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COMPARATIVE VERTEBRATE TAPHONOMY OF THE PEMBINA AND SHARON SPRINGS MEMBERS (MIDDLE CAMPANIAN) OF THE PIERRE SHALE, WESTERN INTERIOR.

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ABSTRACT

The Pembina and Sharon Springs members of the Pierre Shale are some of the most organic-rich marine shales in the central portion of the Western Interior. The shales represent the deep-water facies of the transgressive Claggett Cyclothem of the Early Middle Campanian. Both shales preserve a very rich vertebrate record of marine fossils. Theses specimens range from isolated bones shed from drifting carcasses to complete skeletons of carcasses that sank soon after death. No mass accumulation levels are present, even associated with bentonites, thus no mass deaths can be attributed to volcanic ash fallout, nor to dinoflagellate or other phytoplankton blooms ("red tide"). The accumulations are best explained as attritional in anoxic or near anoxic bottom waters. A field inventory of the Sharon Springs Member reveals that museum collections are biased toward more complete skeletons and rare specimens.

Taphonomic data is used in conjunction with wind data inferred from bentonite thickness and upwelling zones inferred from glauconite to reconstruct paleocurrents in the Claggett Seaway. The results suggest that taphonomic data provides an important source of information that should be considered in paleocurrent analyses.