

Taphonomy and paleoecology of a bonebed from the Prince Creek Formation, North Slope, Alaska

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ABSTRACT

The late Campanian–Maastrichtian Liscomb Bonebed is the richest source of dinosaur remains thus far documented in the polar regions. This bed is formally defined herein and assigned to the upper part of the Prince Creek Formation; the bonebed and several other organic-rich beds are part of a 178 m sequence of fluvial and volcanoclastic deposits. The Liscomb Bonebed is a mudstone rich in clay, comminuted plant remains, and palynomorphs with a total organic carbon (TOC) of 6.80%–10.55%. It contains a multitaxic, low-diversity, dinosaur assemblage, dominated by *Edmontosaurus* sp., which is primarily represented by late juveniles. Four theropod taxa are almost exclusively represented by isolated teeth. With >6000 specimens collected, the assemblage is characterized by a Minimum Number of Individuals (MNI) of 36, dominance of Voorhies Groups I and II, and an underrepresentation of teeth, skulls, and girdles. Bones are highly fragmented and exhibit low weathering and abrasion indices. Bite marks occur on slightly more than 1% of elements. The densest accumulations of bone are typically found in the middle third of the bed with the largest bones at the bottom. The Liscomb Bonebed assemblage resulted from mass mortality associated with overbank floods that formed floodplain mires and ponds. Data from the current study clearly establish the Alaskan Arctic as the year-round residence of a rich dinosaur fauna and add further support to the hypotheses that even high-latitude hadrosaurids were gregarious and formed social groups.