

VENDIAN TRACE FOSSILS: PALEOZOOLOGICAL AND PALEOECOLOGICAL IMPLICATION

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Trace fossils are considered as a hard evidence of the benthic metazoan activity. In spite of generally smaller size and density, the Vendian ichnofossils are almost as diverse as their Lower Cambrian counterparts. Preservation of the oldest ichnofossils is controlled by a number of the interacting factors of the environment (hydrodynamics, sedimentation rate, viscosity of the substrate etc.) and organism (body size, mucus secreting, pellet production, density of population and bioturbation depth). The most high population density is documented for the sedentary form, such as soft-bodied polyps. Mass material shows no correlation between the bioturbations and associated Ediacara-type body fossils, domination of the grazing trails with substituted diversity of the feeding burrows, two-dimensional (horizontal) behavioral stereotypes, peristaltic modes of locomotion (by mean of the pedal wave or hydrostatic skeleton), selective feeding on small food particles, less common non-selective deposit feeding. Some antagonism is observed between the ichnofossils and bacterial mats (elephant skin structures). Size, diversity and density of bioturbations decrease offshore remarkably that is related to the low oxidation of the deeper benthic environments. Primary causes of anoxia even at the moderate depth could be relatively high turbidity of water because of intensive erosion of the land unprotected by the vegetation, weak role of the active filter-feeding organisms, and virtually absence of the vertical pellet transport that would remove fine particles from the water column. Narrow photic zone in the turbid sea was resulted in the sharp thermal gradient and stratification of the water. Explosive radiation of the suspension-feeders in the Cambrian caused dramatic change in the marine environments over the globe.