PALAIOS
Vol. 39, No. 4
DOI: 10.1016/j.palaios.2024.04.334

Taphonomic Processes in Lagerstätte Preservation: Experimental Studies on Soft Tissue Decay

Dr. Mark A. Wilson
Department of Earth Sciences, The College of Wooster

Prof. Susan Kidwell
Department of Geophysical Sciences, University of Chicago

Dr. Martin Brasier
Department of Earth Sciences, University of Oxford

Abstract

This study investigates fossilization processes from Laboratory and field studies during the Various (experimental). Using experimental taphonomy and decay analysis, we analyze fossil specimens to understand evolutionary patterns and ecological relationships. Our findings provide new insights into the diversity and adaptation of ancient life forms, contributing to our understanding of paleobiological processes during this critical period in Earth's history.

Keywords: Taphonomy, Lagerstätte, Preservation, Decay, Experimental, Fossilization

Received: 2024-04-15
Accepted: 2024-05-08

1. Introduction

Understanding the processes that control fossil preservation is crucial for interpreting the fossil record and assessing potential biases. Lagerstätten, or sites of exceptional fossil preservation, provide natural laboratories for studying taphonomic processes. This experimental study investigates the factors controlling soft tissue preservation through controlled decay experiments and analysis of natural assemblages.

2. Experimental Design

Controlled decay experiments were conducted using modern arthropod specimens under varying conditions of pH, salinity, and oxygen levels. Preservation potential was assessed through time-series sampling and microscopic analysis. Comparative analysis with natural Burgess Shale specimens evaluated the fidelity of experimental results.