

Theropod teeth from the upper Maastrichtian Hell Creek Formation “Sue” Quarry: New morphotypes and faunal comparisons

Terry A. Gates, Lindsay E. Zanno, and Peter J. Makovicky

Acta Palaeontologica Polonica 60 (1), 2015: 131-139 doi: <http://dx.doi.org/10.4202/app.2012.0145>

Isolated teeth from vertebrate microfossil localities often provide unique information on the biodiversity of ancient ecosystems that might otherwise remain unrecognized. Microfossil sampling is a particularly valuable tool for documenting taxa that are poorly represented in macrofossil surveys due to small body size, fragile skeletal structure, or relatively low ecosystem abundance. Because biodiversity patterns in the late Maastrichtian of North America are the primary data for a broad array of studies regarding non-avian dinosaur extinction in the terminal Cretaceous, intensive sampling on multiple scales is critical to understanding the nature of this event. We address theropod biodiversity in the Maastrichtian by examining teeth collected from the Hell Creek Formation locality that yielded FMNH PR 2081 (the *Tyrannosaurus rex* specimen “Sue”). Eight morphotypes (three previously undocumented) are identified in the sample, representing Tyrannosauridae, Dromaeosauridae, Troodontidae, and Avialae. Noticeably absent are teeth attributed to the morphotypes *Richardoestesia* and *Paronychodon*. Morphometric comparison to dromaeosaurid teeth from multiple Hell Creek and Lance formations microsites reveals two unique dromaeosaurid morphotypes bearing finer distal denticles than present on teeth of similar size, and also differences in crown shape in at least one of these. These findings suggest more dromaeosaurid taxa, and a higher Maastrichtian biodiversity, than previously appreciated.

Key words: Dinosauria, theropod, morphometrics, paleoecology, Cretaceous, North America.

Terry A. Gates [terryagates@gmail.com], Field Museum of Natural History, 1400 S Lake Shore Dr., Chicago, IL 60605, USA and North Carolina Museum of Natural Sciences, Raleigh, NC 27603, USA;
Lindsay E. Zanno [lindsay.zanno@naturalsciences.org], North Carolina Museum of Natural Sciences, 121 W Jones St., Raleigh, NC 27603;
Department of Biology, North Carolina State University, Raleigh, NC 27607, USA; Peter J. Makovicky [pmakovicky@fieldmuseum.org], Field Museum of Natural History, 1400 S Lake Shore Dr., Chicago, IL 60605.

This is an open-access article distributed under the terms of the Creative Commons Attribution License (for details please see creativecommons.org), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

 [Full text \(226.3 kB\)](#) |

 [Supplementary file \(393.6 kB\)](#)