diameter. This morphology was identified as *Coprinisphaera*. The setting attests the episodic colonization of the vegetated flood plains by insects. Furthermore, the sedimentologic and ichnological data reveal the unexpected presence of meandering river deposits in the Capacete Formation. Despite the general interpretation of an arid climate for the Late Cretaceous of the Sanfranciscana Basin, these new data support punctual deposition under humid conditions.

Keywords: meandering fluvial systems, coprinisphaera, paleoclimate, paleoenvironment