

STRATIGRAPHIC ARCHITECTURE AND THE OCCURRENCE AND DISTRIBUTION OF FOSSILS IN LAST CHANCE CANYON, NEW MEXICO

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Abstract

Stratigraphic paleobiology states that stratigraphic architecture has a significant, non-random impact on fossil accumulation. Accordingly, the distribution of fossil assemblages is expected to follow a pattern that directly correlates to their position within the depositional sequence. This study will apply this assertion to a section of the Middle Permian San Andres Formation at Last Chance Canyon in the Guadalupe Mountains, New Mexico to examine (1) if the first and last occurrences of taxa concentrate at flooding surfaces and (2) if changes in shell bed density reflect areas of low net sedimentation.

High-resolution images of Last Chance Canyon will be taken using terrestrial LIDAR scans and GigaPan photographs identify major facies changes. To examine how the assemblage compositions change across flooding surfaces, *in situ* abundance and diversity counts of fossil taxa will be collected and taxa will be identified to the genus or species level. Field counts will be performed along the mapped sections and their GPS locations will be collected. Multivariate analyses will be performed to define the paleoecology of the assemblages. When combined with GPS data of the field counts and the digital outcrop model, facies based on the paleoenvironments and fossils can be defined and tracked through the depositional sequence. The results from this study will allow for better predictions of finding fossil occurrences within a stratigraphic sequence. Patterns in fossil distributions found here can be applied elsewhere within the San Andres Formation and to other mixed carbonate-siliciclastic passive margin, resource-bearing formations.

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