

New Fossil Box Turtles from the Paleogene of West Texas: A New Taxon With Critical Insights into the Evolutionary History of Box Turtles

Burroughs, R.W.¹

rburroughs@utexas.edu

1. Jackson School of Geosciences, The University of Texas at Austin, Austin, TX

Two new fossils of functional box turtles from the Vieja Formation of Texas provide insights into the evolutionary history of North American box turtles. The formation is latest Eocene/early Oligocene (Chadronian) in age. The specimens are immediately recognizable as functional box turtles because of the separation of the plastron into two distinct lobes, the presence of a well-developed kinetic plastral hinge, and the reduction of the plastral-bridge to bony projections similar to those seen in the extant box turtle genera *Terrapene* and *Cuora*. These specimens are the most complete known specimens of box turtles from the North American Paleogene, and are younger in age than a previously described extinct box turtle *Planetochelys*. The specimens are mostly obscured by hard matrix. Both were CT scanned at UTCT and were digitally prepared. Digital preparation exposed the nuchal bone, which is otherwise completely obscured by matrix and allowed the mostly complete anterior lobe of the plastron to be visualized and studied. The entoplastron of the specimen is roughly oval in shape and more similar to that of extant *Terrapene* than *Cuora*; the entoplastron of *Planetochelys* has never been described. The nuchal bone does not have features of *Cuora*, but does have features similar to those described for *Planetochelys* and *Terrapene*, such as intruded contact of the first neural. The carapace is highly domed, similar to that of extant *Terrapene*, but distinct from *Planetochelys*. The specimens have more neural bones than extant species of *Terrapene* (8 compared to 7), and have a suprapygal consistent in shape with that of *Terrapene*. They have post-neural elements similar to those described for *Planetochelys*. These fossils provide insights into the convergent evolution of box turtle morphology within Testudinoid turtles (the larger group that includes *Cuora* and *Terrapene*), because at present, these fossils appear to be more closely related to those two taxa than *Planetochelys*.

Keywords: Paleontology, Geobiology, UTCT, Morphology, Turtles