

**PALEOCENE BIOCHRONOLOGY IN THE NORTHERN GREAT PLAINS:
NONMARINE MOLLUSCA AND MAMMALS FROM THE CRAZY MOUNTAINS BASIN**

by

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The geological and paleontological exploration of the Western Interior of North America had, as an early and brief focus, the strata of the upper Missouri River in North Dakota and Montana, centered near the confluence of the Yellowstone and Missouri Rivers in the vicinity of Fort Union. The significance of this section is due to the description of a large number of Paleocene nonmarine Mollusca by Meek and Hayden in the 1850's and early 1860's. This fossil assemblage was later used to recognize 'Fort Union time' during coal survey mapping, which began at the turn of the century and continued into the 1940's and 1950's.

Present biochronologic organization of western North American Tertiary nonmarine strata is based on the evolutionary history of several lineages of land mammals. The Puercan, Torrejonian, and Tiffanian land-mammal ages, which comprise most of the Paleocene, were recognized initially from isolated local faunas described from localities in the Nacimiento Formation in the San Juan Basin of New Mexico and Colorado. A comprehensive Paleocene zonation was presented in summary form for the first time in 1941 by a committee of vertebrate paleontologists.

Thus, throughout much of the mapping of the Western Interior, the nonmarine Paleocene was biochronologically delimited on the basis of nonmarine Mollusca from the northern Great Plains, and then subsequently organized on the basis of land mammals from the American

southwest. Further subdivision of Paleocene land mammal ages into a sequence of zones has proceeded apace with the discovery of additional mammalian fossils and the intense interest in their evolutionary history. On the other hand, invertebrate fossils have not received the taxonomic or biostratigraphic revision that would increase their biochronologic utility in organizing nonmarine strata.

Present studies include, as an important objective, the correlation of mammal and mollusk occurrences in the northern Great Plains to provide a reference section that attempts to fully utilize the best attributes of both fossil groups. Toward this end, Paleocene strata in the Crazy Mountains Basin contain numerous molluscan and mammalian occurrences, particularly through the Torrejonian and into the Tiffanian.