TAPHOFACIES OF SELECTED FOSSIL SITES WITHIN THE EARLY CRETACEOUS CEDAR MOUNTAIN FORMATION IN EAST-CENTRAL UTAH

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ABSTRACT

Taphofacies were delineated from a comparison between the sedimentology of rock units and the preservational features of fossils (primarily dinosaurs) found within them from the lower Cretaceous Cedar Mountain Formation in a localized study area north and west of Arches National Park, Utah. Selected paleontological sites on federal- and state-owned land with established fossil collections were targeted, including: Doelling’s Bowl (DB), Dalton Wells (DW), and Gaston Quarry (GQ) (Yellow Cat Member); Tony’s Bone Bed (TBB) (Poisson Strip Sandstone); and Lorrie’s Site (LS) (Ruby Ranch Member). Analysis of taphonomic variables (fossil preservational features) was conducted, focusing on weathering, abrasion, fracture, and breakage conditions. Utilizing several statistical methods (F- and T-testing, chi-square randomization, and linear trend analysis), we compared these taphonomic characters 1) between localities, 2) between element classes (ex. rod-shaped bones vs. flat bones), and sometimes 3) between taxa within each locality. These associations between the preservational characteristics and sedimentology have yielded a basis for a definitive description of five taphofacies, which are mapped intervals of rock defined by their own specific preservational characteristics. Taphofacies DB showed moderate weathering and abrasion in its fossilized specimens, whereas Taphofacies DW showed greater average abrasion with a bias towards flat elements. Taphofacies TBB revealed yet higher averages in abrasion and weathering, and Taphofacies LS showed the highest average weathering.