

GSA Connects 2022 meeting in Denver, Colorado

Paper No. 273-35

Presentation Time: 2:00 PM-6:00 PM

FAUNAL COMPARISON OF APTIAN-ALBIAN CONTINENTAL VERTEBRATES, NORTH AMERICAN WIB: BIOSTRATIGRAPHIC AND BIOGEOGRAPHIC CONTEXT

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The middle Cretaceous (Aptian-Cenomanian) fossil record of the Western Interior Basin (WIB) is key to understanding the rate and timing of dramatic, nearly complete faunal turnovers in continental vertebrates that occurred between emplacement of the Late Jurassic Morrison fauna and early Late Cretaceous assemblages such as the Mussentuchit fauna of Utah. With recent improvements on chronostratigraphic constraints of middle Cretaceous WIB deposits, more precise faunal comparisons can be made across spatial and temporal scales. We reviewed and analyzed existing occurrence data from some of the most complete late Early Cretaceous (Aptian-Albian) faunas within the WIB and evaluated the coverage of latest Jurassic (Kimmeridgian-Tithonian) and early Late Cretaceous (Cenomanian) faunas. Shareholder quorum subsampling (SQS) was used to standardize and estimate coverage of each sample. We then calculated Sørensen index values for each pairwise comparison. Analyses were conducted at the genus level. Aptian-Albian assemblages range widely in coverage, with the Cloverly, Antlers, and Cedar Mountain (Ruby Ranch member) formations at 93%, 84%, and 38% estimated coverage, respectively. However, we found that an aggregate sample of these three Aptian-Albian faunas is estimated at 91% coverage ($n = 305$). We generated this Aptian-Albian aggregate sample by combining the Cloverly, Antlers, and Ruby Ranch faunas and treating them as a single assemblage. Currently, most Cenomanian occurrences compiled in the Paleobiology Database occur in the Mussentuchit member ($n = 196$, est. coverage = 88%) of the Cedar Mountain Formation. The latest Jurassic occurrences are almost exclusively from the Morrison Formation ($n = 978$, est. coverage = 95%). Comparison of the Aptian-Albian aggregate to the preceding Late Jurassic Morrison fauna and the early Late Cretaceous Mussentuchit fauna yield Sørensen values of 0.05 and 0.25, respectively. Preliminary comparisons between the Cloverly and Antlers formations yield a Sørensen value of 0.46, which is generally consistent with a previous estimate (0.58). These results suggest that the Aptian-Albian faunas are twice as similar to one another as their aggregate is to the Cenomanian Mussentuchit fauna.

Session No. 273--Booth# 139

[D24. Paleontology: Recent Advances in Phylogeny, Morphological Patterns, Biogeography, and Biostratigraphy \(Posters\)](#)
Wednesday, 12 October 2022: 2:00 PM-6:00 PM

Exhibit Hall F (Colorado Convention Center)

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