lower molar loci and may have a bearing on purgatoriid species diagnoses. 3DGM analyses incorporating larger samples of isolated purgatoriid teeth from Pu3 of northeastern Montana have also assisted in documenting a greater diversity of plesiadapiform taxa from this study area than previously recognized, including at least four species of *Purgatorius* (*P. janisae*, *P. unio*, *P. mckeeveri*, *Purgatorius* cf. *P. pinecreeensis*), which adds to our understanding of plesiadapiform species richness and biogeography within the first million years of the Cenozoic.

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Regular Poster Session 4 (Saturday, October 21, 2023, 4:30 - 6:30 PM)

CHARACTERIZING TRANSPORT IN HADROSAUROID DINOSAURS: AN ACTUALISTIC EXPERIMENTAL APPROACH TO FLUVIAL TAPHONOMY

Chiappone, Michael A.[1], Guala, Michele[2], Rogers, Raymond[3], Makovicky, Peter[1]

[1]Earth and Environmental Sciences, University of Minnesota, Minneapolis, Minnesota, United States, [2]St. Anthony Falls Laboratory, Minneapolis, Minnesota, United States, [3]Geology, Macalaster College, St. Paul, Minnesota, United States

Taphonomic processes create bias in the fossil record, and understanding these processes is integral to interpreting the record of extinct life worldwide. Bones preserved in fluvial environments make up a substantial part of the vertebrate fossil record. These bones have often been transported varying distances from the location of death before becoming buried. Experiments in flumes and natural settings have explored the fluvial taphonomy of mammal skeletons, but the taphonomy of other terrestrial vertebrates, especially extinct clades, has only been sparingly studied directly. Hadrosauroids are a dinosaur clade known from extensive remains throughout the Cretaceous and across the globe, making them an ideal group for taphonomic study. Previous examinations regarding the fluvial taphonomy of their skeletons have often applied bone transport groups derived from classic studies on mammals. Some researchers have raised concerns that the morphologies of non-mammalian bones would not exhibit the same hydraulic properties as mammals, producing different transport patterns. Here, we investigate hadrosauroid bone transport under various flow conditions through actualistic flume experiments using 3d printed models with comparable densities to real bone. We aimed to characterize the timing of transport of different elements (Voorhies Groups), orientation of bones relative to flow direction, and bone surface abrasion patterns. Some elements behave similarly to those described in mammals. As would be expected from previous work, relatively heavy bones such as the femur tend to move last, acting as lag elements. Lighter elements such as the scapula and radius tended to begin moving at much lower flow speeds. Because dinosaur pelvic bones are not fused as in mammals, we observed that the isolated pubis is often among the first elements to commence movement, often rotating or sliding along the bed. Cylindrical limb bones tend to roll or slide along the bed, orienting to be parallel to flow faster or slower depending on element size and flow velocity. Bones with more complex shapes, such as the curved and concave blade of the scapula, moved in less straightforward and unique ways, even vaulting over other bones. We also found that burial by fine silt and mud could be achieved relatively quickly even at slower flow speeds, and burial by sand played an important part in inhibiting transport in higher flow regimes.

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Technical Session 1: Sauropod & Ornithischian Dinosaurs (Wednesday, October 18, 2023, 8:00 AM)

THE OLDEST PACHYCEPHALOSAUR (ORNITHISCHIA: MARGINOCEPHALIA) FROM THE LOWER CRETACEOUS HUHTEEG FORMATION AT KHUREN DUKH LOCALITY IN SOUTHEASTERN MONGOLIA

Chinzorig, Tsogtbaatar[1], Takasaki, Ryuji[2], Yoshida, Junki[3], Buyantegsh, Batsaikhan[4], Mainbayar, Buuvei[5], Tucker, Ryan[6], Tsogtbaatar, Khishigjav[5], Zanno, Lindsay E.[7]

[1]Biological Sciences, North Carolina State University, Raleigh, North Carolina, United States, [2]University of Toronto, Toronto, Ontario, Canada, [3]Fukushima Museum, Aizuwakamatsu, Fukushima, Japan, [4]Stratigraphy, Institute of Paleontology,