



The osteology of *Shaochilong maortuensis*, a carcharodontosaurid (Dinosauria: Theropoda) from the Late Cretaceous of Asia

STEPHEN L. BRUSATTE^{1,2,6}, DANIEL J. CHURE³, ROGER B. J. BENSON⁴ & XING XU⁵

¹Department of Paleontology, American Museum of Natural History, Central Park West at 79th Street, New York, NY 10024, USA.
E-mail: sbrusatte@amnh.org

²Department of Earth and Environmental Sciences, Columbia University, New York, NY, USA

³Dinosaur National Monument, Box 128, Jensen, UT 84035, USA. E-mail: dan_chure@nps.gov

⁴Department of Earth Sciences, University of Cambridge, Downing Street, Cambridge, CB2 3EQ, United Kingdom.
E-mail: rbb27@cam.ac.uk

⁵Institute of Vertebrate Paleontology and Paleoanthropology, Chinese Academy of Sciences, P.O. Box 643, Beijing 100044, People's Republic of China. E-mail: xingxu@vip.sina.com

*Corresponding author. E-mail: sbrusatte@amnh.org

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Abstract

Large-bodied theropod dinosaurs from the Early-mid Cretaceous of the northern continents (Laurasia) are poorly known. One of the most complete and intriguing theropods from this interval is *Shaochilong maortuensis* Hu, 1964 from the Turonian (< 92 Ma) Ulansuhai Formation of Inner Mongolia, China. The phylogenetic placement of *Shaochilong* has long been a subject of debate, as it has been referred to several disparate theropod groups (e.g., Megalosauridae, Allosauridae, Tyrannosauroidae, Maniraptora). In a recent taxonomic reassessment, *Shaochilong* was identified as the first Asian member of Carcharodontosauridae, a clade of allosauroid theropods that was once thought to be restricted to Gondwana and includes some of the largest terrestrial predators to ever live. However, the characters supporting such a placement were only briefly discussed, and a full anatomical description of *Shaochilong* has yet to be presented. We provide a detailed osteological description of the lectotype and paralectotype series, show that *Shaochilong* is a small-bodied and short-snouted carcharodontosaurid, and highlight numerous cranial features shared with other carcharodontosaurids. We argue that the vicariant hypothesis of allosauroid biogeography, in which lineages split in concert with the fragmentation of Pangaea, is poorly supported. Finally, large-scale patterns of theropod evolution and faunal replacement are discussed, and it is argued that allosauroids persisted as large-bodied predators later in the Cretaceous than previously thought.

Key words: Allosauroidae, Carcharodontosauridae, cladistics, China, paleobiogeography, Theropoda