

[Start](#) | [Grid View](#) | [Author Index](#) | [View Uploaded Presentations](#) | [Meeting Information](#)

GSA Connects 2022 meeting in Denver, Colorado

Paper No. 126-9

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

TRACKING PALEOENVIRONMENTAL ASSOCIATIONS IN VERTEBRATE MICROFOSSIL BONEBEDS IN THE UPPER CRETACEOUS (CAMPANIAN) JUDITH RIVER FORMATION, MONTANA

MENDEZ-CURBELO, Irene¹, **NICOLAYEVSKY, Katya**², **LUFT, Marisa**³, **FLOWERS, Rebecca**⁴, **ZUGSCHWERT, Lily**³, **CURRY ROGERS, Kristi**³ and **ROGERS, Raymond**³, (1)Department of Geology, University of Puerto Rico at Mayagüez, Calle Post, PO Box 9000, Mayagüez, PR 00681, (2)Geology Department, Colorado College, Colorado Springs, CO 80946, (3)Geology Department, Macalester College, Saint Paul, MN 55105, (4)Geology Department, Carleton College, Northfield, MN 55057

The Upper Cretaceous (Campanian) Judith River Formation of north-central Montana preserves abundant vertebrate microfossil bonebeds (VMBs), which are accumulations of millimeter to centimeter scale vertebrate fossils that range from intact bones of small animals to small bones and fragments of large animals. Previous work on the taphonomy of Judith River VMBs suggest that they represent time-averaged accumulations of resilient fossils that accrued in freshwater aquatic basins (lakes, swamps). Over 7500 fossils (including unidentifiable fragments) from two VMBs (WBN15-18: hereafter referred to as Site 1, and CC13-015: hereafter referred to as Site 2) were studied in relation to the presence/absence and relative abundance of eight general taxonomic groups: osteichthyans, chondrichthyans, amphibians, turtles, crocodiles, champsosaurs, dinosaurs, mammals, and squamates. The Site 1 sample (n=1168 identifiable specimens) was recovered from a localized outcrop of brown massive siltstone rich in carbonaceous debris. The Site 2 sample (n=2735 identifiable specimens) was collected from a more expansive outcrop of massive gray silty mudstone that preserves abundant freshwater clam and gastropod shells. Given the fully dissociated nature of material in both sites, identifiable specimens were counted as a single individual (we recognize that this inflates counts). Despite similar taphonomic characteristics and depositional settings, the two sites exhibit distinct distributions of taxa. Site 1 is dominated by animals with terrestrial affinities (>80%), most notably dinosaurs. Site 2 is dominated by semi-aquatic and fully aquatic groups overall (>95%), including fish, turtles, crocodiles, and champsosaurs. However, one sample from Site 2 preserves a decidedly greater proportion of terrestrial taxa (again, dinosaurs), comparable to site 1. We interpret these patterns to potentially reflect “onshore-offshore” control on collections, with samples dominated by terrestrial animals representing more shoreline proximal settings. This interpretation is supported by grain size trends and the distribution of plant debris, which tends to be more abundant in the lake margin settings. These results suggest potential to track paleoecological associations in VMBs at a finer level than previously suspected.

Session No. 126--Booth# 35

[T166. Showcase of Undergraduate Research Posters by 2YC and 4YCU Geoscience Students \(Posters\)](#)

Monday, 10 October 2022: 2:00 PM-6:00 PM

Exhibit Hall F (Colorado Convention Center)

Geological Society of America *Abstracts with Programs*. Vol 54, No. 5
doi: 10.1130/abs/2022AM-379052

© Copyright 2022 The Geological Society of America (GSA), all rights reserved. Permission is hereby granted to the author(s) of this abstract to reproduce and distribute it freely, for noncommercial purposes. Permission is hereby granted to any individual scientist to download a single copy of this electronic file and reproduce up to 20 paper copies for noncommercial purposes advancing science and education, including classroom use, providing all reproductions include the complete content shown here, including the author information. All other forms of reproduction and/or transmittal are prohibited without written permission from GSA Copyright Permissions.

[Back to: T166. Showcase of Undergraduate Research Posters by 2YC and 4YCU Geoscience Students \(Posters\)](#)

[<< Previous Abstract](#) | [Next Abstract >>](#)