

CONTRIBUTIONS TO THE MARSHALL LAMBERT SYMPOSIUM

AN UNUSUAL OCCURRENCE OF PALEOCENE NONMARINE MOLLUSKS ON THE EAST FLANK OF THE CEDAR CREEK ANTICLINE, FALLON COUNTY, MONTANA

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The "Melcher Snail Locality"* (Locality L49) is a highly fossiliferous bed of snails about 1.9 km (1.2 mi) northeast of the breaks of the Cedar Creek Anticline in northern Fallon County, Montana (T. 10 N., R. 59 E.). The faunule is unusual in that it contains 1) a diverse assemblage of freshwater mollusks in a stratigraphic interval that is generally unfossiliferous or of low diversity, 2) a relatively complete ontogenetic series of one particular taxon, and 3) specimens of a genus that is not otherwise well represented in the Paleocene of the northern Great Plains. The locality was referred to me by Marshall E. Lambert in 1977 while examining collections at the Carter County Museum, Ekalaka, Montana. Mr. Lambert collected specimens at his "north of Baker" locality in 1960 and had obtained a representative sample of the faunule. Additional material was subsequently collected in 1977 (with J.A. Milske), 1978 (with students from Carleton College and later with R.C. Holtzman), 1988, and 1989 (with D.W. Krause, T.J. Kroeger, and others). Collections from the approximately meter-thick shell bed were made in a shallow pit, some 50 m² in size, on the north end of a grassed butte. The shell bed, barely discernible in the cover, extends southward along the crest of the hill. The pit was produced by farmers quarrying shells for a calcium carbonate feed supplement for their chickens.

Vuke-Foster and others (1986) assigned provisional geologic map units to the Paleocene strata of the Wibaux 30x60-minute Quadrangle. The stratigraphic sequence in the area of the Melcher Locality includes the uppermost Cretaceous Hell Creek Formation and the Paleocene Tfu₁ and Tfu₃ map units. Vuke-Foster and others (1986) correlated Tfu₁ with the Ludlow Formation and Tfu₃ with the Slope Formation, as recognized in the Little Missouri River drainage in adjacent North Dakota counties. The area of the Melcher Locality was mapped as Tfu₃ (Vuke-Foster and others, 1986). The very minor rock outcrops at the south end of the butte are mottled, pale yellow silty claystones, claystones, and calcareous claystones indicative of this map unit. The slope of the butte is littered with large silcrete boulders let down from a higher, no longer preserved horizon. Employing field observations and mapping of Vuke-Foster and others (1986), a dip of slightly less than 1° was derived for the strata about the locality. Its occurrence was calculated to be approximately 73 m above the Hell Creek-Tfu₁

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contact and about 37 m above the Tfu₁-Tfu₃ contact. In addition, the fossil horizon appears to be about 24 m above an in situ silcrete layer exposed a short distance to the southwest.

The Melcher Locality faunule is dominated by large snails of the Family Viviparidae, including numerous specimens of *Viviparus* sp. C and *Campeloma nebrascense whitei* Russell, and a few specimens of *V. meeki* Wenz (Hartman, 1984). Of significance are a number of small specimens of *Viviparus* sp. C that are interpreted as probably prenatal. The assemblage includes, in minor abundance, only the second report of a highly sculptured species of the Family Pleuroceridae, probably assignable to the genus *Elimia* (*Goniobasis* of earlier usage). A single specimen of a sculptured pleurocerid (?*Goniobasis* sp.) was reported by Van Alstine (1974) from the Slope Formation, associated with the lower tongue of the Cannonball Formation, in Slope County, North Dakota. The Melcher Locality snail faunule also includes *Lioplacodes nebrascensis* and *L. tenuicarinata* (Pleuroceridae), *Hydrobia* spp. (Hydrobiidae), *Physa* sp. (Physidae), and New Genus *A limneaformis* (incertae sedis). A very small portion of the shell mass of the locality consists of bivalves, including specimens of uncertain affinity assigned to *Corbula* (Corbulidae) and *Sphaerium* (Pisidiidae), and very fragmentary remains of freshwater mussels (Unionidae) assignable to indeterminate species of *Plesielliptio* and *Rhabdotophorus*.

A comparable assemblage, but of lower diversity, is known from a horizon between the tongues of the Cannonball Formation in western Slope County, North Dakota, on the west side of the Little Missouri River (Hartman, 1984; Locality L4232). The fossil assemblage and stratigraphic placement of the Melcher Locality indicate its probable lateral equivalence to the strata bearing the transgressive-regressive sequences of the Cannonball Sea. A comparison to other nonmarine molluscan localities, correlated with mammalian local faunas, suggests a post-Puercan to pre-Ti3 (middle Tiffanian) Paleocene age for the Melcher Locality.

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- Hartman, J.H., 1984, Systematics, biostratigraphy, and biogeography of latest Cretaceous and early Tertiary Viviparidae (Mollusca, Gastropoda) of southern Saskatchewan, western North Dakota, eastern Montana, and northern Wyoming [Ph.D. thesis]: Minneapolis, University of Minnesota, 928 p., 19 pls. [Dissertation Abstracts International, v. 45, no. 3].
- Van Alstine, J.B., 1974, Paleontology of brackish-water faunas in two tongues of the Cannonball Formation (Paleocene, Danian), Slope and Golden Valley Counties, southwestern North Dakota [M.S. thesis]: Grand Forks, University of North Dakota, 101 p., 2 pls.
- Vuke-Foster, S.M., Colton, R.B., Stickney, M.C., Wilde, E.M., Robocker, J.E., and Christensen, K.C., 1986, Geology of the Baker and Wibaux 30x60-minute quadrangles, eastern Montana and adjacent North Dakota: Montana Bureau of Mines and Geology, Geologic Map 41, 1 sheet.