

**THE LAST FRESHWATER MOLLUSCAN ASSEMBLAGE OF THE CRETACEOUS?
A NEW LOCALITY FROM THE LUDLOW FORMATION OF NORTH DAKOTA**

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INTRODUCTION

The freshwater molluscan record of the uppermost Cretaceous is replete with numerous localities containing species-rich assemblages of highly sculptured freshwater unionids (Family Unionidae). Nonmarine molluscan biostratigraphy during this time is best known from the Williston Basin of Montana (1), where the Hell Creek Formation is fossiliferous throughout most of its extent. Sampling is particularly robust in the upper half of the formation in part because of the accessibility of strata in badland exposures. The upper few meters of the formation appear to be less well sampled, but the absence of fossils is due more to the rarity of fossil occurrences subjacent to the Cretaceous–Tertiary (K/T) boundary. In North Dakota, the K/T boundary is usually found within the basal meters of the Ludlow Member of the Fort Union Formation (2). This contribution represents the first record of mollusks from the Cretaceous portion of the Ludlow and is a rare glimpse of an assemblage of freshwater mollusks at the very end of the Cretaceous.

OBSERVATIONS

While prospecting in 1998, Kirk Johnson (3) and Tim Farnham discovered molluscan fossils (Figure 1, M = Hartman Locality L6516) in sec. 9, T. 134 N., R. 106 W., in Little Missouri River badland exposures in Slope County, North Dakota. Collections from the 1998, 1999, and 2000 field seasons represent an assemblage dominated by unionid bivalves and a species of caenogastropod belonging to the family Viviparidae. The bivalves are unsculptured and typically ovate in marginal outline (Figure 2). Morphotypes have been identified, but in the absence of distinctive features, no generic or specific names have been assigned. Fossils are preserved as compressed external molds, most often articulated or with valves butterfly-open, in a pale yellowish brown (10YR 6/2-5YR 5/2) clay-rich, slightly sandy siltstone, rich with plant debris. Diagnostic palynomorphs were identified by Doug Nichols from the Badland Draw and Das Goods sections (2) delimiting the K/T boundary interval (Figure 1) superjacent to the molluscan fossils.

CONCLUSIONS

Hartman (1) has suggested that the absence of highly sculptured unionid clams at the very end of the Cretaceous is real and not a product of biased sampling. The extinction of bivalves and snails with tubercles, nodes, and accentuated ridges so characteristic of the Cretaceous appears complete prior to the K/T boundary. Although representing a rare occurrence, the unsculptured Ludlow bivalves reported here may reflect evidence of a molluscan faunal turnover prior to the end of the Cretaceous.

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2. Nichols, D.J. (in prep.) Palynology and palynostratigraphy of the Hell Creek Formation in North Dakota – A microfossil record of plants at the end of Cretaceous time.
3. Johnson, K.R. (in prep.) Overview of the Cretaceous–Tertiary (K/T) megaflora of the Hell Creek and lower Fort Union Formations in southwestern North Dakota and northwestern South Dakota.

Figure 1. L6516 Stratigraphy

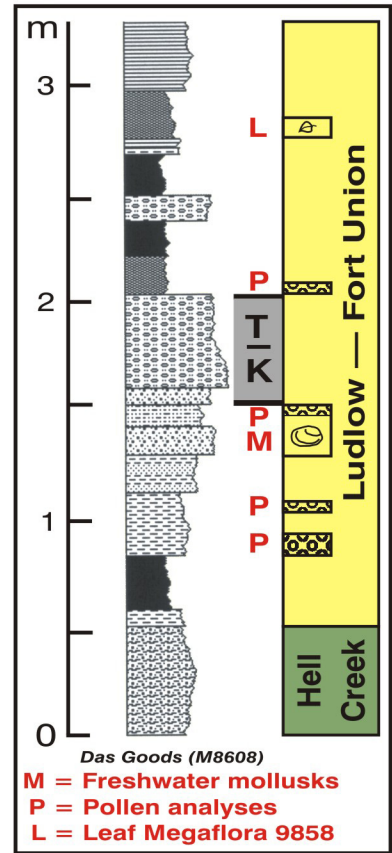


Figure 2. L6516 Unionid

