

## Unravelling the history of a unique Triceratops graveyard from eastern Wyoming, USA

Kaskes, Pim; Portanger, Leonie A.; Schulp, Anne S.

*Published in:*

European Association of Vertebrate Paleontology, Program and Abstracts, 2016

*Publication date:*

2016

*Document Version:*

Final published version

[Link to publication](#)

*Citation for published version (APA):*

Kaskes, P., Portanger, L. A., & Schulp, A. S. (2016). Unravelling the history of a unique Triceratops graveyard from eastern Wyoming, USA. In *European Association of Vertebrate Paleontology, Program and Abstracts, 2016* (pp. 192-192)

**Copyright**

No part of this publication may be reproduced or transmitted in any form, without the prior written permission of the author(s) or other rights holders to whom publication rights have been transferred, unless permitted by a license attached to the publication (a Creative Commons license or other), or unless exceptions to copyright law apply.

**Take down policy**

If you believe that this document infringes your copyright or other rights, please contact [openaccess@vub.be](mailto:openaccess@vub.be), with details of the nature of the infringement. We will investigate the claim and if justified, we will take the appropriate steps.

## UNRAVELLING THE HISTORY OF A UNIQUE TRICERATOPS GRAVEYARD FROM EASTERN WYOMING, USA

P. Kaskes<sup>1\*</sup>, L.A. Portanger<sup>1</sup>, and A.S. Schulp<sup>1,2</sup>

<sup>1</sup>Vrije Universiteit Amsterdam, Department of Earth and Life Sciences, De Boelelaan 1085, 1081 HV Amsterdam, the Netherlands

<sup>2</sup>Naturalis Biodiversity Center, Darwinweg 2, 2333 CR Leiden, the Netherlands

\*pim.kaskes@gmail.com

**Keywords:** *Triceratops, Ceratopsidae, Lance Formation, bonebed, taphonomy*

In August 2015, Naturalis Biodiversity Center (Leiden, the Netherlands) continued its excavations at a unique bonebed of ceratopsian dinosaurs south of Newcastle in Weston County, eastern Wyoming, USA. Preliminary field data shows these Upper Maastrichtian terrestrial deposits of the Lance Formation to hold at least five fairly complete skeletons of the genus *Triceratops*, ranging from juveniles to subadults and adults. Discoveries of *Triceratops* bonebeds are extremely rare and two previously described localities, in the time-equivalent Hell Creek Formation in Montana, amounted only three individuals. Therefore, this site marks the largest monospecific bonebed of *Triceratops* found so far.

Detailed geological fieldwork at the dig site and adjacent exposures was carried out to investigate the sedimentology and to develop possible taphonomic scenarios responsible for the burial of these horned dinosaurs. The *Triceratops* skeletons are associated with abundant micro- and macrofloral and -vertebrate remains, all incorporated within an organic-rich siltstone matrix. The remains are associated, but also show clear disarticulation. The fifth skeleton is located at the same site, c. 4 m above the main bonebed, implying that this specimen was buried at the same location thousands of years later. The preservation of multiple, ontogenetically different individuals within the same sedimentary horizon and in close proximity of each other suggests that these animals died together, but better geological understanding is needed to verify this scenario.

High resolution grain-size and thermogravimetric analysis of the bonebed and surrounding rock units can reveal the hydrodynamic and palaeoenvironmental conditions prior, during and after deposition of the bone accumulation. This way, it may be possible to differentiate between two post-mortem scenarios. The first hypothesis considers a fluvial origin for the bonebed in which the dinosaurs possibly accumulated on an overgrown pointbar after drowning. The second hypothesis suggests burial linked to potential trapping of the animals inside a swampy depression. Hence, unravelling the complex sedimentary origin of this *Triceratops* graveyard might provide new insights about gregarious behaviour –if any– of these famous horned dinosaurs.