literature. Raw and sample-standardized diversity were plotted through time and with latitude, and the ranges of dinosaur taxa were reconstructed in ArcGIS. Sample-standardized diversity increased through time, with no evidence for a diversity decrease prior to extinction of the Morrison fauna at the end of the Jurassic. Highest raw diversity is found in systems tracts characterized by waterlogged floodplain facies, indicating a sequence stratigraphic control on fossil preservation. Sample-standardized diversity peaked in the middle of the Morrison basin, decreasing at higher and lower latitudes, consistent with previous suggestions that the center of the basin might have been wetter than the margins, but contrasting strongly with the latitudinal biodiversity gradient across the same area today. The ranges of species of *Allosaurus* and *Camarasaurus* do not overlap, indicating geographical partitioning, and there is some indication of a northwestern and southeastern fauna, albeit with several shared taxa. High resolution climate models for North America through the Late Jurassic are needed to examine the causative mechanisms behind these diversity patterns.

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Technical Session 16: Theropods - I (Saturday, October 21, 2023, 8:00 AM)

NEW ADDITIONS TO THE EARLY FOSSIL RECORD OF CAENAGNATHIDS IN NORTH AMERICA

Makovicky, Peter[1], Cifelli, Richard[2], Zanno, Lindsay E.[3], Cullen, Thomas[4]

[1]Department of Earth and Environmental Sciences, University of Minnesota, Minneapolis, Minnesota, United States, [2]Sam Noble Museum, University of Oklahoma, Norman, Oklahoma, United States, [3]Paleontology, North Carolina Museum of Natural Sciences, Raleigh, North Carolina, United States, [4]Department of Geosciences, Auburn University, Auburn, Alabama, United States

Caenagnathids are toothless pennaraptoran theropods with increasing diversity in the Campano-Maastricthian of the Western Interior Basin (WIB). The clade also has a growing fossil record in Asia including giant taxa such as *Gigantoraptor erlianensis*. In contrast to their Campano-Maastrichtian record, the pre-Campanian caenagnathid record in North America is restricted to the juvenile holotype specimen of *Microvenator celer* from the Early Cretaceous Cloverly Formation.

The stratigraphic gap in the North American caenagnathid record between *Microvenator* and Campano-Maastrichtian taxa was until recently only punctuated by eggs and eggshell referred to the ootaxon *Macroelongatoolithus carlylei* from the Cenomanian Mussentuchit member (MM) of the Cedar Mountain Formation and the penecontemporaneous Wayan Fm. of Idaho. Nearly complete eggs from those units exhibit sizes consistent with being laid by a *Gigantoraptor*-sized animal.

In 2012, a Field Museum crew excavated a partial skeleton of a giant caenagnathid from the MM. With a tibial length of 95 cm, this specimen is very close in size to *Gigantoraptor*. This discovery also permits reinterpretation of a small theropod skeleton collected from the MM by the Sam Noble Museum as a juvenile specimen of the same species based on several femoral synapomorphies. Thin-sections were made from femora of both individuals for osteohistological analysis. The histology of the smaller individual exhibits a single annual growth mark and laminar to plexiform fibrolamellar bone throughout the cortex, consistent with being a juvenile. The osteohistology of the large individual is unusual. It possesses a comparatively thin cortex, with nearly uniform laminar fibrolamellar bone, and only two annual growth marks located near the periosteal margin.

Synapomorphies of caenagnathids are also evident in an isolated femur from the Antlers Fm. of Texas, documenting the first caenagnathid specimen from that unit and a major geographic range extension for the clade in the Early Cretaceous. This find also adds to the significant taxonomic overlap between the Antlers and Cloverly Formations, which share a majority of their dinosaurian genera. Body mass estimates calculated for this femur, and for the large MM specimen, result in an optimized ancestral body size of over 100 kg for Caenagnathidae.

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