

Saturday September 14th, 10:00am talk

A New Species of Nanhsiungchelyid Turtle from the Arlington Archosaur Site, Woodbine Formation, Texas: Macro- and Micro-anatomical Analyses

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Abstract

The Nanhsiungchelyidae is a family of mostly large-bodied, terrestrial adocusian turtles from the Early to Late Cretaceous. While they are primarily an Asian radiation, one genus from this family (*Basilemys*) is known from North America and is considered endemic. Here we present the initial description of a second nanhsiungchelyid genus from the Cenomanian (early Late Cretaceous, 95-96 Mya) of the Arlington Archosaur Site (AAS) of Texas. Our analysis is based on a partial cranium, lower jaw, and numerous plastral and carapacial elements. The posterior half of the cranium is complete, but the face and dermal neurocranium are very incomplete. We assign the specimen to Nanhsiungchelyidae on the basis of a closed incisura columella auris, rounded tympanic openings, and outwardly radiating striations on the cranial roof. This specimen is unique and differs from *Basilemys* in having large, rounded processus trochlearis oticum with minimal parietal contribution, and large tubercula basioccipitale that project caudally and are bounded by deep fossae superiorly. The lower jaw has a complex triturating surface that divides into distinct posterior and anterior dentary pockets, a pronounced symphyseal hook, and the labial ridge of the dentary is serrated with a distinctive row of tooth-like denticles. The shell sculpture is typical of nanhsiungchelyids, consisting of large, sometimes-coalesced pits separated by rounded ridges. The cervical scute is substantially wider than in *Basilemys*, approximately twice as wide as it is long, and its lateral and posterior aspects are concave. We also compare the shell histology of the new nanhsiungchelyid to other adocusian taxa from the Arlington Archosaur Site. AAS adocusid specimens display characteristics consistent with *Adocus*, including abundant Sharpey's fibers organized into plies (layers) and reticulated vascular channels. The AAS nanhsiungchelyids differs by lacking plywood-like organization and having minimal Sharpey's fibers. However, the AAS nanhsiungchelyids lack the characteristic wavy growth marks of *Basilemys*, more closely resembling basal Asian nanhsiungchelyids such as *Hanbogdemys orientalis*. This finding when combined with gross morphological traits suggest that the AAS nanhsiungchelyid is a new genus, distinct from

Basilemys. These findings add to the terrestrial herpetofauna of AAS, further supporting environmental reconstructions of the site as a complex coastal ecosystem with a broad range of available terrestrial and aquatic niches.