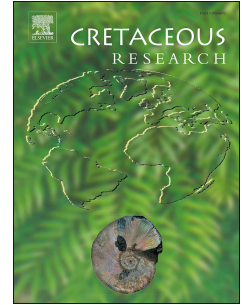


# Accepted Manuscript

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PII: S0195-6671(17)30400-7

DOI: [10.1016/j.cretres.2018.03.023](https://doi.org/10.1016/j.cretres.2018.03.023)

Reference: YCRES 3843

To appear in: *Cretaceous Research*

Received Date: 10 September 2017

Revised Date: 8 March 2018

Accepted Date: 23 March 2018

Please cite this article as: Meehan, K.C., Mego Vela, M., Gilles, N.V., Chow, Y.O., Koo, C., Lopez, B., Wolfe, Y., George, S.A., Foraminifera from the upper Campanian Pierre Shale methane cold-seeps, South Dakota, *Cretaceous Research* (2018), doi: 10.1016/j.cretres.2018.03.023.

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FORAMINIFERA FROM THE UPPER CAMPANIAN PIERRE SHALE METHANE COLD-  
SEEPS, SOUTH DAKOTA

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Keywords: methane seep, foraminifera, Pierre Shale, Cretaceous

### Abstract

Investigations into ancient benthic foraminiferal populations are limited, particularly in the Late Cretaceous methane cold-seeps of the Western Interior Seaway. Poorly lithified shale samples (400 cc) from 8 methane cold-seeps and one coeval non-seep locality from the upper Campanian Pierre Shale in South Dakota were disaggregated, sieved, and examined for specimens (> 150  $\mu\text{m}$ ). Seeps yielded between 100 - 148 specimens per locality. The foraminiferal populations found at seeps and the single non-seep locality contain many of the same species. The most abundant benthic genera found at late Campanian seeps in South Dakota include *Guardryina*, *Haplophragmoides*, *Trochammina*, buliminids (*Buliminella* and *Praebulimina*), *Lagena*, and *Gavelinella*. Planktic foraminiferal assemblages are much less diverse and dominated by *Globigerinelloides*. Only two seeps and the non-seep locality contain biserial species, these localities fall in the *Baculites compressus* zone. The foraminifera from both seeps and the non-seep have Shannon-Weiner (ln) and Fisher's diversity indices that show that the foraminiferal populations are

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