

Comment on “A New Arctic Hadrosaurid from the Prince Creek Formation (Lower Maastrichtian) of Northern Alaska” by Hirotosugu Mori, Patrick S. Druckenmiller, and Gregory M. Erickson

Author: Fiorillo, Anthony R.

Source: *Acta Palaeontologica Polonica*, 61(1) : 158

Published By: Institute of Paleobiology, Polish Academy of Sciences

URL: <https://doi.org/10.4202/app.00233.2015>

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.



Comment on “A new Arctic hadrosaurid from the Prince Creek Formation (lower Maastrichtian) of northern Alaska” by Hirotugu Mori, Patrick S. Druckenmiller, and Gregory M. Erickson

ANTHONY R. FIORILLO

Recently Mori et al. (2016) published a paper describing a new taxon of hadrosaurid dinosaur from the Upper Cretaceous Prince Creek Formation of the North Slope Alaska, a rock unit that has recently proven to be a productive source of scientific insights into the workings of an ancient Arctic terrestrial ecosystem (Fiorillo and Gangloff 2001; Gangloff et al. 2005; Fiorillo et al. 2009, 2010; Gangloff and Fiorillo 2010; Flaig et al. 2011, 2013, 2014; Fiorillo and Tykoski 2012, 2014). Although thorough testing of the systematics of this proposed taxon will occur over the next few years, one statement in the Mori et al. (2016) paper warrants comment now. In their section on “Geologic setting and taxonomic composition”, the authors state “The hadrosaurid remains are almost entirely disarticulated, show little evidence of weathering, predation, or trampling and are typically uncrushed and unpermineralized.” As evidence for this statement, the authors cite two papers: Gangloff and Fiorillo (2010) and Fiorillo et al. (2010). These two papers discuss the taphonomy and depositional setting of the Liscomb Bonebed, which is the source of the materials used by Mori et al. (2016).

It is puzzling that Mori et al. (2016) state the bones are “typically uncrushed and unpermineralized” because these bones are indeed permineralized. As stated by Gangloff and Fiorillo (2010: 300) there is common to abundant occurrence of minerals such as pyrite, calcite, and chalcedony (microcrystalline quartz) within the dinosaur bones collected. All of these minerals are commonly introduced during the permineralization process. Further, Gangloff and Fiorillo (2010) discussed fractures of bones resulting from freeze-thaw dynamics present along boundaries of permafrost, and the paper included figures illustrating the degree of crushing in some of the bones (2010: fig. 5C, D). The bones from the Liscomb Bonebed are remarkable but they are indeed fossilized and they are indeed permineralized. Fiorillo et al. (2010), did not focus on any of the mineralogical aspects of bone preservation so the use of this paper in support of Mori et al.’s (2016) claim is baffling. As a co-author of the two papers that are being misused, several colleagues have now contacted me requesting clarification on the state of fossilization of dinosaur bones from northern Alaska. The Mori et al. (2016) paper serves as a reminder that scientists are not only obligated to provide the supporting data for their conclusions, they are also obligated to cite their sources accurately.

Anthony R. Fiorillo [anthony.fiorillo@perotmuseum.org], Perot Museum of Nature and Science, 2201 North Field Street, Dallas, Texas, 75201, USA.

Received 7 December 2015, accepted 9 December 2015, available online 19 January 2016.

Copyright © 2016 A.R. Fiorillo. This is an open-access article distributed under the terms of the Creative Commons Attribution License (for details please see <http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

References

- Fiorillo, A.R. and Gangloff, R.A. 2001. The caribou migration model for Arctic hadrosaurids (Ornithischia: Dinosauria): a reassessment. *Historical Biology* 15: 323–334.
- Fiorillo, A.R. and Tykoski, R.S. 2012. A new species of centrosaurine ceratopsid *Pachyrhinosaurus* from the North Slope (Prince Creek Formation: Maastrichtian) of Alaska. *Acta Palaeontologica Polonica* 57: 561–573.
- Fiorillo, A.R. and Tykoski, R.S. 2014. A diminutive new tyrannosaur from the top of the world. *PLoS ONE* 9 (3): e91287.
- Fiorillo, A.R., McCarthy, P.J., and Flaig, P.P. 2010. Taphonomic and sedimentologic interpretations of the dinosaur-bearing Upper Cretaceous strata of the Prince Creek Formation, Northern Alaska: insights into an ancient high-latitude terrestrial ecosystem. *Palaeogeography, Palaeoclimatology, Palaeoecology* 295: 376–388.
- Fiorillo, A.R., Tykoski, R.S., Currie, P.J., McCarthy, P.J., and Flaig, P. 2009. Description of two partial *Troodon* braincases from the Prince Creek Formation (Upper Cretaceous), North Slope Alaska. *Journal of Vertebrate Paleontology* 29: 178–187.
- Flaig, P.P., Fiorillo, A.R., and McCarthy, P.J. 2014. Dinosaur-bearing hyperconcentrated flows of Cretaceous Arctic Alaska: recurring catastrophic event beds on a distal paleopolar coastal plain. *Palaios* 29: 594–611.
- Flaig, P., McCarthy, P.J., and Fiorillo, A.R. 2011. A tidally-influenced, high-latitude alluvial/coastal plain: the Late Cretaceous (Maastrichtian) Prince Creek Formation, North Slope, Alaska. In: C. North, S. Davidson, and S. Leleu (eds.), From River to Rock Record: The Preservation of Fluvial Sediments and their Subsequent Interpretation. *SEPM Special Publication* 97: 233–264.
- Flaig, P.P., McCarthy, P.J., and Fiorillo, A.R. 2013. Anatomy, evolution, and paleoenvironmental interpretation of an ancient Arctic coastal plain: Integrated paleopedology and palynology from the Upper Cretaceous (Maastrichtian) Prince Creek Formation, North Slope, Alaska, USA. In: S.G. Driese and L.C. Nordt (eds.), New Frontiers in Paleopedology and Terrestrial Paleoclimatology: Paleosols and Soil Surface Analogue Systems. *SEPM Special Publication* 104: 179–230.
- Gangloff, R.A. and Fiorillo, A.R. 2010. Taphonomy and paleoecology of a bonebed from the Prince Creek Formation, North Slope, Alaska. *Palaios* 25: 299–317.
- Gangloff, R.A., Fiorillo, A.R., and Norton, D.W. 2005. The first Pachycephalosaurine (Dinosauria) from the Paleo-Arctic and its paleogeographic implications. *Journal of Paleontology* 79: 997–1001.
- Mori, H., Druckenmiller, P.S., and Erickson, G.M. 2016. A new Arctic hadrosaurid from the Prince Creek Formation (lower Maastrichtian) of northern Alaska. *Acta Palaeontologica Polonica* 61: 15–32.