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Behavioural and taphonomical testimony of *Treptichnus pedum*, inferences from the Nagaur Sandstone, Marwar Supergroup, India

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First Appearance Datum (FAD) of the three dimensional 'vertical worm burrow' *Treptichnus pedum* heralds the on set of Phanerozoic Eon. It is considered as the Pc-C boundary marker fossil which is reported from several Precambrian-Cambrian transitory successions world over. *T. pedum* is considered mainly as branching feeding burrow and formed by the rhythmical probing and back filling action into the sediment most probably by the *Priapulid* worm [1, 2]. Morphologically these worm burrows are subdivided into modular segments, resembling like buds on twig, which follow a straight, sinusoidal or coiled course. Such patterns distinguish it from other ordinary burrows.

In the present study, *T. Pedum* reported from siliciclastic facies of the Nagaur Sandstone of the Marwar Supergroup exposed in the western Rajasthan, India is considered to understand the behavioural and taphonomical implications. The Marwar Supergroup is an established Ediacaran-Cambrian succession exposed on the peninsular India. A large number of bedding plane bio-turbation structures/specimens (291) recorded from the Nagaur Sandstone were studied and compared with various known occurrences from other parts of the world to gain insight about the causative organisms, their behavioural and taphonomical aspects. Results are based on the studies conducted on the parameters such as morphology, geometry, ecological niches, global distribution, petrological attributes of the host sediments in which they were preserved and taphonomy of Nagaur assemblage. Sandstone-mudstone interfaces present in the Nagaur Sandstone offer excellent medium for the preservation of burrows. Statistical analyses were performed on size (length, width and gap of each segment of *T. pedum*) to document the taxonomical variations at species level. Data suggest that the entire assemblage belong to one major group of causative organism. Structural pattern suggest that these were probably meant for shelter and trapping small epibenthic or endobenthic organisms as prey. Its global occurrence in varied depositional environment shows broad environmental tolerance [3]. An overview on these aspects of *Treptichnus pedum* is presented in this paper.

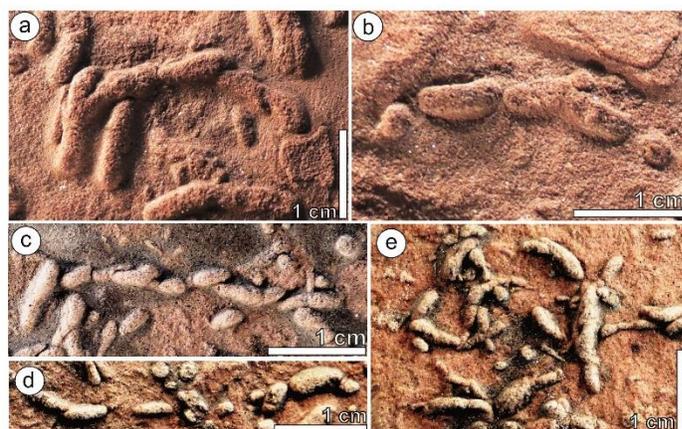


Figure-1: Specimens of *Treptichnus pedum* reported from the Nagaur Sandstone of Nagaur Group; **a)** Show small burrows arranged in an alternate fashion illustrating the movement of the animal; **b)** Burrow pattern showing little gap between the two consecutive small individuals; **c)** Distribution of burrows in a linear fashion; **d)** Showing small and larger burrow morphologies; **e)** Randomly arranged burrows of different shapes and sizes.

References:

- [1] Seilacher A et al., (2005) *Palaeogeography, Palaeoclimatology, Palaeoecology* 227: 323-356.
- [2] Vannier J et al., (2010) *Geology* 38: 711-714.
- [3] Buatois L A (2013) *Geology* 41: 519-522.

