

# **Bioturbation and Its Effects on Porosity and Permeability in the Cretaceous Buda Limestone Formation, South-Central Texas**

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## **ABSTRACT**

Bioturbation is normally a small-scale but potentially important geologic process for paleoecological interpretations, facies analysis and sequence stratigraphy. Moreover, in recent studies, several authors have expanded the application of ichnology to evaluate its implications in reservoir petrophysical properties, since the significant effects of bioturbation in porosity and permeability (enhancement or destruction) in biogenically modified facies. Even though the role of bioturbation as a modifying agent of porosity and permeability has been recognized, it is still essentially overlooked, particularly in reservoir characterization studies in the oil and gas industry. In addition to the under-estimation of bioturbation as a process that affects reservoir's petrophysical properties, the typical heterogeneity of carbonate pore architecture (due to the interplay of primary depositional fabric and diagenetic processes) adds more challenges for carbonate reservoir characterization. Therefore, the following project has as the main goal to determine the effects of biological activity on the petrophysical properties in the highly bioturbated carbonate reservoir of the Buda Limestone Formation in South Central Texas, through a high-resolution ichnological, sedimentological, diagenetic and petrophysical study. The results of this project will improve the understanding of bioturbation processes in the Buda Limestone Formation, and determine its effect on porosity and permeability during its diagenetic evolution; as well as, why bioturbation studies can continue to grow and be integrated into reservoir characterization and carbonate sedimentology studies in general.