THE SOCIETY OF VERTEBRATE PALEONTOLOGY

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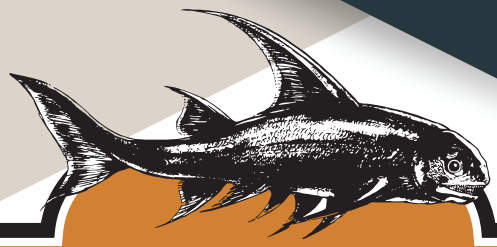

SOCIETY OF VERTEBRATE PALEONTOLOGY
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Trilophosaurs were a group of lizard-like archosauromorph herbivorous reptiles known for their transversely broadened multi-cuspid teeth. Until now, the group has been known exclusively from the Late Triassic of North America. Potential European members of the group were noted in the 1950s, *Tricuspisaurus thomasi* and *Variodens inopinatus*, but they were commonly identified as procolophonids. Here, we re-study these taxa using new CT scan data, confirm they were trilophosaurs, and for the first time include them in a phylogenetic analysis. Our investigation and results conclude that the two European taxa do belong to Trilophosauridae, and that they may represent the youngest known trilophosaurs in the fossil record before the group's extinction at the end of the Triassic.

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Non-avian Theropod Systematics, Biology, and Evolution

A CT-BASED REVISED DESCRIPTION AND PHYLOGENETIC ANALYSIS OF THE SKULL OF THE BASAL MANIRAPTORAN *ORNITHOLESTES HERMANNI* OSBORN 1903

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Ornitholestes hermanni was one of the first small-bodied theropods named in the 1900s. It is known from a single specimen discovered during the American Museum Expedition of 1900, at the Jurassic Morrison Formation site known as Bone Cabin Quarry, in Wyoming. It has long been a critical taxon in understanding the evolution of the Coelurosauria, the clade that includes tyrannosauroids, living birds, and their common ancestors. The holotype specimen comprises a nearly complete skull and most of a postcranial skeleton. Despite this abundant material, its precise phylogenetic relationships have been difficult to determine. This is in part due to the intense mediolateral crushing of the skull and the relatively generalized postcranial anatomy. Here we present the results of a micro- computed tomography-based investigation of the cranial anatomy and subsequent incorporation of these data into a phylogenetic data matrix designed to test coelurosaurian interrelationships. We find robust evidence across different optimality criteria that *Ornitholestes* is the earliest-branching oviraptorosaurian species. Using parsimony as an optimality criterion, this phylogenetic position is supported by 14 unambiguous synapomorphies, including: a short frontal process of the postorbital; short, deep, and pendant paroccipital processes; a large mandibular foramen; an anterodorsally oriented dentary symphysis; a surangular that is longer than the dentary; short maxillary and dentary tooth rows; and procumbent dentary and premaxillary teeth. Using Bayesian fossilized birth-death models, we find high posterior probabilities (>.99) that *Ornitholestes* is the earliest-branching oviraptorosaurian species. We additionally find strong support in both analyses that the superficially bat-like and possibly arboreal scansoriopterygids are an early branching lineage within Oviraptorosauria. This new phylogenetic position fills in a persistent ghost lineage in Oviraptorosauria and confirms that scansoriopterygids are basally branching oviraptorosaurians that represent an independent origin of aerial habits, separate from those of dromaeosaurs and avialans.

Funding Sources Kalbfleisch Fellowship, Richard Gilder Graduate School, AMNH; DSI-NRF Centre of Excellence in Palaeosciences; Palaeontological Scientific Trust

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Avialan Evolution & Biology

CONTROLS ON THE CAMPANIAN DISTRIBUTION OF *HESPERORNIS* (AVES: HESPERORNITHIFORMES) IN THE WESTERN INTERIOR SEAWAY

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The epicontinental Western Interior Seaway (WIS) divided North America during the Late Cretaceous and